

Protectionism and Economic Growth: Causal Evidence from the First Era of Globalization

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Abstract

We investigate how protectionist policies influence economic growth. Our empirical strategy exploits an extraordinary tax scandal that gave rise to an unexpected change of government in Sweden. A free-trade majority in parliament was overturned by a protectionist majority in 1887. The protectionist government increased tariffs. We employ the synthetic control method to select control countries against which economic growth in Sweden can be compared. We do not find evidence suggesting that protectionist policies influenced economic growth and examine channels why. The new tariff laws increased government revenue. However, the results do not suggest that the protectionist government stimulated the economy by increasing government expenditure.

JEL-Codes: C330, D720, F100, F130, H200, H500, N100, O110.

Keywords: protectionism, economic growth, government revenue, government expenditure, first era of globalization, synthetic control method, causal inference.

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1 Introduction

How trade policies influence economic growth has been examined for a long time. Empirical evidence based on data for the late 20th and the early 21st century suggests that protectionist policies decrease economic growth.¹ The empirical evidence from the late 19th and the early 20th century is less conclusive; most studies report positive correlations between tariffs and economic growth (‘tariff-growth paradox’).² However, such positive correlations do not provide causal evidence on how protectionism influences growth because most policy changes are endogenous. Reverse causality and anticipation effects give rise to biases when applying, for example, standard panel data approaches based on international cross-sections.

We provide causal evidence on the tariff-growth paradox by investigating a rare case of a plausibly exogenous change in trade policy. We exploit that an extraordinary tax scandal in the fall of 1887 gave rise to an unexpected change of government in Sweden. Swedish trade policies had been liberal for decades in the 19th century. Advocates of free trade (free-traders) also won the Swedish national elections in 1887 by a large margin. Two weeks after the election, a newspaper editor appealed the election results, claiming that a free-trade candidate from Stockholm is an illegitimate candidate because of outstanding tax liabilities. To the surprise of many, the election committee discarded all ballots with votes for the free-trade candidate and instated protectionist candidates as representatives for the Stockholm electoral district in the *Riksdag*. In January 1888, the supreme court confirmed the decision of the election committee. The free-trade majority in the second chamber of parliament was overturned by a comfortable protectionist majority, and the free-trade government resigned. A protectionist government took office in February 1888 and increased tariffs by around 30% (Persarvet, 2019).

¹See, for example, Sachs and Warner (1995); Edwards (1998); Frankel and Romer (1999); Rodríguez and Rodrik (2000); Wacziarg (2001); Irwin and Tervio (2002); Vamvakidis (2002); Dreher (2006); Wacziarg and Welch (2008); Nunn and Trefler (2010); Billmeier and Nannicini (2013); Felbermayr and Gröschl (2013); Eaton et al. (2016); Feyrer (2019); Gygli et al. (2019); Irwin (2019); Andersen et al. (2020); Fajgelbaum et al. (2020); Furceri et al. (2020).

²See, for example, Bairoch (1972); Irwin (1998, 2002); O’Rourke (2000); Lehmann and O’Rourke (2011); Schularick and Solomou (2011). Similarly, Pascali (2017) reports that an increase in trade decreased economic growth for most countries in the first era of globalization.

The unanticipated change of government provides an ideal case for investigating how protectionist policies influence short-run economic growth. First, because the change of government was unanticipated and decided by a court, anticipation effects and reverse causality are unlikely to bias our estimates. Second, the tariff increase was large. Overall, tariffs increased by around 30%, and all industries were affected by the tariff laws. Third, customs revenue was the most important revenue stream for state finances at the time and made up 42% of total government revenue in 1888/89 (Häggqvist, 2018). Fourth, trade policy was the central topic defining political competition, and the new tariff laws were the only major policy changes implemented by the protectionist government. Finally, changes in tariff laws were quickly perceived by merchants in the first era of globalization. The telegraph, for example, was used frequently in the late 19th century and reduced information frictions in international trade (Steinwender, 2018).

We employ the synthetic control (SC) method (Abadie and Gardeazabal, 2003) to select control countries against which economic growth in Sweden can be compared. We do not find evidence suggesting that the protectionist policies influenced short-run economic growth in 19th century Sweden. The results corroborate that the short-run effects of protectionism are likely to be context-specific (Eichengreen, 2019). Our study shows that focusing on exogenous variation is essential to better understand the ‘tariff-growth paradox’ in the first era of globalization.

A channel through which changes in import tariffs may influence short-run economic growth operates through changes in government revenue and fiscal policies. How changes in import tariffs affect imports depends on the tariff rate and the elasticity of import demand. We find that imports did not decrease and government revenue increased. Consequently, the protectionist government needed to decide how to spend the additional revenue. While increases in government expenditure translate quickly into higher GDP (Owyang et al., 2013; Ramey and Zubairy, 2018; Ramey, 2019), our results do not show that the Swedish government increased government expenditure. The Swedish government used the additional revenue to consolidate budgets and repay public debt. Consistent with our empirical results, budget consolidation is unlikely to increase short-run economic growth.

Methodologically, our paper is most closely related to [Billmeier and Nannicini \(2013\)](#) who employ the SC method to examine how trade policy reforms influence economic growth in the 20th century. Using the SC method in the literature on trade policies and economic growth has been a major innovation ([Irwin, 2019](#)). However, the variation in the trade policy reforms investigated by [Billmeier and Nannicini \(2013\)](#) is not exogenous. While SC can accommodate some forms of selection on unobservables (e.g., [Ferman, 2019](#)), it is unlikely to completely eliminate the endogeneity bias in such settings. We use the SC method and examine a change of government that induced exogenous variation in Swedish trade policy.

Finally, we also contribute to the literature exploiting quasi-exogenous variation to examine how protectionism influenced economic development in the 19th century (e.g., [Juhász, 2018](#)). We provide well-identified reduced-form evidence on the effect of protectionism on short-run growth in late 19th century Sweden.

2 Change in government and protectionism

2.1 The 1887/1888 change in government

Sweden pursued a liberal trade policy since the late 1850s ([Rustow, 1955](#)). In 1885, members of both chambers of the Swedish parliament started to organize themselves according to their stance on trade policy ([Rustow, 1955](#); [Lewin, 1988](#)). The result was a face-off between free-traders and protectionists. The free-traders won the election in fall 1887 by a large margin ([Andersson, 1950](#)).³ Thus, it was very likely that the liberal trade policy would have been continued.

Shortly after the fall election, an unexpected event took place, which was called “sensational” ([Lewin, 1988](#)), “preposterous” ([Carlsson and Rosén, 1961](#)), and “scandalous” ([Esaiasson, 1990](#)). Stockholm’s electoral district was entitled to 22 seats in the second chamber of parliament ([Rustow, 1955](#)). Citizens in Stockholm elected only free-traders into parliament by large vote margins.⁴ The election’s appeal pe-

³See [Lehmann and Volckart \(2011\)](#) for a description of the electorates of free-traders and protectionists.

⁴Stockholm was the main stronghold of free-trade sentiment at the time. See [Appendix A](#) for the

riod lasted until October 4, 1887. Two citizens filed appeals against the election results in Stockholm's electoral district (*Stockholms Dagblad*, 1887). The appeal by Wilhelm Alexander Bergstrand, the publisher of the newspaper *Nya Dagligt Allehanda*, induced political turmoil in Stockholm and soon after in the whole country.

On October 4, 1887, shortly before the appeal period ended, Bergstrand submitted his appeal and published it in *Nya Dagligt Allehanda* on the same day (*Bergstrand*, 1887). In his appeal, Bergstrand claimed that Olof Larsson, one of the 22 free-trade candidates, owed a small amount of crown and municipal taxes for 1881 and 1882. According to paragraphs 25 and 26 of the Parliament Act of 1866, a candidate with tax debt is disqualified, and all ballots with votes for the respective candidate are invalid (*Lagerbjelke et al.*, 1866). Bergstrand demanded that all ballots with votes for Larsson must be declared invalid. He further demanded a recount of all valid votes. On October 5, 1887, Bergstrand published proof for Larsson's tax liabilities: the tax collection commissioner for Adolf Fredriks and Kungsholms (two districts in Stockholm) had issued a certificate confirming Larsson's tax liabilities on October 4, 1887 (*Geete*, 1887).

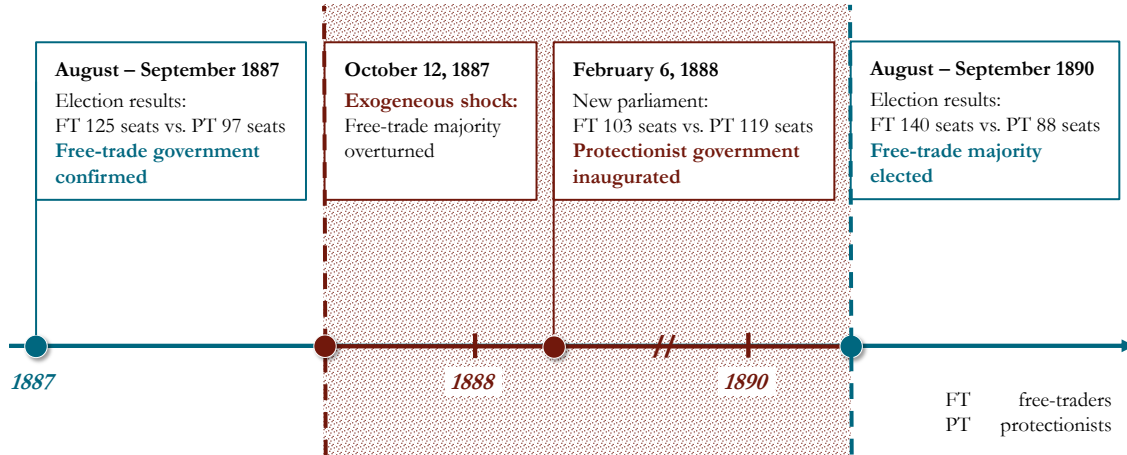
Events unraveled during the following days. Many newspapers published opinions about the legitimacy of the appeal. Larsson's statement in *Aftonbladet*, one of the most influential newspapers at the time, disputed any tax liabilities but remained without the intended effect (*Larsson*, 1887). On October 12, 1887, the election committee accepted Bergstrand's appeal and invalidated all ballot papers with votes for Larsson (*Lindorm*, 1936). It ordered a recount of the votes and declared the 22 protectionist candidates winners of the election. Disputes followed and the decision of the election committee was challenged. On January 25, 1888, the supreme court ruled that the 6,585 ballot papers with votes for Larsson are indeed invalid and officially instated the 22 protectionist candidates as legitimate representatives of the electoral district of Stockholm in the *Riksdag* (*Lewin*, 1988). The free-trade majority in the second chamber of parliament (125 free-traders, 97 protectionists) was overturned by a comfortable protectionist majority (119 protectionists, 103 free-traders).⁵ As a result, the

fall election results for the electoral district of Stockholm.

⁵Both chambers of parliament decide on trade policy, and each representative has one vote.

free-trade government resigned on February 6, 1888, and the experienced protectionist Gillis Bildt became Prime Minister (Lindorm, 1936).⁶ In February 1888, Bildt’s government issued the first tariff laws. See Section 2.2 for details on the new tariff laws. Figure 1 shows the timeline of the main events.

Figure 1: The 1887/1888 change in government and the 1890 general election



Source: Own illustration

The change in parliamentary majorities in the aftermath of the 1887 fall election occurred unexpectedly. We reviewed hundreds of articles from regional and national Swedish newspapers from before the September 1887 election up to January 25, 1888.⁷ We found no indication that the tax debt was publicly known before the election.

2.2 Swedish protectionist policies

The protectionist government increased overall tariffs by around 30% in 1888 (Persarvet, 2019).⁸ The tariff increase was heterogeneous across product classes.

⁶Bildt served as Swedish ambassador in Berlin when the *Reichstag* under Bismarck introduced the agrarian protectionist system in 1879.

⁷We used a search algorithm with keywords and time periods for Swedish newspaper articles provided by the National Library of Sweden (*Kungliga biblioteket, KB*).

⁸We contribute to the long-standing debate on the effect of the Swedish tariff increases by providing causal evidence (e.g., Heckscher, 1941; Montgomery, 1966; Jörberg, 1961, 1966; Hammarström, 1970; Schön, 1989; Bohlin, 2005; Häggqvist, 2018; Persarvet, 2019). We review this debate in more detail in Appendix B.

We follow [Persarvet \(2019\)](#) and classify the goods of the Swedish historical trade statistics according to the Standard International Trade Classification (SITC) framework. Tariffs on food and beverages increased substantially (SITC sections 0–1). The protectionist government raised food tariffs on average by six percentage points. The increase affected 36% of total imports. The largest tariff increase was on grain (from 2% to 27%).

Tariffs on raw materials and fuels increased only to a small extent (SITC sections 2–4). The tariff increase on scrap metal increased the average tariff on ores and metal scrap. New tariffs on lard increased the average tariff on animal and vegetable fats. Coal, coke, and crude oil remained duty-free.

Tariffs on manufactured products increased slightly (SITC sections 5–9). Most of the industrial tariffs were still bound by the Franco-Swedish trade agreement.⁹ Tariffs increased on iron and steel products through the introduction of new tariffs on sheet metal, steel beams, cast steel, and metal wire.

3 Data and empirical strategy

3.1 Data

We use data from the Jordà-Schularick-Taylor Macrohistory Database ([Jordà et al., 2017](#)).¹⁰ The Jordà-Schularick-Taylor Database includes annual data for 17 advanced economies since 1870. It encompasses measures of GDP¹¹, imports, central government revenue, and central government expenditure. Data comes from a broad range of historical sources and various publications of governments, statistical offices, central banks, and private banks. For some countries, the authors extended data series from university databases and international organizations. The main source for our GDP

⁹In 1860, France and Great Britain signed the Cobden-Chevalier treaty. This triggered a large number of most favored nation treaties on the European continent and contributed to a period of relatively free trade ([Lampe, 2009](#); [Tena-Junguito et al., 2012](#)). France and Sweden signed a trade agreement in 1865. When this agreement expired in 1892, Sweden regained tariff autonomy and substantially increased tariffs on industrial products ([Persarvet, 2019](#)).

¹⁰The data are available here: <http://www.macrohistory.net/data/>.

¹¹We use real GDP per capita (index, 2005=100).

measure is the Macroeconomic Data Set (Barro and Ursúa, 2010). Most trade and national account data come from Mitchell (2007), Flora et al. (1983), IMF international financial statistics, OECD national accounts statistics, and national statistics offices.

We examine data until 1890 because the next election took place in the fall of 1890. The free-traders won this election. An important advantage of using a relatively short post-treatment period is that other potential confounding events are unlikely to affect our analysis.

3.2 The synthetic control method

We employ the SC method (Abadie and Gardeazabal, 2003; Abadie et al., 2010, 2015); see Abadie (2021) for a review.¹² SC approximates what would have happened to Sweden with a free-trade government using a weighted average of control countries. We perform the empirical analyses in Stata (StataCorp., 2019) and R (R Core Team, 2020).

To describe the SC method formally, we use the potential outcomes framework (Rubin, 1974). We denote by Y_{jt}^F and Y_{jt}^P the potential outcome of country j in period t with a free-trade (F) and a protectionist (P) government. Our main outcome of interest is real GDP per capita, and we also investigate imports, government revenue, and government expenditure. Let $j = 1$ index Sweden and $j = 2, \dots, J + 1$ index the J control countries. We discuss the choice of the J control countries, our *donor pool*, in Section 3.3.

Our purpose is to estimate the causal effect of protectionism between 1888 and 1890 (the year of the next election),

$$\tau_t = Y_{1t}^P - Y_{1t}^F, \quad t \in \{1888, 1889, 1890\}. \quad (1)$$

For Sweden, we observe Y_{1t}^F until 1887 and Y_{1t}^P afterwards. For the control countries, we observe Y_{jt}^F for all periods. Thus, to estimate τ_t , we need to estimate the unobserved

¹²There is a growing body of work using SC to make causal inference in aggregate panel data settings (e.g., Billmeier and Nannicini, 2013; Bohn et al., 2014; Pinotti, 2015; Cunningham and Shah, 2018; Asatryan et al., 2018; Eliason and Lutz, 2018; Andersson, 2019; Born et al., 2019; Potrafke and Wüthrich, 2020).

potential outcome Y_{1t}^F . We use the following estimator

$$\hat{Y}_{1t}^F = \sum_{j=2}^{J+1} \hat{w}_j Y_{jt}^F. \quad (2)$$

We refer to the weighted average in equation (2) as *synthetic Sweden*. The SC weights $(\hat{w}_2, \dots, \hat{w}_{J+1})$ are estimated by minimizing the discrepancy between the pre-treatment outcomes for Sweden and synthetic Sweden using the Stata package `synth` (Abadie et al., 2011). To avoid concerns about specification search, we do not include additional predictors. The weights are restricted to be positive and add up to one, which ensures transparency and precludes extrapolation (Abadie, 2021, Section 4).

SC generalizes difference-in-differences (DID). To approximate Y_{1t}^F , DID employs simple averages of control units chosen by the researcher. By contrast, SC chooses controls in an automatic data-driven way, employing a weighted average (equation (2)) to approximate Y_{1t}^F . As a result, SC is less susceptible to specification search and often provides a better counterfactual approximation. See Section 4 in Abadie (2021) for further discussions of the advantages of SC.

To make inferences, we employ the permutation method proposed by Abadie et al. (2010). See Firpo and Possebom (2018) and Abadie (2021) for further discussions. In Section 6, we apply the conformal inference procedure of Chernozhukov et al. (2021) as an additional robustness check.¹³

3.3 Choice of donor pool

We restrict our donor pool of control units to countries that had free-trade governments from 1870 to 1890. From the 17 countries available in the Jordà-Schularick-Taylor Database, we exclude France, Germany, Italy, Spain, and Portugal because of protectionist trade policies.¹⁴ Data is missing for Australia and Japan. Therefore, our

¹³We implement the conformal inference procedure using the R-package `scinference` (available here: <https://github.com/kwuthrich/scinference>).

¹⁴We use country classifications of previous studies (e.g., O’Rourke et al., 1996; O’Rourke, 2000; Irwin, 1998, 2002; Rodríguez and Rodrik, 2000; Clemens and Williamson, 2004; Williamson, 2006; Schularick and Solomou, 2011) and classify countries either as “protectionist”/“tariff hikers” or “free-trade”/“non-tariff hikers”.

donor pool includes Belgium, Canada, Denmark, Finland, the Netherlands, Norway, Switzerland, the United Kingdom, and the United States. In Section 6, we present results for a restricted donor pool with only European countries.

An important requirement for SC analyses is that the donor pool of control countries is homogeneous enough (Abadie, 2021). All countries in our donor pool were industrializing during the 1870s and 1880s. Citizens or elected representatives of the citizens possessed substantial political power and influenced national policies.

4 Results: protectionism and growth

The upper left panel of Figure 2 shows real GDP per capita for each donor pool country and Sweden from 1870 to 1890. Sweden’s GDP is shown in thick black; the control countries’ GDPs are shown in grey. The upper right panel shows how real GDP per capita developed in Sweden and synthetic Sweden over the period 1870–1890. The synthetic Sweden consists of 21.7% Denmark, 43.6% Finland, 17.3% Norway, 0.3% United Kingdom, and 17.0% United States (Table 3 in Appendix E).

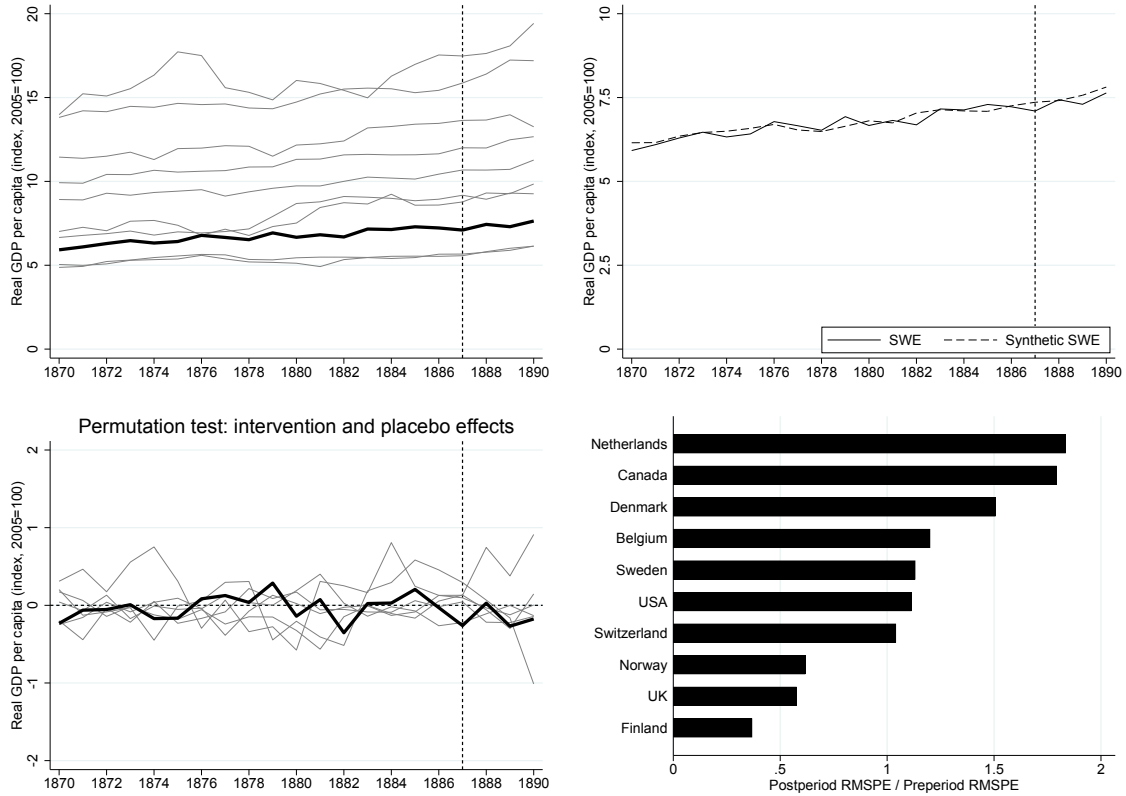
We find no evidence suggesting that protectionism influenced real GDP per capita. From 1870 to 1887, Sweden’s average real GDP per capita grew from 5.92 to 7.10 (average annual growth rate (AAGR): 1.07%), and synthetic Sweden’s average real GDP per capita grew from 6.15 to 7.36 (AAGR: 1.06%). After the change in government, from 1887 to 1890, Sweden’s average real GDP per capita grew from 7.10 to 7.64 (AAGR: 2.47%), and synthetic Sweden’s average real GDP per capita grew from 7.36 to 7.81 (AAGR: 2.01%).

To make inferences, following Abadie et al. (2010), we iteratively re-assign the treatment of having a protectionist government to each country in the donor pool. Because SC does not yield good pre-treatment fits for some control countries, we exclude countries for which the pre-treatment mean squared prediction error (MSPE) is more than 10 times larger than the pre-treatment MSPE for Sweden (lower left panel of Figure 2). The results do not suggest that the effect of protectionism on GDP in Sweden was large relative to the distribution of placebo effects. Since the cutoff of 10 is arbitrary, we also report the ratios of post-treatment root MSPE (RMSPE) to pre-treatment RMSPE,

as suggested by [Abadie et al. \(2015\)](#). A large RMSPE ratio indicates a rejection of the null hypothesis that protectionism had no effect. The lower right panel of Figure 2 suggests that Sweden's ratio was not large compared to the other countries in the donor pool.

In Section 6, we show that our results are robust to potential spillover effects from Sweden's tariff policy on its trading partners and to restricting the donor pool to European countries.

Figure 2: Real GDP per capita



Notes: Real GDP per capita is shown as an index (2005 = 100). The lower left panel excludes countries for which the pre-treatment MSPE is at least 10 times larger than Sweden's pre-treatment MSPE. The data are from the Jordà-Schularick-Taylor Macrohistory Database.

5 Channels

We examine channels for why there is no evidence suggesting that protectionism influenced short-run economic growth. We focus on outcomes of international trade and fiscal policies that are likely to influence short-run economic growth.¹⁵

5.1 Imports

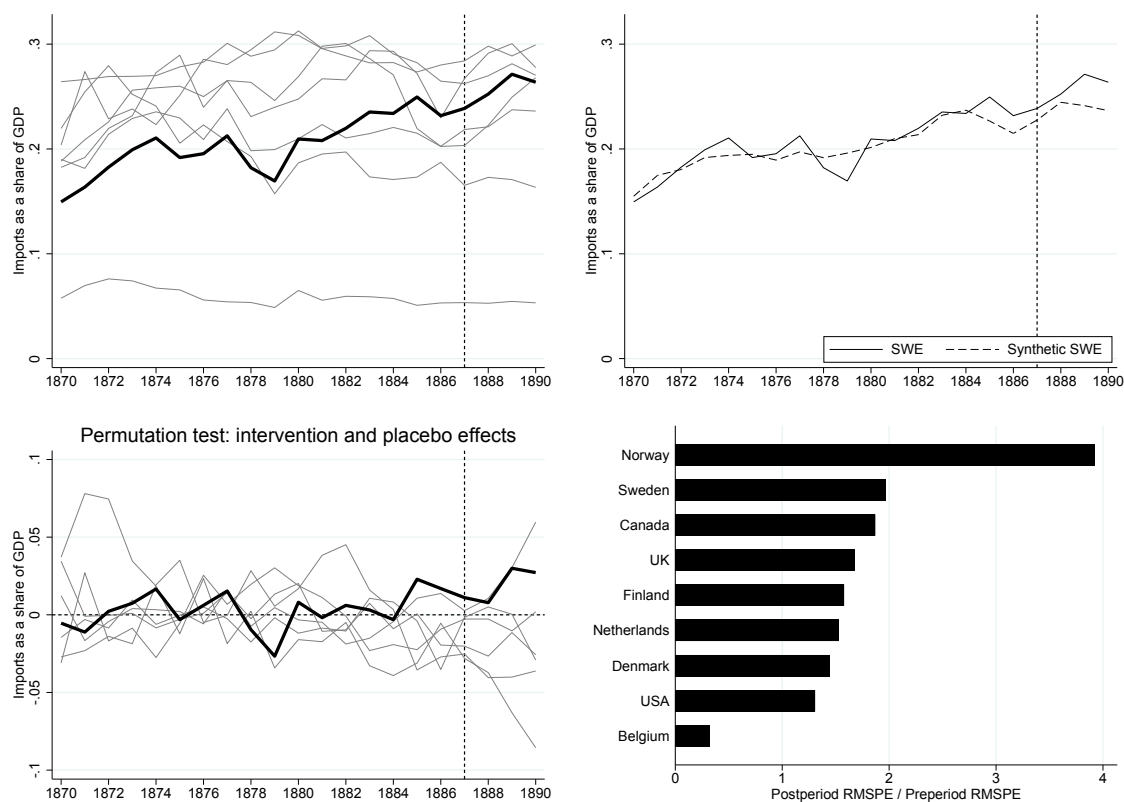
It is conceivable that protectionism decreased imports, especially from those countries from which Sweden imported a substantial fraction of its goods. However, the empirical results in Figure 3 do not suggest that the introduction of tariffs decreased imports. The total value of imports increased from 297.41 million SEK in 1887 to 324.71 million SEK in 1888. The protectionist tariff policy implemented in early 1888 did not reverse the steady growth of imports. The total value of imports as a share of GDP increased from 14.95% in 1870 to 23.87% in 1887. In 1888, imports as a share of GDP increased to 25.23% and reached 26.37% in 1890.

We do not find evidence that aggregate import levels masked heterogeneous effects of the Swedish tariffs on individual trading partners. See Appendix D.1 for how Swedish imports from individual countries developed between 1870 and 1890.

Bildt's government increased tariffs to different extents across sectors (see Section 2.2). Appendix D.2 shows how the composition of Swedish imports across sectors developed between 1870–1890. Agricultural imports remained stable on a high level, and manufactured imports continued their growth path after 1888. Based on our data, we cannot disentangle the effects of tariffs on agricultural imports and tariffs on manufactured imports. However, we do not observe that the composition of imports changed substantially after 1887.

¹⁵Clearly, if possible, we would have liked to also examine the extent to which short-run economic growth was influenced through changes in firms' productivity. However, there is no data on firms' productivity or TFP across countries in the late 19th century available, which we could use in our SC analyses.

Figure 3: Imports as a share of GDP



Notes: The graphs (upper left panel) do not include the Netherlands' imports. The Netherlands' imports as a share of GDP were between 54.43% and 107.95% (1870–1890). Data is missing for Switzerland. The lower left panel excludes countries for which the pre-treatment MSPE is at least 10 times larger than Sweden's pre-treatment MSPE. The data are from the Jordà-Schularick-Taylor Macrohistory Database.

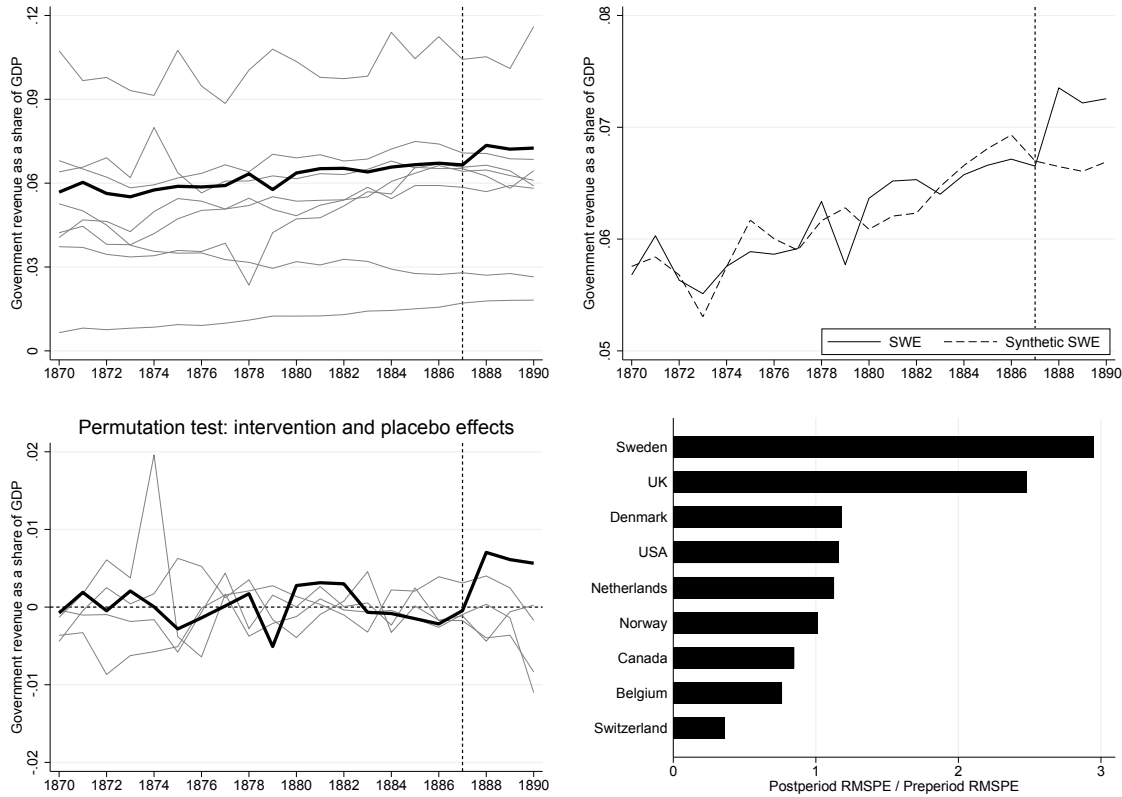
5.2 Government revenue

We examine how the protectionist policies influenced government revenue. Whether the higher tariffs decreased or increased government revenue depends on the tariff rate and the elasticity of import demand. As shown in Section 5.1, imports did not decrease when tariffs were increased. Hence, higher tariffs may well have increased government revenue.

Figure 4 shows that the protectionist policies enacted after the change of government increased government revenue. The ratio of the post-treatment to the pre-

treatment RMSPE is the largest for Sweden. If one were to select a country at random, the probability of obtaining a ratio as high as Sweden’s is 1/9 (see [Abadie et al., 2015](#), for a further discussion of this interpretation). This result is robust to using the conformal inference procedure of [Chernozhukov et al. \(2021\)](#) (cf. Section 6).

Figure 4: Government revenue as a share of GDP



Notes: Data is missing for Finland. The lower left panel excludes countries for which the pre-treatment MSPE is at least 10 times larger than Sweden’s pre-treatment MSPE. The data are from the Jordà-Schularick-Taylor Macroeconomy Database.

Government revenue was 81.11 million SEK in 1887. It increased by 16.02% to 94.11 million SEK in 1888. As a share of GDP, government revenue increased from 6.65% to 7.35% and remained relatively stable until 1890 (1889: 7.22%, 1890: 7.26%). Meanwhile, synthetic Sweden’s government revenue as a share of GDP decreased from 6.70% in 1887 to 6.65% in 1888. It remained relatively stable until 1890 (1889: 6.61%, 1890: 6.69%). Customs revenue was responsible for the increase in government rev-

enue (see Appendix C for a description of Swedish fiscal policies 1888–1890). Because imports did not decrease when the protectionist policies were introduced, it is unlikely that tariffs were systematically circumvented.¹⁶

Our results are in line with empirical evidence from the United States in the 1880s (Irwin, 1998). The United States enjoyed high fiscal surpluses in the early 1880s, and the political parties were discussing how changing import tariffs would influence customs revenues. Irwin (1998) estimates the revenue effects of the proposed tariff changes and concludes that lower import tariffs would also have reduced customs revenues.

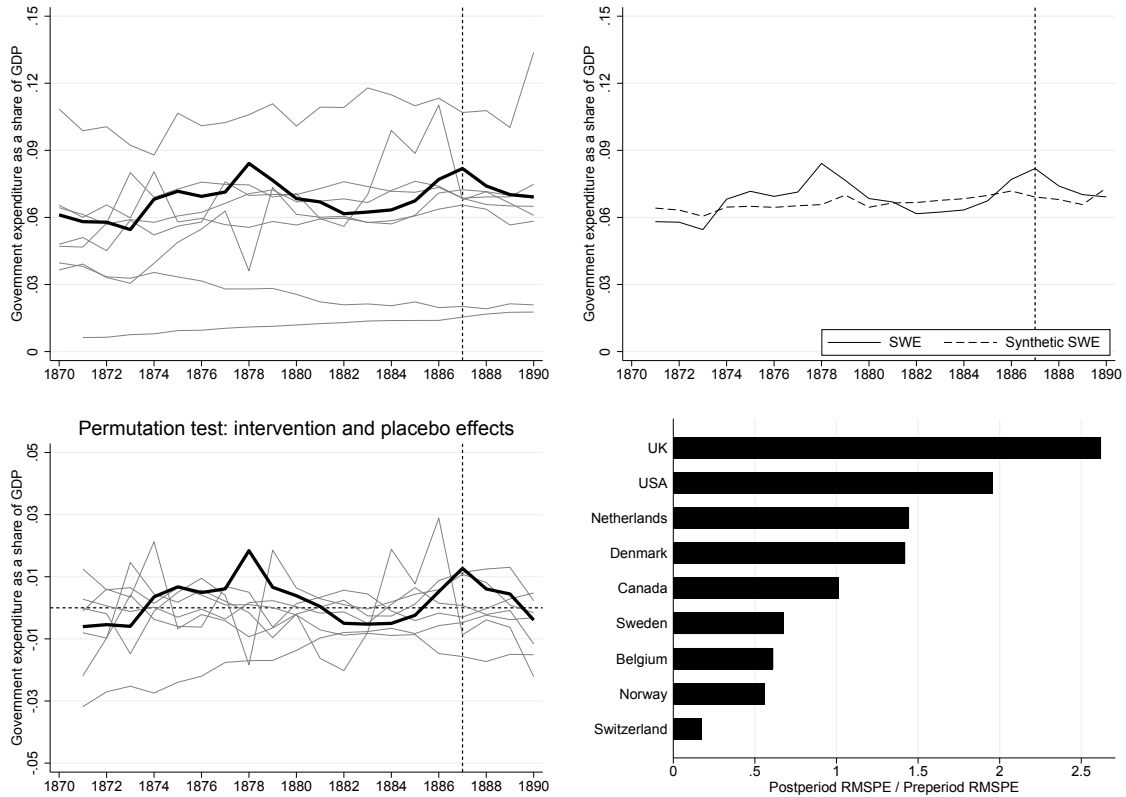
5.3 Government expenditure

Figure 5 shows the SC estimates for government expenditure. The results do not suggest that the protectionist government influenced government expenditure. Swedish government expenditure as a share of GDP decreased from 8.19% in 1887 to 6.92% in 1890. Synthetic Sweden’s government expenditure as a share of GDP increased from 6.92% to 7.31% over the same period.

Sweden went from a large primary budget deficit in 1887 to a small primary budget surplus in 1888. The surplus increased in 1889 and 1890. In both years, Sweden had a total budget surplus and total government debt decreased.

¹⁶Further, given the development of Swedish imports from Norway after 1887, it is unlikely that goods destined for Sweden were shipped to Norway and then crossed country borders on rail; see Appendix D.1.

Figure 5: Government expenditure as a share of GDP



Notes: Data is missing for Switzerland’s government expenditure in 1870. Therefore, we calculate the synthetic Sweden based on the best pre-treatment fit from 1871 to 1887. Data is missing for Finland. The lower left panel excludes countries for which the pre-treatment MSPE is at least 10 times larger than Sweden’s pre-treatment MSPE. The data are from the Jordà-Schularick-Taylor Macrohistory Database.

6 Robustness checks

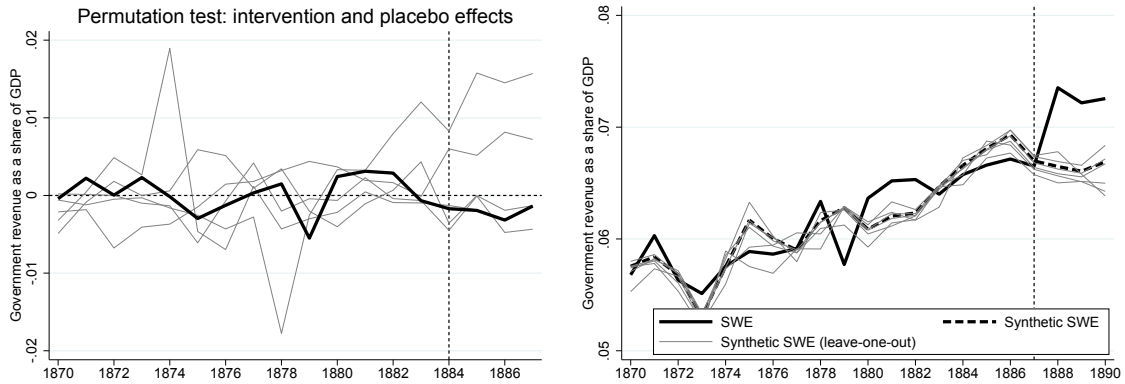
We submit the estimated effect of protectionism on government revenue to four robustness checks and also apply the conformal inference procedure of [Chernozhukov et al. \(2021\)](#).

First, following [Abadie et al. \(2015\)](#), we backdate the treatment and consider a placebo change of government in the previous election year (1884). A significant effect of this placebo treatment would threaten the credibility of our findings. The results from the permutation inference procedure do not indicate an effect of the placebo

treatment on government revenue (left panel of Figure 6). The ratio of post-treatment to pre-treatment RMSPE for Sweden is smaller than one and only the sixth highest among all countries.

Second, we investigate whether an influential control country drives the estimated effect of protectionism on government revenue. Following [Abadie et al. \(2015\)](#), we re-estimate the causal effect by iteratively excluding from the donor pool countries with a positive SC weight. The right panel of Figure 6 shows the results. We find that the effect of protectionism on government revenue is not driven by any individual control countries.

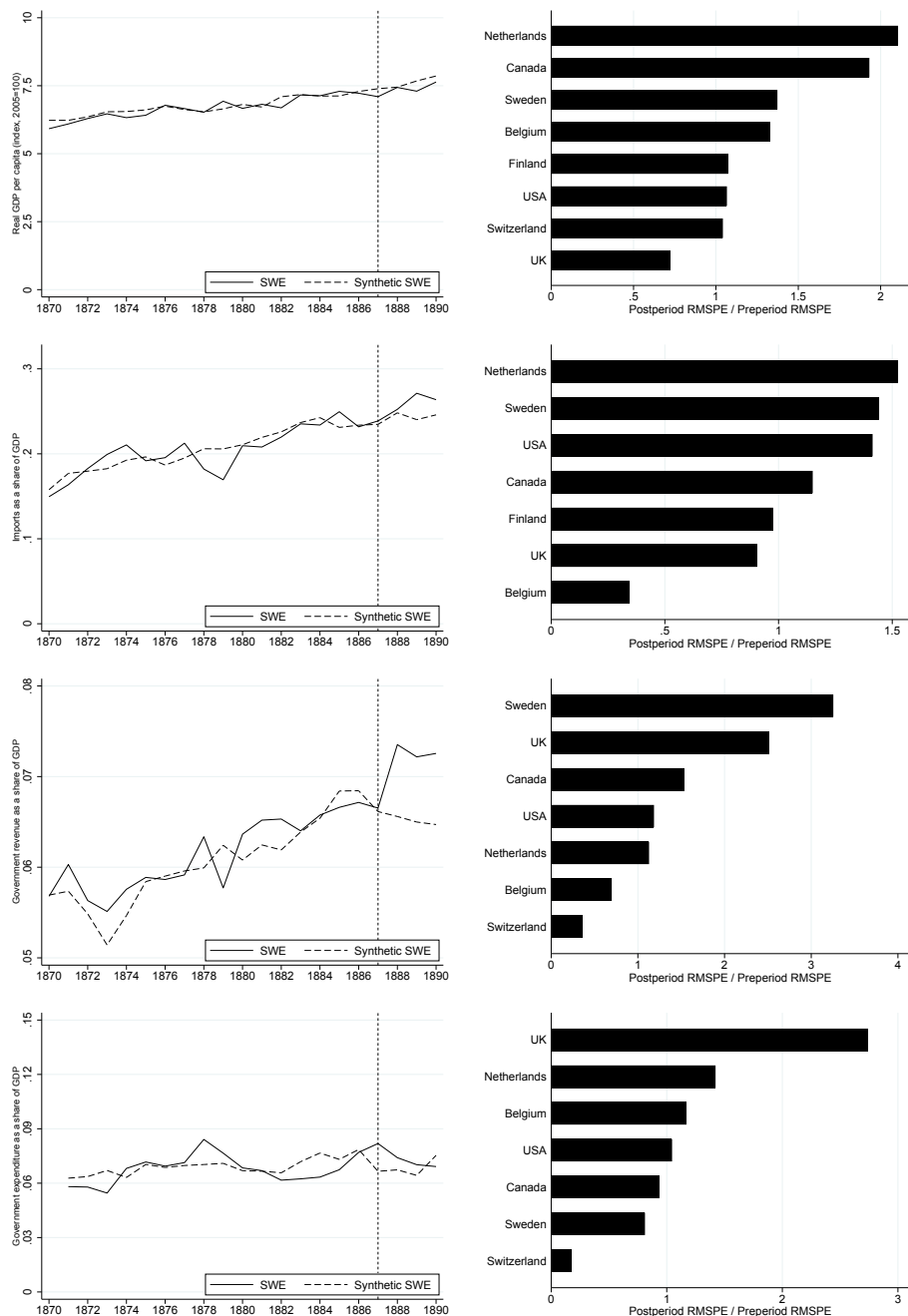
Figure 6: Placebo treatment in 1884 and leave-one-out sensitivity



Notes: The left panel shows the results for government revenue for the placebo treatment in 1884 and excludes countries for which the pre-treatment MSPE is at least 10 times larger than Sweden’s pre-treatment MSPE. The right panel shows the Swedish counterfactuals for government revenue iteratively excluding each country in the donor pool with positive weights. The data are from the Jordà-Schularick-Taylor Macroeconomy Database.

Third, we examine the robustness of our results to potential spillover effects from Sweden’s tariff policy on its trading partners. We exclude from the donor pool countries exporting more than 10% of their total exports to Sweden in 1887. There are two such countries: Denmark and Norway. Figure 7 shows that restricting the donor pool does not change the results.

Figure 7: Robustness: excluding countries with >10% exports to Sweden in 1887

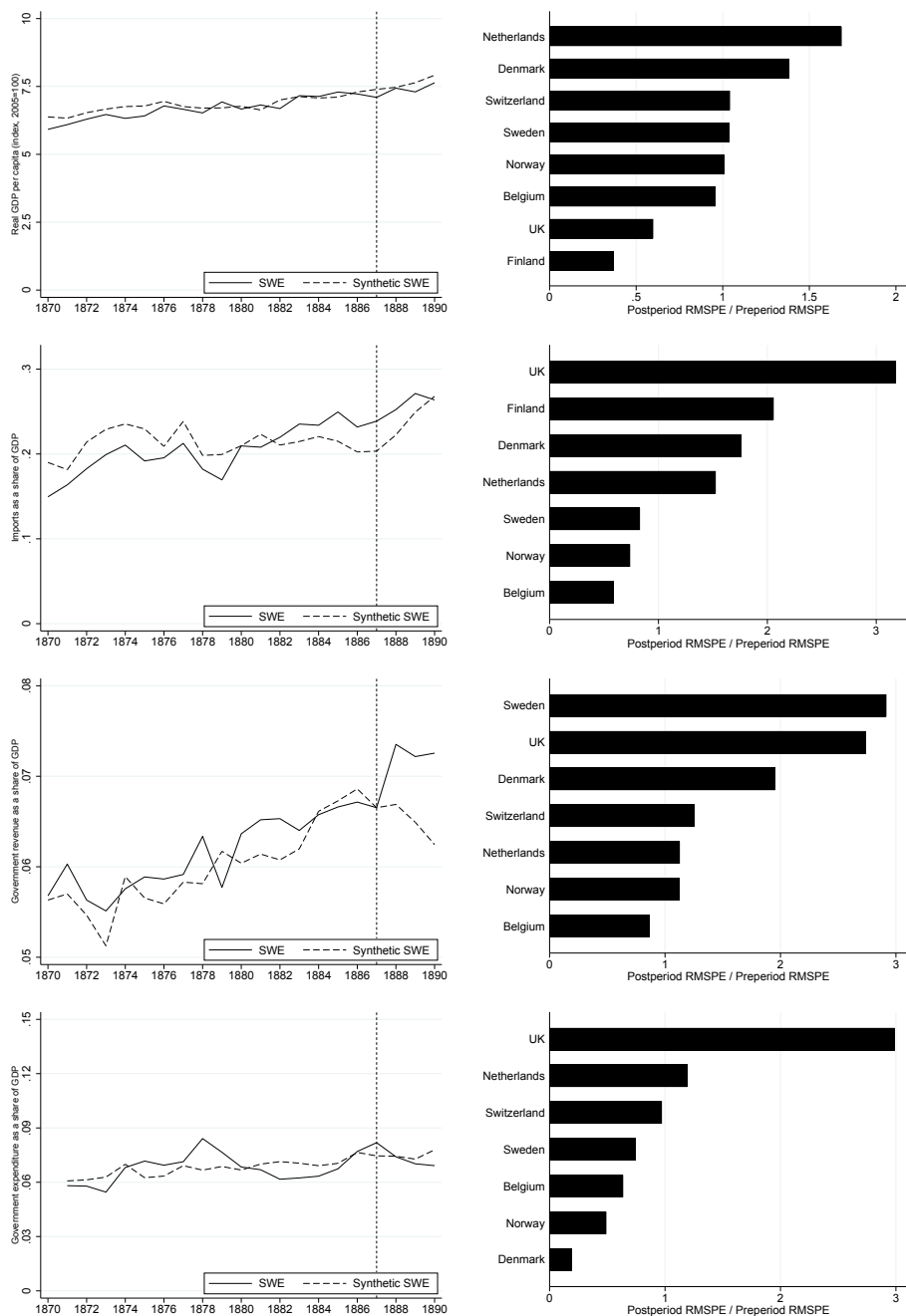


Notes: We exclude Denmark and Norway from the original donor pool. The data are from the Jordà-Schularick-Taylor Macrohistory Database.

Fourth, we restrict the donor pool to European countries. Average tariffs between 1870 and 1890 were substantially higher in the labor-scarce, land-abundant United States and Canada than in the European countries, and the institutional settings were

different as well (Irwin, 2002). Figure 8 shows that excluding Canada and the United States from the donor pool does not change the inferences.

Figure 8: Robustness: European countries only



Notes: We exclude Canada and the United States from the original donor pool. The data are from the Jordà-Schularick-Taylor Macrohistory Database.

Finally, we apply the conformal inference procedure of [Chernozhukov et al. \(2021\)](#) to test the null hypothesis that the protectionist policies had no effect on government revenue. This approach computes p -values by permuting SC residuals. We employ the two types of permutations recommended by [Chernozhukov et al. \(2021\)](#): iid and moving block permutations. The p -values are 0.01 for the iid permutations and 0.05 for the moving block permutations (the smallest possible p -value given the number of time periods). Thus, our results are robust to the choice of the inference procedure.

7 Conclusion

Previous studies did not explain the ‘tariff-growth paradox’ in the first era of globalization: protectionism has been shown to decrease economic growth in the 20th and 21st century, but tariffs and growth were positively correlated in the late 19th century and the early 20th century. We provide causal evidence on how protectionist policies influenced short-run economic growth in the late 19th century. We exploit an exogenous shock, unique in Sweden’s history, that changed the parliamentary majority from free-trade to protectionist. The new protectionist government increased tariffs.

Using the SC method, we do not find evidence suggesting that the protectionist policies influenced short-run economic growth in late 19th century Sweden. An interesting question is why. The results suggest that the increased tariffs did not deter Sweden’s trading partners from exporting goods to Sweden. The protectionist government increased revenue but refrained from stimulating the economy in the short-run by increasing government expenditure. Instead, it used the increased government revenue to balance the budget. Protectionist policies may increase government revenue without jeopardizing economic growth when the tax base for other taxes and size of government are small.

More causal evidence is needed to better understand the ‘tariff-growth paradox’ in the first era of globalization. The short-run effects of protectionism are likely to be context-specific ([Eichengreen, 2019](#)). Empirical strategies to identify causal effects should also be employed to examine how individual tariffs (e.g., agricultural tariffs, industrial tariffs) influenced government revenue and growth (e.g., [Lehmann and](#)

O'Rourke, 2011).

Changes in import tariffs may also influence growth through firm productivity (e.g., Pavcnik, 2002; Muendler, 2004; Amiti and Konings, 2007; Fernandes, 2007; Topalova and Khandelwal, 2011; Chen and Steinwender, 2021). Future studies should therefore examine how protectionism in the late 19th century influenced firms' productivity and TFP. One avenue would be employing data at the firm level to investigate trade-policy shocks as scholars did for the late 20th and the early 21st century (see Shu and Steinwender, 2019, for a survey). Another avenue would be extending historical data on TFP that is currently only available since the year 1890 (Bergeaud et al., 2016).

We examine how protectionism influences short-run economic growth. Our post-treatment period encompasses three years. A relatively short post-treatment period is well-suited for our purpose because other confounding events after treatment are unlikely to bias our results. However, our research design is not suitable to identify and estimate the long-run effects of protectionism on economic growth, and future research should investigate such long-run effects in the first era of globalization.

References

- Abadie, A. (2021). Using synthetic controls: Feasibility, data requirements, and methodological aspects. *Journal of Economic Literature*, 59(2):391–425.
- Abadie, A., Diamond, A., and Hainmueller, J. (2010). Synthetic control methods for comparative case studies: Estimating the effect of californias tobacco control program. *Journal of the American Statistical Association*, 105(490):493–505.
- Abadie, A., Diamond, A., and Hainmueller, J. (2011). SYNTH: Stata module to implement Synthetic Control Methods for Comparative Case Studies. Statistical Software Components, Boston College Department of Economics.
- Abadie, A., Diamond, A., and Hainmueller, J. (2015). Comparative politics and the synthetic control method. *American Journal of Political Science*, 59(2):495–510.
- Abadie, A. and Gardeazabal, J. (2003). The economic costs of conflict: A case study of the basque country. *American Economic Review*, 93(1):113–132.
- Aftonbladet (24 September 1887). Stockholms riksdagsmannaval. *Aftonbladet*.
- Amiti, M. and Konings, J. (2007). Trade liberalization, intermediate inputs, and productivity: Evidence from Indonesia. *American Economic Review*, 97(5):1611–1638.
- Andersen, J. E., Larch, M., and Yotov, Y. V. (2020). Transitional growth and trade with frictions: A structural estimation framework. *Economic Journal*, 130(630):1583–1607.
- Andersson, I. (1950). *Schwedische Geschichte: Von den Anfängen bis zur Gegenwart*. München: Verlag von R. Oldenbourg.
- Andersson, J. J. (2019). Carbon taxes and CO2 emissions: Sweden as a case study. *American Economic Journal: Economic Policy*, 11(4):1–30.
- Asatryan, Z., Castellon, C., and Stratmann, T. (2018). Balanced budget rules and fiscal outcomes: Evidence from historical constitutions. *Journal of Public Economics*, 167:105–119.
- Bairoch, P. (1972). Free trade and european economic development in the 19th century. *European Economic Review*, 3(3):211–245.
- Barro, R. and Ursúa, J. (2010). *Barro-Ursua Macroeconomic Data*. Harvard University, Cambridge MA.
- Beck, F., Bain, R. N., Dumrath, O., Howarth, O., and Gosse, E. (1911). Sweden. In Chisholm, H., editor, *The Encyclopaedia Britannica*, volume 11, pages 188–221. Horace Everett Hooper.
- Bergeaud, A., Cette, G., and Lecat, R. (2016). Productivity trends in advanced countries between 1890 and 2012. *Review of Income and Wealth*, 62(3):420–444.
- Bergstrand, W. A. (4 October 1887). Riksdagsmannavalet i hufvudstaden öfverklagadt. *Nya Dagligt Allehanda*.
- Billmeier, A. and Nannicini, T. (2013). Assessing economic liberalization episodes: A synthetic control approach. *Review of Economics and Statistics*, 95(3):983–1001.
- Bohlin, J. (2005). Tariff protection in Sweden, 1885-1914. *Scandinavian Economic History Review*, 53(2):7–29.

- Bohn, S., Lofstrom, M., and Raphael, S. (2014). Did the 2007 legal arizona workers act reduce the state’s unauthorized immigrant population? *Review of Economics and Statistics*, 96(2):258–269.
- Born, B., Müller, G. J., Schularick, M., and Sedláček, P. (2019). The Costs of Economic Nationalism: Evidence from the Brexit Experiment. *Economic Journal*, 129(623):2722–2744.
- Carlsson, S. and Rosén, J. (1961). *Svensk historia II. Tiden efter 1718*. Stockholm: Bonniers.
- Chen, C. and Steinwender, C. (2021). Import competition, heterogeneous preferences of managers, and productivity. *Journal of International Economics*, 133:103533.
- Chernozhukov, V., Wuthrich, K., and Zhu, Y. (2021). An exact and robust conformal inference method for counterfactual and synthetic controls. *Journal of the American Statistical Association*, forthcoming.
- Clemens, M. A. and Williamson, J. G. (2004). Why did the tariff-growth correlation change after 1950? *Journal of Economic Growth*, 9(1):5–46.
- Cunningham, S. and Shah, M. (2018). Decriminalizing Indoor Prostitution: Implications for Sexual Violence and Public Health. *Review of Economic Studies*, 85(3):1683–1715.
- Dreher, A. (2006). Does globalization affect growth? Evidence from a new index of globalization. *Applied Economics*, 38(10):1091–1110.
- Du Rietz, G. and Henrekson, M. (2015). Swedish Wealth Taxation (1911–2007). In Henrekson, M. and Stenkula, M., editors, *Swedish Taxation: Developments since 1862*, pages 267–302. New York, NY: Palgrave Macmillan.
- Du Rietz, G., Henrekson, M., and Waldenström (2015a). Swedish Inheritance and Gift Taxation (1885–2004). In Henrekson, M. and Stenkula, M., editors, *Swedish Taxation: Developments since 1862*, pages 223–265. New York, NY: Palgrave Macmillan.
- Du Rietz, G., Johansson, D., and Stenkula, M. (2015b). Swedish Capital Income Taxation (1862–2013). In Henrekson, M. and Stenkula, M., editors, *Swedish Taxation: Developments since 1862*, pages 123–178. New York, NY: Palgrave Macmillan.
- Du Rietz, G., Johansson, D., and Stenkula, M. (2015c). Swedish Labor Income Taxation (1862–2013). In Henrekson, M. and Stenkula, M., editors, *Swedish Taxation: Developments since 1862*, pages 35–122. New York, NY: Palgrave Macmillan.
- Eaton, J. E., Kortum, S., Neiman, B., and Romalis, J. (2016). Trade and the global recession. *American Economic Review*, 106(11):3401–3438.
- Edwards, S. (1998). Openness, productivity and growth: What do we really know? *Economic Journal*, 108(447):383–398.
- Eichengreen, B. (2019). Trade policy and the macroeconomy. *IMF Economic Review*, 67(2):4–23.
- Eliason, P. and Lutz, B. (2018). Can fiscal rules constrain the size of government? an analysis of the “crown jewel” of tax and expenditure limitations. *Journal of Public Economics*, 166:115 – 144.

- Esaiasson, P. (1990). *Svenska valkampanjer 1866-1988*. Gothenburg: University of Gothenburg.
- Fajgelbaum, P. D., Goldberg, P. K., Kennedy, P. J., and Khandelwal, A. K. (2020). The return to protectionism. *Quarterly Journal of Economics*, 135(1):1–55.
- Felbermayr, G. and Gröschl, J. (2013). Natural disasters and the effect of trade on income: A new panel IV approach. *European Economic Review*, 58:18–30.
- Ferman, B. (2019). On the properties of the synthetic control estimator with many periods and many controls. *arXiv preprint arXiv:1906.06665*.
- Fernandes, A. M. (2007). Trade policy, trade volumes and plant-level productivity in Colombian manufacturing industries. *Journal of International Economics*, 71(1):52–71.
- Feyrer, J. (2019). Trade and Income – Exploiting Time Series in Geography. *American Economic Journal: Applied Economics*, 11(4):1–35.
- Firpo, S. and Possebom, V. (2018). Synthetic control method: Inference, sensitivity analysis and confidence sets. *Journal of Causal Inference*, 6(2).
- Flora, P., Kraus, F., and Pfenning, W. (1983). *State, Economy, and Society in Western Europe 1815-1975: The growth of industrial societies and capitalist economies*, volume 2. St James Pr.
- Frankel, J. and Romer, D. (1999). Does trade cause growth? *American Economic Review*, 89(3):379–399.
- Furceri, D., Hannan, S. A., Ostry, J. D., and Rose, A. K. (2020). Are tariffs bad for growth? Yes, say five decades of data from 150 countries. *Journal of Policy Modeling*, 42(4):850–859.
- Geete, O. (5 October 1887). Det öfverklagade riksdagsmannavalet för stockholm. *Nya Dagligt Allehanda*.
- Gygli, S., Haelg, F., Potrafke, N., and Sturm, J.-E. (2019). The KOF globalization index – revisited. *Review of International Organizations*, 14(3):543–574.
- Häggqvist, H. (2018). Foreign trade as fiscal policy: tariff setting and customs revenue in sweden, 1830-1913. *Scandinavian Economic History Review*, 66(3):298–316.
- Hammarström, I. (1970). *Stockholm i svensk ekonomi 1850-1914*. Stockholms kommunalförvaltning.
- Heckscher, E. F. (1941). *Svenskt arbete och liv: från medeltiden till nutiden*. Bonnier.
- Henrekson, M. and Stenkula, M. (2015). *Swedish Taxation: Developments since 1862*. New York, NY: Palgrave Macmillan.
- Irwin, D. A. (1998). Higher tariffs, lower revenues? analyzing the fiscal aspects of “the great tariff debate of 1888”. *Journal of Economic History*, 58(1):59–72.
- Irwin, D. A. (2002). Interpreting the tariff-growth correlation of the late 19th century. *American Economic Review Papers & Proceedings*, 92(2):165–169.
- Irwin, D. A. (2019). Does trade reform promote economic growth? A review of recent evidence. *NBER Working Paper 25927*.

- Irwin, D. A. and Tervio, M. (2002). Does trade raise income?: Evidence from the twentieth century. *Journal of International Economics*, 58(1):1–18.
- Jörberg, L. (1961). *Growth and fluctuations of Swedish industry, 1869-1912: studies in the process of industrialisation*, volume 3. Almqvist & Wiksell.
- Jörberg, L. (1966). Några tillväxtfaktorer i 1800-talets svenska industriella utveckling. *Kring industrialismens genombrott i Sverige*, pages 13–47.
- Jordà, O., Schularick, M., and Taylor, A. M. (2017). Macrofinancial history and the new business cycle facts. In Eichenbaum, M. and Parker, J. A., editors, *NBER Macroeconomics Annual 2016*, volume 31. Chicago: University of Chicago Press.
- Juhász, R. (2018). Temporary protection and technology adoption: Evidence from the Napoleonic blockade. *American Economic Review*, 108(11):3339–3376.
- King, M. A. and Fullerton, D. (1984). The Theoretical Framework. In *The Taxation of Income from Capital: A Comparative Study of the United States, the United Kingdom, Sweden, and Germany*, pages 7–30. Chicago: University of Chicago Press.
- Lagerbjelke, G., Reuter Dahl, H., Schwan, J. G., and Larson, N. (1866). *Riksdagsordningen*. Stockholm: Riksdagskommittén.
- Lampe, M. (2009). Effects of bilateralism and the MFN clause on international trade: evidence for the Cobden-Chevalier network, 1860-1875. *Journal of Economic History*, 69(4):1012–1040.
- Larsson, O. (7 October 1887). Förklaring af hr o. larsson. *Aftonbladet*.
- Lehmann, S. and O’Rourke, K. H. (2011). The structure of protection and growth in the late nineteenth century. *Review of Economics and Statistics*, 93(2):606–616.
- Lehmann, S. and Volckart, O. (2011). The political economy of agricultural protection: Sweden 1887. *European Review of Economic History*, 15(1):29–59.
- Lewin, L. (1988). *Ideology and Strategy: A Century of Swedish Politics*. Cambridge: Cambridge University Press.
- Lindorm, E. (1936). *Ny Svensk Historia: Oscar II och hans tid. En bokfilm*. Stockholm: Wahlström & Widstrand.
- Mitchell, B. R. (2007). International historical statistics 1750-2005: Europe.
- Montgomery, A. (1966). *Industrialismens genombrott i Sverige*. Almqvist & Wiksell.
- Muendler, M.-A. (2004). Trade, technology and productivity: A study of Brazilian manufacturers 1986-1998. *CESifo Working Paper No. 1148*.
- Nunn, N. and Treffer, D. (2010). The structure of tariffs and long-term growth. *American Economic Journal: Macroeconomics*, 2(4):158–94.
- O’Rourke, K., Taylor, A. M., and Williams, J. G. (1996). Factor price convergence in the late nineteenth century. *International Economic Review*, 37(3):499–530.
- O’Rourke, K. H. (2000). Tariffs and growth in the late 19th century. *Economic Journal*, 110(463):456–483.
- Owyang, M. T., Ramey, V. A., and Zubairy, S. (2013). Are government spending multipliers greater during periods of slack? Evidence from twentieth-century historical data. *American Economic Review: Papers and Proceedings*, 103(3):129–134.

- Pascali, L. (2017). The wind of change: Maritime technology, trade, and economic development. *American Economic Review*, 107(9):2821–54.
- Pavcnik, N. (2002). Trade liberalization, exit, and productivity improvements: Evidence from Chilean plants. *Review of Economic Studies*, 69(1):245–276.
- Persarvet, V. (2019). Tariffs, trade, and economic growth in Sweden 1858-1913. In *Uppsala Studies in Economic History*, volume 119. Uppsala: Acta Universitatis Upsaliensis.
- Pinotti, P. (2015). The economic costs of organised crime: Evidence from southern Italy. *Economic Journal*, 125(586):F203–F232.
- Potrafke, N. and Wüthrich, K. (2020). Green governments. *CESifo Working Paper No. 8726*.
- R Core Team (2020). *R: A Language and Environment for Statistical Computing*. R Foundation for Statistical Computing, Vienna, Austria.
- Ramey, V. A. (2019). Ten years after the financial crisis: What have we learned from the renaissance in fiscal research? *Journal of Economic Perspectives*, 33(2):89–114.
- Ramey, V. A. and Zubairy, S. (2018). Government spending multipliers in good times and in bad: Evidence from US historical data. *Journal of Political Economy*, 126(2):850–901.
- Rodríguez, F. and Rodrik, D. (2000). Trade policy and economic growth: A skeptic’s guide to the cross-national evidence. *NBER Macroeconomics Annual 2000*, 15:261–325.
- Rubin, D. B. (1974). Estimating causal effects of treatment in randomized and non-randomized studies. *Journal of Educational Psychology*, 66(5):688–701.
- Rustow, D. A. (1955). *The Politics of Compromise*. London: Geoffrey Cumberlege, Oxford University Press.
- Sachs, J. and Warner, A. (1995). Economic reform and the process of global integration. *Brookings Papers on Economic Activity*, 26(1):1–118.
- Schön, L. (1989). Kapitalimport, kreditmarknad och industrialisering 1850-1910. In Dahmén, E., editor, *Upplåning och Utveckling: Riksgäldskontoret 1789-1989*. Stockholm: Nordstedts Tryckeri, pp. 227-273.
- Schön, L. and Krantz, O. (2015). Swedish historical national accounts 1560-2010. *Table XIV. Public Services. Production Account 1800-1950. (1000 SEK) Current Prices*.
- Schularick, M. and Solomou, S. (2011). Tariffs and economic growth in the first era of globalization. *Journal of Economic Growth*, 16:33–70.
- Shu, P. and Steinwender, C. (2019). The impact of trade liberalization on firm productivity and innovation. In Lerner, J. and Stern, S., editors, *NBER Book Series Innovation Policy and the Economy*, volume 19.
- StataCorp. (2019). *Stata Statistical Software: Release 16*. College Station, TX.
- Steinwender, C. (2018). Real effects of information frictions: When the States and the Kingdom became united. *American Economic Review*, 108(3):657–696.

- Stenkula, M. (2015). Taxation of Goods and Services in Sweden (1862–2013). In Magnus, H. and Stenkula, M., editors, *Swedish Taxation: Developments since 1862*, pages 179–221. New York, NY: Palgrave Macmillan.
- Stockholms Dagblad (5 October 1887). Riksdagsmannavalet för stockholm öfverklagadt. *Stockholms Dagblad*, page 4.
- Tena-Junguito, A., Lampe, M., and Fernandes, F. T. (2012). How much trade liberalization was there in the world before and after Cobden-Chevalier? *Journal of Economic History*, 72(3):708–740.
- Topalova, P. and Khandelwal, A. (2011). Trade liberalization and firm productivity: The case of India. *Review of Economics and Statistics*, 93(3):995–1009.
- Tull- och traktatkommittén (1924). *Betänkande angående tullsystemets verkningar i Sverige före världskriget. D. 1*. Stockholm.
- Vamvakidis, A. (2002). How robust is the growth-openness connection? Historical evidence. *Journal of Economic Growth*, 7(1):57–80.
- Wacziarg, R. (2001). Measuring the dynamic gains from trade. *World Bank Economic Review*, 15(3):393–429.
- Wacziarg, R. and Welch, K. H. (2008). Trade liberalization and growth: New evidence. *World Bank Economic Review*, 22(2):187–231.
- Williamson, J. G. (2006). *Globalization and the Poor Periphery before 1950*. Cambridge, MA: MIT Press.

Appendix to *Protectionism and economic growth:
Causal evidence from the first era of globalization*

Niklas Potrafke Fabian Ruthardt Kaspar Wüthrich

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A 1887 fall election results for the electoral district of Stockholm

Table 1: Number of votes for free-trade, protectionist and independent candidates

Free-trader	Votes	Protectionist	Votes	Independent	Votes
Key	6,707	de Laval	2,954	Telander	1,856
Nordenskiöld	6,641	Widström	2,946	Crusebjörn	1,777
Taube	6,640	Billing	2,984	Morssing	1,699
Fock	6,640	Palmstierna	2,982		
von Friesen	6,639	Werner	2,876		
Wallden	6,637	Styffe	2,787		
Loven	6,636	Carlsson, E. W.	2,776		
Stackelberg	6,627	Lindmark	2,756		
Abergsson	6,626	Svanberg	2,731		
Grafström	6,620	Bergman	2,717		
Beckmann	6,617	Bexelius	2,717		
Siljeström	6,614	Berndes	2,716		
Hedin	6,591	Nyström C	2,715		
Larsson, A. P.	6,497	Cederschiöld	2,710		
Johansson	6,475	Beskow	2,708		
Fredholm	6,466	Höglund, F.	2,691		
Höglund, O. M.	6,420	Björek	2,688		
Erikson, P. J. M.	6,389	Carlsson, A. V.	2,688		
Larsson, Olof	6,197	Lund	2,687		
Hammarlund	4,916	Berg, C. O.	2,649		
Berg, F.	4,911	Wittrock	2,628		
Gustafsson	4,866	Lyth	2,598		

Sources: *Aftonbladet* (1887)

B The Swedish tariff debate

Economists have been investigating and discussing the effect of the Swedish tariff increases on the economy since 1888.

The first scientific contribution on the matter came shortly after WWI. Eli Heckscher and Arthur Montgomery examined the effects of the Swedish 19th-century tariff policy in a public investigation. The final report was published in 1924 and concluded that the increased tariff protection was probably negative for the Swedish economy because it supported mostly domestic market industries and not export industries (*Tull- och traktatkommittén, 1924*). They later diverted from their previous assessment and argued that the tariffs probably had only small effects on the economy (*Heckscher, 1941*)

and that Sweden would have developed similarly without the tariff increases in 1888 and 1892 (Montgomery, 1966).

In a similar vein, Jörberg (1961) describes that the tariffs may have contributed to import substitution but that the overall effect is difficult to assess. Jörberg (1966) argued that the domestic market may have benefited from the tariffs but that this influenced the Swedish industrialization process only to a small extent. He concluded that the tariffs probably did not have a significant effect on Swedish industrial growth.

Hammarström (1970) argued that the tariffs triggered an import substitution process, particularly in the customer goods industries. Imports of finished products decreased, and raw material imports increased.

Contrary to previous work, Schön (1989) concluded that Swedish tariffs increased economic growth. Tariffs primarily protected industries with long-term growth potential and contributed to Sweden's industrial development.

Bohlin (2005) constructed tariff indices for a large part of the Swedish economy using a sample of commodities between 1885 and 1914, and, similar to Hammarström, emphasized that the tariffs caused import substitution. Import penetration decreased significantly for goods subject to the tariffs of the late 1880s.

“Even if one measures the tariff rate in a more appropriate way one may of course argue that the rate of protection was not ‘high’, however it was apparently high enough in the majority of cases to achieve its aim of deterring imports. It seems obvious that the protectionist system had effects, good or bad, on individual industries and thus also on Swedish economic development in general.”

— (Bohlin, 2005, p.25)

More recently, Häggqvist (2018) contributed to the tariff debate by investigating the link between customs revenue and government activity. The Swedish trade liberalization initially forced a switch in the fiscal structure of tariffs towards consumption goods with low demand elasticity. After 1888, tariffs on agricultural and capital goods became more fiscally relevant.

“This development took place during a critical time when customs revenue as share of total government revenue really took off and came to be the single most important tax receipt. Trade policy hence came to be a key driver of

nineteenth century fiscal development in Sweden.”

— (Häggqvist, 2018, p.16)

The most comprehensive analysis of the topic so far was conducted by Persarvet (2019). In his encompassing work, he concludes:

“Foreign trade and growth increased rapidly, the later more so after a protectionist trade policy was put in place in the late 1880s and 1890s.”

— (Persarvet, 2019, p.180)

“In the end, the tariff protection thus probably had a limited impact on the overall development of the aggregate productivity growth of the Swedish economy. Although it might have increased in the short term due to labor shifts, this effect was most likely small.”

— (Persarvet, 2019, p.184)

We contribute to this longstanding debate by providing causal evidence on how the tariff increases influenced economic outcomes.

C Swedish fiscal policies in the first era of globalization

C.1 Government revenue

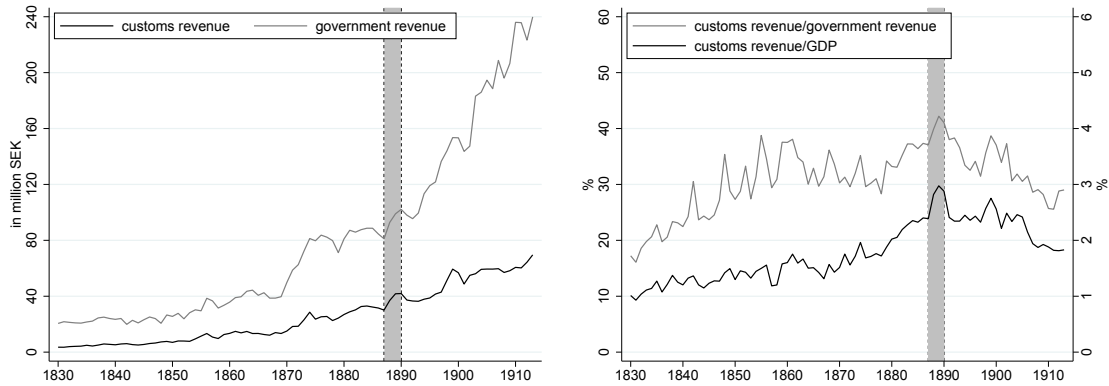
Since 1870 Sweden’s government revenue as a share of GDP remained relatively stable at around 6%. In 1888, government revenue as a share of GDP increased substantially to well above 7% and remained at this level throughout 1889 and 1890.

C.1.1 Customs revenue

Customs revenue was the single most important source of government revenue (Häggqvist, 2018). Customs revenue as a share of total government revenue was 39.87% in 1888, 42.20% in 1889, and 41.06% in 1890 — the highest shares over the period from 1830 to 1913 (Figure 9). Customs revenue increased by 6.94 million SEK or 23.06% in 1888. Tariffs on grains accounted for more than half of the increase (4.16 million SEK), which changed the composition of customs revenue. While, in 1887, customs duties on

agricultural products accounted for only 0.1% of customs revenue, agricultural customs revenue as a share of total customs revenue increased to 14.7% in 1888, 19.4% in 1889, and peaked in 1890 (20.0%). Customs revenue coming from industrial products was low; its share of total customs revenue was 2.9% in 1887 and increased just slightly to 3.6% in 1888, 3.8% in 1889, and 3.7% in 1890.¹⁷

Figure 9: Customs revenue



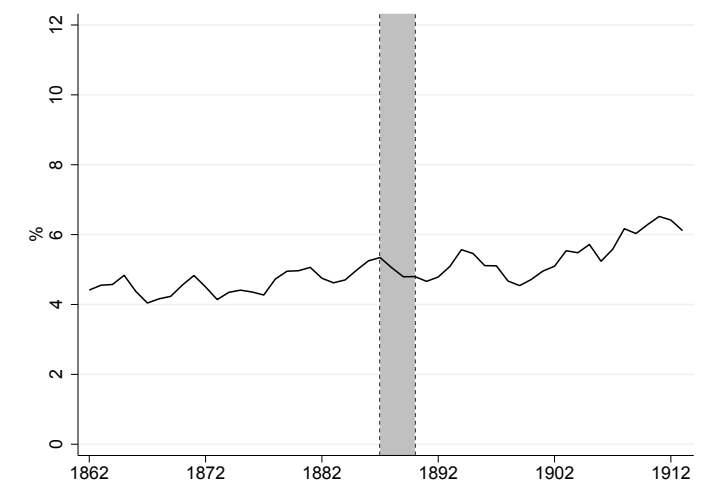
Notes: The left panel shows the development of customs revenue and government revenue between 1830 and 1913. The right panel shows the development of customs revenue as a share of government revenue (left y-axis) and as a share of GDP (right y-axis) between 1830 and 1913. The relevant post-treatment period (1888–1890) is shaded in gray. The data are from Häggqvist (2018).

C.1.2 Taxation

We follow the editorial work of Henrekson and Stenkula (2015) and examine the development of taxation in Sweden for six key aspects of the Swedish tax system: the taxation of labor income, capital income, consumption, inheritance and gifts, wealth, and real estate. The overall tax-to-GDP ratio, excluding customs revenue, changed little between 1862 and 1913 (Figure 10). Tax revenue usually fluctuated between four and 6% of GDP.

¹⁷Customs duties on industrial products increased substantially in the 1890s. At the end of the decade, industrial customs revenue as a share of total customs revenue was above 10%. Major increases occurred after the Cobden-Chevalier treaty expired in 1892: the share of total customs revenue coming from industrial products was 4.5% in 1892, 6.5% in 1893, 7.6% in 1894, 8.2% in 1895, 9.8% in 1896, and 10.4% in 1897 (Häggqvist, 2018).

Figure 10: Tax revenue development



Notes: The figure the development of tax revenue as a share of GDP between 1862 and 1913. The relevant post-treatment period (1888–1890) is shaded in gray. The data are from [Henrekson and Stenkula \(2015\)](#).

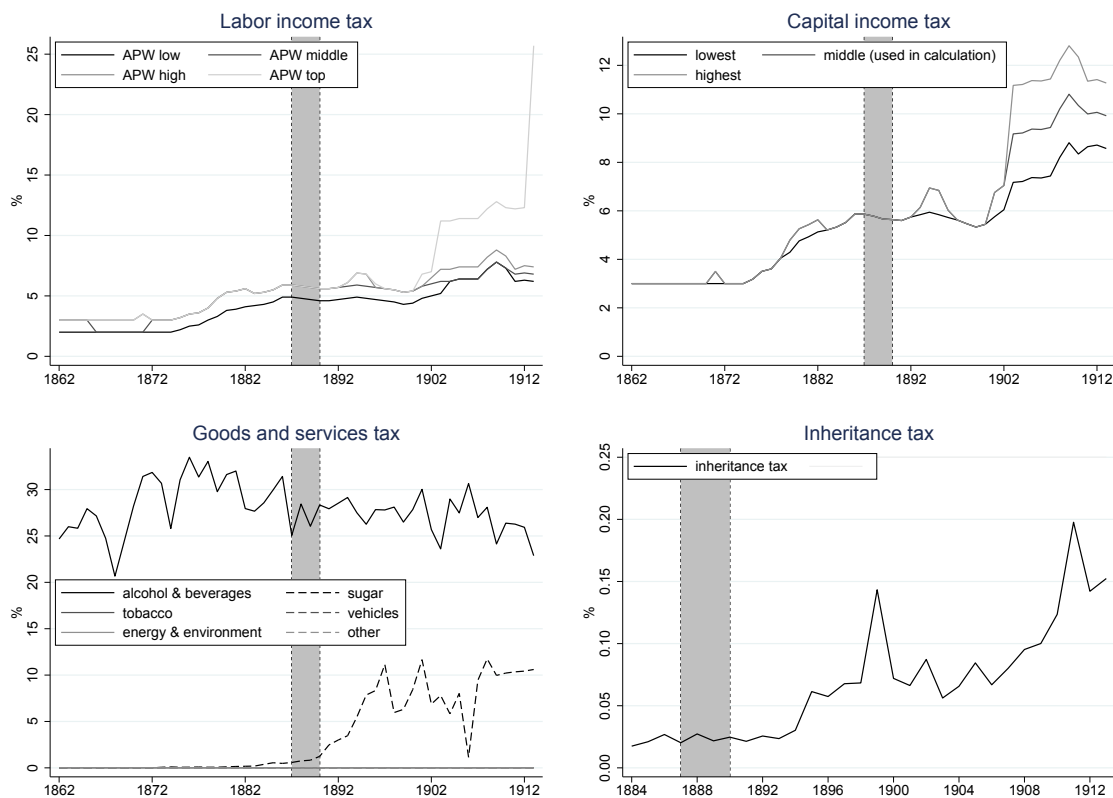
Before WWI, major national income tax reforms were implemented in 1862, 1903, and 1911, none of which affected our pre-treatment period differently than our post-treatment period. The national tax level on labor income was normally set at 1% but could be increased to 2% if the ordinary appropriation taxes yielded insufficient revenue ([Du Rietz et al., 2015c](#)). However, in the years prior to and including 1887 and in our post-treatment period, the national marginal labor income tax rate remained constant. A local labor income tax, excise duties, and a national appropriation tax were also introduced in 1862 and 1863. The marginal local labor tax rate gradually increased from 2% to 5% at the end of the 19th century. Still, overall the marginal labor income tax rates remained low until WWI (Figure 11, upper left panel).

Changes in capital income taxation affect the incentive to invest and thereby might influence GDP even in the short run. Again, the analysis of Swedish capital income taxation begins in 1862 with the introduction of a major central government tax system. The new state appropriation tax law taxed corporate profits in the same way and at the same rates as individual taxpayers' income (approximately 1%, see previous paragraph¹⁸) ([Du Rietz et al., 2015b](#)). Based on [King and Fullerton \(1984\)](#), [Du Rietz](#)

¹⁸Initially, approximately 1% of taxable profit was paid to the state, and approximately 2% were paid to local governments. The state income tax was stable, but the local tax rate increased to

et al. (2015b) calculate the marginal effective tax rate (METR) on capital income for an investment financed with new share issues, retained earnings, and debt. The METR was low between 1862 and 1913 and changed little in the 1880s (Figure 11, upper right panel).

Figure 11: Tax rate and revenue development by tax type



Notes: The upper left panel shows the development of the marginal labor income tax rate as the sum of the national and local marginal labor income tax rates and social security contributions paid by employees. The upper right panel shows the development of the marginal effective tax rate on capital income for the highest and lowest statutory marginal corporate tax rate and the middle statutory marginal corporate tax rate used in the calculations by Du Rietz et al. (2015b). The lower left panel shows the development of consumption taxes as a share of state tax revenue. The lower right panel shows the development of inheritance, estate, and gift tax revenue as a share of GDP. The relevant post-treatment period (1888–1890) is shaded in gray. The data are from Henrekson and Stenkula (2015).

Consumption taxes were the second most important state revenue stream after customs duties between 1862 and 1913 (Stenkula, 2015). Consumption taxes accounted approximately 5% until 1900.

for 15% to 20% of total tax revenue and up to 40% of state tax revenue until WWI. Alcohol-related taxes were the most important specific consumption tax, with revenue fluctuating between 20.7% and 33.5% of state tax revenue. Consumption taxes on sugar increased substantially during the 1890s from 1.24% of state tax revenue in 1890 to around 10% at the end of the century. Overall, revenue from consumption taxes fluctuated considerably, but while fluctuations were most pronounced in the 1860s and 1870s and sugar started to gain importance in the 1890s, the 1880s were a decade of comparatively stable consumption tax revenue (Figure 11, lower left panel).

Finally, various duties and fees on estates, inheritances, and wills existed for small and parts of the tax base and population strata throughout the 18th century. In 1885, the modern Swedish inheritance taxation was introduced as a single tax (the 1884 Stamp Ordinance) (Du Rietz et al., 2015a). The actual tax was imposed on the lots received by the heirs. The income tax reform of 1861/62 also reduced the inheritance tax from around 3% to a flat rate at 1%. The 1884 Stamp Ordinance merged all previous variants of estate taxes (e.g., stamp duties and inheritance lot taxes) into a single tax in the form of a stamp on the total estate value. Direct heirs were taxed at a rate of 0.5%, and other heirs were taxed at a rate of 0.6%. Du Rietz et al. (2015a) find that revenue from the gift, inheritance, and estate taxes were never fiscally important when compared to personal income or wealth taxes, even though tax rates increased substantially in the 20th century. They suggest, that the inheritance tax was primarily supposed to reduce large intergenerational transfers at the top of the distribution. Accordingly, inheritance, estate, and gift tax revenue in Sweden was very low and accounted for only 0.017% of GDP in 1884 and 0.030% of GDP in 1894 (Figure 11, lower right panel). Swedish wealth taxation was introduced in 1911 and is therefore not suitable for consideration in our study (Du Rietz and Henrekson, 2015).

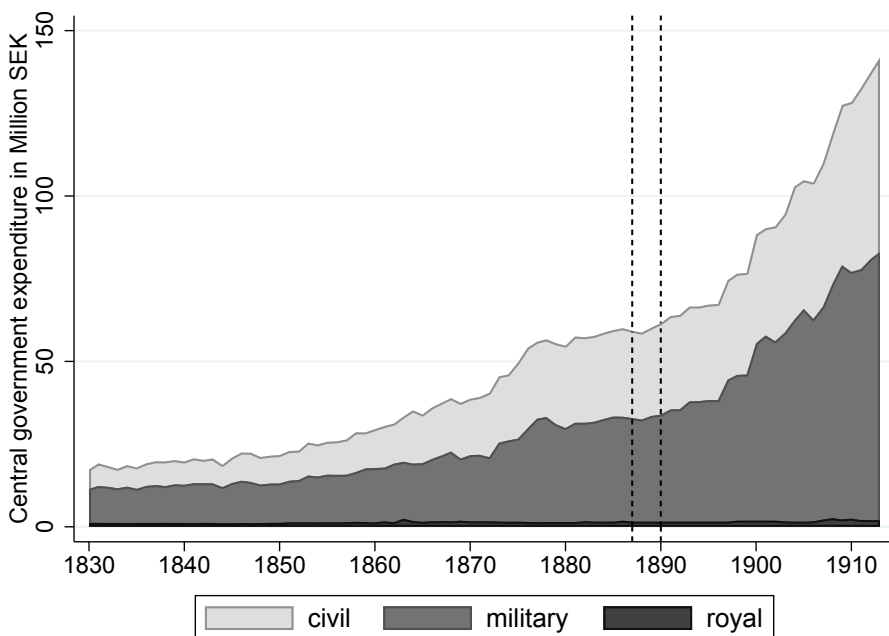
C.2 Government expenditure

C.2.1 Central government expenditure

Swedish central government expenditure increased at an accelerating pace from 1830–1913 (Figure 12). However, the 1880s and early 1890s were marked by rather steady and moderate increases. In 1888, the increased central government revenue due to the increased customs revenue gave rise to financial desires across the parliamentary benches

and the royal court (Beck et al., 1911). On October 12, 1888, Oscar II¹⁹ declared at the Council of State that he wishes to spend the surplus from the increased customs revenue on insurance and pensions, the abolition of the land taxes, and lowering of the municipal taxes. However, the *Riksdag* devoted the increased central government revenue to balance the budget (Beck et al., 1911). Overall, the budget composition changed little after the majority in parliament changed (Schön and Krantz, 2015). Civil, military, and royal expenditure remained unchanged or increased just slightly, thereby following its slow but steady growth path.

Figure 12: Central government expenditure 1830–1913



Notes: The relevant post-treatment period (1888–1890) is indicated by the dashed vertical lines. The data are from Schön and Krantz (2015).

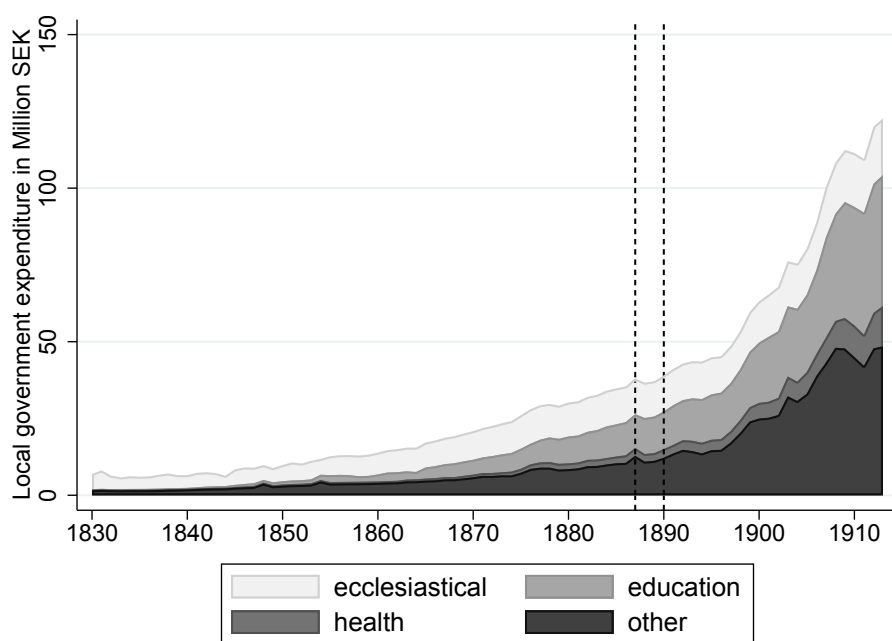
C.2.2 Local government expenditure

Swedish local government expenditure developed similarly to Swedish central government expenditure, though being less volatile pre-1900 (Figure 13). Local government expenditure ought to be unaffected by the majority change in the *Riksdag* and the

¹⁹Oscar II was King of Sweden from 1872–1907.

change in national government. If we observe an increase or decrease in local government expenditure after 1887, our identification strategy would likely be biased because local government expenditure potentially influences short-run macroeconomic outcomes. We do not observe that local government expenditure changed systematically after 1887. Indeed, Schön and Krantz (2015) show that ecclesiastical expenditure hardly changes throughout the 1870s and 1880s whereas educational expenditure follows a steady growth path that accelerates at the turn of the century. Health expenditure remained a minor item on the local government expenditure list until the early 1900s.

Figure 13: Local government expenditure 1830–1913

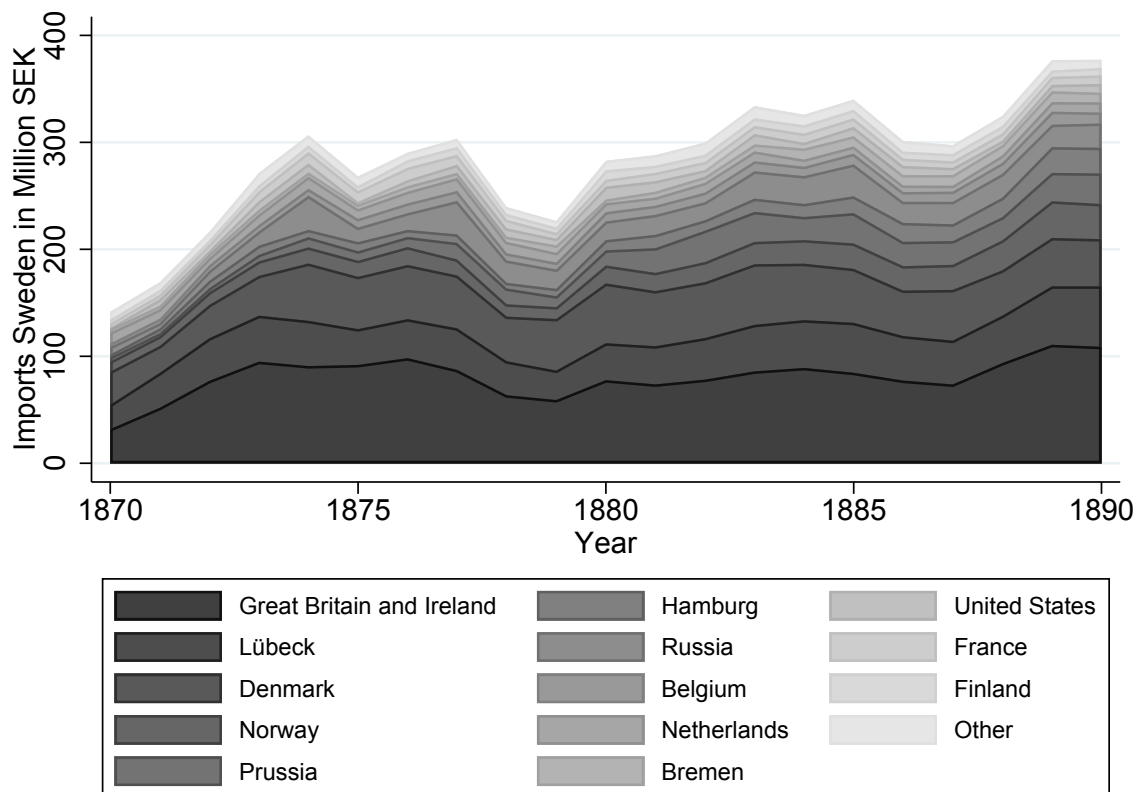


Notes: The relevant post-treatment period (1888–1890) is indicated by the dashed vertical lines. The data are from Schön and Krantz (2015).

D Composition of Swedish imports

D.1 Swedish imports by trading partner

Figure 14: Swedish imports by trading partner: 1870 to 1890



Notes: The data are from the Swedish Board of Trade: Annual Statistics 1870 to 1890.

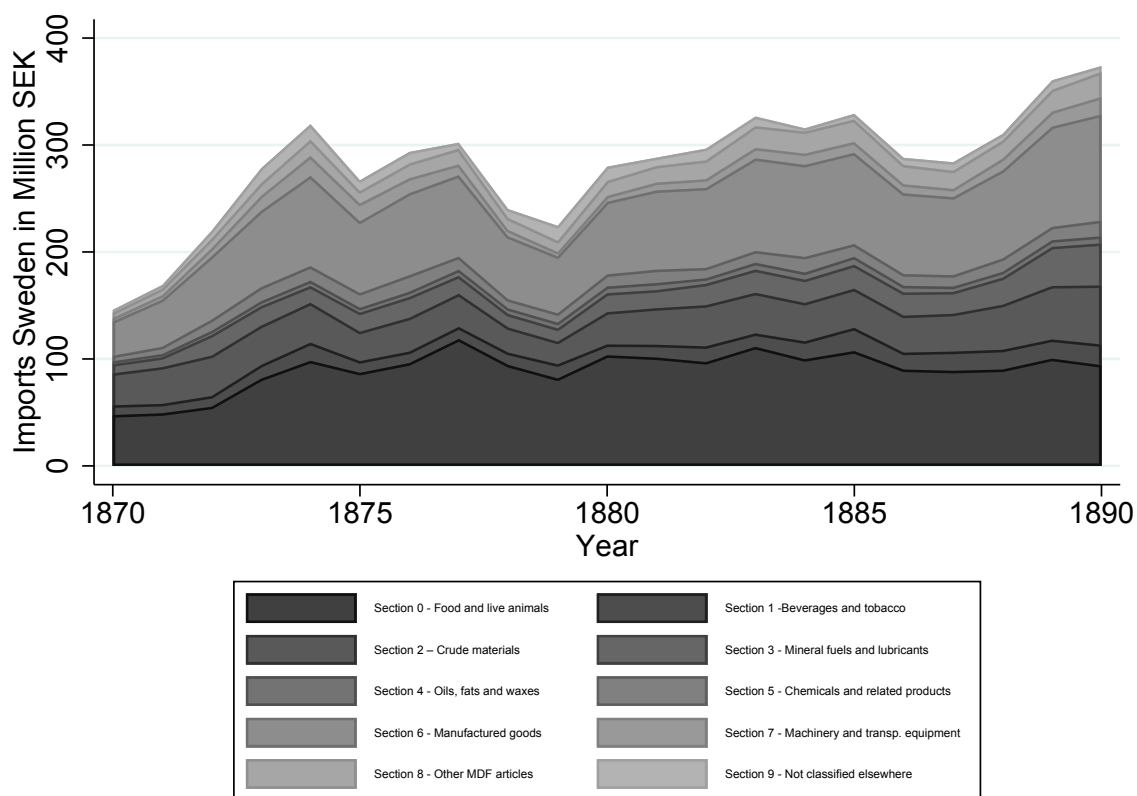
Table 2: Swedish imports by trading partner: growth rates

Countries	1871	1872	1873	1874	1875	1876	1877	1878	1879	1880	1881	1882	1883	1884	1885	1886	1887	1888	1889	1890
Norway	-4%	29%	14%	11%	0%	11%	-11%	-23%	-4%	51%	1%	11%	11%	6%	8%	-4%	3%	20%	22%	-4%
Finland	23%	-11%	40%	10%	-24%	52%	3%	-24%	-8%	73%	-25%	3%	6%	9%	0%	-16%	4%	2%	-17%	20%
Russia	-29%	87%	44%	138%	-57%	15%	100%	-33%	-13%	-3%	7%	-10%	51%	2%	15%	-34%	6%	6%	-6%	9%
Denmark	-19%	24%	20%	44%	-9%	4%	-2%	-16%	15%	16%	-8%	1%	9%	-7%	-4%	-16%	12%	-11%	7%	-3%
Prussia	-27%	34%	60%	57%	-7%	7%	64%	-5%	-31%	40%	63%	27%	-4%	-23%	31%	-20%	-3%	8%	22%	8%
Luebeck	43%	22%	8%	-2%	-21%	9%	7%	-18%	-13%	25%	3%	9%	12%	3%	4%	-11%	-2%	8%	23%	4%
Hamburg	70%	58%	24%	-20%	25%	-23%	20%	-33%	31%	38%	31%	-21%	27%	-2%	29%	13%	-11%	15%	32%	0%
Bremen	0%	18%	9%	-9%	6%	22%	-5%	1%	41%	-51%	60%	4%	14%	59%	-8%	2%	2%	-3%	5%	-11%
Netherlands	-13%	-23%	45%	14%	-19%	19%	11%	-12%	-14%	-8%	-9%	19%	2%	-29%	2%	-10%	-9%	26%	29%	8%
Belgium	23%	28%	14%	10%	25%	12%	3%	-28%	-4%	35%	-2%	6%	4%	-6%	13%	-9%	5%	7%	19%	-17%
UK and Ireland	62%	49%	23%	-4%	1%	7%	-11%	-27%	-7%	31%	-5%	6%	10%	4%	-5%	-9%	-5%	27%	18%	-2%
France	1%	43%	58%	15%	-6%	15%	-20%	-14%	-32%	18%	20%	-2%	0%	12%	-5%	-17%	-8%	9%	13%	4%
USA	450%	-53%	179%	4%	-70%	126%	34%	2%	-20%	95%	-18%	-37%	56%	-44%	61%	0%	-24%	-37%	41%	39%
Other	-2%	7%	50%	-16%	-8%	-21%	10%	-18%	-6%	48%	11%	15%	0%	-14%	-3%	4%	-17%	12%	5%	-22%
Total	19%	28%	25%	13%	-13%	8%	4%	-21%	-5%	25%	2%	4%	11%	-2%	4%	-11%	-1%	9%	16%	0%

Notes: The data are from the Swedish Board of Trade: Annual Statistics 1870 to 1890.

D.2 Swedish imports by sector

Figure 15: Swedish imports by sector: 1870 to 1890



Notes: The data are from [Persarvet \(2019\)](#).

E Synthetic control weights

Table 3: Synthetic control weights by outcome

	GDP	Imports	Government Revenue	Government Expenditure
Belgium	0	0	0.128	0
Canada	0	0	0.410	0
Denmark	0.217	0.365	0.061	0.222
Finland	0.436	0	.	.
Netherlands	0	0.102	0.126	0.229
Norway	0.173	0	0	0.052
Switzerland	0	.	0	0
UK	0.003	0	0.231	0.314
USA	0.170	0.532	0.045	0.182