

European strategic trade policy and Brazilian export growth during the nineteenth century ♦

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Abstract

Until the Amazonian rubber boom, cane sugar and coffee were the two most important export commodities for Brazil during the nineteenth century. Despite inherent differences in methods of cultivation, both sugar and coffee at once benefitted and suffered from the characteristics of Brazil's factor endowment in land, labour and capital. Yet these two export commodities demonstrated divergent growth patterns across the nineteenth century. The difference was not one of relative productivity and thus price competitiveness disadvantage, but of the imperfectly competitive nature of the international market for each commodity. European governments actively practised strategic trade policy to transfer profits from foreign to domestic or colonial firms. These market distortions were exogenous, imposed by consumer markets, and took the form of European colonial tariff preferences and subsidies to domestic production. Coffee suffered less from imperfect competition, thus remaining more profitable to Brazilian agricultural producers in the long run.

Keywords

Brazil; Export growth; Trade policy; Coffee; Sugar; Nineteenth century.

Resumo

Até o boom da borracha na Amazônia, a cana-de-açúcar e o café eram os dois produtos de exportação mais importantes do Brasil durante o século XIX. Apesar das diferenças inerentes nos métodos de cultivo, tanto o açúcar quanto o café se beneficiaram e sofreram com as características da dotação de fatores do Brasil em terra, trabalho e capital. No entanto, esses dois produtos de exportação demonstraram padrões de crescimento divergentes ao longo do século XIX. A diferença não era na produtividade relativa e, portanto, na desvantagem da competitividade de preços, mas na natureza imperfeitamente competitiva do mercado

♦ The author is indebted to Marc Morgan, Thales Zamberlan Pereira, Colin Lewis, José Díaz-Bahamonde, Agustina Rayes, Marc Badia-Miró and participants of the V Congreso Peruano de Historia Económica and the Workshop Revision in Brazilian Economic History at the LSE, the three anonymous referees and editor Leonardo Weller. All remaining errors are mine.

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Recebido: 13/07/2021. Aceito: 20/12/2021.

Editor Responsável: Leonardo Weller



internacional para cada mercadoria. Os governos europeus praticavam ativamente uma política comercial estratégica para transferir lucros de empresas estrangeiras para empresas domésticas ou coloniais. Essas distorções de mercado eram exógenas, impostas pelos mercados consumidores, e tomaram a forma de preferências tarifárias coloniais europeias e subsídios à produção doméstica. O café sofreu menos com a concorrência imperfeita, permanecendo mais lucrativo para os produtores agrícolas brasileiros no longo prazo.

Palavras-chave

Brasil; Crescimento das exportações; Política comercial; Café; Açúcar; Século XIX.

JEL Classification

F13, N76, Q02.

1. Introduction

The question that this paper poses is a simple one, yet it has profound consequences for Brazil's export performance and economic development during the nineteenth century: why did the Brazilian coffee industry expand to dominate the world market while the previously important Brazilian sugar sector stagnated and lapsed into crisis? The answer presented here is also simple: while the coffee sector enjoyed close to free market conditions in its principal consuming markets for most of the century, Brazilian sugar was crushed by strategic trade policy implemented by its principal European trade partners. Such strategic trade policy took several forms across the century: preferential tariff schemes that favoured colonial produce, subsidies and bounties to European domestic producers, and good old-fashioned imperialism. While supply-side conditions were undoubtedly important for both commodities, it was policy in the key consuming markets that explain the timing of the rise of Brazilian coffee and the decline of cane sugar.

The central idea of the literature on strategic trade policy is that governments may intervene in the market to shift profits and market share from foreign to domestic firms. Such strategies may take various forms, including subsidies on production and export, import tariffs that favour domestic exporters or infant industry, and subsidies to research and development or investment in domestic industries (Krugman 1986; Brander and Spencer 1985; Brander 1995). One of the central assumptions of this

literature is that the nature of competition in international commodity markets is imperfect, being constituted by firms that possess monopolistic or oligopolistic power. While the overall objective of strategic trade policy may be to enhance overall domestic welfare, imperfections in political institutions and redistributive processes may lead to rent seeking and inequalities in the gains derived from trade (Bagwell and Staiger 2001; 2002).

Historically, strategic trade policy has been a key characteristic of international commodity markets. Prior to the modern period, mercantilism and the monopolisation of trading routes were instrumental to the construction of Imperial networks (Viner 1948; Irwin 1991; 1992). Colonialism was the ultimate form of strategic trade policy. By nature, colonial trade policy was discriminatory, predicated on the benefits to Imperial welfare derived from the monopoly of territory and commodity markets.¹ In this context, Imperial strategic trade policy awarded preference to the colonies, serving to exclude a large portion of the international competition from the market, frequently to the detriment of the domestic consumer. The nineteenth century British market for tropical products, most notably cane sugar, is a classic example of the consequences of such policy. Later in the century, strategic policy took the form of direct and indirect subsidies to the production of substitutes of tropical products in European markets. Those countries lying outside the realm of Empire, such as Brazil, suffered from the negative externalities derived from the practice of such policy. The recognition of the inefficiencies of such a system by European governments would lead to the first multilateral trade negotiations, the Brussels convention of 1902, also the first attempt to regulate an international commodity market (Martineau 1904; Taylor 1909; Filho 2012/13; Fakhri 2014).

This paper argues that the divergent performances of Brazil's two principal export commodities during the nineteenth century, coffee, and cane sugar, were the result of European strategic trade policy. The practice of strategic trade policy by European governments served to exclude Brazil from important markets for cane sugar and depress the international price to a level that retarded the expansion of the Brazilian sugar industry. Initially, Brazilian sugar was barred from the world's sugar emporium – Great Britain – by preferences that favoured British West Indian cane

¹ Whether colonialism was beneficial to the Empire was an entirely different matter. See Hobson 1902; Davis and Huttenback 1982; O'Brien 1988. For a comparative overview, see O'Brien and Prados de la Escosura 1998.

production. Slave emancipation served to break this monopoly and the inflated prices caused by the supply crisis associated with emancipation placed pressure on British lawmakers to permit the entry of noncolonial sugar to the British market. This occurred following the Sugar Act of 1846, and the demand for Brazilian sugar increased alongside its dependency on the British market. Continental European beet producers also responded to the opening of the British market, however, and soon the market was flush with heavily subsidized German beet, which drove prices so low that cane sugar producers the world over could not survive. The international market for Brazilian coffee, on the other hand, did not suffer from such a degree of discrimination. Following the abolition of the tariff on coffee in 1832, Brazilian producers enjoyed free access to one of the fastest growing consumer markets in the world: the United States. Thus, while barriers on the supply-side were considerable for both commodities, only conditions on the demand-side explain when and why the Brazilian coffee and cane sugar industries expanded and declined.

The structure of the paper is as follows. The next section provides a brief overview of the relative performance of Brazilian coffee and cane sugar during the nineteenth century. The following two sections review both supply- and demand-side explanations of this relative performance. I then examine the characteristics of competition in the principal markets for Brazilian coffee and cane sugar. The final two sections study the effect of strategic trade policy on Brazilian export competitiveness.

2. The performance of Brazilian coffee and sugar exports during the nineteenth century

The different trajectories of the two commodities can be clearly observed in Figure 1, which displays the quantum of exports of coffee and sugar over the period 1821 to 1913. In the case of sugar, rapid growth during the post-independence decades was interrupted by the closure of the trans-Atlantic slave trade to Brazil in 1850, took off again in the late-1860s, reached its peak in 1884, before rapidly declining and virtually disappearing from Brazil's export composition by the eve of the First World War. For coffee, growth was also rapid during the post-independence period to mid-century, slowed down from the 1850s through to the 1880s, befo-

re dramatically increasing in the final decade of the nineteenth century, resulting in the crisis of over-production. This comparative performance is reflected in Brazil's commodity composition of exports as well as the share of each commodity in world exports. Sugar declined from 31 per cent of the value of Brazil's exports in the period 1821-50 to two per cent in 1890-1913, while coffee rose from 35 to 60 per cent. Over the same period, the world market share of Brazilian cane declined from 10 per cent to two per cent, and that of coffee rose from 34 to 70 per cent (Absell and Tena-Junguito 2016: 697-704).

The rapid expansion of coffee and the contraction of the sugar sector hint at a divergence in the rates of profitability. Figure 1 also displays estimates of the production cost of both items. Of course, these estimates are merely approximate, as the cost of production undoubtedly shifted across the century alongside changes in the cost of labour, the coming of the railroads, the cost of imported foodstuffs and inputs, and so forth. The two production cost estimates given, one for Bahia and São Paulo from the British consul reports of 1848² and another for Pernambuco from Brazilian engineer Henrique Augusto Milet's pamphlet *A Lavoura de Canna de Assucar*, published in 1881, coincide in the fact that the price of sugar definitively dropped below the cost of production around 1880. Profits, however, if measured simply as the ratio between the selling price and cost of production, with a few exceptional periods had been slim pickings since the mid-1840s. Although the quantum and price show a negative relationship, as discussed below, Brazil was a price taker in the market for sugar, and thus increases in Brazil's supply did not influence the international price of the commodity to a great extent.

Until the crisis of the 1890s, coffee, on the other hand, remained a profitable venture for most of the period. The cost of production estimates, taken from Affonso de Taunay's *Historia do Café no Brasil* for São Paulo and Rio de Janeiro during the 1880s and the 1897 *Relatorio* of the Ministry of Finance, show that the profit margin for most of the century was considerable. Thus, the quantum of coffee continued its meteoric rise during the century, until overproduction flattened the world price in the 1890s. Brazil's position as the principal world supplier from mid-century onwards

² The same source also gives estimates for Pernambuco, although the figure is unrealistically low (£0.37 per cwt), due to the exclusion of the fixed cost of slaves. The account only lists the cost of clothing the already existing slave labour force. Interestingly, figures for Cuba, Puerto Rico and St. Lucia coincide with the figures for Bahia and São Paulo, although the estimates for St. Lucia range from £0.5 to £1.1 per cwt.

allowed it to occupy the position of price maker, and while the behaviour of the nominal exchange rate moderated the supply effect, the tendency of prices generally oscillated in response to the quantum exported.³

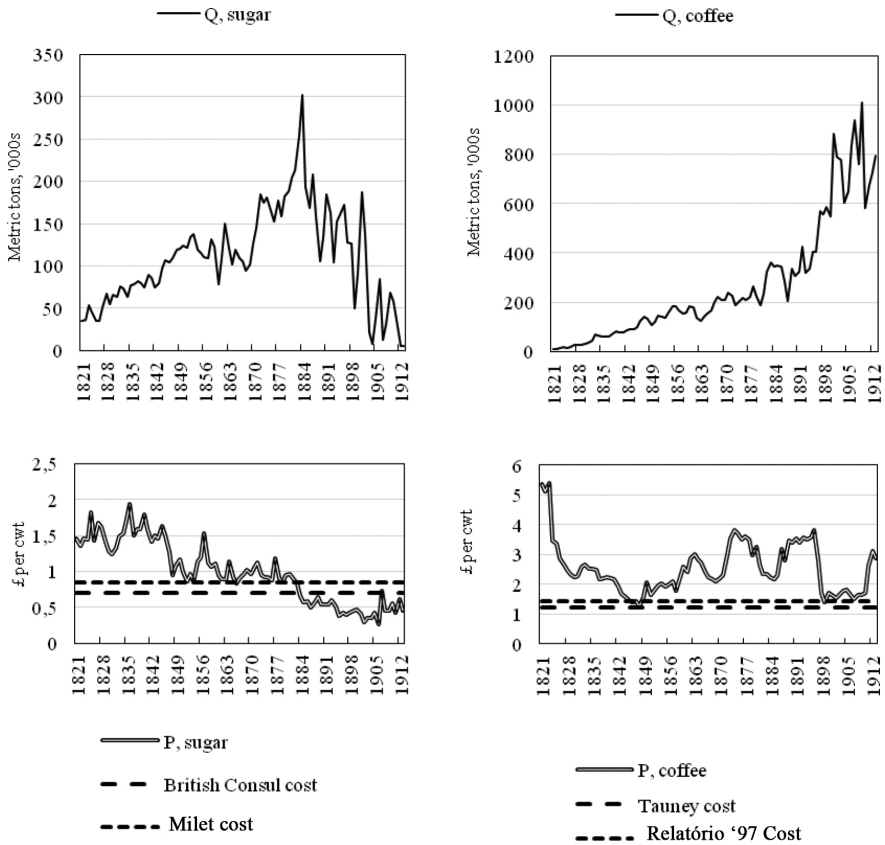


Figure 1 - Quantum (Q), price (P), and unit production cost estimates of sugar and coffee, Brazil, 1821-1913.

Sources: Absell and Tena-Junguito 2016, online appendix; Great Britain. 1948. *Correspondence relative to the distress of the sugar growing colonies*, House of Commons Parliamentary Papers, 63-6, 428-52; Milet 1881: 6-26; Taunay 1939: 80-1, 123; Brasil, Ministerio da Fazenda. 1898. *Relatorio apresentado ao Presidente da República dos Estados Unidos do Brazil pelo Ministro de Estado dos Negocios da Fazenda, Mernardino de Campos no anno de 1898*, Rio de Janeiro: Imprensa Nacional, 291.

³ The simple correlation for coffee price and quantum becomes stronger as the century progress: from 1850: -0.34, from 1870: -0.72, from 1890: -0.73. For sugar, this correlation remains positive.

In both cases price tendencies determined the relative level of profitability and thus the expansion or contraction of each industry. The question remains, however, whether the relative in/ability of each industry to adapt to price tendencies was due to supply-side inflexibility or demand-side pressures. The next two sections cast a critical eye on both historiographical and contemporary opinions on the relevance of supply- and demand-side factors for explaining the divergence in the export performance of Brazil's two principal export commodities.

3. The supply side of the story

In his previously cited pamphlet, Milet addressed the stagnation of sugar production in Pernambuco, arguing that 'Hoje [1881], como em 1876 e 1878, para a immensa maioria de nossos senhores de engenho, os preços que seu genero obtem nos grandes mercados consumidores ... não pagam os gastos da produção...' Milet's prognosis of the problem was principally concerned with supply-side factors: 'Escassez de braços e de capitaes, falta de instrucção professional e de credito, impostos exagerados e illogicos, carestia dos transportes...'[Sic]; Milet 1881: VII-VIII). Milet's argument coincides with much of the historiography in blaming the path of Brazil's export performance on supply-side factors. The scarcity of labour and capital, prohibitively high transport costs due to geography and the slow development of the railroads, the burdensome taxation of exports, parasitic foreign financial and commercial entities, the exchange rate, cultural and institutional backwardness and the absence of technological innovation have all been thrown into the ring as potential explicators of Brazil's export growth experience.⁴ Most of these explanations have either been confirmed or rejected by the voluminous literature on Brazil's economic experience during the nineteenth century. Here I wish to address the basic factors: labour, land, capital, and productivity. As we shall see, none of these factors serve as convincing explanations of the timing of the divergent performance of sugar and coffee over the period in question.

⁴ For an overview of the conventional explanations of the historical divergence between the North-east and Southeast, see Leff 1972: 249-52, who favoured a Dutch Disease-type explanation. See also Prado Júnior 1990: 192-204; Furtado 1962: 113-23. Seminal Marxian interpretations on the obstacles to growth include Dowbor 1978; Frank 1967.

Until abolition in 1888, the production of both sugar and coffee relied principally on slave labour. Indeed, the import of African slaves from independence until the closure of the trade in the 1850s was unprecedented for any one country in the history of the Atlantic slave trade (Klein 1999: 210-11). Furthermore, the geographical destination of slave arrivals was not only concentrated in the south-east: substantial numbers of slaves were imported into Bahia and Pernambuco as well (Schwartz 1985: 343-45; Eisenberg 1974: 149). The closure of the slave trade led to a considerable rise in both the purchase and rental price of slaves. In Pernambuco, this price had tripled by 1860 (Eisenberg 1974: 156). Prices in Rio de Janeiro followed a similar course (Corrêa do Lago 2014: 114). Given the state of the sugar industry at the time, many sugar planters had no choice but to sell their slaves to buyers in the south-east. According to data given by Robert Slenes, this trade reached its peak in 1878, shortly after which the south-eastern provinces raised entry taxes to prohibitive levels (Slenes 2004: 328, fig. 14.2). The impact of abolition differed across sectors and regions. In the case of sugar, figure 1 shows a sharp drop in the quantum of sugar exported during the two years following abolition, although this was quickly corrected. Likewise, coffee exports plunged to 1881 levels, but rapidly recovered. In Pernambuco, planters had long since turned to the exploitation of poor free labour to replace the dwindling slave population (Eisenberg 1974: Ch. 6). Bahian sugar planters, however, did not enjoy such access to free labour, and suffered accordingly (Barickman 1996: 585). For the remainder of the century, coffee exports from Rio de Janeiro did not reach the same level as the decade prior to abolition. While this may have been due to a relative lack of immigrant labour (when compared to, say, São Paulo), the more salient problem was most likely the ‘...excessive supply...’ of coffee that led to ‘...a considerable number of plantations ... being abandoned as coffee producers.’⁵ The situation was different in São Paulo, ‘...where, owing to larger average yield and superior labour and transport facilities, the development of new coffee plantations has been very great...’⁶ Indeed, immigrant (especially Italian) labour served as an imperfect substitute for slave labour on the coffee *fazendas* (Corrêa do Lago 2014: 184-202; Bucciferro 2021: Fig. 1). Again, as figure 1 indicates, the principal difference between sugar and coffee was the price tendency. Thus, slave abolition came to the sugar industry during a period when prices were to a large extent not remunerating production, whereas coffee

⁵ *Diplomatic and Consular Reports. Brazil. Report for the year 1898 on the trade, &c., of Rio de Janeiro.* House of Commons Parliamentary Papers Online, p. 5.

⁶ *Ibid.*

prices were hitting heights not seen since the 1870s. Certainly, such high prices served to cushion the impact of abolition. The scarcity of labour and redistribution of the slave population were symptoms of sugar's relatively poor performance, not the causes.

A similar argument can be put forward for the supply of the other two factors of production: land and capital. Brazilian agricultural production was land extensive, but land was by no means a homogenous factor (Rebouças 1875; Leff 1972: 255). Moreover, for much of the period the access to this land was monopolised or restricted due to high transport costs. As the growth in registered coffee *fazendas* and sugar *engenhos* indicate, however, these barriers did not prevent the expansion of either sector during the post-independence decades when transport costs would have been at their highest (Barickman 1998: 36; Eisenberg 1974: appendix 3; Vidal Luna and Klein 2003: 56-7). Indeed, until the coming of the railroads, both industries suffered from high transport costs. While, hypothetically, the expansion of the railroads served to increase market access and lower these costs, export commodities suffered from discrimination in favour of foodstuffs destined for the local market. It is evident, however, that freights for coffee declined across the period, which acted to increase land value and, indirectly, the productivity of the coffee plantations (Summerhill 2003a; 2003b: 146). Although the data on railroad freights is less abundant than for the case of coffee, it seems that this was not the case for the sugar plantations. While Pernambuco and Bahia occupied the second and third places as recipients of the railroads, respectively, contemporary reports suggest that freight rates in the former continued to chip into the profit margins of the planters well into the 1870s (Milet 1881: 27-43).⁷ Again, this had much to do with the scarce profit margin of sugar production than a divergence in the relative cost of transport.⁸

⁷ Also see his article in *Jornal de Recife* of 4th of May 1865. Pernambuco received its first line four years after Rio de Janeiro in 1858, Bahia in 1860, São Paulo followed in 1867.

⁸ A further possible explanation for the decline of sugar in the northeast has been the weight of export taxes, which have been blamed for the earlier stagnation of the Brazilian cotton industry (Pereira 2021). Indeed, taxes were high for cane sugar for most of the period, but they were also comparable to those for coffee. The export tax rate on coffee from Rio de Janeiro dropped from around 22 in 1825 to 18 in 1870 and 14 per cent in 1890 (the rate was slightly lower in São Paulo), while over the same period the tax on sugar from Pernambuco also dropped from 20 to 18 to 11 per cent (data taken from Provincial Presidential Reports of Rio de Janeiro and Pernambuco, various years, <http://ddsnxt.crl.edu/brazil>). Like other transport costs, contemporary complaints regarding export taxes were probably symptomatic of the profitability crisis. They do not explain the timing of the crisis, however, and certainly don't explain the divergent performances of both commodities.

Due to the lack of well-defined financial institutions until later in the century, borrowing costs were also high for both regions. Interest rates were spectacularly high but shared across industries. Rio loan rates reached as high as 15 per cent in the 1840s, and loan and mortgage rates continued to be as high as 10 per cent towards the end of the Empire. Capital costs for sugar plantations were equally as high. Interest rates in Recife declined from a high of 18 per cent in 1835 to hover around 10 per cent for most of the century (Eisenberg 1974: 64). This lack of development produced the rise of an intermediary class, the factor (*commissario* or *correspondente*), which was, in Tauney's words, the 'producto natural do defeituoso aparelhamento bancario' (Tauney 1939: 43). Factors operated in both the coffee and sugar commodity chain, feeding off the informational costs derived from the planters' geographical detachment from the market centre. Thus, factors played a large role in getting the product to market, as well as acquiring capital and imported goods for the planter's productive or consumption needs. This relationship would change during the century with the formation of mortgage markets and the spread of commercial banking. Interestingly, the general structure of this relationship was similar for both the coffee and sugar markets, although the slimmer profit margin for sugar planters made the perception of exploitation more apparent: 'Sugar is not profitable, but the warehouse and the correspondente accumulate colossal fortunes, and own palaces with very rich furniture and many household servants ... whereas the poor planter who makes sugar barely survives.'⁹

As we shall see, Brazilian sugar, unlike coffee, was subjected to especially harsh competition in the international market. The decline of the sugar industry due to its relative unprofitability could thus be interpreted as the result of a failure to innovate in the face of stiff competition. Aside from the coming of the railroads, a common argument is that the general mode of production remained unchanged despite changes in the international market. However, the absence of innovation is also a point of departure for the traditional literature on the coffee plantations. Furthermore, the sugar industry received support from the government to modernise during the nineteenth century. Just when sugar planters began to feel the crunch of competition, the Brazilian government guaranteed a fixed rate of interest on capital investments in Central Factories (*usinas*) that, despite sugar's apparently poor performance, attracted foreign investment. Although the first attempts were colossal failures, by the turn of the century J. H. Galloway counted 41 *usinas* in Pernambuco, over half of which

⁹ Opinion of a sugar planter in the 1870s, translated by and quoted in Eisenberg 1974: 66.

were financed by foreign capital (Galloway 1968: 300; Eisenberg 1974: Ch. 3). Similarly, depulping and dehulling technology gradually increased the productivity of coffee plantations over the same period.¹⁰

The Brazilian sugar industry has been frequently compared with the 'success' story of Cuban sugar. For example, David Denslow argued that Cuban mills benefited from scale effects: 'The mills in north-eastern Brazil were much smaller than those in Cuba chiefly because soils and topography in the northeast hindered the development of a system of large factories' (Denslow 1975: 260). For this reason, Cuban plantations yielded anywhere between 10 to 60 tons of cane per hectare more than the plantations in Pernambuco (Eisenberg 1974: 218). While Cuba possessed a considerably smaller endowment of land, it was the first to obtain railroads. Furthermore, while it also suffered from labour scarcity, this was managed in part by the import of indentured labour (Hu-DeHart 1993). Eisenberg suggested that high labour costs might have also provided an incentive to increase marginal output by way of modernisation and the investment in the central mill system (Eisenberg 1974: 219-20). While such differences in productivity explain Cuba's higher market share in the export market for cane sugar, and its proximity and later neo-colonial relationship with the United States its dominant position in the American market, these reasons do not explain the country's dwindling shares, alongside Brazil, in the British and German sugar markets. Furthermore, painting Cuba as a 'success' story ignores the fact that the Cuban coffee sector, unlike the sugar sector in Brazil, rapidly disappeared from the international market after European West Indies slave emancipation.¹¹

¹⁰ An additional explanation related to competition involves the exchange rate. Several scholars have argued that cane sugar suffered from a form of the Dutch disease, whereby the rapid growth of revenue derived from coffee served to appreciate the mil-réis and price Brazilian sugar out of foreign markets (Catão 1992; Leff 1972; Monastério 2005). This hypothesis was lent some weight by Eliana Cardoso, whose work highlighted the negative relationship between coffee export revenue and the mil-réis during the second half of the nineteenth century (Cardoso 1983). While the growth of coffee most likely did affect the mil-réis, it is questionable whether this was the cause of the contraction of the cane sugar industry from the 1880s onwards. As discussed below, the Dutch disease explanation confounds the growth of beet sugar in the principal consuming market of Brazil's cane sugar and subsequent decline of the north-eastern sugar industry with the appreciation of the mil-réis during the same period.

¹¹ Given the relative price competitiveness of the muscovado form of Brazilian cane sugar and the important role of coffee in the American market, the relative absence of Brazilian sugar in this market remains a puzzle. Despite the growth of domestic production, American consumption remained largely dependent on foreign sugar over the century, with domestic sources occupying only around 20 per cent of the volume of unrefined sugar imports during the antebellum period (Eisenberg 1974, pp. 237-40), before hovering around 10 per cent during the rest of the century (Schmitz 1979, p. 271). Political (American imperialism towards Cuba and Puerto Rico) and geographical (Cuba's relative proximity to the United States) factors were undoubtedly important for Cuba's expanding share of

4. The demand side of the story

The nineteenth century witnessed the rapid expansion of the production and consumption of both coffee and sugar. Figure 2 provides details of per capita consumption trends, both for the world and for Brazil's principal trading partners.¹² From 1823 to 1913 total world coffee consumption increased by a factor of 11 and sugar by an astounding factor of 44. Sugar was clearly the more economically important crop, shifting close to 40 billion pounds of beet and cane varieties in 1913, equivalent to an average of 22.2 lbs per capita. By these standards, the consumption of coffee was minuscule, albeit reaching just over two billion pounds in the same period, 1.3 lbs per capita. Consumption trends played a key role in defining the export performance of each commodity. Changing consumption patterns and the growth of real wages associated with industrialisation increased demand in Europe and the United States. Both sugar and coffee became objects of mass consumption in these markets. The United States led the rise in the consumption of coffee, moving from 1.2 to 8.8 lbs per capita between 1820 and 1913 (Topik and Samper 2006: 133-39). In Europe, trends in French and German per capita consumption were not far behind those of the United States. British consumption of coffee, after experiencing a rise during Brazil's post-independence period, fell off after mid-century, possibly due to the abolition of slavery in the British West Indies and its effect on the relative price of coffee and tea, a popular substitute for coffee since the eighteenth century (Smith 1996: 196-201). Until the 1870s, the United Kingdom was the leading consumer of unrefined cane sugar, consuming around ten times the world per capita average; although during the second half of the century, this consumption would decrease in favour of beet varieties. The same was true for both France and Germany, the two most important European beet producers. The only country that did not experience a decline in per capita consumption of cane was the

the American market (Ely 1960; Pérez Jr. 2003), while Brazil's early gravitation towards the British market most likely also had much to do with British shipping's domination of the import market. Imports from Great Britain to Bahia accounted for 58 and to Pernambuco 60 per cent of the total value of imports in 1849 (Brazil 1855: p. 76, 87). The dominance of the British in the import trade likely created a skew in the geographical distribution of exports, as British merchants returned with Brazilian commodities.

¹² The world consumption per capita is based on sketchy world production and sketchy world population data. So, one must assume that production was equivalent to consumption for the benchmark years in question, not a horribly unrealistic assumption. Also, obviously not everybody in the world consumed sugar and coffee, although this figure can be used as a ballpark average consumption figure.

United States, which at the end of the period consumed a whopping 46.6 lbs per capita, over twice the world average.

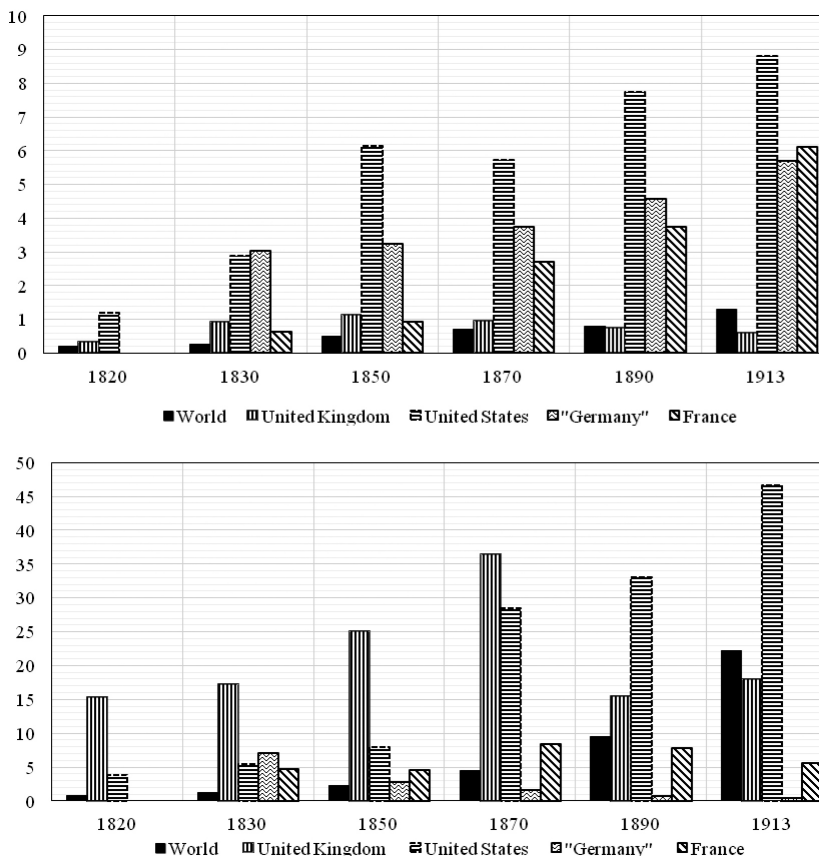


Figure 2 - Per-capita consumption in pounds (lbs) of coffee (above) and unrefined cane sugar (below), world and various countries, 1820-1913.

Notes: Figures for US are for brown sugar only, the UK for cane sugar where possible, France for all types of unrefined minus beet and local production, and for Germany as for France. Germany 1830 and 1850 is Hamburg. France and Germany 1830 is 1831; France 1870 is 1867; Germany sugar 1913 is 1911; world coffee 1820 is 1823 and 1913 is 1910. World population estimates for 1830 and 1890 are interpolated.

Sources: Population: Bolt et al 2018. World production, coffee, and sugar: Absell and Tena-Junguito 2016, online appendix. Coffee and sugar retained for consumption: United Kingdom. Various years. *Tables of the revenue, population, commerce, &c. of the United Kingdom, and its dependencies*; United Kingdom. Various years. *Annual statement of the trade of the United Kingdom with foreign countries and British possessions*; United Kingdom. 1939. *Statistical abstract for the United Kingdom for each of the fifteen years 1913 and 1924 to 1937*. United States. Various years. *Commerce and Navigation of the United States*. France. Various years. *Tableau général du commerce de la France avec ses colonies et les puissances étrangères*; France. Various years. *Annuaire statistique*. "Germany." Hamburg. Various years. *Tabellarische Übersichten des Hamburgischen Handels im Jahre*; Germany. Various years. *Statistisches Jahrbuch für das Deutsche Reich*.

This preference- and income-led growth in demand, however, was offset by other demand-side factors. Several scholars have argued that the geographic trend in consumption was distorted due to the European system of colonial preferences, which in turn was the key to the poor performance of exports (Batista Jr. 1980; Leff 1972: 249-50). Central to this analysis is the role of Great Britain and its asymmetrical relations with Brazil. While import tariffs were reduced for Great Britain and all nations in 1828, until the 1850s Brazilian exports to Great Britain were subjected to a tariff system that favoured colonial produce.¹³ The differential between the colonial and foreign tariff for muscovado sugar was on the scale of 163 per cent during the 1830s and 1840s, while that of coffee descended from 150 in the 1820s to 50 per cent in 1844 (Batista Jr. 1980: 205-6). This system of colonial preference was complemented by the system of drawbacks, whereby until West Indies slave emancipation British exporters of refined sugar were exempted from paying the import tariffs on raw sugar from the colonies.¹⁴ The case of France was much the same until the 1860s. Duties on imports of muscovado varieties of raw sugar from Bourbon (Reunion), French Guiana, Martinique and Guadeloupe were around half of those from foreign countries, the effective tariff (that is, the tariff as a percentage of the Brazilian price) for foreign sugar shipped in foreign vessels being 116 per cent in 1843. The effective tariff on foreign coffee was similar at 127 per cent.¹⁵ Other important trading partners, however, did not practice the system of colonial preferences. United States preferential treatment did not begin until 1875 when Hawaiian sugar was allowed to enter duty free. The preferential system expanded after the Spanish-American War of 1898 to include Puerto Rico, Cuba, and the Philippines. Coffee enjoyed a duty-free status from 1832 that was interrupted only by the Civil War. Likewise, the German tariff on coffee was much lower than France and the United Kingdom, falling between nine and 27 per cent of the Brazilian price. Duties on imports of raw sugar in Germany, however, were considerably higher, in line with the protection afforded

¹³ The commercial treaty of 1810 gave first place preferential status to Great Britain (15 per cent ad valorem), second place to Portugal (16 per cent) and a non-preferential ad valorem rate for the rest of the world (24 per cent). In 1828 the rate of 15 per cent was generalised to all trading partners. Corrêa do Lago 2014: 63; Pereira 2021: 318.

¹⁴ Johann Jakob Sturz observed first-hand the effect of the exclusion of foreign sugar on British refiners and argued in favour of the end of the colonial preferential system: 'Brazil, of all countries can afford to sell her sugars at moderate prices. The fertility of her soil – the favourable climate – and the facility of exporting sugar as ballast for the ships that load cotton, hides, coffee, and cocoa, from Rio de Janeiro, Bahia, Pernambuco, and Maranhão, would enable her to do so; all these advantages would be favourable to the sugar-refiner in this country...' Sturz 1837: 120-137.

¹⁵ *Sugar. Import and export duties on sugar in France*, House of Commons Parliamentary Papers Online, 6 March 1845; prices from Absell and Tena-Junguito 2016, online appendix.

the nascent beet sugar industry. The effective tariff dropped from 140 to 75 per cent when an excise tax was imposed on beet sugar production in 1869. This percentage, however, rose to around 255 during the period of indirect sugar bounties, falling to 131 per cent at the time of the Brussels sugar convention in 1902.

For Alexandre Góes, writing for the Bahian sugar conference of 1902, the explanation for Brazilian sugar's relative decline was as clear as day: '...a lavoura de canna está em crise por uma causa análoga á da lavoura do café – excesso de producção. Mas, n'este particular, ha uma distincção esencial a fazer: a crise do café proveio da superproducção brasileira ... no caso do assucar, a superproducção tem um origen europeia' (Góes 1902: 64). Antonio Gomes do Mattos provided a clear prognosis, and solution, to the problem when he argued that the aim should be 'Procurar reducir o custo da cultura e fabricaçãõ, para poder reducir o preço do assucar, de modo a supportar a concurrencia da betterraba...' (Gomes do Mattos 1882, cited in Góes 1902: 10). What is more, for Góes, the sources of the competitiveness of beet sugar were clear: its substitution of cane was not due to its superior extraction ratio, but rather '...por ser a sua industria toda artificial, isto é, favorecida por todos os governos com premios de diversas especies, protegida pelos cuidados scientificos e industriaes da velha Europa, exigindo capitaes para empresas de irrigaçãõ, com os quaes não podemos contar na mesma proporçãõ' (Góes 1902: 21). Specifically, export subsidies ('premios de exportaçãõ') were to blame.

In terms of output, beet did not overtake cane until the 1870s, although French and German beet sugar had been present on the market since the 1840s. The spread of beet sugar production throughout Western and Central Europe, Russia and, eventually, the United States signalled the demise of cane sugar production as a profitable export activity.¹⁶ The story of beet's triumph over sugar cane during the nineteenth century is well known. What remains understudied is the effect of strategic trade policy on Brazil's export performance. Previous studies assume that tropical

¹⁶ A representative of the West India Committee, Thomas Daniel Hill, described the effects of discrimination in the sugar cane industry in a letter to the Board of Trade in 1881, arguing "There would have been no fear whatever of a dearth of cane sugar in any particular year had the production been left to natural conditions and competition ... We, however, assert that bounties have had the effect of restricting the cultivation of cane, and if they are continued there must inevitably be a general decline of cane sugar ... granted free trade, cane-sugar production has all the elements of a permanent and increasing supply..." 'West India Committee to Board of Trade,' in *Correspondence between Foreign Office, Board of Trade and Foreign Governments on Export Bounties of Sugar*, House of Commons Papers, p. 5.

products faced identical trading regimes in the international market. Yet distortions in the market for sugar were quite different from those that characterised the trading regime for coffee. The remaining sections of the paper examine the characteristics of these regimes. The next section examines the nature of competition in the principal importing markets of coffee and sugar. I then turn to the effect of British preferential tariffs and German export bounties on Brazilian export growth.

5. International trade rivalry in the markets for coffee and sugar

An inspection of the composition of Brazil's trading partners suggests one possible reason for the divergent performance across commodities: sugar became increasingly concentrated in the British market over the century (Table 1). Thus, Brazilian sugar producers became largely dependent on the vicissitudes of the British market. Other important European destinations virtually disappeared after the 1870s, while the ports of the Rio da Prata (Montevideo and Buenos Aires) became the second most important destinations. Coffee, on the other hand, enjoyed a more diversified mix of customers. This is clearly demonstrated by way of the construction of a basic Herfindahl-Hirschman index (HHI, final column) for both commodities. Sugar's HHI steadily increased over the nineteenth century as the geographical distribution of exports became more concentrated. Coffee's HHI exhibited an inverted V-shape, with an initial increase in concentration (to the United States) followed by diversification during the final quarter of the century.

The supply-side view, however, does not provide information on the nature of competition in the principal markets for Brazil's products. Thus, I examine in detail the view from the demand-side: the share of Brazil's products in four important markets, including the United States, Great Britain, France and "Germany."¹⁷ The market share indicator, being measured here as the percentage of Brazil's imports by quantity in the total imports of the partner country, is an indirect way of ascertaining changes in Brazil's level of competitiveness. Under free market conditions, market share increases would indicate that Brazil's product enjoyed some

¹⁷ "Germany" refers to, for the period before 1870, Hamburg and, from 1871 onwards, the German Empire. Hamburg was an important port of entry for many regions of Germany before unification.

form of competitive advantage, whether quality or price related. Figures 3 and 4 display the market shares of Brazilian coffee and sugar in the four markets. These market shares are displayed alongside the shares for British colonial (the British West and East Indies, British India, British Guyana and Mauritius), Spanish colonial (Cuba and Puerto Rico), Dutch colonial (Dutch East and West Indies), French colonial (West Indies), and independent (principally South American countries such as Colombia and Venezuela, but also including Central America and Haiti) countries, as well as a category denominated Others that includes, in the case of coffee, unspecified exporters and, in the case of sugar, unspecified and European beet producers.

Table 1 - Percentage of exports of Brazilian coffee and sugar to importing markets and Herfindahl-Hirschman Index (HHI), selected benchmarks.

	Great Britain	France	'Germany'	Other Europe	United States	Rio da Prata	Other	HHI
Sugar								
1841/42	20	3	19	40	6	6	2	0.13
1871/72	56	5	1	10	6	20	1	0.37
1913	70	0	0	3	0	9	18	0.53
Coffee								
1841/42	14	7	20	25	33	0	0	0.19
1871/72	13	4	5	10	53	2	11	0.32
1913	2	14	14	27	37	2	3	0.20

Sources: Brazil. Various years. *Collecção de mappas estatísticos do commercio e navegação do Imperio do Brasil*. Rio de Janeiro: Typographia Nacional; Brazil Various years. *Estatística do commercio marítimo do Brasil*. Rio de Janeiro: Typographia Nacional; Brazil, 1939. *Anuario estatístico do Brasil (1939/1940)*. Rio de Janeiro: Tip Departamento de Estatística e Publicidade.

The growth of Brazilian coffee was principally absorbed by the United States. Brazil's market share grew by 11 per cent per annum from the eve of the country's independence to mid-century and averaged around three quarters of the United States' coffee imports during the rest of the century. Most of this initial growth came at the expense of Cuba, Puerto Rico, and Haiti. While the Spanish colonies disappeared almost completely from the American coffee market, Haiti was replaced by other independent states, principally Colombia and Venezuela. Although these countries benefitted from the Haitian and Cuban decline, they did not make large inroads into Brazil's market share due to the overall price competitiveness

of Brazilian coffee. The initial rise of Brazilian coffee in the United States corresponds with the reduction and eventual abolition of the American import tariff on coffee during the period 1828/32. Brazilian dominance was achieved during the period 1838/46, when the market share increased to 74 per cent. A similar tendency is observed in the Hamburg market, with a slight difference: Brazilian market share dominance occurred during the period 1833/40, when its market share rose from an already considerable 27 per cent to hold over half the market. This came at the expense mostly of the Spanish colonies and Haiti, while other independent states, like Venezuela and, to a lesser extent, Columbia, prevented Brazil from fully consolidating its market share.

The United States and Hamburg are interesting cases of quasi-free market conditions. As mentioned above, until 1875 in the case of the United States, competition for the share of these markets was not distorted by colonial preferences. Thus, the trends in these markets to a large extent capture the state of competitiveness for these commodities on both sides of the Atlantic. The decline of coffee exports from Cuba and Puerto Rico during the period of British West Indies slave abolition corresponds with the increase of the market shares of these countries in the sugar market. Thus, there seems to have occurred a rapid process of specialisation whereby Brazil was able to reap the rewards of Cuba and Puerto Rico's exit from the coffee market,¹⁸ undoubtedly helped along by weather shocks. As a British consular officer stationed in La Havana observed in the late 1840s, 'A great number ... of the coffee plantations, having been destroyed by the hurricanes of 1844 and 1846, are abandoned, and their dotations of slaves have been sold, and their labour turned to the cultivation of sugar.'¹⁹ In the case of the American sugar market, Brazil managed to maintain its marginal market share (averaging around five per cent for the period until mid-century), losing out only around the turn of the century when neo-colonial preferential access fully consolidated Cuba and Puerto Rico's market share. Instead, the initial gain of the Spanish colonies came at the expense of Danish, British, and Dutch West Indies and the British and Dutch East Indies. In the case of the sugar market in Hamburg, while

¹⁸ Sidney Mintz vividly described the rapid development of the sugar market in Puerto Rico: "Squatter farmers were cleared from Crown and private land, and marshalled on the plantations to work in a state approximating slavery. Slaves and landless freeman alike could not leave plantation without permission. The number of slaves increased, and colored freeman were warned to show no resistance to the stiffened control of the enslaved population." Mintz 1959: 279.

¹⁹ *Correspondence relative to the distress...* Enclosure 1, No. 3. Letter from E.J. Stanley, Esq. to E. Hawes, Esq., House of Commons Parliamentary Papers Online, 15 April 1848, p. 749.

Brazil's market share declined by two percent during the period 1831/50, it maintained a sizable portion of the market until the incidence of beet sugar after mid-century. This market share, however, declined alongside the growth rates of Brazilian sugar exports. While previous studies on the decline of Brazilian sugar have focused almost solely on the British market, Table 1 reminds one that before mid-century, this market was almost equal in importance to the British market for Brazilian sugar, importing around 20 per cent of Brazil's total exports.

Paradoxically, during the period of colonial preferences Brazil's market share for both coffee and sugar grew in France and Great Britain. Although this market share remained marginal in both cases, this suggests that Brazil's exports of these commodities were competitive even in conditions of discrimination. The British market for coffee was unsurprisingly dominated by its colonial possessions until around the turn of the century. The geographical nature of this colonial supply, however, altered considerably during the period under study. Although it was evident that decline was apparent before abolition,²⁰ the contribution of the British West Indies declined rapidly after slave abolition, from 55 per cent of the British market share in 1833 to six per cent around the time of the end of colonial preferences. British West Indian supply was replaced by coffee from the British East Indies and British India, and increasingly by Brazil and Colombia. In the case of sugar, the market share of cane sugar producers, both colonial and otherwise, would be gradually replaced by European beet sugar producers, mainly Germany. Likewise, the French sugar market was dominated by colonial possessions Guadeloupe, Martinique, and Bourbon (Reunion). The distribution of France's sugar imports followed a similar tendency after emancipation in 1848: a decline in the French colonial market share and an increasing presence of the Spanish colonies and, to a lesser extent, Brazil. The French colonies also lost shares in the market for coffee, although the French supply was much more diversified. While the colonies declined and switched to sugar, independent Haiti, perhaps for reasons of colonial path dependence, maintained its market share against increasing competition from Dutch Java, British Ceylon, and Brazil.

²⁰ According to Eric Williams, it was the American War of Independence that began the British West Indies decline, driven by the rise of abolitionism and the rejection of mercantilism in favour of *laissez-faire*. Williams 1944, especially ch. 6. The long-run decline of the British West Indies plantations, however, was made questionable by evidence of profitability up until the eve of abolition. See Ward 1978. Regardless of the level of profitability of these plantations, the rapid decline of the market share of the British West Indies and its almost complete absence from Brazil's other major trading partners shows evidence of their inability to compete with other tropical producers.

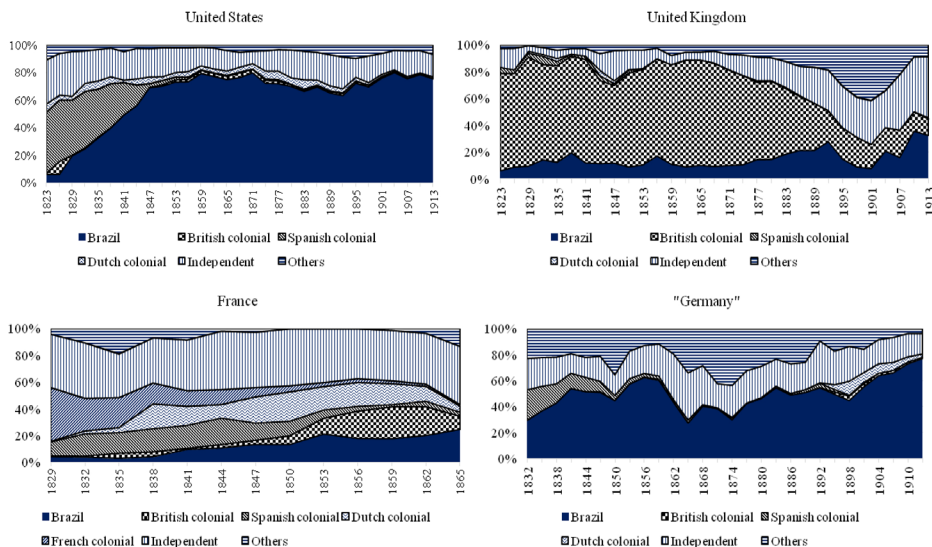


Figure 3 - Coffee market shares in principal import markets, three-year averages.

Sources: same as Figure 2.

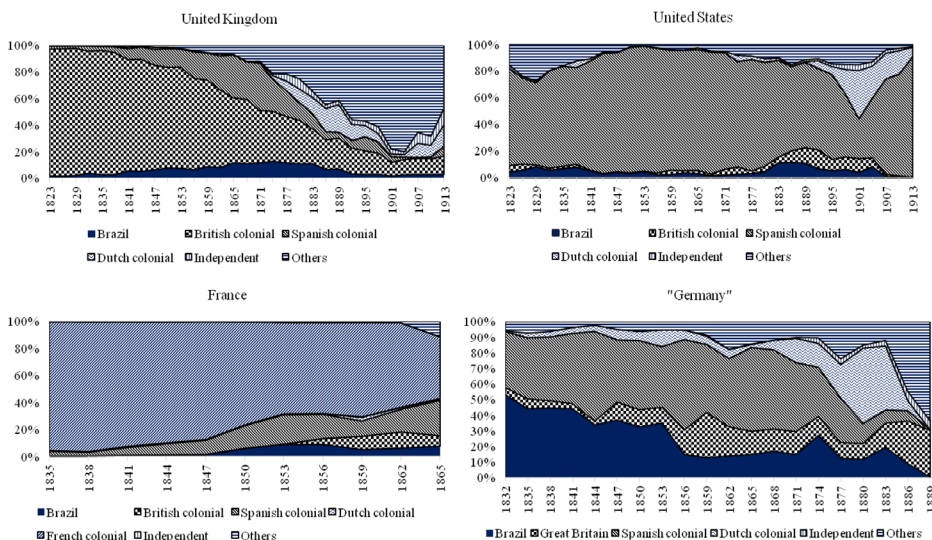


Figure 4 - Sugar market shares in principal import markets, three-year averages.

Sources: same as Figure 2.

Indices of price competitiveness, presented here as the ratio of all foreign prices (c.i.f. but not including import tariffs) to the Brazilian price in the importing market weighted by the market share of each competitor,²¹ suggest that in most cases Brazil increased, or at least maintained, its competitiveness during the period that Brazilian sugar's performance diverged dramatically from that of coffee. Figure 5 shows the indices for coffee and sugar in the cases of the United States, the United Kingdom and Germany (or, until the 1870s, Hamburg). Values higher than one indicate a relative price advantage for Brazil. Coffee enjoyed gradual increases in price competitiveness in all three markets. Brazilian sugar also remained marginally price competitive in the United States and United Kingdom. This was not the case for the German market, however, where Brazilian sugar lost its competitive edge during the 1870s. The take-away from these indicators is that the price competitiveness of Brazilian coffee and sugar, prior to the imposition of tariffs and other non-tariff barriers, does not explain coffee's rise and sugar's decline. Given that price competitiveness was directly affected by productivity, this indicates that conditions on the ground in Brazil are of limited use for understanding the divergent performances of coffee and sugar. A complete picture of Brazilian export growth during the nineteenth century requires a consideration of the vicissitudes of European strategic trade policy.

²¹ On the construction of price competitiveness indices, see Kravis and Lipsey 1971: Ch. 3. In the case of the British price competitiveness index for sugar, the index is the weighted ratio of Cuba and the British West Indies (Jamaica) to Brazil until 1854.

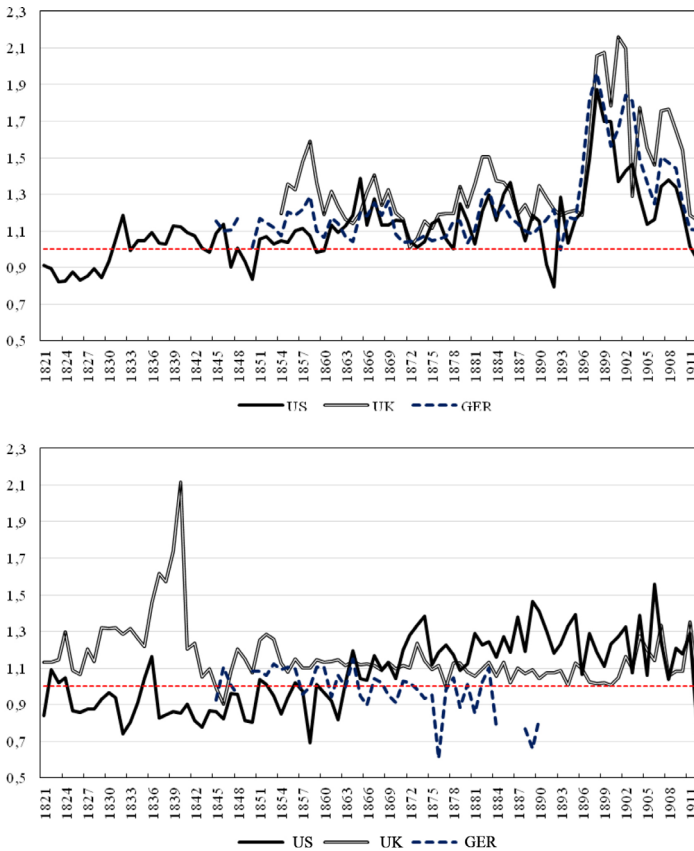


Figure 5 - Price competitiveness indices for coffee (above) and cane sugar (below) in selected import markets, 1821-1913.

Sources: same as Figure 2.

6. British slave emancipation and the growth of Brazilian sugar

The official abolition of slavery by the Slavery Abolition Act of 1833 provided an entrance for non-colonial producers to the British market. In the case of sugar, the British market share of the West Indies fell from around three quarters in the period 1821/23 to 32 per cent in 1848/50. The impact on the share of coffee was even greater, falling from 65 to eight per cent over the same period. The consequences for the Brazilian

sugar industry, however, were more important given the United Kingdom's status as the world's premier cane sugar consumer. The process of slave emancipation corresponded with a rapid rise in the price of British West Indies muscovado, which peaked in 1840 at levels not observed since the end of the Napoleonic Wars.²² Brazilian and Cuban prices, however, did not rise to the same extent, and this is reflected in the price competitiveness index for British sugar imports shown in Figure 5. The subsequent decline of the British West Indies corresponded with the rapid growth of imports from other colonial and non-colonial destinations. As panel A of Table 2 shows, imports from Brazil, Cuba and the British East Indies grew rapidly during the decade spanning British slave emancipation and apprenticeship (1830/40). Here it is particularly interesting to compare the performance of Brazil and Cuba. Cuban competition was fierce, a fact attested to by the sharp drop of the price competitiveness index for sugar after 1841. Nevertheless, the market shares of each country remained comparable. Cuba increased from a share of two per cent in 1821/23 to nine in 1848/50. Likewise, Brazil's market share rose from two to eight per cent between independence in 1822 and mid-century. Thus, for the first half of the century Brazil maintained competitiveness despite the geographical and technological (principally, the coming of the railroads in 1837) advances enjoyed by Cuban competition.

Supply-side differences aside, both competitors shared the (mis)fortune of being excluded from British imperial preferential treatment. Thus, as mentioned above, non-colonial producers faced almost prohibitive barriers to entry in the British market. Initially the system gave preference to British West Indies sugar, charging less than half the duty imposed on foreign sugar and around 10 shillings less per hundredweight than sugar from Mauritius and the British East Indies. The duties on British colonial imports were equalised after West Indies slave emancipation, and later colonial preferences were abolished in 1855 following the stipulations of the Sugar Act of 1846 and its amendment in 1848 (Curtin 1954: 154-64). The foreign tariff experienced several important revisions before being equalised in 1855. The tariff increased from 60/- at the time of Brazilian independence to a high of 66/1³/₄d in the period 1841/44. In the space of the next three years, this dropped from 63/-, to 21/- and 20/-, representing a radical reduction of the effective tariff from 227 to 70 per cent.

²² British muscovado prices dropped from 61/10d per cwt in 1815 to 31/- in 1823, fluctuating around this level until rising to 40/10d in 1836 and reaching a peak for the period surveyed here (1821/1913) of 49/1d. *Account relating to sugar imported into the United Kingdom from 1815 to 1840*, House of Commons Parliamentary Papers Online, 5 May 1841.

The immediate effect of this change on Brazil's export supply is clear from Figure 6, which displays the effective rate (right axis) alongside the volume of British imports of Brazilian sugar. The fall in British sugar duties corresponded with an almost three-fold rise in the quantity of sugar supplied from Brazil.²³

Table 2 - Quantum cane sugar import growth rates and share of home consumption of selected partners in British market, 1821-65.

<i>Growth per annum of imports (%)</i>	Brazil	Cuba	British East Indies	British West Indies	All
			A		
1821-50	4.4	6.6	5.8	-1.6	1.4
1821-30	-1.4	5.3	-0.8	-0.7	2.0
1830-40	9.2	13.4	7.6	-3.5	-2.2
1840-50	5.8	2.4	11.2	-0.8	4.9
1850-65	7.4	10.8	-25.7	1.2	3.5
<i>Growth per annum of imports retained for consumption (%)</i>	Foreign				
			B		
1835-44	16.5		29.5	-5.0	-0.9
1844-50	182.1		5.8	1.6	7.8
1850-65	11.9		-7.0	3.4	3.4
<i>Av. share of home consumption (%)</i>			C		
1834-44	0.0		14.9	70.6	85.5
1844-50	12.2		23.5	48.2	83.9
1850-65	33.8		12.0	46.5	92.4

Notes: Quantity retained for consumption for the British West Indies in 1850-65 contains figures for Mauritius, and thus may bias growth rates upwards.

Sources: *Tables of the revenue, population, commerce, &c. of the United Kingdom, and its dependencies, various years; Accounts of the Quantities of sugar imported and exported into and from Great Britain and Ireland; and Amount of Duties received, various years; Annual statement of the trade of the United Kingdom with foreign countries and British possessions, various years.*

Before these restrictions and the subsequent abolition of colonial preferences, however, such high duties on the import of foreign sugar meant that much of this product was instead destined for the re-export trade. For the decade spanning 1834 to 1844, the percentage of foreign sugar

²³ In February 1848, the British consul in Pernambuco reported that "The removal of the differential duties on the import of sugar in England, added to the fortunate contingency of an abundant harvest here, not only at once raised the export of sugar from 40,000 tons to 61,000 tons, but its average price from Rs. 1/600, or 3/7 ¼d, to Rs.2/, or 4/6d per arroba." *Correspondence Relative to distress*, p. 429.

retained for British consumption was virtually negligible, the sugar consumed being sourced principally from the West Indies and, to a lesser extent, from the East Indies and Mauritius. As panel B of Table 2 shows, between the passing of the Sugar Act in 1846 and mid-century, the quantity of foreign sugar retained for consumption grew by an astounding 182 per cent per annum to occupy around 15 per cent of home consumption in 1850, seemingly filling the gap left by the decline of the West Indies. This performance suggests that imports from non-colonial suppliers of sugar (that is, Brazil, Cuba, and Puerto Rico) were particularly sensitive to the British system of colonial preferences. It also suggests that they were relatively more competitive than the dominant colonial suppliers. The importance of the preferential system for retarding sugar imports from Brazil and the Spanish Caribbean colonies is further highlighted by an examination of another important European market for cane sugar: Hamburg. While Figure 4 shows that Brazil lost its market share in the Hanseatic market principally due to an increased share of imports from Great Britain, such imports consisted of a high 'foreign' component. Thus, the correction of the German import statistics for re-exports from Great Britain would most likely increase the market share of both Brazil and the Spanish Caribbean colonies.²⁴ The fact that British colonial produce was little consumed outside of the British Empire suggests that the presence of preferential treatment substantially retarded the export performance of the competition blocked from the market.

The abolition of preferential duties in 1855 fully opened the market to foreign competition. The effect of this change in the structure of duties can be observed in the subsequent expansion of both Brazilian and Spanish colonial market shares displayed in Figure 4, as well as the import growth and home consumption performance of the 'foreign' countries in panel C of Table 2. Both Brazil and Cuba increased their market shares to 12 and 23 per cent in 1865, respectively. The growth of imports retained for consumption, while less than in previous periods, still outperformed the British colonies. Furthermore, the share of British consumption rose to around 50 per cent a decade after the abolition of duties.

When compared to sugar, the British coffee market was economically unimportant. While the volume of coffee retained for consumption quadrupled between 1821 and mid-century, per capita consumption levels

²⁴ Unfortunately, the British statistics do not disaggregate this foreign category, so it is not possible to correct for country composition. Figure 4, however, shows that almost all this sugar consisted of imports from Brazil and the Spanish colonies of Cuba and Puerto Rico.

remained far below those of the United States and Hamburg, and minuscule when compared to the British per capita consumption of cane sugar (as shown in Figure 2). What's more, the volume of British imports of Brazilian coffee was dwarfed by the United States; in fact, by mid-century, the United States was importing more Brazilian coffee than Hamburg, the United Kingdom and France combined. Although the German market was no doubt an import destination for Brazilian producers, it was coffee's duty-free status in the American market from 1832 and subsequent dramatic expansion of consumption that served to fuel coffee's growth until late into the century (Figure 6) (Absell 2020).

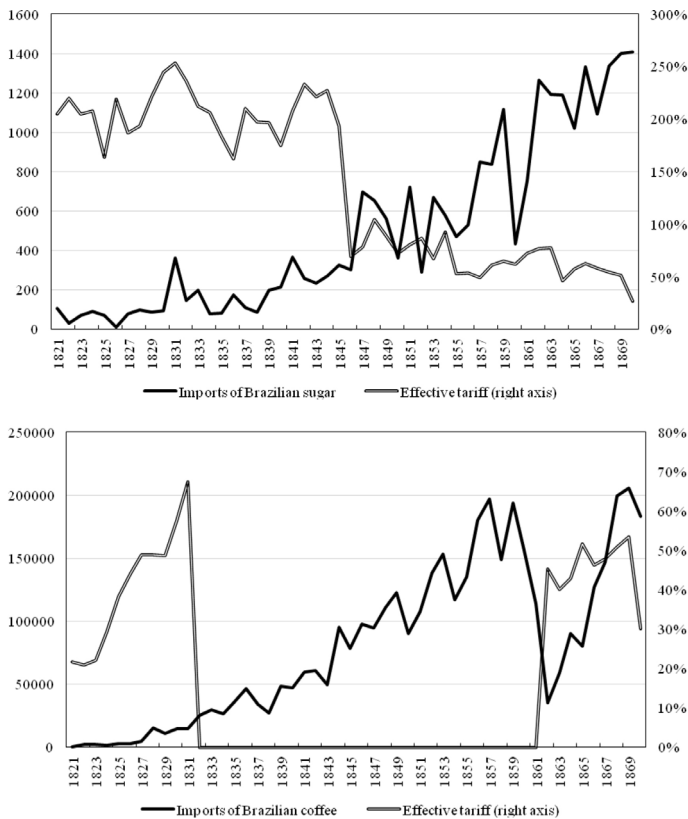


Figure 6 - British imports of Brazilian cane sugar (above), United States' imports of Brazilian coffee (below), thousands of metric tons, and the effective tariff rate (% of price), 1821-70.

Sources: *Tables of the revenue, population, commerce, &c. of the United Kingdom, and its dependencies*, various years; *Annual statement of the trade of the United Kingdom with foreign countries and British possessions*, various years; *Sugar, &c. Return of the quantities of sugar imported into the United Kingdom, from 1800 to 1858, inclusive*. House of Commons Parliamentary Papers Online, 8 June 1859.

7. German sugar bounties and the decline of Brazilian sugar

British slave emancipation created the conditions for, and the Sugar Act of 1846 opened the door to, the increased consumption of Brazilian sugar in Great Britain. Likewise, these events increased Brazilian producers' dependence on the British market. Liberalisation of the British sugar market, however, also drove the development of beet sugar production in Continental Europe. The eventual decline of the cane sugar industry in the second half of the century would occur as the result of overwhelming competition from the European beet industry in the British market, which after mid-century consumed a major part of Brazilian exports. Most importantly, the decline of the British demand for Brazilian sugar did not occur under free market conditions. European beet producers received considerable subsidies for production and export.

The impact of the increased consumption of beet sugar in the British market on the demand for Brazilian and other cane sugar producers can be seen in Figure 7. Prior to the mid-1870s, the quantity imported of Brazilian, Cuban, and British West Indian sugar was comparable. This changed dramatically during the last half of the decade, however, as imports of German beet rapidly increased. Imports of beet sugar from Germany, the principal exporter of beet sugar to the British market, grew at a rate of 10 per cent per annum during the period 1870/90, increasing its market share to around one third of total imports of unrefined sugar. The result was the contraction of the sugar industry.

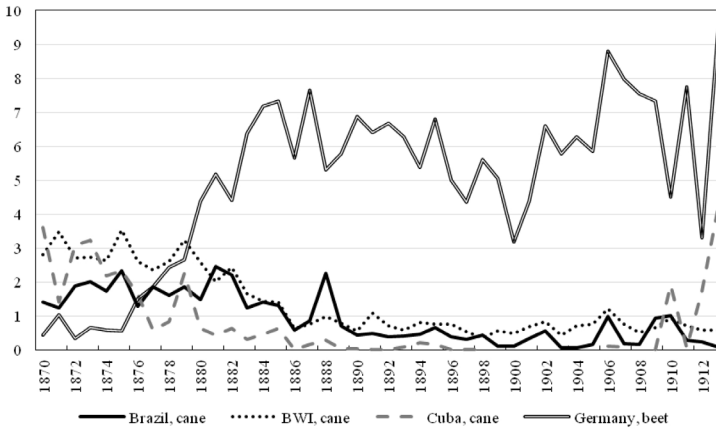


Figure 7 - Imports of cane and beet sugar to the British market, millions of hundredweights, selected countries, 1870-1913.

Note: BWI is British West Indies.

Sources: *Annual statement of the trade of the United Kingdom with foreign countries and British possessions*, various years.

Figure 7 also shows that the decline of Brazilian sugar that occurred in parallel with the growth of German beet was also suffered by the British West Indies and Cuba. Imports of Cuba's product also violently contracted due to the impact of the Ten Year' War and slave emancipation on agricultural production. The expansion of German beet came not only at the expense of cane sugar producers, but also of other important beet suppliers to the British market, such as France and Belgium.

Beet being a temperate crop, it could be grown in areas where the climate disallowed the cultivation of cane sugar. In its refined form, beet was a direct substitute for cane sugar. However, at the point of production, beet possessed certain characteristics that meant that it was only competitive with cane at high levels of productivity. To begin with, cane contains more sugar per weight than beet. Perhaps more importantly, the extraction of sugar from beets was more costly because the by-products were largely unfit for consumption. Cane, on the other hand, produced by-products (cane sugar, and molasses) that were important inputs to syrup and rum production (Smith 1887: 2-4). The advantage of beet, and the reason for its initial rise as an agricultural commodity, was that its pulp could be used to feed cattle, a high value economic activity, while cane pulp was only good

for use as fuel (*'bagaço'*) (Griffin 1902: 6-15). Given the same initial conditions, however, beet was not a direct competitor with cane in terms of agricultural efficiency. Contemporary (late-19th century) estimates show that cane sugar was generally more productive than European beet sugar, even during the period that German beet was flooding the British market. Table 3 shows estimates of raw sugar per hectare for a group of cane producers and three of the principal beet producers (Germany, France, and Russia, in bold). Even in the late-1880s, plantations in Cuba, Java, British Guyana, and French Guadeloupe were yielding higher levels of raw sugar per hectare than that achieved by German producers. Depending on the assumption made regarding cane yield per hectare and extraction ratio, producers in Pernambuco were most likely as productive as German beet producers, and more so than French and Russian ones.

The European competitive edge was thus not achieved on land, or in the refining process, both of which made dramatic advances in the final quarter of the nineteenth century, but rather by a complex system of protectionist measures (Guyot 1902). In the German case, the system of bounties served to rapidly increase beet production. From 1869, the payable amount of the excise duty on raw sugar production was calculated on the weight of the beetroots delivered to the manufacturer of unrefined sugar. Thus, in 1871, at the estimated yield rate of roughly 8.28 per cent, 1,207 kilograms of beetroots were needed to produce 100 kilograms of raw sugar. On this weight the manufacturer paid the duty of 1.6 marks per 100 kilograms of roots, 19.31 marks in total. The drawback on the export of 100 kilograms of unrefined sugar was 18.8 marks, almost covering the excise duty outlay. The appearance of the excise duty, however, incentivised German producers to increase the saccharine yield of the beetroots, which rose from 8.28 per 100 kilograms of roots in 1871/72 to 12.79 in 1897/98. For much of this period the excise duty remained fixed, and producers enjoyed a bounty that returned to them more than they had paid (Smart 1887: 15-20; Martineau 1904). Thus, instead of adjusting their supply in response to prices in the British market, German producers followed the bounty.

Table 3 - Raw sugar yield per hectare, various countries, late-1880s.

Country	Yield
Cuba	40-50
Java	40-50
Guyana	32-38
Brazil (Pernambuco)	Upper: 32-48 Lower: 20-30
Guadeloupe	36
Germany	34.6
Martinique	30-32
Egypt	27-32
France	27.3
Australia (New South Wales)	25
Hawaii	25
USA (Louisiana)	22-25
Philippines	20
Russia	17.1

Notes: The upper bound estimate for Pernambuco is based on a 60-ton cane yield per hectare, and minimum five and maximum eight per cent extraction ratio, figures mentioned by numerous commentators towards the end of the nineteenth century. The lower bound estimate is based on a 40-ton cane yield per hectare, and the same extraction ratio, the figures used by Eisenberg to calculate productivity in the mid-1850s.

Sources: Brazil: Eisenberg 1974: 126-27; Gôes 1902: 18-19. Other countries: Paasche 1891: 344.

The details of this bounty, together with the corresponding exports to the United Kingdom and prices of unrefined German beet and Brazilian cane sugar, are displayed in Figure 8. As mentioned above, during the first few years of the system raw sugar producers were refunded the excise duty payable on the purchase of beetroots. After 1874, however, the difference between duty and drawback became attractive. The rising value of the bounty induced an export boom that would peak in 1885. Between 1871 and 1887 Germany almost quadrupled its market share, rising from nine to 43 per cent. This rapid expansion corresponded with the drastic fall in the price of both beet and cane sugar in the British market. The average price dropped from £1.20 per cwt in 1870 to a low of £0.42 per cwt on the eve of the Brussels convention in 1902. In the five years spanning 1882/87, the price of a hundredweight of unrefined sugar almost halved its value, falling from £1.12 to £0.60.

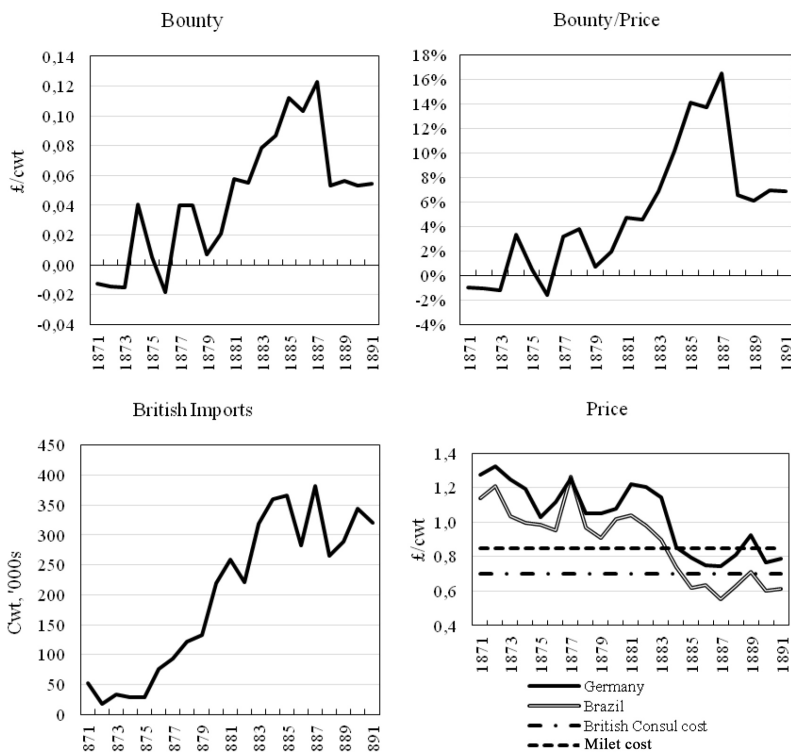


Figure 8 - Bounties paid to, bounty to price ratio of, and imports of German beet sugar, and German beet and Brazilian cane sugar prices in British market, 1871-91.

Sources: Martineau 1899: 305; *Annual statement of the trade of the United Kingdom with foreign countries and British possessions*, various years. Exchange rates from Denzel 2010: 243-44.

When put in terms of the ratio of the bounty to the price of German unrefined beet sugar in the British market, it becomes clear that the bounty constituted a considerable incentive. This incentive reached a nineteenth century peak in 1887, constituting 17 per cent of the British import price. What is more, bounties were increased towards the end of the nineteenth century as the result of bad grain harvests (Crespo 2006: 155). Yves Guyot estimated for 1900 that German manufacturers of beet sugar for export received a subsidy of around 3/8d per cwt, which in 1900 constituted roughly 40 per cent of the unit price of German beet sugar in the British market. Guyot observed that the ‘...abolition of direct bounties for export ... would have the effect of raising prices in the proportion of the amount

of the suppressed bounties' (Guyot 1902: 435-37).²⁵ This occurred after the Brussels convention of 1902, during which all parties agreed to eliminate all direct and indirect subsidies to sugar production from September 1903. While prices somewhat recovered, they did not do so to the level required by Brazilian producers to cover production costs. Beet production had ejected Brazilian sugar from the German market, reduced its British market share, and severely retarded the growth of the industry.²⁶

8. Conclusions

This article provides a broad narrative of the demand-side conditions that determined the divergent growth patterns of Brazilian coffee and cane sugar during the nineteenth century. We knew that both commodities suffered from important supply-side imperfections in factor markets and distribution channels. What has previously been underappreciated, however, is that, despite these imperfections, both commodities remained marginally price competitive in important consumer markets, indicating that this divergence was not due to the lagging productivity of Brazilian plantations, a common explanation of the Brazilian sugar sector's decline during the second half of the century. Instead, these tendencies are explained by the interaction between these supply-side conditions and strategic interventions by European governments in commodity markets that created distortions on the demand-side. Although these interventions were numerous, this article has focused on two: British colonial preferences and German beet sugar subsidies. Both interventions served to block Brazilian sugar from the most important consumer market in the world: Great Britain. The German intervention was the death knell for not only the Brazilian sugar sector, but also for many cane producers in the poor periphery.

²⁵ See also British estimates in *Return of all the Bounties, direct or indirect, on the Production or Export of Sugar, given by France, Germany, and Austria-Hungary*, House of Commons Parliamentary Papers Online, 2 June 1899, p. 4.

²⁶ This is evident not only from export data but also from the number of mills in Pernambuco and Bahia, which, for the former, decreased from around 2000 in the 1880s to 1500 in 1901 and, for the latter, from 1274 in 1854 to 705 in 1925. See Eisenberg 1974: 124; Barickman 1998: 36.

Taken from a wider perspective, however, there is a bright side to this narrative. When Brazil became an independent nation, the international sugar market was plagued by imperial monopsony, slavery, and beggar-thy-neighbour trade policy. By the turn of the twentieth century, monopsony had been replaced by the ideology of free trade, slavery was history (at least, in *de jure* terms), and sugar was the focal point of the first multi-lateral effort to regulate a commodity market in European history (the Brussels Convention of 1902). In effect, European strategic trade policy in the nineteenth century not only destroyed many a livelihood in the poor periphery; it also generated the conditions of its own demise.

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