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Working Paper 27178
http://www.nber.org/papers/w27178

NATIONAL BUREAU OF ECONOMIC RESEARCH
1050 Massachusetts Avenue
Cambridge, MA 02138
May 2020

O'Rourke gratefully acknowledges the financial support of the ERC, under the European Union's Seventh Framework Programme (FP7/2007-2013), ERC grant agreement no. 249546; the Oxford History Faculty's Sanderson Fund; and the John Fell OUP Research Fund. We are extremely grateful to Emma Mathieson and the rest of the staff of the Bodleian Library and Oxford's Oriental Institute Library for their generous assistance in locating material. Aileen Mooney's help was invaluable in getting financial support for the project and we thank her most sincerely. We are also very grateful to Bob Allen, Mike Bordo, Luis Catao, Mary Cox, Ron Davies, Alan de Bromhead, Alan Fernihough, James Foreman-Peck, Paulo Guimarães, Bishnu Gupta, Stefanie Haller, Jean Imbs, Chris Meissner, Chris Minns, Ferdinand Rauch, Tirthankar Roy, Alan Taylor, and Susan Wolcott for answering our questions, sharing data, providing comments, and helping us in a variety of other ways. A special word of thanks is due to Alex Green, Thea Don-Siemion, and Brian Varian for finding data for us in the LSE library. We benefitted from some great comments when presenting this work at Cardiff University, the University of Warwick, the 2019 Economic History Society annual conference in Belfast, and the Dublin Trade Group and thank all concerned. The usual disclaimer applies. The views expressed herein are those of the authors and do not necessarily reflect the views of the National Bureau of Economic Research.

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NBER Working Paper No. 27178
May 2020
JEL No. F13,F14,N75

ABSTRACT

Research on the quantitative impact of interwar protection on trade flows remains scarce, and much of it has concluded that the impact was surprisingly small. In this paper we ask: Did Indian interwar protection hurt UK manufacturers, by raising tariffs on manufactured imports? Or did it favour UK interests, by discriminating against "foreign" (i.e. non- British) producers? We answer this question by quantifying the impact of trade policy on the value and composition of Indian imports, using novel disaggregated data on both trade policies and imports for 114 commodity categories coming from 42 countries. Indian trade elasticities were generally larger than those in the United Kingdom at the same time. We find that even though Indian protection lowered total imports, it substantially boosted imports from the UK. Trade policy had a big impact on trade flows.

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1 Introduction

What was the impact of protectionism on trade during the 1930s? Despite their ferocious reputation, empirical work quantifying the effects of interwar tariffs and quotas remains scarce. This is surprising since the 1930s saw trade policies fluctuating violently, offering a promising setting for trade economists wishing to estimate trade elasticities and the impact of protection. Such work as has been done has typically found smaller effects than might have been expected.[1] To take one prominent example, Irwin (1998) finds that the bulk of the 1929-33 US trade collapse was due more to the GDP collapse of the period than to an increase in trade frictions. To take another, Eichengreen and Irwin (1995) find little evidence that imperial and regional trade blocs distorted the geographical pattern of trade during the 1930s: the countries involved had already traded disproportionately with each other in the 1920s, prior to the introduction of discriminatory trade policies.[2]

Most empirical work on the subject has focussed on rich countries, and more particularly on the United Kingdom and United States. But what about the developing world? As Goldberg and Pavcnik (2016, p. 181) point out, "trade elasticity estimates may vary by sector, time, and country. This makes careful empirical work that exploits trade policy variation in order to identify the trade elasticity/ies more important." Imbs and Mejean (2017) find that sectoral trade elasticities were typically much higher in developing than in developed countries around the turn of the twenty-first century. On the other hand, Sequeira (2016) finds very low trade elasticities in a study of southern Africa. India is a rare example of a developing nation that adopted protectionist policies during the 1930s: was their impact large or small?

The question is particularly interesting since there has been sharp disagreement regarding not only only the size, but also the sign, of the impact of Indian protection during this period. The issue concerns the effects of Indian tariffs on British manufacturers in general, and on the textile producers of Lancashire in particular. Did Indian tariffs hurt UK manufacturers as some have claimed? Did London foolishly allow Indian policy-makers to deprive it of crucial markets during a very difficult period? Or did supposedly independent Indian policies in fact help British interests, as Indian nationalists have consistently maintained?

[1] Irwin (2012) provides an excellent survey.

[2] Madsen (2001) and Kitson and Solomou (1990) provide dissenting voices. See also, *inter alia*, Estevadeordal, Frantz and Taylor (2003), Gowa and Hicks (2013), and Wolf and Ritschl (2011).

Or, to take a third possibility, were Indian trade policies of little relevance to outcomes either way?

While there is an abundant historical literature on the politics of Indian interwar trade policy, there has been much less work on the consequences of that policy.[3] Assertions abound however. For example, Dewey (1978, p. 36) states that higher Indian tariffs "ejected Lancashire from its largest export market". Drummond (1972, pp. 123-4) similarly suggests that Indian tariffs, facilitated by the "British self-denying ordinance" that was the fiscal autonomy convention (see Section 2), and "helped now and then by the organized boycotts of British goods and Gandhi's cottage-industry campaigns", helped explain the decline in Britain's textiles exports to India. Sandberg (1974) argues that tariffs and boycotts were both important in explaining the decline in Lancashire's exports to India.[4] In sharp contrast, Chaudhuri (1983, p. 869) suggests that Imperial Preference may have boosted Britain's share of Indian imports, while Rothermund (1988, p. 110) argues that the quotas on Japanese cotton exports to India enabled the British "to recover a great deal of the ground that they had lost both to Indian and to Japanese competition in previous years".

The only quantitative study of the impact on trade flows of Indian interwar protection that we are aware of is Wolcott (1991). She estimates partial equilibrium import demand curves for British piece goods, British gray goods, and British bleached goods. Demand depends on real Indian income, the price of raw cotton, and the price of British textiles relative to other consumer goods. The price of US cotton and British wages are used as instruments for British prices. In addition a time trend is added to account for secular trends in the cotton industry, and level shift terms are introduced in 1920 and 1930. The latter are taken to represent *inter alia* the impact of Gandhi's 1920-22 and 1930-31 boycotts. On the basis of her estimates Wolcott concludes that 82% of the decline in the Indian demand for British piece goods was due to the increase in the tariff from 11 to 25%. Indian protection hurt the British producer.

In this paper we extend the analysis in several ways. First, we look at the impact of Indian protection not just on imports of cotton textiles, but on imports more generally. We do so using a newly created dataset giving imports into British India of 114 consistently-defined commodities from 42 countries over the 15 years 1923-4 to 1937-8.[5] Generating these data required typing information

[3] For recent contributions see Stubbings (2019) and Casler and Gaikwad (2019).

[4] Cited in Wolcott (1991, p. 368).

[5] Indian trade statistics for the period were published for fiscal years beginning on April 1

on imports of 202 sub-categories of goods from 63 countries or sub-regions. Second, we look at imports not just from the United Kingdom but from the 41 other countries in our dataset, and we take account of Indian trade policies affecting those countries also. Using data on trade and trade policy that is disaggregated by commodity and country is crucial, since as de Bromhead et al. (2019) show doing so can matter greatly for the estimated impact of protection. Third, when estimating our trade elasticities we control for the impact of civil disobedience campaigns on trade flows, allowing for the possibility that these were different in the short and long run. We also control for a variety of other variables, including cartels affecting trade in particular commodities. And fourth, we embed our econometrically-estimated elasticities in a well-specified general equilibrium model that allows for substitution between varieties of the same goods coming from different countries, substitution between different goods, and substitution between imports in general and domestically produced goods. We find that Indian protection depressed overall imports (our median estimate is that protection lowered imports by around 10%), but substantially *boosted* imports from the United Kingdom. Our median estimates suggest that total British exports to India were increased by over 20%, and UK cotton cloth exports to the country by roughly 50%: these impacts were equivalent to around 2% of aggregate UK exports, and 10% of UK cotton cloth exports, to *all* destinations. Contrary to previous findings that interwar protection did not have a significant quantitative impact on trade flows, these are big effects.

We begin with a brief description of Indian trade policy during the period (interested readers may prefer to read the more detailed and self-contained account in Appendix 1). Section 3 outlines our theoretical framework, and introduces the key elasticities which matter for our results. Section 4 describes the data which are used to estimate those elasticities in Section 5. Section 6 derives the main results of our paper, and Section 7 concludes.

2 Indian trade policy

Indian import tariffs had traditionally been low, reflecting the country's colonial status and the liberal inclinations of the British imperial power.[6] Land, opium, and salt provided the bulk of the Indian government's revenues in the nineteenth

and ending on March 31.

[6] While we make extensive references to the secondary literature below, an invaluable source remains the Indian legislation of the period.

century: customs duties only accounted for 10% of government revenue in 1860-61, and just 5% ten years later (Kumar, 1983, p. 916). On the eve of World War 1 India was still virtually a free-trading country, and such tariffs as were levied were designed to raise revenue rather than to protect domestic industries.[7]

The war was an important turning point. The war effort required revenue, and Indian tariffs were accordingly increased: customs duties accounted for 20% of Indian government revenue during 1916-20 (Mukherjee, 2001, pp. 731-2). Nor did conflict end in 1918: war with Afghanistan in 1919 was followed by a campaign in Waziristan which lasted into the following year. By 1922 the general tariff stood at 15%, with cotton yarn and cotton piece goods being subject to duties of 5% and 11% respectively (Dewey 1978, pp. 43-4; Mukherjee 2001, p. 732).[8] Indian cotton textiles were now enjoying substantial protection, despite the fact that tariffs were being imposed for revenue reasons (Drummond, 1972, p. 123).

The war also "produced a landslip in official attitudes to protection" (Dewey, 1978, p. 45). Total war highlighted the desirability of developing Indian heavy industry, while the belief in *laisser faire* was shaken. Even more importantly, perhaps, Indian nationalist demands were strengthened by the country's contribution to the war effort. In August 1917 the Secretary of State for India, Edwin Montagu, stated that the UK favoured "the progressive realization of responsible government in India as an integral part of the Empire."

In 1919, a British Joint Select Committe stated that "Nothing is more likely to endanger the good relations between India and Great Britain than a belief that India's fiscal policy is dictated from Whitehall in the interests of the trade of Great Britain. That such a belief exists at the moment there can be no doubt...Whatever be the right fiscal policy for India, for the needs of her consumers as well as for her manufacturers, it is quite clear that she should have the same liberty to consider her interests as Great Britain, Australia, New Zealand, Canada and South Africa." It thus proposed (and the government subsequently agreed) that the British government "should as far as possible avoid interference on this subject when the Government of India and its Legislature are in agreement" and that any such intervention "when it does take place, should be

[7] Act XIV of 1899 allowed the government to impose countervailing duties in cases where other governments were subsidising exports to India. Act VIII of 1902 allowed the government to impose duties on imported sugar from countries protecting domestic sugar production by more than a specified amount.

[8] The rate on sugar was increased to 25%, and that on luxury goods to 30%, while tariffs on a range of iron and steel products were raised from $2\frac{1}{2}$ to 10%.

limited to safeguarding the international obligations of the Empire or any fiscal arrangements within the Empire to which His Majesty's Government is a party" (U.K. Parliamentary Papers, 1919, p. 11).

This recommendation, accepted by the British government in 1921, that Britain acknowledge India's right to "fiscal autonomy" took the form of a "convention" rather than a statute, since the latter would have limited "the ultimate power of Parliament to control the administration of India" and "the power of veto which rests in the Crown". Indian historians have pointed out that the Government of India was supposed to consult the British government before tabling fiscal policy proposals, and have argued that the British government *de facto* retained significant control over Indian trade policy (Mukherjee, 2001, pp. 734-5). Yet the succeeding two decades saw the gradual development of far more interventionist trade policies on the sub-continent.

In 1922 the Indian Fiscal Commission recommended protection for Indian industries on classic infant industry grounds (U.K. Parliamentary Papers, 1922 Sess II).[9] Protection was to be resorted to "with discrimination", since indiscriminate protection "would protect industries unsuitable as well as suitable, and would impose on the consumer a burden in many cases wholly gratuitous" (p. 49).[10] In 1923 the Indian government accepted this recommendation, and a Tariff Board was set up to implement it, although it was not as independent of government as had been envisaged in the report. Eleven industries obtained protection from the Tariff Board before the outbreak of World War 2: cotton, iron and steeel, sugar, paper, matches, salt, heavy chemicals, plywood and tea-chests, sericulture, magnesium chloride, and gold thread. Rice and wheat were also singled out for protection (Tomlinson, 1979, pp. 61-2). In some cases the tariffs involved were very high.

The new Tariff Board's first task was to consider the case for protection of the iron and steel industry. In June 1924 tariffs were introduced ranging from 15 to 25% ad valorem.[11] In 1927 protection for the industry was extended for a further 7 years, and importantly the duties were now "differential", which is to

[9] That is to say, Indian industries concerned would have to possess "natural advantages", require protection to be able to develop in the first place, and would eventually be competitive in world markets.

[10] Somewhat confusingly, therefore, the proposed policy was described by contemporaries as one of "discriminatory protection". Notably, 5 Indian members of the 11-member Commission argued for an unqualified commitment to protection (U.K. Parliamentary Papers, 1922 Sess II, pp. 175-212). Roy (2017) provides a sympathetic account of the policy of discriminatory protection.

[11] Act XIV. Several specific tariffs were also introduced.

say that they were in many cases lower for goods "of British manufacture". The argument was that differential protection was required since British steel was tested according to the British Standard Specification, and was more expensive to produce and of higher quality than cheaper, "untested", Belgian steel (Wagle, 1981; Roy, 2017).[12] This legislation marked a break with the past: previous attempts to introduce Imperial Preferences of any kind had fallen foul of Indian nationalist opinion (which objected in this instance also, albeit unsuccessfully).

Protection for the Indian cotton industry also increased over time in response to worsening market conditions and concerns about unfair competition (due to inferior labour conditions) from East Asia.[13] In April 1930 duties on British piece goods were increased to 15% , with duties on foreign piece goods being raised to 20%. The legislation also specificied a minimum specific tariff of $3\frac{1}{2}$ annas per pound on all imported plain grey piece goods, no matter what the origin, which was non-discriminatory enough to get the measure passed by an Indian Legislature hostile to Imperial Preference (Act XVII of 1930). In March 1931 the general tariff was raised to 20%, and the tariff on cotton piece goods was raised to 20% for British goods, and 25% for non-British goods. On the 30th of September these duties were further raised by a quarter, implying a general tariff of 25%, and duties for British and non-British piece goods of 25% and $31\frac{1}{4}$% respectively.[14]

In October 1931 a National Government committed to Imperial Preference was elected in Britain. An Imperial Economic Conference was held in Ottawa the following summer, at which an Anglo-Indian trade deal was signed. The agreement granted continued tariff-free access to the UK market for those Indian goods that had been temporarily exempted from a general 10% tariff introduced in February, and maintained or improved preferences on a wide variety of Indian exports to Britain. In exchange India granted tariff preferences to a large range of UK exports, and in some cases to exports from British colonies (as opposed to Dominions). These margins were generally 10% *ad valorem*, although in some cases (notably motor cars) the margin was $7\frac{1}{2}$%. The agreement did not, however, prevent India from raising tariffs in the future, so long as these preference margins were maintained (U.K. Parliamentary Papers, 1931-32*b*; Drummond, 1972, p. 131). Nor did the agreement deal with cotton textiles, since in April

[12] TISCO was at this stage the only Indian producer capable of making "tested" steel.

[13] An excellent and concise account is given in Indian Tariff Board (1932, pp. 1-8), on which we largely draw.

[14] Indian Finance (Supplementary and Extending) Act, 1931.

1932 the Indian Tariff Board had been asked to report to the Indian Government on the subject; Lancashire interests hoped that the outcome would be greater tariff preference for British textiles in the Indian market.

In December 1931 Japan quit the gold standard and the yen started to depreciate. On August 30, 1932 the Indian duty on *all* non-British cottons was increased from $31\frac{1}{4}$ to 50% (the Indo-Japanese trade treaty of 1904, which had granted most-favoured-nation status to Japan, made it impossible to single out Japanese goods for special attention).[15] The increase was only until March 1933, but in March the 50% tariffs were extended through October. The following month India gave Japan six months notice of its intention to denounce the 1904 treaty, which would allow it to discriminate against Japanese imports; later in the same month the Safeguarding of Industries Act empowered the Indian Governor General to impose "a duty of customs of such amount as he considers necessary to safeguard the interests of the industry affected", in cases where goods were being imported "at such abnormally low prices that the existence of an industry established in British India is thereby endangered" (Act XIII). In May 1933 the UK increased the pressure on Japan by giving twelve months notice of its intention to denounce those portions of the Anglo-Japanese trade treaty dealing with West Africa and the West Indies (Best, 2002, p. 83). On the 7th of June the tariff on non-British cotton goods was increased to 75%.

Japan reacted to the increased tariff on non-British goods, in part by boycotting Indian raw cotton, but also by opening trade negotiations with India (Drummond, 1972, pp. 132-4; Rothermund, 1988, pp. 109-10; Chatterji, 1992, pp. 378-80). The outcome was a trade agreement which came into effect on January 8, 1934. This lowered the Indian duty on foreign piece goods to 50%, in exchange for quotas on Japanese exports of piece goods to India linked to Japanese imports of Indian raw cotton (Chatterji, 1992, p. 395).

In January 1935 the Indian government agreed as a general priciple that protective tariffs should be lower on UK than on other goods, although in the following year the Legislative Assembly asked the Indian government to denounce the Ottawa Agreement. There followed a long series of trade negotiations between the British and Indian governments that eventually resulted in a 1939 trade agreement reducing the range of British imports accorded preferen-

[15] Not unreasonably, the Japanese protested against the fact that tariffs on British goods were not being increased. This was dismissed by the British who took the view that preferences in India on British goods were not inconsistent with the UK's treaty obligations to Japan, presumably since British goods were not of "foreign origin" (Chatterji, 1992, p. 378).

tial treatment in India. Chaudhuri's (1983, p. 869) overall assessment is that "India, even before the Second World War, was coming closer towards the adoption of a much more positive policy of controlling her international economy, which was to become characteristic of official thinking after Independence".

3 Theoretical framework

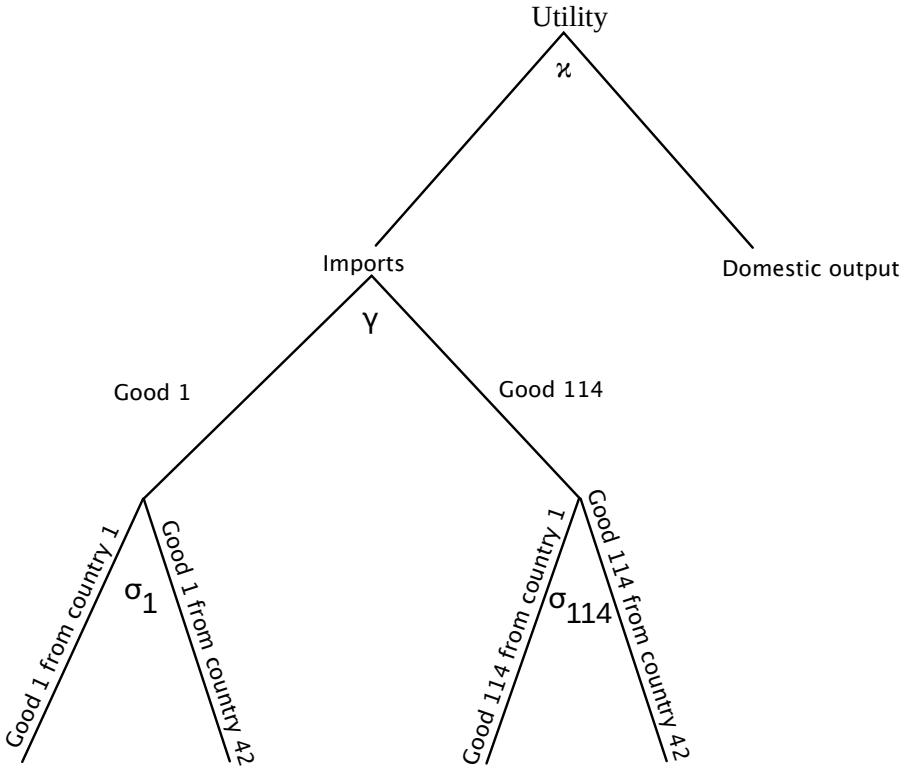
As the previous section has made clear, Indian trade policy became increasingly protectionist, and also more complicated, over the course of the 1920s and 1930s. Tariffs were increased on a wide range of goods, and they were raised more on imports from "foreign" countries than on British imports. Higher tariffs lowered imports, and a partial equilibrium analysis such as Wolcott's will necessarily conclude that they lowered UK exports to India. But tariffs which discriminated in favour of UK goods may have induced substitution towards British imports, potentially giving British exporters a larger share of a shrinking pie. What was the net effect of these countervailing forces?

In order to answer this question we need a model of the Indian economy: ideally a general equilibrium model with many goods originating in many countries being imported, and with corresponding domestic sectors producing these goods in India. We do indeed have data on Indian imports of many goods from many countries, which will be described in Section 4, but we lack Indian production data at the same level of disaggregation. We therefore construct a model similar in structure to that used by de Bromhead et al. (2019), and which resembles in many respects the model of Broda and Weinstein (2006), whose notation we largely use.

In particular, we consider a representative agent characterized by a nested CES utility function, represented in Figure 1. At the top level they choose between the domestically produced good D and an aggregate import good M, with the elasticity of substitution between these two goods being denoted by χ. At the second level the aggregate import good is a CES composite of 114 different imported goods, with the elasticity of substitution between these being set equal to γ. And at the third level each of the 114 goods is an Armington aggregate of up to 42 varieties, each coming from a particular source country. The Armington elasticity of substitution betwen the different national varieties of good g is denoted by σ_g.

The supply side is extremely simple and resembles that used by Anderson

Figure 1: Nested utility function



and Neary (1996): a single factor of production (which we can think of as GDP) is transformed into an export good X and a domestically-consumed good D, via a constant elasticity of transformation production function (with the elasticity of transformation equal to η). The export good is sold to provide the foreign exchange used to buy imports (we assume that trade is balanced).

When protection increases, the main determinants of the impact on the total value of imports will be the ease with which the consumer can substitute towards the domestically produced good, and the ease with which the economy can meet this additional demand for D. The key elasticities determining the response of aggregate import values to an increase in protection will thus be χ and η, although all of the elasticities matter to some extent. On the other hand, the fact that preferences are homothetic implies that χ and η are irrelevant to the *share* of trade coming from a particular country, such as the UK. The key elasticities determining that will be the σ_g's, although γ will also matter.

In order to calibrate the model we need information on benchmark imports of all goods from all countries in all years, as well as information on the consumption of the domestic good and estimates of the elasticities. The next section describes the data we use, while Section 5 derives the elasticities.

4 Data

In order to calibrate the model we need four types of information: imports by commodity and country; trade policy (chiefly tariffs, but also information on non-tariff barriers to trade) by commodity and country; Indian consumption of the domestic good D; and the elasticities described in Section 3. In this section we describe the data sources used to obtain information on the first three of these items, which are also used to derive the elasticities in Section 5.

4.1 Trade data

The basic problem with historical trade data is that the trade classifications used by the relevant national authorities are consistent neither across countries nor over time. However, it is sometimes possible to construct import data that correspond to SITC categories: doing so requires that the trade categories reported at the time fall entirely within particular SITC categories and that the available data allow us to capture all imports falling within a given SITC category. We collected data on all Indian imports, between 1923-4 and 1937-8,

in 35 distinct 3-digit SITC categories.[16] These categories were chosen because of their importance in world trade generally, and also because it was possible to consistently calculate import values for each.[17] In order to accomplish this we hand collected import data from various volumes of the "Annual Statement of the Sea-Borne Trade of British India with the British Empire and Foreign Countries".[18] For each year we collected import values for up to 202 individual product categories from 63 countries/sub-regions. In principle this implied collecting 190,890 datapoints, although product categories tended to change over time, some vanishing and others appearing, implying that the actual number of datapoints collected was rather smaller. In addition, many observations were zero. We were able to aggregate the 202 individual product categories to produce import data for 114 product categories which are consistently defined over time.[19] It is these 114 categories which can in turn be aggregated up to our 35 SITC 3-digit categories. For example, our good number 261001, "Silk, raw", was constructed using eight separate items which appear in the trade statistics between 1923 and 1937, namely "Silk, raw", "Silk. Waste", "Textiles. Silk. Raw and cocoons", "Textiles. Silk. Waste and noils", "Textiles. Silk. Silk, raw and cocoons", "Textiles. Silk. Waste products, including duppion", "Textiles. Silk. Silk, raw and cocoons, Hand reeled" and "Textiles. Silk. Silk, raw and cocoons, Other Sorts". A complicating factor for this good was the fact that the statistics reported an increasingly detailed disaggregation over time, two items at the beginning, and four at the end. It is due to such time-varying disaggregation that we have to aggregate the 202 narrower product categories into a broader and consistently defined set of 114 product categories. Thankfully, there are also series which are presented consistently over time, and for which there is

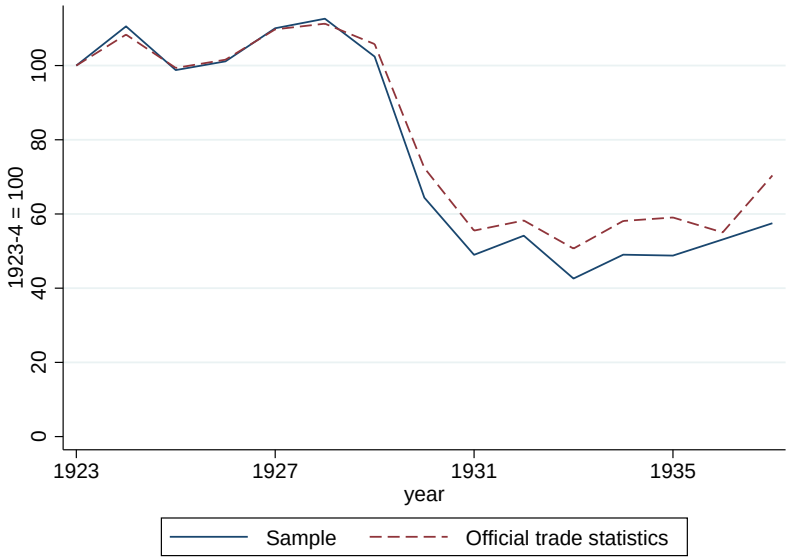
[16] Indian trade statistics were compiled for fiscal years, beginning on April 1 and ending on March 31. We are using the original Standard International Trade Classification, Revision 1, based on Statistical Office of the United Nations (1951, 1953).

[17] That is, sub-categories of trade we needed to compute these values fell neatly within our 3-digit SITC categories, rather than spanning two or more categories; and we were able to capture all of the imports within each 3-digit category.

[18] Prior to financial year 1937-38, the statistics in these volumes referred to the trade not only of British India proper, but of Burma as well. They thus excluded trade between British India and Burma. From 1937-38 onwards, the trade statistics of Burma were published separately. This meant that the Indian statistics included the trade of British India with Burma, and excluded the direct trade of Burma with other countries. The figures recorded in the 1937-38 volumes were therefore not comparable with those for the earlier volumes. To make the figures comparable across volumes, we additionally hand collected trade data from the Annual Statement of the Sea-Borne Trade and Navigation of Burma for 1937-38. We used these statistics to net out trade between British India and Burma, and to add trade between Burma and the rest of the world to the Indian totals.

[19] These 114 categories are the narrowest for which it was possible to generate consistent data over time.

Figure 2: Total and sample Indian imports, 1923-4 to 1937-8



Source: Annual Statement of the Sea-Borne Trade of British India with the British Empire and Foreign Countries.

only one original trade statistics item corresponding to one of our 114 product categories. Examples of such categories include "Cotton, raw" and "Wool, raw".

When estimating elasticities we will distinguish between nine broader categories of goods (see footnote 23 below). Appendix 2 provides full details of how we aggregated the original published trade statistics to produce our final dataset, while Appendix 3 lists the 42 partner countries used in our analysis.

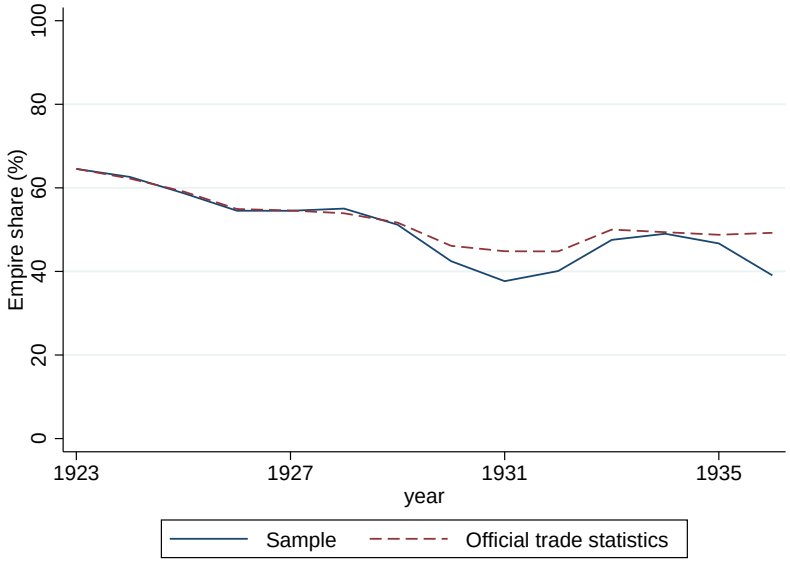
Figure 2 shows that the total value of imports in our sample, and the total value of imports in the official trade statistics, track each other closely. Our sample captures between 54% and 67% of all Indian imports. Figure 3 shows that our sample does a good job of matching the British Empire's share of total Indian imports.[20]

4.2 Trade policy data

Tariff information was obtained from various volumes of the Indian Trade Journal. The tariff rates for a given year were published in the supplement to the

[20]Data for 1937-8 are missing as a result of the reorganization of Burmese and Indian trade statistics.

Figure 3: Total and sample Empire share of Indian imports, 1923-4 to 1936-7



Source: Annual Statement of the Sea-Borne Trade of British India with the British Empire and Foreign Countries.

Trade Journal's final volume of the previous year. We also looked at amendments made to the Indian Tariff Act which were mentioned in the Indian legislation from this period to check for any changes in tariff rates that came into effect in the middle of the year. To account for these mid-year changes we took a weighted average of rates in place prior to and after the change with the weights determined by the month in which the changes took effect.[21]

While tariff rates for some product categories mentioned in the Indian Trade Journal corresponded well with the product categories in the import data, there were cases where the tariff rates were for either a broader or a narrower product category relative to the product categories in our import data. For example, tariff information was given for "Grain and pulse, all sorts, including broken grains and pulse, but excluding flour" which was broader than the corresponding import product categories. In this case the rates were applied to all individual products falling under the Grain and Pulse category, unless there were specific

[21] Our trade policy data are thus for calendar years starting on January 1, while our trade data are for fiscal years starting on April 1. Since trade policy might be expected to influence trade flows with a lag we decided to use calendar year tariff data as a base case. In Appendix 5 we show that using fiscal year tariff data makes little difference to our results.

exemptions.

Alternately, in cases where tariff information was given for narrower product categories, an unweighted average of the rates was used for the broader import categories. For example, tariff information was given for "Cotton twist and yarn, and cotton sewing or darning thread, of counts above 50s" and "Cotton twist and yarn, and cotton sewing or darning thread, of counts below 50s" which are narrower than the product category "Textiles. Cotton. Twist and Yarn" in our import data. In this case the rates used for Cotton, Twist and Yarn are an unweighted average of the rates of the two categories mentioned above.

While tariffs were mainly *ad valorem*, for certain goods there were specific rates in place and for some goods there was a mix of both specific and *ad valorem* rates. Specific rates were expressed in *ad valorem* terms by dividing the specific rates by the unit value of imports (import value divided by import quantity). Information on non-tariff barriers (in particular the quota agreement with Japan) were obtained from the sources used in Section 2, and are listed (along with the information we use on boycotts and cartels) in Appendix 4.

4.3 Consumption of the domestic good D

The Net Domestic Product (NDP) of British India (not including Burma) is taken from Sivasubramonian (2000, pp. 429-30). However, as mentioned in footnote 18 above, our trade data include imports into Burma. Hlaing (1964, p. 143) provides NDP data for Burma for the years 1921-22, 1926-27, 1931-32, 1936-37, and 1938-39. This allows us to adjust "Indian" NDP upward so as to include Burma for these five years, and we compute adjustment factors for the intervening years via geometric interpolation (the combined total is around 5% higher than the NDP for British India alone). In order to compute consumption (and production) of the domestically produced and consumed good D we simply subtract the total value of imports from NDP. We make one adjustment to the data: since our import data only cover a (large and representative) sample of all Indian imports, we scale NDP down so as to match the actual import/NDP ratio when calibrating our CGE models.

4.4 Other data

In our regressions estimating the σ_i's we also controlled for exchange rates and the nominal GDP of trade partners. Nominal exchange rates were calculated as annual averages of closing daily exchange rates and were taken from Global

Financial Data.[22] Nominal GDP was taken from Klasing and Milionis (2014), adjusted for interwar borders using the adjustment coefficients from Broadberry and Klein (2012).

5 Estimating the elasticities

In this section we describe how we estimate the elasticities embedded in the model described in Section 3. In order to take account of the fact that they are estimated imprecisely we perform systematic sensitivity analysis when doing counterfactual analysis (Hillberry and Hummels, 2013, 1243-4). That is, we repeatedly draw values for these elasticities from normal distributions, with means equal to the point estimates of the elasticities, and standard deviations equal to the standard errors of the coefficients. We are therefore interested in both the point estimates and standard errors of all elasticity estimates in what follows.

5.1 Estimating the σ_g's

In order to estimate the σ_g's we proceed as in de Bromhead et al. (2019). Our import data are c.i.f., and valued at world prices inclusive of transport and other trade costs not related to Indian trade policies. We are not interested in these costs since we are holding them fixed in our analysis. Following Anderson and Yotov (2016), and Baier, Kerr and Yotov (2018), we should ideally be estimating

$$ln(V^W_{gct}) = ln(M_{gt}) + ln(Y_{gct}) - ln(Y_{gt}) - \sigma_g ln(1+t_{gct}) - \sigma_g \sum_{i=1}^{n} ln(b_i)\delta_{igct}$$

$$-(1-\sigma_g)ln(P_{gt}) - (1-\sigma_g)ln(\Pi_{gct}) + u_{gct} \quad (1)$$

where $V^W_{gct} = p^W_{gct} \times m_{gct}$ is the value, at world prices p^W_{gct}, of imports m_{gct} of good g from country c in year t; M_{gt} is the total imports from all countries of good g in year t; Y_{gct} is the output of good g in country c in year t; Y_{gt} is world output of good g in year t; t_{gct} is the *ad valorem* tariff imposed by India on imports of good g from country c in year t; $b_i - 1$ is the *ad valorem* equivalent of facing non-tariff barrier i; δ_{igct} is an indicator variable taking the value 1 if

[22] https://www.globalfinancialdata.com/index.html, accessed June 2013.

imports of good g from country c face barrier i in year t, and zero otherwise; P_{gt} is the inward multilateral resistance term for good g in India in year t; Π_{gct} is the outward multilateral resistance term for good g in country c in year t; and u_{gct} is the error term. Ideally we should be estimating σ_g separately for each of our 114 goods g.

There are four practical problems which we face. The first is that we only have import data for India, implying that we cannot include all the desired fixed effects (in particular, those varying by good, country, and year). We therefore incorporate fixed effects which vary by good and year, d_{gt}. These control for M_{gt}, Y_{gt}, and P_{gt} in equation (1). Intuitively, by controlling for the total imports of particular goods in particular years we are focussing on the margin of substitution between different national varieties of the same good, which is what we want to do when estimating the σ_g's. We also include fixed effects which vary by good and country, d_{gc}. By including such variety fixed effects we are ensuring that identification occurs along the time dimension alone, an important consideration given the possibility that some varieties may have faced systematically higher tariffs over time than others.

Second, we lack data on foreign output of individual goods (Y_{gct}) and therefore have to make do with including foreign GDP (i.e. we replace Y_{gct} with GDP_{ct} in equation (1) above). We also control for the bilateral exchange rate, E_{ct}.

Third, we should ideally be estimating σ_g separately for each of our 114 goods g, but we lack the degrees of freedom to do this. We therefore follow de Bromhead et al. (2019) by estimating across nine categories of goods h, assuming a common elasticity σ_h for all goods within a category (i.e. $\sigma_g = \sigma_h \forall g \in h$). The nine categories are grain, animal products, machinery, minerals, textiles, miscellaneous inputs, miscellaneous industry, food oils, and colonial goods.[23]

Finally, there are very strong time trends in the data: in particular, the shares of several imports from the UK were systematically trending down across

[23] 'Grain' includes barley, wheat and rice (SITC categories 041-043); 'Animal' includes butter and meat (SITC categories 012 and 023); 'Machinery' includes SITC categories 711, 712, 714-716, and 721; 'Minerals' includes metals, coal and petroleum (SITC categories 311-313, 681, and 682); 'Textiles' includes both yarn and cloth (SITC codes 651-653); 'Miscellaneous inputs' includes such items as fertilisers, rubber, hides and skins, raw cotton and silk, and hair (SITC codes 211, 231, 261-263, 271, and 561); 'Miscellaneous industry' includes vehicles and rubber manufactures, including tyres (SITC codes 629, 713, and 732); 'Food oils' includes oils and oilseeds of various kinds (SITC codes 221 and 412); and 'Colonial' includes coffee, sugar, tea and tobacco (SITC categories 061, 071, 074, and 121).

our period. We therefore include country-specific time trends in all regressions.

Our estimating equation is thus:

$$ln(V_{gct}^W) = ln(GDP_{ct}) + ln(E_{ct}) - \sigma_h ln(1 + t_{gct}) - \sigma_h \sum_{i=1}^{n} ln(b_i)\delta_{igct} + d_{gt} + d_{gc} + d_c \times trend + u_{gct} \quad (2)$$

where good g is a member of goods category h, and where $d_c \times trend$ represents country-specific time trends. The non-tariff barrier that we consider is the quota on textile imports from Japan, which came into effect in 1934. We also consider three control variables which enter into the econometric specification as if they were non-tariff barriers. These are the League of Nations trade sanctions against Italy which operated from November 1935 to June 1936 (we let a dummy variable be equal to one in 1936 for all imports coming from Italy in that year); the various cartel arrangements of the period involving India or Indian producers; and the boycott of UK cotton cloth which began in 1930.[24] We allow the latter to have a differential impact in 1930 and subsequent years, including two variables in the regression for this purpose. We follow Santos Silva and Tenreyro (2006) and use a PPML estimator to estimate (2). Since we are including both $114 \times 42 = 4,788$ good times country fixed effects, and $114 \times 15 = 1,710$ good times year fixed effects, as well as country-specific time trends, we estimate the equations using the ppmlhdfe estimator available in Stata (Correia et al. 2019a,b).[25]

The results are given in Table 1. Italian sanctions were extremely effective, and the boycotts lowered imports of British cotton cloth, but we found no effect of cartels on trade flows. The key elasticities are the coefficients on the tariff variable, which are our estimates of the σ_h's. We were unable to estimate these for three commodity categories (grain, animal products, and miscellaneous inputs) for the simple reason that there was no between-country variation in tariff rates for those products (i.e. there was no discrimination involving these goods). For the other six categories the estimates seem sensible: the elasticities range from a minimum of 4.0 (textiles) to a maximum of 23.1 (miscellaneous industry). The coefficients on the quota and tariff variables in column (5) jointly

[24] See Appendices 1 and 4.

[25] Our standard errors are clustered by country.

Table 1: PPML gravity estimates by category, 1923-4 to 1937-8

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Narrow category	Grain	Animal	Machinery	Minerals	Textiles	Misc. inputs	Misc. industry	Food oils	Colonial
Log(1 + tariff)			-5.735	-4.306	-4.046		-23.05	-8.583	-5.384
			(1.504)	(1.104)	(0.801)		(4.331)	(3.957)	(3.982)
Quota on Japanese piece goods					-0.707				
					(0.195)				
Cartel				-0.171		-0.262			-0.656
				(0.507)		(1.784)			(0.563)
Italian sanctions			-0.982	-0.942	-0.983	-3.742	-0.630	-2.273	
			(0.0566)	(0.0761)	(0.103)	(0.355)	(0.114)	(0.149)	
1930 cotton cloth boycott					-0.585				
					(0.123)				
1930 cotton cloth boycott LR impact					-0.867				
					(0.178)				
Log(GDP)	4.129	-0.242	0.871	0.225	0.662	0.221	0.933	-2.076	4.082
	(4.202)	(0.873)	(0.341)	(0.483)	(0.649)	(0.820)	(0.520)	(1.498)	(1.528)
Log(exchange rate)	5.342	0.730	0.0986	0.0260	0.779	-0.274	-0.0994	1.048	-0.0363
	(2.742)	(0.695)	(0.0576)	(0.125)	(0.355)	(0.899)	(0.538)	(0.488)	(0.237)
Constant	-27.60	-1.151	-11.26	-4.230	-6.497	-5.319	-8.241	15.87	-38.05
	(42.25)	(9.210)	(3.936)	(5.165)	(7.327)	(9.508)	(6.414)	(13.02)	(15.26)
Observations	383	390	5,880	5,385	5,208	1,880	915	512	1,206

Note: Dependent variable is the value of imports by good, country, and year. Estimates control for good*country and good*year fixed effects, and for country-specific time trends. Estimates computed using ppmlhdfe. Robust standard errors clustered by country in parentheses.

imply (from equation 1) that the quota on Japanese piece goods was equivalent to a 19.1% ad valorem tariff.[26]

Table 2 compares our Indian trade elasticities with those obtained for the UK by de Bromhead et al. (2019). Consistent with Imbs and Mejean (2017), the Indian elasticities are in general larger (food oils being a striking exception). For the three categories for which we were unable to calculate Indian elasticities (grain, animal products and miscellaneous inputs) we used the British estimates. This should not matter for the results: the σ_h's matter when calculating the impact of tariff discrimination, but there was no discrimination for these three categories of goods which is why we could not calculate the elasticities. We also calculated the σ_h's using OLS rather than PPML, and Appendix 5 shows that our results are robust to doing so.

5.2 Estimating κ

We also estimated κ, the upper level elasticity of substitution between imports and domestic expenditure.

The most straightforward method was simply to run the OLS regression

$$ln(m_t) = -\kappa ln(1 + t_t) + u_t \tag{3}$$

where m_t is the value of imports in year t expressed as a share of total private expenditure on both domestic and imported goods, u_t is the error term, and t_t is the unweighted average tariff estimated for our sample of goods. The method produced an estimate of κ of 1.073, with a standard error of 0.376.[27]

5.3 Choosing values for other parameters

We assume that γ, the mid-level elasticity of substitution between different Armington aggregates of imported goods, is equal to 1. Appendix 5 shows that our qualitative results are insensitive to varying this elasticity.[28]

[26] Similarly the boycott was equivalent to a 15.6% tariff on British cloth in 1930, and a 23.9% tariff in subsequent years.

[27] Total private expenditure on domestic goods was calculated by multiplying GDP by the ratio of gross output to GDP at factor cost in 1951-2, and then subtracting the value of total exports (both government and private). Gross output was taken to be equal to GDP at factor cost plus total material inputs into all sectors. The 1951-2 input-output data are taken from Ramana (1969, pp. 46-7). Sources for interwar GDP are as given in Section 4.3 of the text. The aggregate Indian trade data are taken from the Annual Statement of the Sea-Borne Trade of British India.

[28] de Bromhead et al. (2019) estimate γ using the methods of Ottaviano and Peri (2012). This involves estimating equation (2) for all nine categories of goods and extracting the goods

Table 2: Indian versus UK trade elasticities

Narrow category	Grain	Animal	Machinery	Minerals	Textiles	Misc. inputs	Misc. industry	Food oils	Colonial
India			-5.735	-4.306	-4.046		-23.05	-8.583	-5.384
			(1.504)	(1.104)	(0.801)		(4.331)	(3.957)	(3.982)
UK	-9.567	-3.908	-4.533	-2.477	-1.861	-4.905	-7.995	-23.47	-1.468
	(4.829)	(1.489)	(1.951)	(0.743)	(3.350)	(2.787)	(2.509)	(3.098)	(0.533)

Source: Table 1 and de Bromhead et al. (2019), Table 2, p. 343. Robust standard errors clustered by country in parentheses.

Finally, we need to choose values for η, the supply-side elasticity of transformation between domestic output and exports. Here we proceed as in de Bromhead et al. (2019): we use the fact that $\eta = \varepsilon_S/(1-\alpha^X)$, where $\alpha^X = 1-\alpha^D$ is the share of exports in total production, and assume (based on Tokarick 2014) that the log of ε_S is normally distributed, with mean 0.403 and standard deviation 0.468.

6 Counterfactual results

In this section we explore the impact of the changes in Indian trade policy following the establishment of the Tariff Board on the recommendation of the Indian Fiscal Commission. Since the first tariffs recommended by the Board came into effect in 1924, we focus on the impact of trade policy changes from that year onwards. To this end we first embed the elasticities described in the previous section into the model outlined in Section 3. We then solve the model for each fiscal year from 1923-4 to 1937-8 inclusive, using the tariffs and quotas that were actually in place in every year.[29] Finally, we solve the model for each year, assuming counterfactually that trade policy was identical to what it was in 1923 throughout (that is, that *ad valorem* tariffs in each year were the same as in 1923, and that no quotas were in place).[30] By comparing these counterfactual, constant-policy equilibria with the actual equilibria we can infer the impact on trade flows of the shifts in trade policy that took place after 1923. We repeat this procedure 1000 times, each time drawing new elasticity values from normal distributions whose means and standard errors were decribed in the previous section.[31] The result is 1000 estimates of the impact of trade policy on trade flows for each year, allowing us not only to calculate the impact of policy, but to assess how tightly estimated that impact is.

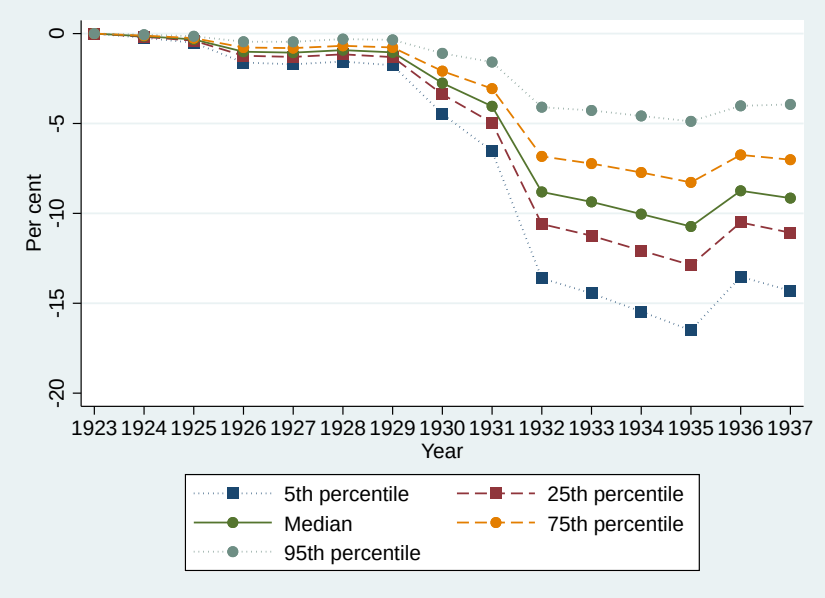
times country (variety) fixed effects. Since we are unable to estimate equation (2) for three categories of goods, where there was no cross-country variation in tariffs, we cannot implement this procedure in the Indian case. We therefore have to rely on the robustness checks in Appendix 5.

[29] See footnote 21.

[30] Because we are only interested in the impact of trade policy, we assume that the 1930 boycott and Italian sanctions campaign would still have taken place, and that existing cartels would have remained in place unchanged.

[31] In the case of η we draw 1000 replications of the log of ε_S and calculate η using the formula in Section 5.3.

Figure 4: Percentage impact of post-1923 shift in protection on total Indian imports



6.1 The impact of trade policy on the total value of imports

We begin with the impact of tariffs and quotas on the total value of Indian imports. Figure 4 plots the percentage impact on imports from 1923 to 1937. In each case the figure shows the percentage by which actual imports differed from what they would have been, had trade policies remained fixed at their 1923 level. It plots not only the median estimated impact across all 1000 repetitions for each year, but the 5th, 25th, 75th, and 95th percentile impacts also. In this manner it indicates how senstitive our results are to the fact that our elasticities are imprecisely estimated.

As can be seen from Figure 4, by the 1930s protectionism was lowering Indian imports by roughly 10% on average, although the effect is imprecisely estimated (mostly reflecting the imprecision with which we estimated κ). The median estimate for 1934 was 10%, while the 25th and 75th percentile impacts were 7.7 and 12.1% respectively.[32] The value of Indian private imports fell by

[32]The 5th and 95th percentile impacts were 4.6 and 15.5% respectively. The gap between these upper and lower bound estimates depends not just on the standard error of the elasticity estimates, but on the size of the shock being imposed on the model, which is why the gap is

42% between 1923 and 1934, so our results indicate that protection accounted for about a quarter of that decline. India was a developing economy and a colony, very different from the rich industrial economies that have been the focus of previous analysis. It is striking therefore that the results are so similar to those obtained by Irwin (1998) for the United States, and de Bromhead et al. (2019) for the UK.

6.2 The impact of trade policy on the share of Indian imports coming from the UK

The previous subsection showed that protection lowered Indian imports during the 1920s and 1930s. But tariffs did not just increase during this period, they did so in a discriminatory fashion. Not only did UK exports face lower tariffs than non-British countries, but Japanese textile producers were subjected to quantiative restrictions from 1934 onwards. What was the impact of trade discrimination on the UK's share of Indian imports?

Figure 5: Percentage impact of post-1923 shift in protection on the UK share of Indian imports

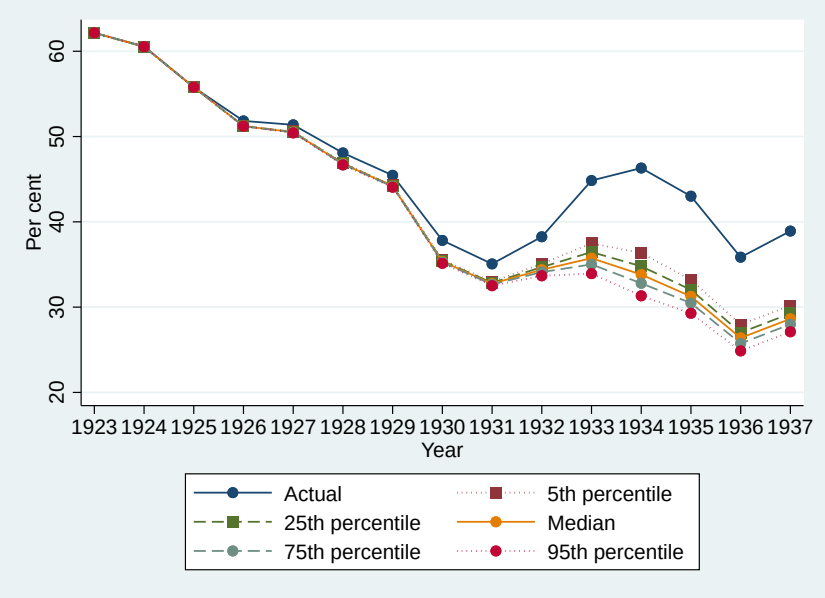


Figure 5 plots the UK's actual share of Indian imports between 1923 and

so much smaller before 1930.

1937, as well as the counterfactual share that it would have enjoyed had Indian protection remained at its 1923 level. Once again the figure plots not only the median counterfactual share for each year, calculated across the 1000 replications, but the 5th, 25th, 75th, and 95th percentile impacts also. As can be seen, the actual and counterfactual shares remain fairly close until 1931 but diverge sharply thereafter. In 1934, to take the same example as in the previous subsection, the UK accounted for 46.3% of Indian imports. However, if protection had remained at its 1923 level, the UK would only have accounted for 33.8% according to our median estimate. Reflecting the fact that the σ_g's, which are what really matter for the UK share, are relatively precisely estimated, our estimates of the counterfactual UK share do not vary greatly across replications. The 25th and 75th percentile counterfactual shares are 34.8 and 32.8% respectively, while the 5th and 95th percentile estimates are 36.3 and 31.3% respectively. By the mid-1930s protection was boosting the UK share of Indian imports by more than ten percentage points, or by more than a third. This is a large effect.

6.3 The impact of trade policy on the value of UK exports to India

Indian protection increased the UK's share of a shrinking pie. What was the net impact on total British exports to India? Figure 6 plots the percentage impact of the post-1923 shift in Indian protection on UK exports to India. As can be seen, the fact that UK exporters to India faced higher tariffs was less important than the fact that foreign exporters faced even higher levels of protection. The net impact on total UK exports to India was strongly positive. Our median estimate suggests that Indian protection boosted UK exports to that country by 23.2% in 1934, a substantial effect, with 25th and 75th percentile estimates of 18.8 and 28.2% respectively.[33] This positive impact reflects the fact that different national varieties of similar goods were highly substitutable for each other (Table 1), which more than compensated British exporters for the decline in total Indian imports.

Far from hurting the UK textile industry, Indian protection greatly benefited it (Figure 7). Our median estimate suggests that total UK exports of cotton cloth were 55.1% higher in 1934 than they would have been if protection had remained at its 1923 level (with 25th and 75th percentile estimates of 40.3 and

[33]The 5th and 95th percentile impacts were 12.3 and 35.5% respectively.

Figure 6: Percentage impact of post-1923 shift in protection on total UK exports to India

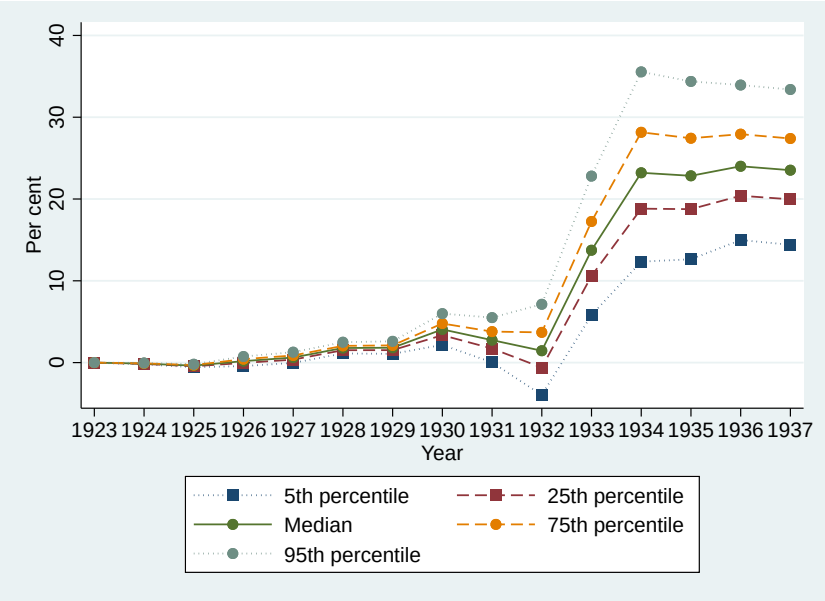


Figure 7: Percentage impact of post-1923 shift in protection on total UK cotton cloth exports to India

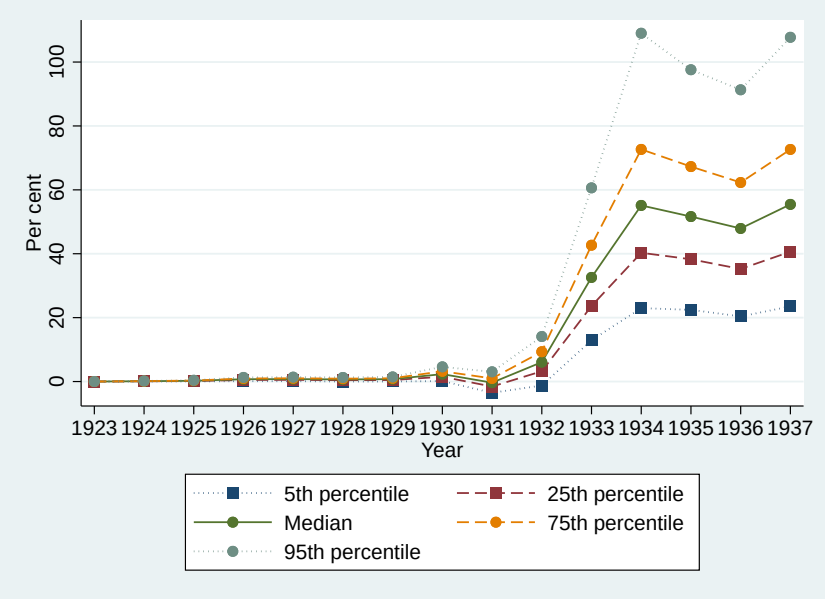
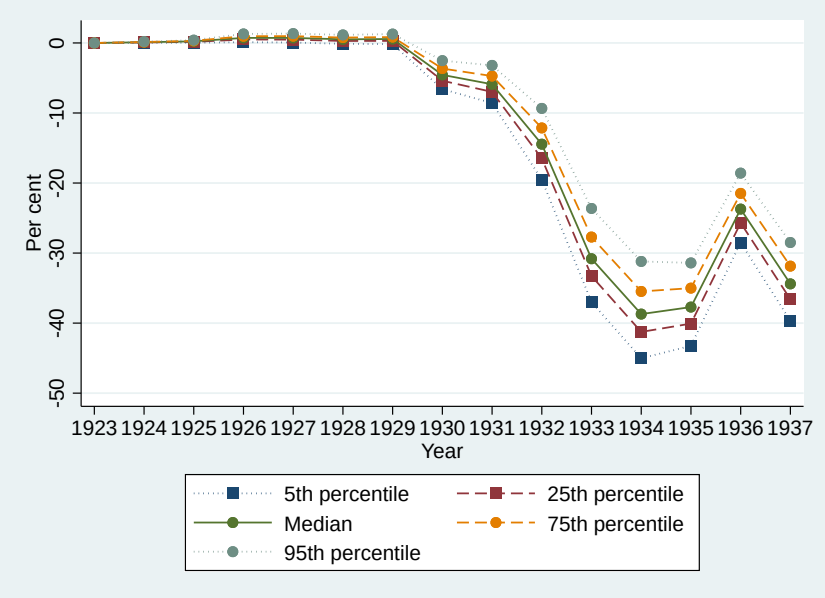


Figure 8: Percentage impact of post-1923 shift in protection on total Japanese exports to India



72.7% respectively).[34]

India was an important market for the UK: in 1934 it took over 9% of total UK exports, and 20% of its cotton cloth exports.[35] Indian protection thus boosted total UK exports by 2%, and its cotton textile exports by more than 10%. Whether or not the Indian fiscal autonomy convention was a "self-denying ordinance" from the British point of view, Indian trade policy in the 1930s was highly beneficial to the imperial power.

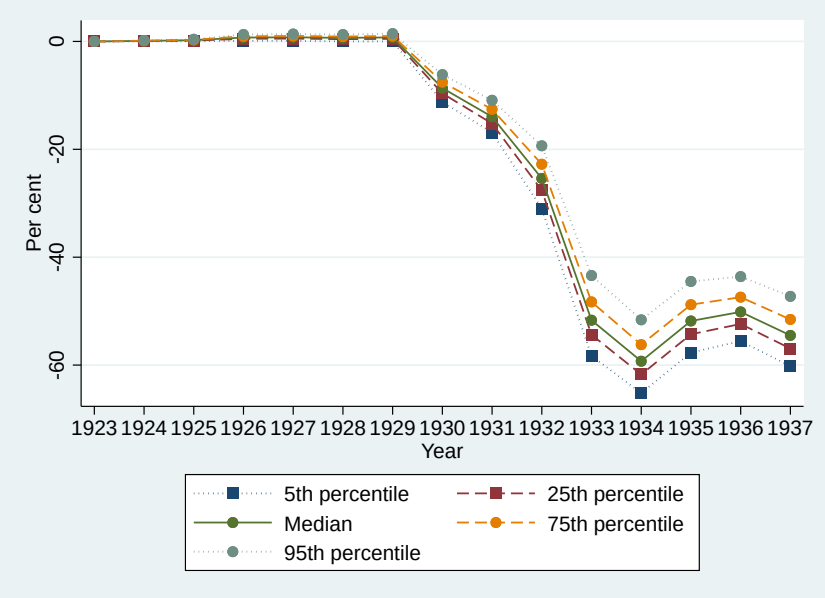
6.4 Impact on Japan

Indian protection did lower imports, by a little more than 10% according to our median estimates, but Lancashire seems to have substantially benefited. The big losers were those countries outside the British Empire that now faced discrimination, such as Japan. Figure 8 plots the impact of Indian protection on aggregate Japanese exports to that country. Our median estimates suggest that protection lowered total Japanese exports to India in 1934 by 38.7%. The impact

[34] The 5th and 95th percentile impacts are 23 and 109% respectively.

[35] Statistical Office of the Customs and Excise Department (United Kingdom) (1937, pp. 175-177) (totals); U.K. Parliamentary Papers (1934-35, pp. 830-831) (cottons).

Figure 9: Percentage impact of post-1923 shift in protection on total Japanese cotton cloth exports to India



is relatively precisely estimated.[36] Figure 9 plots the impact on Japanese cotton cloth exports: in 1934 protection was reducing these by a median of 59.3%.[37]

These were very substantial effects and large enough to have an impact on total Japanese exports. India accounted for almost 11% of total Japanese exports in 1934, and for almost 14% of its cotton textile exports.[38] Indian protection thus lowered total Japanese exports by over 4%, and total Japanese cotton cloth exports by over 8%.

7 Conclusion

It seems as though Indian nationalists were right, and that those British historians who bemoaned the impact of interwar Indian protection on the UK were wrong. Partial equilibrium analysis may suggest that Indian protection must have lowered UK exports to that country, but this ignores the fact that Indian

[36] The 5th, 25th, 75th and 95th percentile estimates are 31.2, 35.5, 41.3 and 45% respectively.

[37] The 5th, 25th, 75th and 95th percentile estimates are 51.6, 56.2, 61.7 and 65.2% respectively.

[38] Department of Finance (Japan) (1935, pp. 111-156 (cotton piece goods), 396 (total exports)).

protection was discriminatory, and that elasticities of substitution between UK and non-British varieties of the same goods were high. Far from hurting the UK, Indian protection during this period helped it in both relative and absolute terms.

Most existing studies have found that the protection of the 1930s had only modest effects on the volume and geographical composition of international trade. This study, using a large new dataset on both trade and trade policy, reaches a very different conclusion. To be sure, protection only explains a quarter of the Indian trade collapse, but discriminatory trade policy had a large impact on the composition of India's imports, and on different countries' exports to that market. This in turn played an important role in exacerbating the geopolitical tensions of the time. In particular, given our results it is hardly surprising that Indian protectionism was a major irritant in Anglo-Japanese diplomatic relations throughout the decade (Osamu, 2000).

We hope that we have demonstrated the usefulness of general equilibrium approaches using high-resolution historical data. Using a large new dataset we have found that trade elasticities in a large, developing country, India, were generally larger than in the United Kingdom at the same time. Our findings stand in direct contrast both to the conclusions of contemporary British observers, and to recent empirical findings from partial equilibrium analysis. Discriminatory trade policy in the 1930s had a substantial impact on the size and composition of trade flows.

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Appendix 1. Indian interwar trade policy

This section provides an expanded and self-contained account of the description of Indian trade policy contained in Section 2.

Indian import tariffs had traditionally been low, reflecting the country's colonial status and the liberal inclinations of the British imperial power.[39] Land, opium, and salt provided the bulk of the Indian government's revenues: customs duties only accounted for 10% of government revenue in 1860-61, and just 5% ten years later (Kumar, 1983, p. 916). Tariffs had been increased in the wake of the 1857 Mutiny, but under pressure from Lancashire cotton interests they were gradually reduced, and they were abolished altogether (except for on salt and alcohol) in 1882. Acts VIII and XVI of 1894 introduced a general tariff of 5%, with the duty on cotton yarns being offset by an equivalent domestic excise duty so as to ensure that Indian manufacturers were not unfairly favoured (Act XVI). However, in 1896 the import tariff on cotton piece goods was lowered to $3\frac{1}{2}$%, while the duty on cotton yarn was abolished (Act III). Since the excise duties on domestically produced cotton goods (both yarn and cloth), at a new rate of $3\frac{1}{2}$% (Act II), were not abolished , there was now a negative rate of protection for the Indian cotton spinning industry (Kumar, 1983, p. 921). On the eve of the war India was thus a virtually free-trading country, and such tariffs as were levied were designed to raise revenue rather than to protect domestic industries.[40]

World War 1 was an important turning point. First, the war effort required revenue, and the most obvious way for India to raise more was to increase tariffs. The general tariff was therefore increased from 5 to $7\frac{1}{2}$% in 1916, although cotton duties remained unchanged which greatly limited the fiscal benefit of the measure (Act IV).[41] By late 1916 Austen Chamberlain, Secretary of State for India, was demanding a £100 million contribution by India to the war effort, while Indian nationalists objected to the exclusion of cotton from the general tariff increase. The Government of India eventually acceeded to Chamberlain's request, but only after the British government had agreed to allow India to raise duties on cotton goods (still not including yarn) to $7\frac{1}{2}$% (Act VI of 1917),

[39] While we make extensive references to the secondary literature below, an invaluable source remains the Indian legislation of the period.

[40] Act XIV of 1899 allowed the government to impose countervailing duties in cases where other governments were subsidising exports to India. Act VIII of 1902 allowed the government to impose duties on imported sugar from countries protecting domestic sugar production by more than a specified amount.

[41] Act XI of the same year gave the Governor General sweeping powers to restrict international trade.

without a countervailing increase in domestic excise duties (Dewey, 1978, pp. 41-3). Customs duties accounted for 20% of Indian government revenue during 1916-20 (Mukherjee, 2001, pp. 731-2).

The end of the world war did not bring peace to India: war with Afghanistan in 1919 was followed by the Waziri uprising which lasted into the following year. Interest rates on Indian government debt rose. The general tariff was further increased to 11% in 1921 (Act VI): cotton textiles were included and once again there was no offsetting increase in domestic excise duties (Dewey, 1978, pp. 43-4).[42] The following year the general tariff was once again raised, to 15%, with imported cotton yarn now being subject to a duty of 5% (Act XII) (duties on cotton piece goods remained unchanged) (Mukherjee, 2001, p. 732).[43] *De facto*, Indian cotton textiles were now enjoying substantial protection, despite the fact that tariffs were being imposed for revenue reasons (Drummond, 1972, p. 123), and were by this stage a more important source of government revenue than the land tax.

But the world war did not only lead to an increase in tariffs because of government revenue needs. It also "produced a landslip in official attitudes to protection" (Dewey, 1978, p. 45). Total war highlighted the desirability of developing Indian heavy industry; Chamberlain followed his father, Joseph, in pushing for imperial preference; the belief in *laisser faire* had been shaken; Indian nationalist demands were strengthened by the country's contribution to the war effort. Even before the war, the 1905 partition of Bengal had led to a boycott of British-made goods, especially cloth, and had stimulated import-substituting manufacturing in a number of sectors. Now Indian participation in the British war effort heightened Indian demands for self-government. In August 1917 Chamberlain's successor, Edwin Montagu, stated that the UK favoured "the progressive realization of responsible government in India as an integral part of the Empire." That incremental vision had however already been severely undermined when in April 1919 British soldiers murdered almost 400 civilians in Amritsar, as well as by the subsequent British official response to the atrocity. On August 1, 1920, Gandhi launched a policy of non-cooperation against the British Raj, because of both Amritsar and the Allied treatment of Turkey after World War 1. The aim was to achieve *swaraj* (self-rule) within

[42] Imports of cotton yarn remained duty-free. The duty on sugar was raised to 15%, and that on a range of luxury goods to 20%.

[43] The rate on sugar was increased to 25%, and that on the afore-mentioned luxury goods to 30%, while tariffs on a range of iron and steel products were raised from $2\frac{1}{2}$ to 10%.

a year, and involved among other things a boycott of imported cloth; non-cooperation lasted until February 1922, when Gandhi cancelled the campaign as a result of an attack on a police station (although he continued to argue for a foreign cloth boycott in the years that followed) (Brown, 1985, pp. 213-8).

Despite such setbacks, the British remained committed to a policy of transitioning India towards self-government within the Empire. In 1919, a British Joint Select Committe stated that "Nothing is more likely to endanger the good relations between India and Great Britain than a belief that India's fiscal policy is dictated from Whitehall in the interests of the trade of Great Britain. That such a belief exists at the moment there can be no doubt...Whatever be the right fiscal policy for India, for the needs of her consumers as well as for her manufacturers, it is quite clear that she should have the same liberty to consider her interests as Great Britain, Australia, New Zealand, Canada and South Africa." It thus proposed (and the government subsequently agreed) that the British government "should as far as possible avoid interference on this subject when the Government of India and its Legislature are in agreement" and that any such intervention "when it does take place, should be limited to safeguarding the international obligations of the Empire or any fiscal arrangements within the Empire to which His Majesty's Government is a party" (U.K. Parliamentary Papers, 1919, p. 11).

This recommendation, accepted by the British government in 1921, that Britain acknowledge India's right to "fiscal autonomy" took the form of a "convention" rather than a statute, since the latter would have limited "the ultimate power of Parliament to control the administration of India" and "the power of veto which rests in the Crown". Indian historians have pointed out that the Government of India was supposed to consult the British government before tabling fiscal policy proposals, and have argued that the British government *de facto* retained significant control over Indian trade policy (Mukherjee, 2001, pp. 734-5). Yet the succeeding two decades saw the gradual development of far more interventionist trade policies in the sub-continent.

In 1922 the Indian Fiscal Commission recommended protection for Indian industries on classic infant industry grounds (U.K. Parliamentary Papers, 1922 Sess II).[44] Protection was to be resorted to "with discrimination", since indiscriminate protection "would protect industries unsuitable as well as suitable,

[44]That is to say, Indian industries concerned would have to possess "natural advantages", require protection to be able to develop in the first place, and would eventually be competitive in world markets.

and would impose on the consumer a burden in many cases wholly gratuitous" (p. 49).[45] In 1923 the Indian government accepted this recommendation, and a Tariff Board was set up to implement it, although it was not as independent of government as had been envisaged in the report. Although the remainder of this section will follow the literature in focussing on the protection accorded to the iron and steeel, and (especially) cotton sectors, reflecting their importance in Indian trade and the Indian economy, nine other industries also obtained protection from the Tariff Board before the outbreak of World War 2: sugar, paper, matches, salt, heavy chemicals, plywood and tea-chests, sericulture, magnesium chloride, and gold thread. Rice and wheat were also singled out for protection (Tomlinson, 1979, pp. 61-2). In some cases the tariffs involved were very high.

The newly constituted Tariff Board immediately set about considering the case for protection of the iron and steel industry. The Tata Iron and Steel Company (TISCO) had been founded in 1907, and proved a useful asset during the war. By 1921 it was in trouble, however, due to imported steel from the European continent, in particular Belgium: it was this which had led the Indian governemnt to set up the Fiscal Commission in the first place (Wagle, 1981). Happily for TISCO, the Fiscal Commission had singled out the iron and steel industry for special consideration as an industry which might warrant protection on national security grounds, and recommended that one of the first tasks of the new Tariff Board should be to investigate this possibility (U.K. Parliamentary Papers, 1922 Sess II, pp. 59-60). In June 1924 tariffs were therefore introduced ranging from 15 to 25% ad valorem.[46] In 1927 protection for the industry was extended for a further 7 years, and importantly the duties were now "differential", which is to say that they were in many cases lower for goods "of British manufacture".[47] The argument was that differential protection was

[45] Somewhat confusingly, therefore, the proposed policy was described by contemporaries as one of "discriminatory protection". Notably, 5 Indian members of the 11-member Commission argued for an unqualified commitment to protection (U.K. Parliamentary Papers, 1922 Sess II, pp. 175-212). Roy (2017) provides a sympathetic account of the policy of discriminatory protection.

[46] Act XIV. Several specific tariffs were also introduced.

[47] It is unfortunately difficult to be completely certain from the legislation alone if the phrase refers to goods produced in the UK only, or to "British" goods more generally. Act III of 1927, which introduced the differential tariffs, merely stated that "The Governor General in Council may, by notification in the Gazette of India, prescribe the conditions subject to which articles shall be deemed to be of British manufacture for the purposes of this section and of the Second Schedule". As Thackeray (2017) points out, "British goods" generally referred in the 1930s to goods coming either from the UK or her Dominions. This is reflected in the Indian trade statistics (as well as the trade statistics of the UK and other British dominions and colonies), which speak of 'British and foreign merchandise' and provide summaries for 'Total British Empire' and 'Total foreign countries'. In his statement on behalf of the Government of India

required since British steel was tested according to the British Standard Specification, and was more expensive to produce and of higher quality than cheaper, "untested", Belgian steel (Wagle, 1981; Roy, 2017).[48] This legislation marked a break with the past: previous attempts to introduce Imperial Preferences of any kind had fallen foul of Indian nationalist opinion (who objected in this instance also, albeit unsuccessfully).

Protection for the Indian cotton industry was also increasing over time in response to worsening market conditions.[49] These were in part due to worldwide price trends, and in part due to increasing competition from Japan which India regarded as unfair due to inferior labour conditions there. The domestic excise tax on Indian cotton goods was suspended in 1925 and abolished in the follow-

to the 1930 Imperial Conference, Sir Geoffrey Corbett spoke of how when it came to the steel and cotton textiles industries, India had "fixed differential duties for British and foreign goods" (U.K. Parliamentary Papers, 1930-31, p. 131). It is difficult to imagine that Canadian steel would have been described as "foreign" at this time. On the other hand, in his objection to the 1927 legislation, Motilal Nehru spoke of being "asked to give preference to the manufacturers of the U.K. in the matter of steel" (Wagle, 1981, p. 127). On February 12, 1927, the Gazette of India described the Bill as imposing duties "on steel of British manufacture sufficient to protect the Indian manufacturer against competition from the United Kingdom and higher duties on steel imported from other countries." In 1932 Sir Atul Chatterjee, speaking at the Ottawa Conference, stated that "One of the most interesting things about the Indian system of protection is that it has led directly to what has been in effect, if not in intention, a preference for Empire goods. In two very important cases, iron and steel and cotton piece goods, it has been found that the imposition of a lower rate of duty on goods made in the United Kingdom is entirely consistent with India's interests" (U.K. Parliamentary Papers, 1931-32*a*, p. 97). In its 1932 report on the cotton industry, the Indian Trade Board wrote that "in his budget speech on the 28th February 1930 the Finance Member announced the intention of the Government of India to raise the revenue duty on goods 11 to 15 per cent., and in addition to impose a 5 per cent. protective duty, with a minimum of $3\frac{1}{2}$ annas a pound on "plain grey goods," on all cotton piecegoods imported from countries other than the United Kingdom" (Indian Tariff Board, 1932, p. 4). Most compellingly of all, Sir David Chadwick, who served as Secretary to the Government of India Commerce Department between 1922 and 1927, and went on to become Secretary of the Imperial Economic Committee (in which position he served until 1946) (Dupree, 1987, p. 160), wrote in December 1927 of the duties on iron and steel being "be split into two parts- a basic duty applicable to any imported steel protected, and an additional duty if the steel were imported from countries other than the United Kingdom" (Chadwick, 1928, p. 202). In addition, the Gazette of India of April 4, 1930, specified that in the case of duties on cotton goods, articles would be deemed to be of British manufacture if "in the production of the article no process of manufacture other than a process anterior to weaving has been carried out elsewhere than in the United Kingdom of Great Britain and Northern Ireland" (p. 73). We thus feel confident that the phrase "of British manufacture" did in fact refer to goods made in the UK; the way of reconciling this with Corbett's statement is that the vast majority of imported "British" cotton or steel, using Thackeray's language, would have come from the United Kingdom at this time. We have therefore coded imports of iron and steel, and of cotton goods, coming from the Dominions, as not being "of British manufacture".

[48] TISCO was at this stage the only Indian producer capable of making "tested" steel.

[49] An excellent and concise account is given in Indian Tariff Board (1932, pp. 1-8), on which this paragraph largely draws.

ing year.[50] In 1927, the Indian Tariff Board recommended that the tariff on cotton piecegoods (but not yarn) be raised from 11 to 15%, with the President of the Board recommending an additional duty of 4% on all Japanese cotton goods. The Board also recommended that duties on cotton textile machinery be abolished. The Indian government accepted the latter proposal but rejected the others.[51] Gandhi unsuccessfully tried to use this decision to coopt Indian millowners into his *swadeshi* or self-sufficiency movement (Chatterji, 1983, pp. 265-7); following protests by the latter, the Indian government did agree in September to introduce a minimum specific duty of $1\frac{1}{2}$ annas per pound on cotton yarn to complement the existing 5% ad valorem duty.[52]

Competition from Japan continued to worsen, however, and concern about unfair labour conditions in Japan was replaced with similar concerns regarding China. Meanwhile the Depression hit both Britain and India, with major implications for Indian trade policy. The budgetary situation worsened in the UK, implying that it was essential that the flow of remittances from India to the UK be maintained, but government revenues in India were also under pressure. Since tariffs were at this stage the most important source of revenue in India the case for increasing customs duties became politically unanswerable, even in the face of stiff opposition from Lancashire cotton interests (Chatterji, 1992, pp. 347-8). And by this stage Indian politics required that at least some of these increases be protective in nature.

Attention thus turned to the possibility of raising the tariff on cotton textiles from 11% to the general rate of 15%. In 1930, the Indian government faced pressure from two sides: Indian mill owners feared that 15% would not be sufficient to protect them from Japanese competition, while the British government (fiscal autonomy convention notwithstanding) worried about the impact of a 15% tariff on Lancashire. An obvious solution to this political conundrum was to extend the principle of differential protection to the cotton textile industry, imposing higher tariffs on foreign (and in particular Japanese) cloth than on British cloth. This however ran into the problem that the Indian Legislature was opposed to Imperial Preference. The eventual solution, adopted in April 1930, was to increase duties on British piece goods to 15% , with duties on foreign piece goods

[50] Act XIX of 1926.

[51] Imposing differential duties on Japanese cotton goods would have been in breach of the Indo-Japanese trade agreement of 1904 (U.K. Parliamentary Papers, 1905), which entitled Japan to "the lowest customs duties applicable to similar products of any other foreign origin" (Art. I).

[52] Act XXIII of 1927.

being raised to 20%. The legislation also specificied a minimum specific tariff of $3\frac{1}{2}$ annas per pound on all imported plain grey piece goods, no matter what the origin, which was non-discriminatory enough to get the measure passed (Act XVII of 1930). With the budgetary situation continuing to worsen, in March 1931 the general tariff was raised to 20%, and the tariff on cotton piece goods was raised to 20% for British goods, and 25% for non-British goods. On the 30th of September these duties were further raised by a quarter, implying a general tariff of 25%, and duties for British and non-British piece goods of 25% and $31\frac{1}{4}$% respectively.[53]

In addition to these legislative moves to protect the Indian cotton industry, nationalist agitation was also affecting cotton imports. Gandhi launched a new campaign of civil disobedience in April 1930: according to Judith Brown, "The main all-Indian index of the spread and strength of civil disobedience was the boycott movement against foreign goods, particularly cloth" (Brown, 1977, p. 127). The boycott was better organised than in 1920-22, involving widespread picketing of foreign cloth shops, and caused considerable concern among the British authorities, who regarded it as being directed "chiefly, if not exclusively, against British goods".[54] The boycott was used as an argument by the British Viceroy in India, Lord Irwin, to oppose the imposition of imperial preference on India: this would, he argued, only make the boycott more effective (Tomlinson, 1979, p. 122). In March 1931 Gandhi and Irwin signed a pact according to which the political boycotting of British goods would be discontinued, but peaceful picketing could continue within the limits of the law (Brown, 1977, p. 186). The accord soon broke down however: in January 1932 civil disobedience resumed, with Congress recommending the boycott of "foreign cloth and all British goods" (Brown, 1977, p. 283). On this occasion the agitation only finally came to an end in April 1934.

In September 1931, Britain left the gold standard. The October election brought to power a National Government and strengthened the hand of those in Britain advocating for protection and Imperial Preference. The first moves towards protection were made in November 1931, and in the same month the British government started preparing for the forthcoming Imperial Economic Conference, to be held in Ottawa the following summer. Their hope was that bilateral tariff bargains could be struck between the participants there (the UK,

[53]Indian Finance (Supplementary and Extending) Act, 1931.

[54]The Collected Works of Mahatma Gandhi, Vol. 45, p. 433. Available at https://web.archive.org/web/20151024131012/https://www.gandhiheritageportal.org/.

India, and the Dominions) which would then be generalised as far as possible, in "most-favoured-Imperial-nation" fashion (Drummond, 1972, pp. 90-91). In February 1932 the UK Import Duties Act imposed a general 10% tariff on imports not already subject to duties, with exceptions being made for a variety of raw materials and foodstuffs, including raw cotton and wheat (Gordon, 1941, p. 219). Imports from India were exempted from the tariffs until November, giving time for an Anglo-Indian trade agreement to be signed at Ottawa.

The Anglo-Indian deal signed at Ottawa granted continued tariff-free access to the UK market for those Indian goods that had been temporarily exempted under the Import Duties Act, and maintained or improved preferences on a wide variety of Indian exports to Britain. In exchange, India granted tariff preferences to a large range of UK exports, and in some cases to exports from British colonies (as opposed to Dominions). These margins were generally 10% ad valorem, although in some cases (notably motor cars) the margin was $7\frac{1}{2}\%$. The agreement did not, however, prevent India from raising tariffs in the future, so long as these preference margins were maintained (U.K. Parliamentary Papers, 1931-32*b*; Drummond, 1972, p. 131). Nor did the agreement deal with cotton textiles, since in April 1932 the Indian Tariff Board had been asked to report to the Indian Government on the subject; Lancashire interests hoped that the outcome would be a greater tariff preference for British textiles in the Indian market.

The need for greater protection from Japanese competition had increased in December 1931, when Japan quit the gold standard and the yen started to depreciate. On August 30 1932 the duty on all non-British cottons was increased from $31\frac{1}{4}$ to 50% (the Indo-Japanese trade treaty of 1904, which had granted most-favoured-nation status to Japan, making it impossible to single out Japanese goods for special attention).[55] The increase was only until March 1933, maintaining the pressure on the Indian Tariff Board to increase Imperial preferences in the sector in a more durable fashion (Chatterji, 1992, pp. 374, 378; Drummond, 1972, p. 133). Hopes that it would do so were dashed, however (Chatterji, 1981, p. 554): it recommended greater protection for the Indian cotton textile sector, but came out against Imperial preferences, including the existing ones. Meanwhile the yen continued to depreciate, and Japanese imports

[55] Not unreasonably, the Japanese protested against the fact that tariffs on British goods were not being increased. This was dismissed by the British, who took the view that preferences in India on British goods were not inconsistent with the UK's treaty obligations to Japan (see footnote 51), presumably since British goods were not of "foreign origin" (Chatterji, 1992, p. 378).

continued to put pressure on the Indian market.

In March 1933 the 50% tariffs were extended through October; in April, India gave Japan six months notice of its intention to denounce the 1904 trade treaty, which would allow it to discriminate against Japanese imports ; later in the same month the Safeguarding of Industries Act empowered the Indian Governor General to impose "a duty of customs of such amount as he considers necessary to safeguard the interests of the industry affected", in cases where goods were being imported "at such abnormally low prices that the existence of an industry established in British India is thereby endangered" (Act XIII). In May the UK further increased the pressure on Japan by giving twelve months notice of its intention to denounce those portions of the Anglo-Japanese trade treaty dealing with West Africa and the West Indies (Best, 2002, p. 83). On the 7th of June the tariff on non-British cotton goods was increased to 75%. Japanese competition also encouraged Indian and Lancashire mill owners to see if they could make common cause: in October, they signed the Lees-Mody Pact, with the Indians agreeing not to oppose a reduction in the tariff rate on British cotton goods back to its pre-September 1931 level of 20% (Chatterji, 1981, pp. 555-6).[56]

Japan reacted to the increased tariff on non-British goods, in part by boycotting Indian raw cotton, but also by opening trade negotiations with India (Drummond, 1972, pp. 132-4; Rothermund, 19986, pp. 109-10; Chatterji, 1992, pp. 378-80). The outcome was a trade agreement which came into effect on January 8, 1934. This lowered the duty on foreign piece goods to 50%, in exchange for quotas on Japanese exports of piece goods linked to Japanese imports of Indian raw cotton (Chatterji, 1992, p. 395).[57] New tariff legislation in April confirmed this lower rate; it also maintained the 25% rate for British piece goods, and set the rates on British and non-British cotton yarn to 5 and $6\frac{1}{4}$% respectively (Act XII). In January 1935, the Indian government agreed as a general priciple that protective tariffs should be lower on UK than on other

[56]The pact was incorporated as a Supplementary Agreement to the Ottawa agreements in the following year.

[57]There was a final twist to the take of Indo-Japanese trade relations during this period (Friedman, 1940; Thackeray, 2017, p. 394). Traditionally, the Japanese role in Asian emancipation from Western rule had been a source of inspiration for Indian nationalists, but this image was damaged by Japan's imperialistic expansion in East Asia. Thus, Indian nationalists criticized the Japanese puppet state in Manchuria, and the Indian National Congress severely condemned the Japanese invasion of China in 1937. At the Haripura Congress of February 1938, Congress called for a boycott of Japanese goods by the Indian population. In August 1939, Nehru himself visited Chiang Kai-shek's headquarters in Chungking to demonstrate the solidarity of Indian nationalists with the Chinese Government.

goods, although in the following year the Legislative Assembly asked the Indian government to denounce the Ottawa Agreement. There followed a long series of trade negotiations between the British and Indian governments which eventually resulted in a 1939 trade agreement that reduced the range of British imports accorded preferential treatment in India.[58] Chaudhuri's (1983, p. 869) overall assessment is that "India, even before the Second World War, was coming closer towards the adoption of a much more positive policy of controlling her international economy, which was to become characteristic of official thinking after Independence".

[58] Another policy shift discouraging imports, especially from the UK, concerned the procedures for purchasing government stores. In 1924 control of these purchases was transferred from London to the Government of India, and by the 1930s "the bulk of stores were obtained by rupee tender in India rather than by sterling tender in London" (Tomlinson, 1979, p. 63). In this paper we are focussing on private imports, which were unaffected by this policy shift.

Appendix 2. Commodity classification

The data collection process initially involved collecting information on the 202 individual items falling within 35 3- digit SITC categories over the period 1923/24- 1937/38. However, a number of series which existed in the first year of the sample were discontinued or reclassified in subsequent years. Likewise, new categories were created over time, as imports of particular products were reported in a more disaggregated fashion. Consequently, not all series were consistently observed over the entire sample period.

Our aim was to create the most disaggregated dataset possible, given the changing classifications in the data. This required tracking these changing classifications over time, and figuring out the minimum level of aggregation required to produce series for categories of goods that were consistently defined over time. This had to be done manually rather than algorithmically, in the sense that the classifications in every year had to be read by us, and decisions about aggregation made on that basis.

For example, one of our 114 goods is "Refined Sugar", which is a fairly broad category. Imports of different types of refined sugar were reported over the course of the fourteen years in our sample. For example, "Sugar below 23 Dutch Standard but not below 16 Dutch Standard" and "Sugar, 23 Dutch Standard and above" were reported as separate categories during 1930/31- 1937/38 and we would have preferred to work with these as separate categories in our analysis. However, this was not possible since from 1923/24- 1929/1930 these two categories were included in a broader category titled, "Sugar, 16 Dutch Standard and above". We therefore had to aggregate the imports of all refined sugar items from each country in each year, creating a new good classification "Refined Sugar". Imports of this expanded category could be measured consistently over time, whereas imports of "Sugar below 23 Dutch Standard but not below 16 Dutch Standard" and "Sugar, 23 Dutch Standard and above" could not.

We went through a similar procedure for each of the 202 individual items in our sample. For some items no aggregation was necessary as the items were consistently reported across the sample period at the 202- level (for example, "Wool, raw"). For other series the fact that the classification changed regularly meant that the only way to ensure a consistent series was to aggregate a large number of items. For example, the 16 separate items covering machinery and millwork (excluding prime movers or electrical machinery) over the sample period, had to be aggregated up to one series "Machinery and Mill-work. Ma-

chinery, not being prime movers or electrical machinery" (good 716001 in our dataset). Since we were aggregating import values rather than quantities, there was no problem regarding different units. Finally, to generate a tariff rate for each of our 114 goods we calculated an unweighted average of the tariff rates of each of the constituent series.

Table 3 lists the top 10 goods by import value in 1923/24, 1930/31 and 1937/38. As can be seen the lists are dominated by cotton manufactures and machinery.

Each of our 114 goods g falls into one of the 35 SITC categories s which we started with when constructing the dataset. We are using the original Standard International Trade Classification, based on Statistical Office of the United Nations (1951; 1953), since this is more appropriate for this period than more recent revisions. On average there are 3.25 goods per SITC category, but the range is relatively wide (standard deviation of 3.76 goods and a maximum of 13 goods per SITC category). For example, "Iron or steel, Sheets and plates" is included with 12 other goods in SITC 681, "Iron or steel". The good "Grain, wheat" is the only good in SITC 041. Of the 35 3- digit SITC categories in our dataset, 20 contain one good, 9 contain between 2 to 6 goods and 6 contain more than 6 goods. Table 4 lists the top 10 3- digit SITC categories in our sample by import value.

Out of these 34 SITC groups we construct 9 narrow categories which are used when estimating the σ_h's. 'Grain' includes barley, maize, wheat and rice (SITC categories 041–044); 'Animal' includes butter, eggs and meat (SITC categories 011, 012, 023, and 025); 'Machinery' includes SITC categories 711, 712, 714-716, and 721; 'Minerals' includes metals, coal and petroleum (SITC categories 311–313, 681, and 682); 'Textiles' includes both yarn and cloth (SITC codes 651–653); 'Miscellaneous inputs' includes such items as fertilisers, rubber, hides and skins, raw cotton and silk, and hair (SITC codes 211, 231, 261–263, 271, and 561); 'Miscellaneous industry' includes vehicles and rubber manufactures, including tyres (SITC codes 629, 713, and 732); 'Food oils' includes oils and oilseeds of various kinds (SITC codes 221 and 412); and 'Colonial' includes coffee, sugar, tea and tobacco (SITC categories 061, 071, 074, and 121).

The maximum number of goods g per narrow category is 29 (for machinery) while the minimum is 2 for animal (just bacon and hams and butter). Full details of the classification of each item in our sample can be found in Appendix Table 1, available at https://cepr.org/content/trade-depression.

Table 5 presents an extract from Appendix Table 1, which lays out the

Table 3: Top 10 goods by import value, 1923/4-1937-8

Rank	Name of good	Import value (£)
	1923-4	
1	Textiles. Cotton. Manufactures. Piecegoods. Grey unbleached	230495305
2	Textiles. Cotton. Manufactures. Piecegoods. Total of White (bleached)	154280628
3	Machinery and Mill-work. Machinery, not being prime movers or electrical machinery.	136491138
4	Refined Sugar	135495900
5	Iron or steel. Sheets and plates	87694242
6	Textiles. Cotton. Manufactures. Piecegoods. Printed	81006827
7	Cotton. Twist and Yarn	79256805
8	Textiles. Cotton. Manufactures. Piecegoods. Dyed Goods	61138025
9	Kerosene	44163650
10	Textiles. Cotton. Manufactures. Piecegoods. Woven coloured	34230453
	1930-31	
1	Refined Sugar	95032489
2	Machinery and Mill-work. Machinery, not being prime movers or electrical machinery.	80233630
3	Textiles. Cotton. Manufactures. Piecegoods. Grey unbleached	68664068
4	Textiles. Cotton. Manufactures. Piecegoods. Total of White (bleached)	61996389
5	Motor vehicles and parts thereof	49683956
6	Kerosene	46932916
7	Iron or steel. Sheets and plates	39689845
8	Cotton, raw	33503168
9	Cotton. Twist and Yarn	30836081
10	Textiles. Artificial Silk	30387577
	1937-38	
1	Machinery and Mill-work. Machinery, not being prime movers or electrical machinery.	123184373
2	Cotton. Twist and Yarn	96073065
3	Cotton, raw	70907830
4	Motor vehicles and parts thereof	61566381
5	Textiles. Cotton. Manufactures. Piecegoods. Total of White (bleached)	48541354
6	Textiles. Cotton. Manufactures. Piecegoods. Printed	32033391
7	Textiles. Cotton. Manufactures. Piecegoods. Dyed Goods	27978136
8	Electrical Machinery	27954546
9	Textiles. Artificial Silk	23650060
10	Artificial Silk Yarn	22693186

Table 4: Top 10 SITC categories by import value, 1923-4-1937/8

Rank	SITC	Import value (£)
	1923-4	
1	652	568161581
2	681	177780906
3	061	151451626
4	716	139220374
5	651	98071503
6	313	84368595
7	653	56580281
8	721	43683788
9	682	41943173
10	732	27873604
	1930-31	
1	652	200908781
2	061	108654772
3	681	96611826
4	313	90364540
5	716	82501535
6	653	59425682
7	651	52937582
8	721	50090473
9	732	49683956
10	263	33504005
	1937-38	
1	652	138342580
2	651	137820965
3	716	126515086
4	681	75158202
5	263	70907830
6	721	68930479
7	313	62189296
8	732	61566381
9	653	50808510
10	711	25993929

structure of the data as originally collected, and details how it was aggregated. We take the example of the 3-digit SITC category 682, "Copper". In the first column we list the individual items as they were reported in the trade statistics (i.e. at the 202 level of disaggregation), such as "Metals and Ores. Copper. Unwrought. Tiles, ingots, cakes, bricks and slabs". The ID 682-009 is the one used for this item in our original dataset. The second column lists the name of the item as reported in the trade statistics. The third column shows a numerical ID for the good g to which the item in question belongs, in this instance "Copper. Unwrought" (given in the fourth column). There are 114 of these goods. The fifth column lists the 3-digit SITC code s to which the item and good in question belong (in this case 682). The seventh column lists the narrow category h to which the item, good, and SITC code belong (in this case 4, minerals: the narrow categories are listed from 1–9 in the same order as they appear in the regression tables).

Table 5: Extract from Appendix Table 1

ID	Full Name Item	Good Dataset ID	Good	SITC 3-digit	Narrow category
682-001	Implements, apparatus and appliances, and parts thereof. Electrical, including telegraph and telephone apparatus, not being machinery. Bare copper wire (electrolytic), other than telegraph and telephone wires	682001	Bare copper wire (electrolytic), other than telegraph and telephone wires	682	4
682-002	Metals and Ores. Brass, bronze, and similar alloys and manufactures thereof. Unwrought	682002	Brass, bronze and similar alloys and manufactures thereof	682	4
682-003	Metals and Ores. Brass, bronze, and similar alloys and manufactures thereof. Wrought.Mixed or yellow metal for sheathing	682002	Brass, bronze and similar alloys and manufactures thereof	682	4
682-004	Metals and Ores. Brass, bronze, and similar alloys and manufactures thereof. Wrought. Rods	682002	Brass, bronze and similar alloys and manufactures thereof	682	4
682-005	Metals and Ores. Brass, bronze, and similar alloys and manufactures thereof. Wrought. Sheets	682002	Brass, bronze and similar alloys and manufactures thereof	682	4
682-006	Metals and Ores. Brass, bronze, and similar alloys and manufactures thereof. Wrought. Tubes	682002	Brass, bronze and similar alloys and manufactures thereof	682	4
682-007	Metals and Ores. Brass, bronze, and similar alloys and manufactures thereof. Wrought. Wire	682002	Brass, bronze and similar alloys and manufactures thereof	682	4
682-008	Metals and Ores. Brass, bronze, and similar alloys and manufactures thereof. Wrought. Other sorts	682002	Brass, bronze and similar alloys and manufactures thereof	682	4
682-009	Metals and Ores. Copper. Unwrought. Tiles, ingots, cakes, bricks and slabs	682003	Copper. Unwrought	682	4
682-010	Metals and Ores. Copper. Unwrought. Other sorts	682003	Copper. Unwrought	682	4
682-011	Metals and Ores. Copper. Wrought. Braziers and sheets	682004	Copper. Wrought	682	4
682-012	Metals and Ores. Copper. Wrought. Braziers	682004	Copper. Wrought	682	4
682-013	Metals and Ores. Copper. Wrought. Rods	682004	Copper. Wrought	682	4
682-014	Metals and Ores. Copper. Wrought. Sheets	682004	Copper. Wrought	682	4
682-015	Metals and Ores. Copper. Wrought. Tubes	682004	Copper. Wrought	682	4
682-016	Metals and Ores. Copper. Wrought. Wire excluding telegraphic and telephonic wire	682004	Copper. Wrought	682	4
682-017	Metals and Ores. Copper. Wrought. Other manufactures	682004	Copper. Wrought	682	4

Appendix 3. List of countries used in the analysis

Table 6 provides a list of the 42 countries used in our analysis and indicates how they were described in the original sources. In some cases, we had to type in data for several regions to calculate the data for one country. In the case of Spain, we summed over Canary Isles and Spain; in the case of British Malaya, we summed over the Federated Malay States, British Borneo and the Straits Settlements; and in the case of Dutch East India we summed over Sumatra, Dutch Borneo, and Celebes and Other Islands.

Table 6: Countries in dataset

Countries in dataset	As described in original sources
Algeria	Algeria
Argentina	Argentine Republic (including Atlantic Coast of Patagonia)
Australia	Australian Commonwealth
Austria	Austria
Belgium	Belgium
Brazil	Brazil
British Malaya (all federated and non federated)	Federated Malay States; British Borneo; Straits Settlements (incl. Labuan)
British West Indies (Bermudas, Barbados, Jamaica, Trinidad/ Tobago, Others)	Bermudas; British West India Islands
Canada	Canada - Atlantic and Pacific Coast
Chile (including Pacific Coast of Patagonia)	Chile (including Pacific Coast of Patagonia)
China (exclusive of Hong Kong and Macau)	China (exclusive of Hong Kong and Macau)
Colombia	Colombia
Cuba	Cuba
Czechoslovakia	Czechoslovakia
Denmark	Denmark
Dutch East India	Java; Sumatra; Celebes and other Islands; Borneo (Dutch);
Dutch West Indies	Dutch West Indies
Egypt	Egypt; Anglo-Egyptian Sudan
France	France
Germany	Germany
Hong Kong	Hong Kong
Hungary	Hungary
Italy	Italy; Fiume
Japan	Japan; Formosa
Luxemburg	Luxemburg
Mexico	Mexico
Netherlands	Netherlands
New Zealand	New Zealand (including Nauru and British Samoa)
Norway	Norway
Persia	Persia; Henjam Island
Poland (including Dantzig)	Poland (including Dantzig)
Roumania	Roumania
Russia	Armenia; Russia - Northern; Russia - Southern; Georgia; Russia - Pacific Ports in Asia
Spain	Spain; Canary Islands
Sweden	Sweden
Switzerland	Switzerland
Turkey, European and Asiatic	Turkey. European and Asiatic
Union of South Africa (incl. South West Africa)	Cape of Good Hope; Transvaal; Natal; Protectorate of South-West Africa;
United Kingdom	Channel Islands; United Kingdom
United States of America	United States of America - Pacific Coast; United States of America - Atlantic Coast
Venezuela	Venezuela
Yugoslavia	Serb-Croat Slovene State (Jugoslavia)

Appendix 4. Non-tariff barriers to trade, boycotts and cartels

Table 7 lists the commodities in our dataset that were affected by the voluntary export restraint on Japanese piece goods that came into effect in 1934. The "quota" dummy variable in the regressions reported in Table 1 takes the value 1 for the goods and years indicated in the table (for Japan only).

Table 7: Non-tariff barriers to trade

Commodity	Description of commodity	Years
652002	Textiles. Cotton. Manufactures. Piecegoods. Grey unbleached	1934-
652003	Textiles. Cotton. Manufactures. Piecegoods. Total of White (bleached)	1934-
652004	Textiles. Cotton. Manufactures. Piecegoods. Printed	1934-
652005	Textiles. Cotton. Manufactures. Piecegoods. Dyed Goods	1934-
652006	Textiles. Cotton. Manufactures. Piecegoods. Woven coloured	1934-
652007	Textiles. Cotton. Manufactures. Piecegoods. Fents of all descriptions |	1937-

Source: U.K. Parliamentary Papers (1933-34, pp. 471-478, especially Protocol, Article 7, p. 477); U.K. Parliamentary Papers (1937-38, pp. 397-403, especially Protocol, Article 8, p. 401).
Note: good 652001 is cotton canvas, and is not mentioned in the aforementioned sources.

What about the boycotts? Brown (1977, p. 129) argues that the 1930-31 "piece-goods trade boycott clearly had a marked effect since the decline in imports was greater than that of other commodities and affected British goods more than those from other countries". Chatterji (1992, pp. 164-5) argues that while it is difficult to disentangle the impact of boycotts from all the other factors influencing Indian imports during the period, boycotts were a "factor working against Lancashire during the inter-War years". He quotes British officials who in 1932 were of the opinion that the boycott had had "very considerable effects" on British cotton sales, which had slumped more than imports in general; a particular worry was that boycotts might have permanent effects, by shifting tastes towards locally produced cloth.

Table 8 codes the boycotts of UK cotton cloth in the short run (1930) and long run (1931 and subsequently). In all cases the "cotton cloth boycott" dummy variables in the regressions reported in Table 1 take the value 1 for the goods and years mentioned (for the U.K. only).

Table 8: Boycotts

Goods	Name	Years (1930)	Year ("Long run")
652001	Cotton. Manufactures. Canvas	1930	1931-
652002	Textiles. Cotton. Manufactures. Piecegoods. Grey unbleached	1930	1931-
652003	Textiles. Cotton. Manufactures. Piecegoods. Total of White (bleached)	1930	1931-
652004	Textiles. Cotton. Manufactures. Piecegoods. Printed	1930	1931-
652005	Textiles. Cotton. Manufactures. Piecegoods. Dyed Goods	1930	1931-
652006	Textiles. Cotton. Manufactures. Piecegoods. Woven coloured	1930	1931-
652007	Textiles. Cotton. Manufactures. Piecegoods. Fents of all descriptions	1930	1931-

Sources: Brown (1977), pp. 127-129, 186, 283; Chatterji (1992, 164-5); Wolcott (1991).

In addition to trade policy, Indian industries were also involved in a number of cartels which may have influenced trade flows during this period. Indian producers joined an international tea agreement in 1930. This was not renewed in 1931 and 1932, but from 1933 up to the Second World War it attempted to freeze the market share of the three participating countries, India, Ceylon and the Dutch East Indies (Gupta, 2001; Suslow, 2005). The tea agreements seem to have been moderately successful in 1930 in slowing the decline in tea prices, and to have stabilized and reflated tea prices after 1933, a period when prices for similar goods such as cocoa and coffee continued to fall (Gupta, 2001; Rowe, 1965, pp. 90, 148-51). Since the agreement mostly affected Indian producers and exporters of tea, its effect on tea imports remains unclear in the literature. The International Rubber Regulation Agreement of 1934 only came into force as international recovery after the Great Depression was already underway, and India was a fairly minor player in this market in comparison to Malaya, the Dutch East Indies, Ceylon and Indochina (Rowe, 1965, pp. 90, 152-4), so the consequences of the export quotas agreed upon by the contracting parties on the structure of Indian imports remains unclear as well. India was also probably affected by the Achnacarry and subsequent agreements in the petroleum industry (United States Congress, Senate, 1952), as well as by the Chadbourne sugar agreement, which India joined together with the UK in late 1937 (Dye and Sicotte, 2006).

Table 9 below provides data on how these cartels were coded in our dataset. International producer cartels in which British India was a member were coded from Suslow (2005, Appendix 1). This was supplemented by information on primary goods, and especially international sugar cartels, in Dye and Sicotte (2006), US Secretary of Agriculture (1933), and Rowe (1965), and by information on the Achnacarry and subsequent agreements in the petroleum industry, in United States Congress, Senate (1952). We only include formal cartel agreements concluded by British India domestic producers, trade organizations, or the government. Cartels have to be in force at least 6 month in the corresponding year to be coded as dummy=1. Only cartel members included in our country sample are mentioned in the table.

Table 9: Cartels

Cartel	Goods	Name	Countries	Years
Rubber (crude)	231001	Rubber, raw	British Malaya (all federated and non federated); Dutch East India	1934-
Tea (1)	74001	Tea	Dutch East India	1930
Tea (2)	74001	Tea	Dutch East India	1933-
International Agreement Regarding the Regulation of Production and Marketing of Sugar (Chadbourne)	61001	Refined Sugar	Austria, Belgium, Brazil, China (excl. Hong Kong, Macao, Kwantung), Cuba, Czechoslovakia, Dutch East India, France, Germany, Hungary, Poland (incl. Dantzig), Russia, Union of South Africa (incl. South West Africa), United Kingdom, United States of America, Yugoslavia	1938
	61002	Beet Sugar		
	61003	Unrefined Sugar		
	61004	Molasses		
International Petroleum Cartel (Achnacarry)	312001	Crude Petroleum	All except Russia (Soviet Union)	1929-
	313001	Fuel Oils		
	313002	Kerosene		
	313003	Lubricating Oils		
	313004	Refined Petroleum. Other sorts		
	313005	Paraffin Wax		
	313006	Pitch and Tar		

Sources: Suslow (2005); Dye and Sicotte (2006); US Secretary of Agriculture (1933); United States, Senate (1952); Rowe (1965).

Appendix 5. Robustness

Alternative estimates of the σ_g's

Table 10 presents alternative estimates of the σ_g's. The first row reproduces the baseline results from Table 1. These regressions were estimated using PPML, and used calendar year tariffs. The second row uses fiscal year tariffs. The third and fourth rows repeat the exercise using OLS instead of PPML.

As can be seen, replacing calendar with fiscal year tariffs makes relatively little difference. However, using OLS significantly reduces the elasticities for machinery and minerals (the latter now has the wrong sign, though it is statistically insignificant) and increases the elasticity for miscellaneous industry.

What really matters, however, is the impact of changing these elasticities on our results regarding trade flows. We therefore re-ran our simulations using six sets of elasticities. These are: the benchmark elasticities used in the body of the paper; the three other sets of elasticities in Table 10;[59] the benchmark elasticities, but with the value of γ lowered from its benchmark value of 1 to 0.5; and the benchmark elasticities, but with γ raised to 2.

Figure 10 shows the estimated impact of post-1923 protection on aggregate trade flows (India's total imports, and the UK's and Japan's aggregate exports to that country) under each of these six elasticity scenarios. As can be seen, our results are not particularly sensitive to the elasticities used, except insofar as total UK exports are concerned. Depending on the elasticities , the impact could have been 4-5 percentage points lower than under the benchmark scenario, or roughly 10 percentage points higher. Figure 11 performs the same exercise for UK and Japanese exports of cotton cloth to India. Once again the Japanese results are relatively insensitive to the elasticities used, and the UK results more so. In all cases, however, the estimated impact of protection on trade flows is very large, and our qualitative results survive.

[59] The incorrectly signed minerals elasticities in Table 10 are simply set equal to zero.

Table 10: Alternative estimates of the σ_g's

Narrow category	Machinery	Minerals	Textiles	Misc. industry	Food oils	Colonial
PPML, calendar year tariffs	-5.735	-4.306	-4.046	-23.05	-8.583	-5.384
	(1.504)	(1.104)	(0.801)	(4.331)	(3.957)	(3.982)
PPML, fiscal year tariffs	-5.970	-5.740	-4.897	-29.09	-11.43	-4.770
	(1.803)	(1.862)	(0.835)	(5.675)	(4.355)	(3.987)
OLS, calendar year tariffs	-1.199	1.407	-3.478	-34.01	-8.925	-7.079
	(1.557)	(1.851)	(3.178)	(6.321)	(17.27)	(4.677)
OLS, fiscal year tariffs	-0.213	0.886	-3.513	-36.41	-9.170	-6.505
	(2.112)	(1.695)	(3.740)	(8.800)	(22.22)	(5.103)

Note: Dependent variable is the value of imports by good, country, and year. Estimates control for good*country and good*year fixed effects, and for country-specific time trends. Estimates computed using ppmlhdfe and reg2hdfe. Robust standard errors clustered by country in parentheses.

Figure 10: Impact of protection on aggregate trade with different elasticities

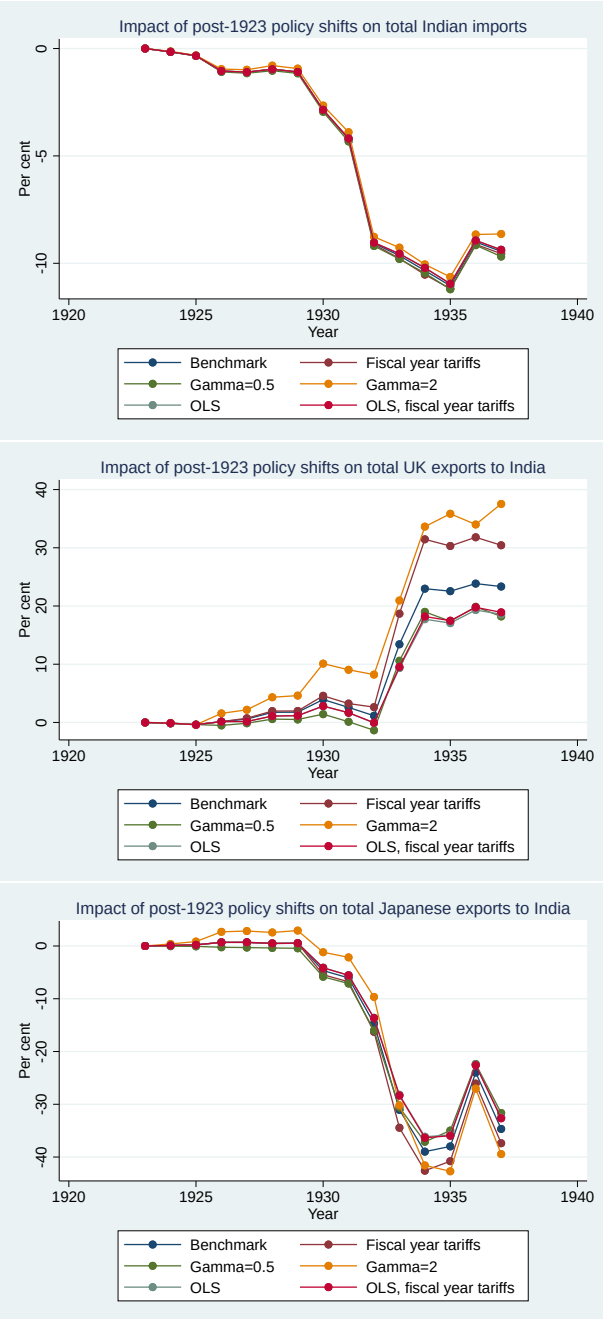

Figure 11: Impact of protection on cotton cloth exports to India with different elasticities