

Ruthardt, Fabian; Potrafke, Niklas; Wüthrich, Kaspar

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

Niklas Potrafke[†] Fabian Ruthardt[‡] Kaspar Wüthrich[§]

February 3, 2021

Abstract

We investigate how protectionist policies influence short-run 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. 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. Tariffs increased government revenue. However, the results do not suggest that the protectionist government stimulated the economy by increasing government expenditure.

Keywords: protectionism; economic growth; first era of globalization; synthetic control method; causal inference

JEL codes: C33; D72; F10; F13; N10; O11

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[†]Department of Economics, University of Munich and Ifo Institute, Ifo Center for Public Finance and Political Economy, Poschingerstr. 5, D-81679 Munich. Email: potrafke@ifo.de

[‡]Ifo Institute, Ifo Center for Public Finance and Political Economy, Poschingerstr. 5, D-81679 Munich. Email: ruthardt@ifo.de

[§]Department of Economics, University of California San Diego, 9500 Gilman Dr. La Jolla, CA 92093; CESifo; Ifo Institute. Email: kwuthrich@ucsd.edu

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 (e.g., [Sachs and Warner, 1995](#); [Edwards, 1998](#); [Frankel and Romer, 1999](#); [Rodríguez and Rodrik, 2000](#); [Dreher, 2006](#); [Billmeier and Nannicini, 2013](#); [Felbermayr and Gröschl, 2013](#); [Eaton et al., 2016](#); [Gygli et al., 2019](#); [Irwin, 2019](#); [Andersen et al., 2020](#); [Fajgelbaum et al., 2020](#); [Furceri et al., 2020](#)). 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’) (e.g., [Bairoch, 1972](#); [Irwin, 1998, 2002](#); [O’Rourke, 2000](#); [Lehmann and O’Rourke, 2011](#); [Schularick and Solomou, 2011](#)). 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. The innovation of our study is to provide causal evidence by investigating a rare case of a plausibly exogenous change in trade policy.

To estimate the causal effect of protectionism on economic growth, we exploit that an extraordinary tax scandal gave rise to an unexpected change of government in Sweden in the fall of 1887. 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. However, shortly after the election, the election committee declared a free-trade candidate for the Stockholm electoral district an illegitimate candidate because of outstanding tax liabilities. It discarded all 6,585 ballots that included his name and instated 22 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 (125

free-traders, 97 protectionists¹) was overturned by a comfortable protectionist majority (119 protectionists, 103 free-traders), and the free-trade government resigned. A protectionist government took office in February 1888 and drastically increased tariffs on agricultural products and, to a lesser extent, on industrial products. The overall tariff level increased by about 30 percent in 1888 (Persarvet, 2019).

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 about 30 percent, 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 percent of total government revenue in 1888/89 (Häggqvist, 2018). Finally, 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.

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 protectionist policies influenced short-run economic growth in 19th century Sweden. The results show that tariffs increased government revenue. However, there is no evidence that the protectionist government increased government expenditure to stimulate the economy.

Our study contributes to the literature examining the trade-growth nexus in the late 20th and 21st century (e.g., Sachs and Warner, 1995; Edwards, 1998; Frankel and Romer, 1999; Rodríguez and Rodrik, 2000; Dreher, 2006; Billmeier and Nannicini, 2013; Felbermayr and Gröschl, 2013; Eaton et al., 2016; Gygli

¹Some sources claim that the initial result was 124 free-traders and 98 protectionists (e.g., Lindorm, 1936).

et al., 2019; Irwin, 2019; Andersen et al., 2020; Fajgelbaum et al., 2020; Furceri et al., 2020) and in the late 19th and early 20th century (e.g., Bairoch, 1972; Irwin, 1998, 2002; O’Rourke, 2000; Lehmann and O’Rourke, 2011; Schularick and Solomou, 2011).

We also 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). Appendix A provides a review of this debate.

Methodologically, our paper is related to the 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; Andersson, 2019; Born et al., 2019; Potrafke and Wüthrich, 2020).

2 Change in government and protectionism

2.1 The 1887 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).² Thus, it was very likely that the liberal trade policy would be 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

²See Lehmann and Volckart (2011) for a description of the electorates of free-traders and protectionists.

Stockholm elected only free-traders into parliament by large vote margins.³ The election's appeal period 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.

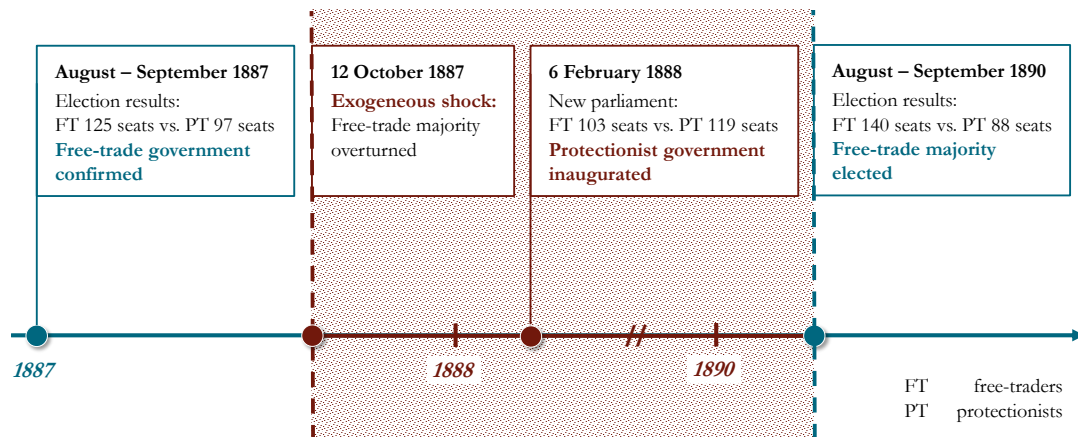
On October 4, 1887, shortly before the appeal period ended, Bergstrand submitted his appeal and published it in *Nya Dagligt Allehanda* on the same day ([Bergstrand, 1887](#)). In his appeal, Bergstrand claimed that Olof Larsson, one of the 22 free-trade candidates, owed a small amount of crown and municipal 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 votes with the candidate's name are invalid ([Lagerbjelke et al., 1866](#)). Bergstrand demanded that all ballot papers including Larsson's name 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 Larsson's name on them ([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 Larsson's name on them are indeed invalid and officially instated the 22 protectionist candidates

³Stockholm was the main stronghold of free-trade sentiment at the time.

as legitimate representatives of the electoral district of Stockholm in the *Riksdag*. 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).⁴ As a result, the liberal government resigned on February 6, 1888, and the experienced protectionist Gillis Bildt became Prime Minister.⁵ In February 1888, Bildt’s government issued the first tariff laws; see Section 2.2 for details. Figure 1 shows a 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, 1888.⁶ We found no indication that the tax debt was publicly known before the election.

⁴Both chambers of parliament decide on trade policy, and each representative has one vote.

⁵Bildt served as Swedish ambassador in Berlin when the *Reichstag* under Bismarck introduced the agrarian protectionist system in 1879.

⁶We used a search algorithm with keywords and time periods for Swedish newspaper articles provided by the National Library of Sweden (*Kungliga biblioteket, KB*).

2.2 Swedish protectionist policies

Overall tariffs increased by about 30 percent in 1888 (Persarvet, 2019). The tariff increase was heterogeneous across product classes.

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 6 percentage points. The increase affected 36 percent of total imports. The largest tariff increase was on grain. Tariffs on grain increased from 2 to 27 percent.

Tariffs on raw materials and fuels increased only slightly (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 only slightly (SITC sections 5–9). Most of the industrial tariffs were still bound by the Franco-Swedish trade agreement.⁷ Tariffs increased mostly on iron and steel products through the introduction of new tariffs on sheet metal, steel beams, cast steel, and metal wire.

2.3 Swedish fiscal policies 1888–1890

Government revenue: Customs revenue as a share of total government revenue was around 40 percent from 1888 to 1890 — the highest value over the period from 1830 to 1913 (Häggqvist, 2018). The composition of customs revenue changed drastically from 1887 to 1888. While, in 1887, agricultural products

⁷In 1860, France and Great Britain signed the Cobden-Chevalier treaty. This triggered a large number of most favored nation (MFN) 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. The Franco-Swedish trade agreement expired in 1892, Sweden regained complete tariff autonomy and substantially increased tariffs on industrial products (Persarvet, 2019).

hardly generated any customs revenue, agricultural customs revenue as a share of total customs revenue increased to almost 20 percent in 1888 (Häggqvist, 2018). Customs revenue coming from industrial products was low; its share of total customs revenue was only around three percent and just slightly increased.⁸

Consumption taxes also generated substantial government revenue. However, consumption tax rates hardly changed over the period 1862 to 1913. Consumption tax revenue ranged between 15 to 20 percent of total government revenue (Stenkula, 2015). The protectionist government did not increase direct tax rates from 1888 to 1890. Overall, increased customs revenue were responsible for the increase in total government revenue (Beck et al., 1911).

Government expenditure: The increased government revenue gave rise to financial desires across the parliamentary benches and the royal court. On October 12, 1888, Oscar II⁹ 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 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, 2012). Figure 2 shows the development of Swedish central government expenditure from 1870 to 1890.

⁸This is expected since the Franco-Swedish trade agreement prevented large increases of industrial tariffs (see Section 2.2).

⁹Oscar II was King of Sweden from 1872–1907.

Figure 2: Central government expenditure 1870–1890



Source: Schön and Krantz (2015)

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, exports, government revenue, and 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 measure is the Macroeconomic Data Set (Barro and Ursúa, 2010). Most trade and national account data come from Mitchel

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

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

(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. The relatively short post-treatment period allows us to examine how protectionism influenced short-run economic growth, as Fajgelbaum et al. (2020) do, for example, for the 2018 US protectionist policies.

3.2 Synthetic control

To estimate how protectionism influences short-run economic growth, we use the SC method (Abadie and Gardeazabal, 2003; Abadie et al., 2010, 2015); see Abadie (2020) for a review. SC approximates what would have happened to Sweden with a free-trade government using a weighted average of contemporaneous outcomes of control countries.

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 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_{1t}^F for all periods. Thus, to estimate τ_t , we need to estimate

the unobserved potential outcome Y_{1t}^F . We use the following SC 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`.¹² The weights are restricted to be positive and add up to 1, which precludes extrapolation beyond the support of the control outcomes.

SC can be viewed as a generalization of the classical difference-in-differences (DID) approach. While DID uses simple averages of control outcomes to approximate the unobserved counterfactual Y_{1t}^F , SC employs a weighted average (equation (2)), which often provides a better approximation to Y_{1t}^F . This feature is especially important in aggregate panel data settings, where the control units are countries as in our application.

To make inferences, we use the permutation method proposed by [Abadie et al. \(2010\)](#).¹³ We permute the treatment assignment and estimate placebo treatment effects for all control countries. This yields a distribution of placebo effects against which the effect estimate for Sweden can be compared. The permutation inference procedure is valid under random assignment of the treatment. If random assignment fails, it can be interpreted as evaluating significance “relative to a benchmark distribution for the assignment process” ([Abadie, 2020](#), p.15).

¹²To avoid concerns about specification search, we follow the recent SC literature (e.g., [Doudchenko and Imbens, 2016](#)) and estimate the weights using only pre-treatment outcomes and no additional predictors.

¹³The permutation inference procedure is a design-based approach that exploits the randomness in the policy assignment mechanism. For alternative sampling-based inference procedures, see, for example, [Chernozhukov et al. \(2019a\)](#), [Chernozhukov et al. \(2019b\)](#), and [Li \(2019\)](#).

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 donor pool includes Belgium, Canada, Denmark, Finland, the Netherlands, Norway, Switzerland, the United Kingdom, and the United States.

An important requirement for SC analyses is that the donor pool of control countries is homogeneous enough (Abadie, 2020). 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

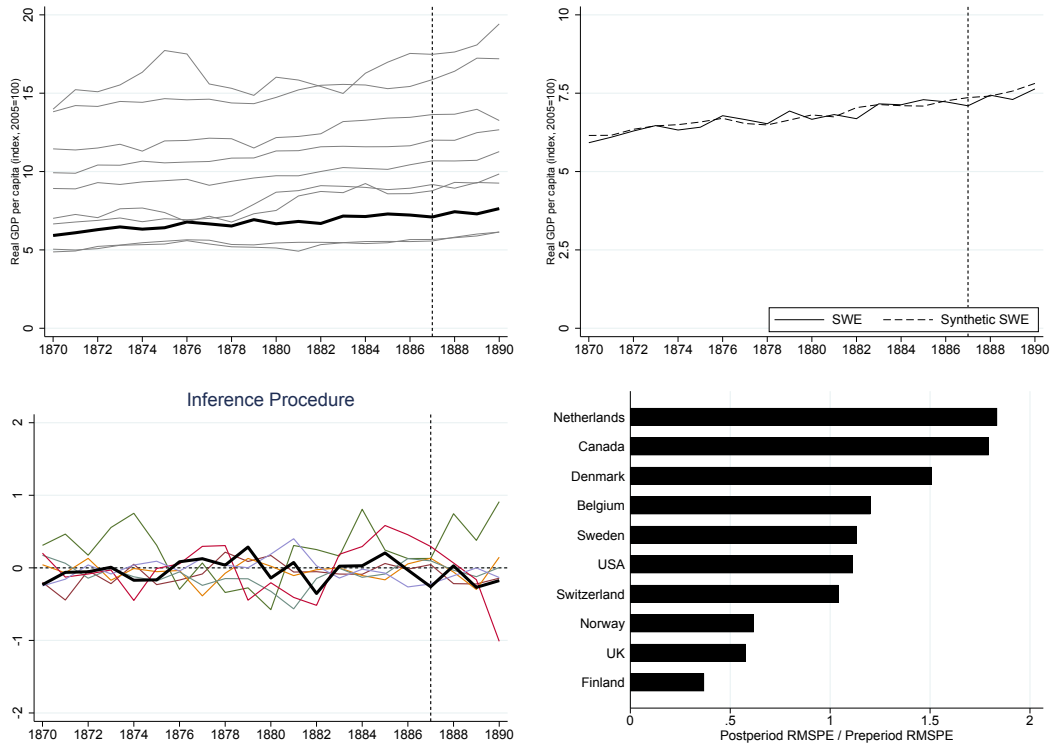
The upper left panel of Figure 3 shows real GDP per capita for each donor pool country and Sweden from 1870 to 1890. Sweden’s GDP is depicted in thick black; the control countries’ GDPs are depicted in grey. The upper right panel shows how real GDP per capita developed in Sweden and synthetic Sweden 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 (Appendix D).

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 percent), and synthetic Sweden’s average real GDP per capita grew from 6.15 to 7.36 (AAGR: 1.06 percent).

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”.

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 percent), and synthetic Sweden’s average real GDP per capita grew from 7.36 to 7.81 (AAGR: 2.01 percent).

Figure 3: 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.

Sources: Jordà-Schularick-Taylor Macroeconomy Database

To make inferences, we iteratively re-assign the treatment to every 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 at least 10 times larger than Sweden’s pre-treatment MSPE (lower left panel of Figure 3). 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 ratio of post-treatment root MSPE (RMSPE) to pre-treatment RMSPE, as suggested by [Abadie et al. \(2015\)](#). A large ratio of post- and pre-treatment RMSPE is indicative of a true effect. The lower right panel of [Figure 3](#) suggests that the ratio of post- and pre-treatment RMSPE was not large in Sweden compared to the other countries in the donor pool.

In [Appendix B.1](#), 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 percent of their total exports to Sweden in 1887. Adjusting the donor pool does not change the results.

In [Appendix B.2](#), we show the results for only European countries in the donor pool. Average tariffs between 1870 and 1890 were substantially higher in the labor-scarce, land-abundant United States and Canada than in the European countries ([Irwin, 2002](#)). Institutional settings in the New World and the Old World differed as well. Excluding Canada and the United States from the donor pool does not change the results.

5 Channels

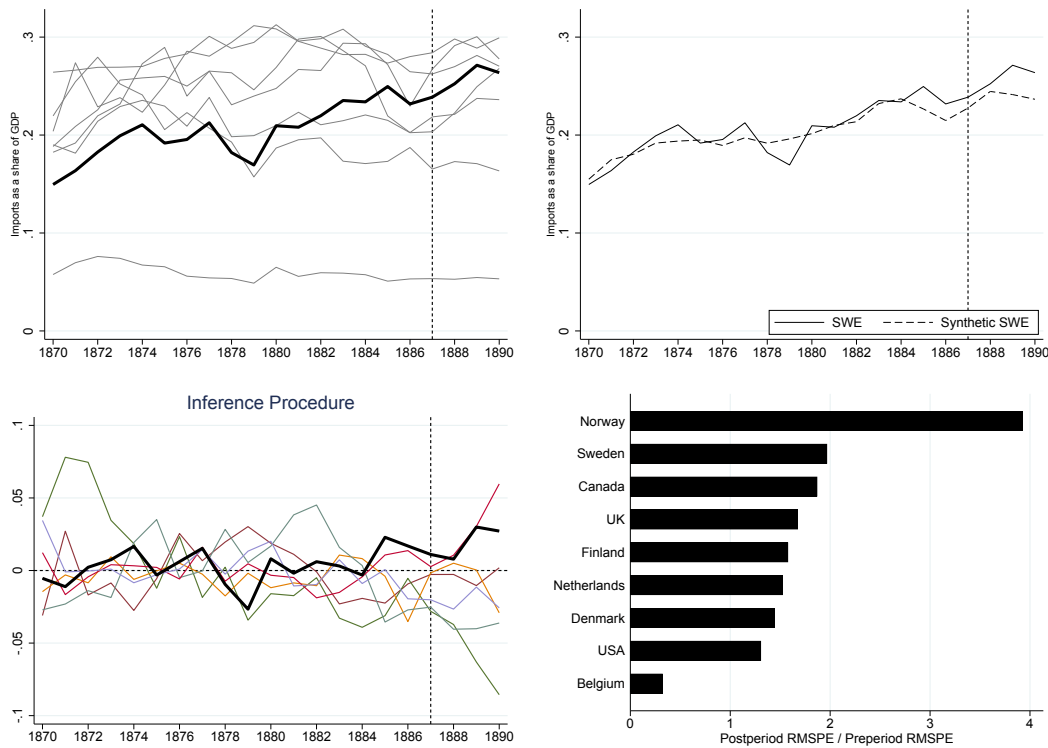
We examine channels for why there is no evidence suggesting that protectionism influenced short-run economic growth. We focus on outcomes of international trade and fiscal policies that are, in turn, likely to influence short-run economic growth.

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, [Figure 4](#) does not suggest that the introduction of tariffs decreased imports. The total value of imports increased from 297,410,000 kronor in 1887 to 324,709,000

kronor 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 percent in 1870 to 23.87 percent in 1887. In 1888, imports as a share of GDP increased to 25.23 percent and reached 26.37 percent in 1890.

Figure 4: Imports as a share of GDP



Notes: The Spaghetti graphs (upper left panel) do not show the Netherlands' imports. The Netherlands' imports as a share of GDP were between 54.43 and 107.95 percent (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.

Sources: Jordà-Schularick-Taylor Macrohistory Database

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

1890.

Bildt’s government increased tariffs to different extents across sectors (cf. Section 2.2). Appendix C.2 shows how the composition of Swedish imports across sectors developed between 1870 and 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.

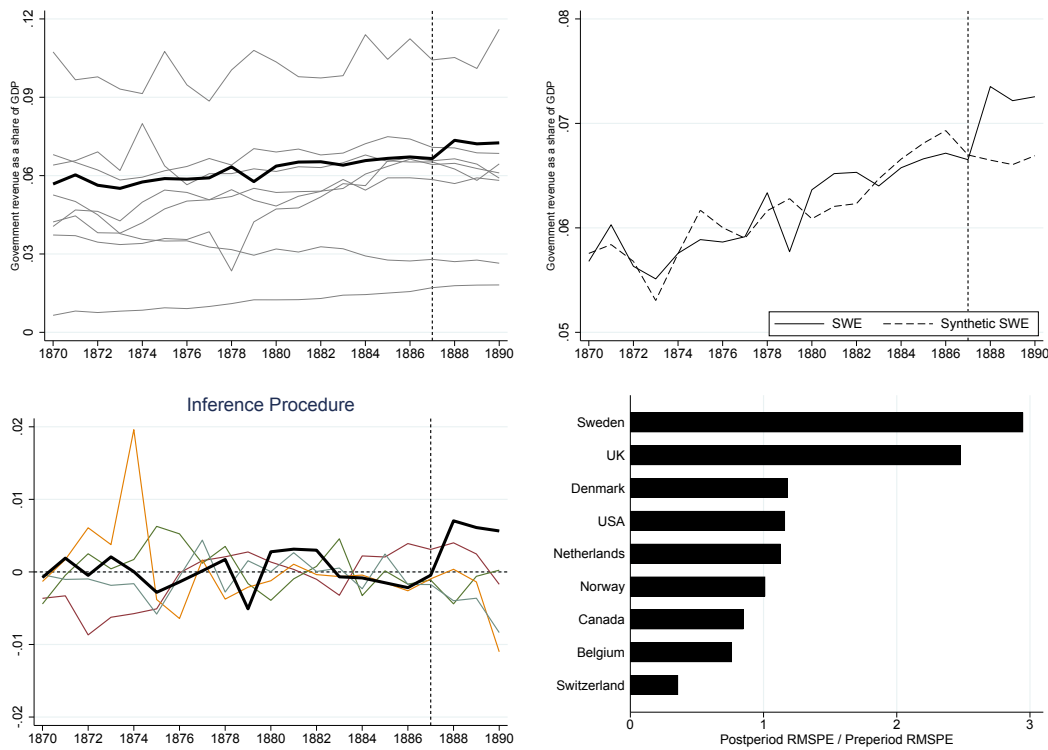
5.2 Government revenue

We examine whether the protectionist policies influenced government revenue. Higher tariffs may well have increased government revenue, which could be used, for example, to increase government expenditure and stimulate short-run economic growth.

Figure 5 shows that the protectionist policies enacted after the change of government increased government revenue. The ratio of post-treatment to 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). Government revenue was 81.11 million SEK in 1887. It increased by 16.02 percent to 94.11 million SEK in 1888. As a share of GDP, government revenue increased from 6.65 percent to 7.35 percent and remained relatively stable until 1890 (1889: 7.22 percent, 1890: 7.26 percent). Meanwhile, synthetic Sweden’s government revenue as a share of GDP decreased from 6.70 percent in 1887 to 6.65 percent in 1888. It remained relatively stable until 1890 (1889: 6.61 percent, 1890: 6.69 percent). Customs revenue was responsible for the increase in government revenue (see Appendix 2.3 for a description of Swedish fiscal policies 1888–1890). In 1888/89, customs revenue as a share of total government revenue reached its absolute maximum over the period from 1830 to 1913 (42 percent) ([Häggqvist, 2018](#)). Because imports

did not decrease when the protectionist policies were introduced, it is unlikely that tariffs were systematically circumvented.¹⁵

Figure 5: 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.

Sources: Jordà-Schularick-Taylor Macroeconomy Database

5.3 Government expenditure

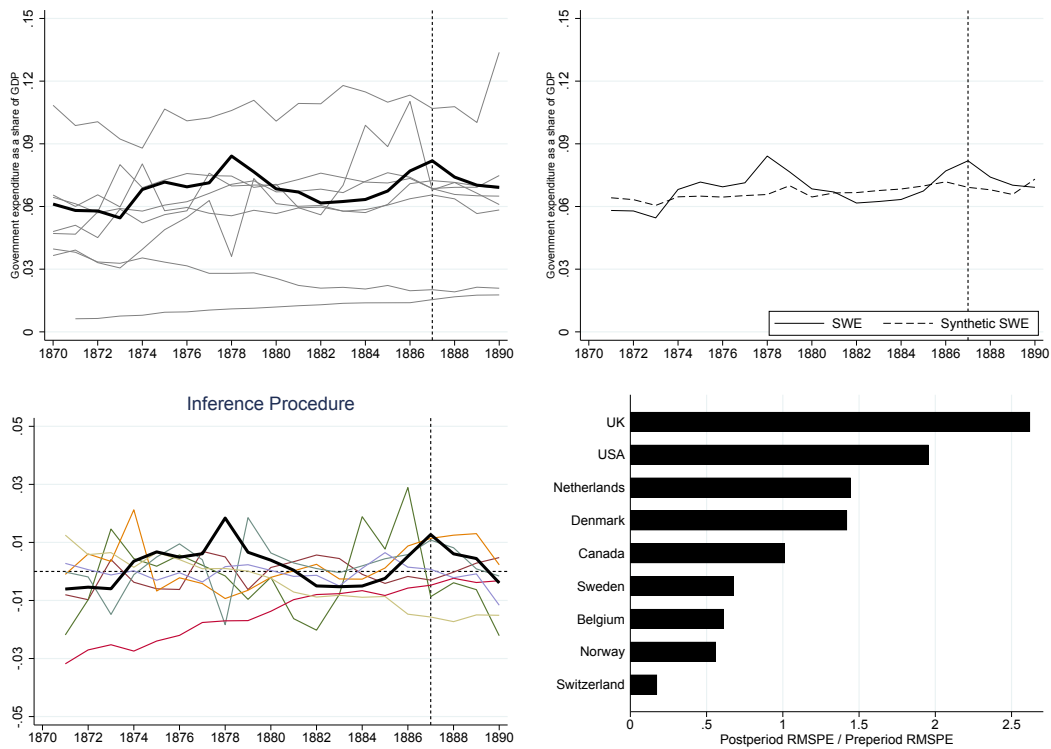
Figure 6 shows the SC estimates for government expenditure. The results do not suggest that the protectionist government influenced government expenditure. Swedish government expenditure as a share of GDP decreased from 8.19 percent

¹⁵Further, 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 C.1.

in 1887 to 6.92 percent in 1890. Synthetic Sweden's government expenditure as a share of GDP increased from 6.92 percent to 7.31 percent over the same period.

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

Figure 6: 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.

Sources: Jordà-Schularick-Taylor Macrohistory Database

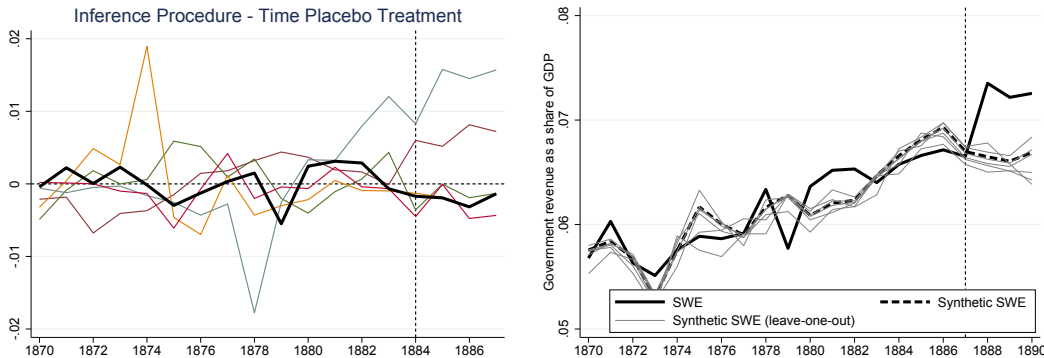
6 Robustness and sensitivity analyses

We submit the estimated effect of protectionism on government revenue to two sensitivity checks proposed by [Abadie et al. \(2015\)](#).

First, we backdate the treatment and consider a placebo treatment in the previous election year (1884). A significant effect of the 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 7). The ratio of post-treatment to pre-treatment RMSPE for Sweden is smaller than one (not shown) and only the sixth highest among all countries.

Second, we perform a leave-one-out sensitivity analysis to examine whether our finding is driven by influential control units. We iteratively exclude from the donor pool each control country with positive weights when applying SC. The right panel of Figure 7 shows the results. We find that the effect of protectionism on government revenue is not driven by influential control units.

Figure 7: 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.

Sources: Jordà-Schularick-Taylor Macrohistory Database

7 Conclusion

Previous studies did not yet explain the ‘tariff-growth paradox’ in the first era of globalization: protectionism was 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 show 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.

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).

We examine how protectionism influences short-run economic growth (e.g., Fajgelbaum et al., 2020). 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. Future research should investigate the long-run impact of protectionism on economic growth in the first era of globalization.

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

Niklas Potrafke Fabian Ruthardt Kaspar Wüthrich

A The Swedish tariff debate	2
B Additional robustness checks	4
C Composition of Swedish imports	7
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A The Swedish tariff debate

Economists have been investigating and discussing the effect of the Swedish tariff increases on the economy for 132 years.

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 diverged from their 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) states 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 was not crucial for the Swedish industrialization process. He concluded that the tariffs probably did not have a significant effect on Swedish industrial growth.

Hammarström (1970) further elaborated on the argument that tariffs caused import substitution. She 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’, how-

ever 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) who dedicated his Ph.D. research to ‘Tariffs, Trade and Economic Growth in Sweden 1858-1913’. 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)

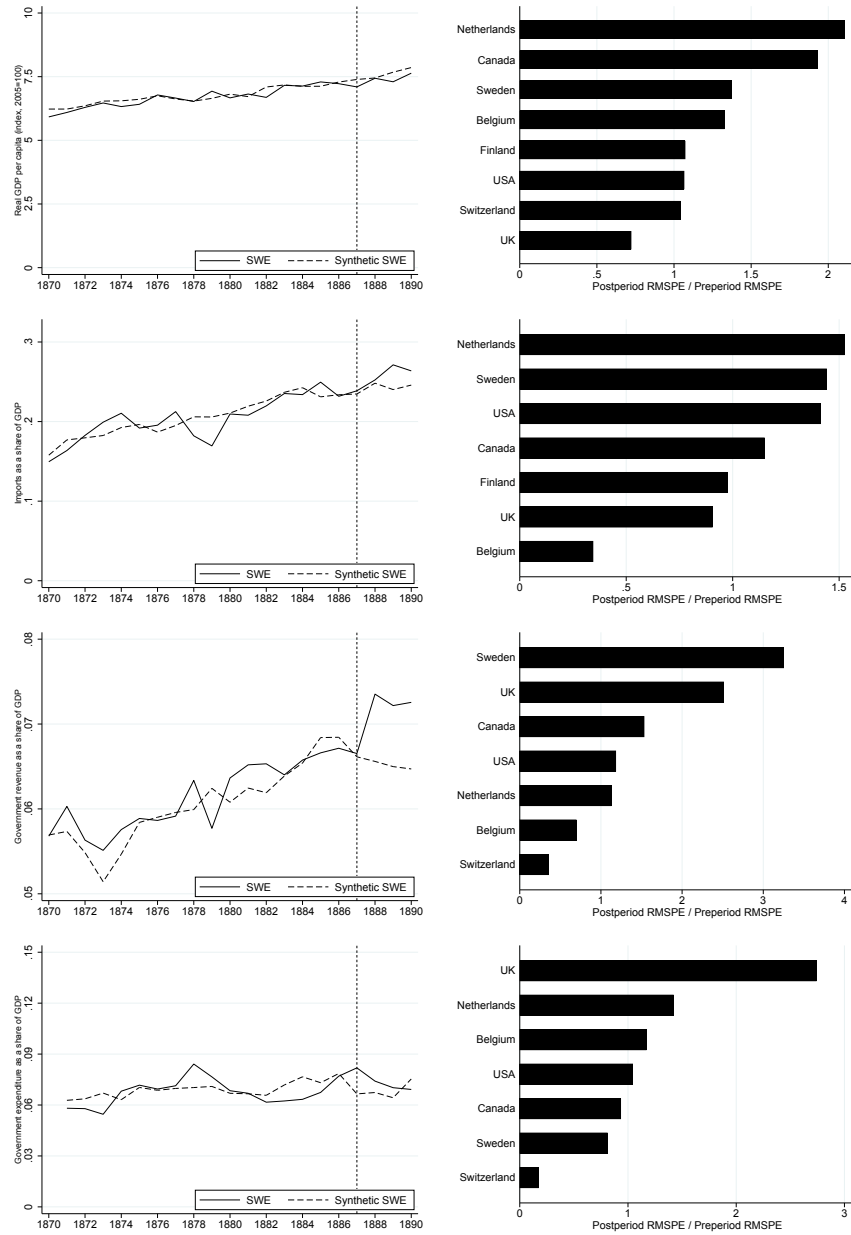
We contribute to this longstanding debate by providing causal evidence on the effect of the tariff increases on key economic outcomes.

B Additional robustness checks

B.1 Robustness: excluding countries with $>10\%$ exports to Sweden in 1887

To assess the robustness of our results against potential spillover effects from Sweden's tariff policy on its trading partners, we exclude from the donor pool all countries which exported more than 10 percent of their total exports to Sweden in 1887. There are two such countries: Denmark and Norway. Figure 8 shows that excluding Denmark and Norway does not affect our results. We find no evidence that Sweden's tariff policy influenced GDP, imports, and government expenditure. However, Sweden's tariff policy increased government revenue.

Figure 8: Robustness: excluding countries with >10% exports to Sweden in 1887

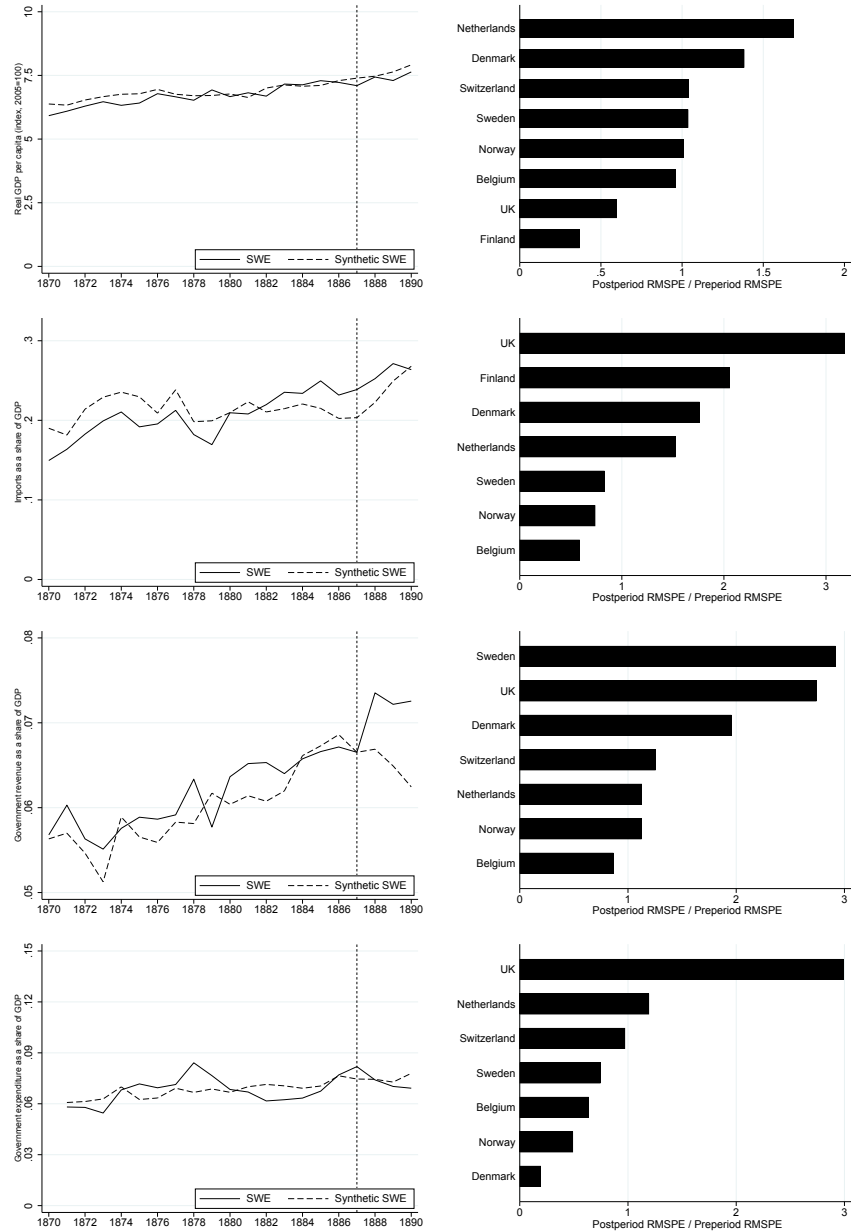


Notes: We exclude Denmark and Norway from the original donor pool.

Sources: Jordà-Schularick-Taylor Macrohistory Database

B.2 Robustness: European countries only

Figure 9: Robustness: European countries only



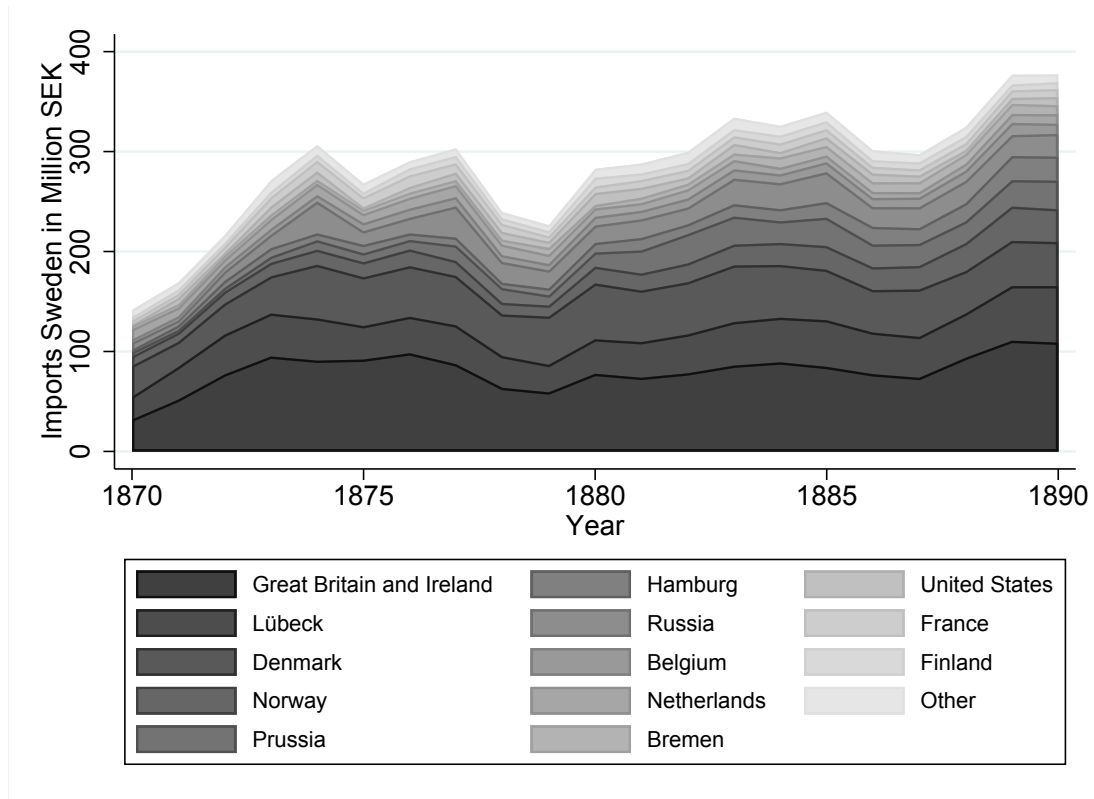
Notes: We exclude Canada and the United States from the original donor pool.

Sources: Jordà-Schularick-Taylor Macrohistory Database

C Composition of Swedish imports

C.1 Swedish imports by trading partner

Figure 10: Swedish imports by trading partner: 1870 to 1890



Sources: Swedish Board of Trade: Annual Statistics 1870 to 1890

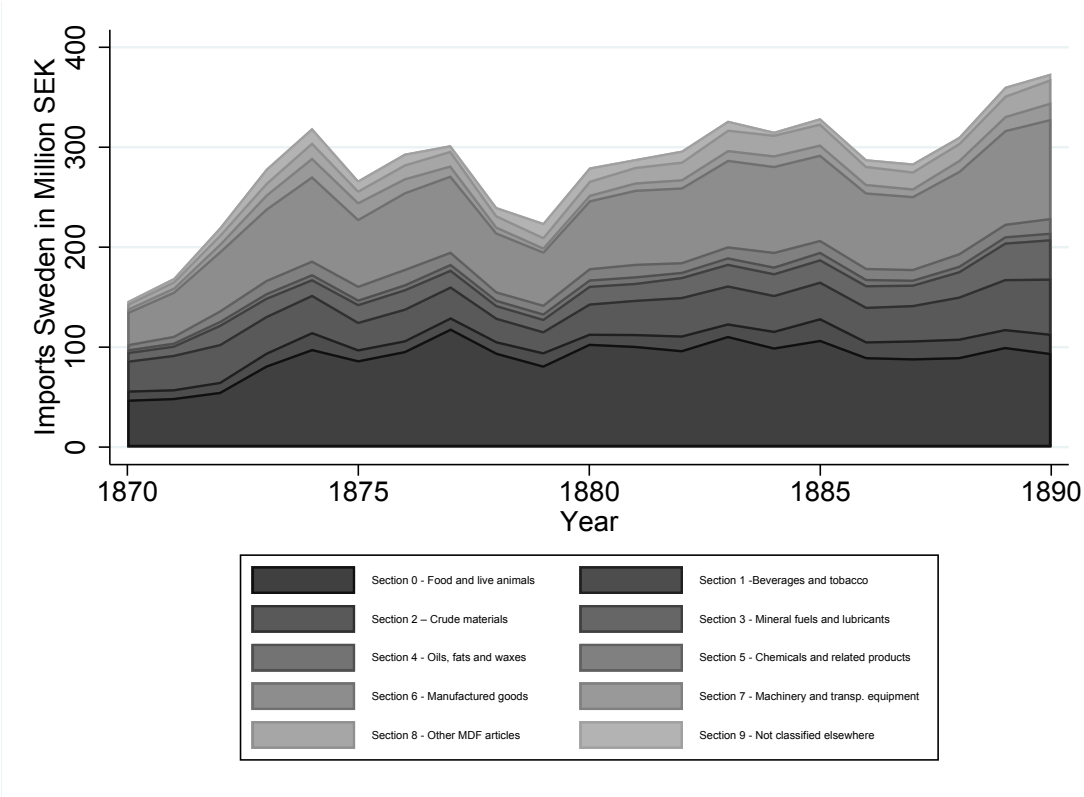
Table 1: Swedish imports by trading partner: growth rates

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%	-2%	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%	2%	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%

Sources: Swedish Board of Trade: Annual Statistics 1870 to 1890

C.2 Swedish imports by sector

Figure 11: Swedish imports by sector: 1870 to 1890



Sources: The data is generously provided by [Persarvet \(2019\)](#).

D Synthetic control weights

Table 2: 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