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Title: Between Conflicts and Commerce : The Impact of Institutions and Wars on Swedish-Portuguese Trade, 1686-1815

Year: 2015

Version:

Please cite the original version:

Eloranta, J., Moreira, M. C., & Karvonen, L. (2015). Between Conflicts and Commerce : The Impact of Institutions and Wars on Swedish-Portuguese Trade, 1686-1815. Journal of European Economic History, XLIV(3), 9-50. http://www.jeeh.it/?to_pdf=1

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Between Conflicts and Commerce: The Impact of Institutions and Wars on Swedish-Portuguese Trade, 1686-1815*

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ABSTRACT

This paper is related to a multiyear project aimed at compiling new data on the early modern trade flows between smaller (or weaker) states. It presents a quantitative analysis of the nature and volume of trade between Sweden and Portugal during the period in question, seeking to identify long-run changes in these flows and to determine whether institutional changes and wars fundamentally altered the composition, trends, or volume of trade. First, it appears that trade between Portugal and Sweden hinged on only a few key commodities, most importantly iron from Sweden and salt from Portugal. In particular, we found that Portugal was somewhat more dependent on Swedish iron than Sweden was on Portuguese salt, since Sweden could also import the salt it needed from other regions. Second, we discovered that institutional arrangements and changes did affect Portuguese-Swedish trade, which they stabilized to some extent. Third, we argue that external shocks, mainly wars, had a slight negative effect on the bilateral trade, although some periods of war also offered new trading opportunities to non-belligerents. In general, the bilateral trade flows were fairly stable over this period and increased substantially during the 18th century.

* This article pertains to the project PTDC/HIS-HIS/118984/2010-*Trade Networks of small and neutral States before, during and after the Revolutionary and Napoleonic Conflicts (1750-1850)*. Funding for this project has been provided by Fundação para a Ciencia e Tecnologia, FEDER, PTDC 2010, Principal Investigator Maria Cristina Moreira; as well as the Finnish Centre of Excellence in Historical Research, funded by the Academy of Finland. We also would like to thank participants in several conferences for their helpful comments, especially Silvia Marzagalli. Eloranta would also like to acknowledge the research assistance of Michael Cushman.

1. Introduction

The role of institutions and conflicts in shaping trade flows has been a frequent topic of discussion among economic historians in the last two decades, typically in connection with research on the nature and impact of the first period of globalization. Many studies have pointed out the strong influence of increased trade flows and competition in the post-Napoleonic period, which ushered in the massive growth of international trade during the 19th century.¹ The very nature of trade was different during the 19th century compared with the past, as more than half of the trade was now in primary products rather than higher-value goods.² Moreover, prior to the 19th century, markets were more regionalized or dominated by the colonial powers within their respective spheres, and bilateral trade relationships were very important, especially given the mercantilist tendencies of early modern states. In fact, even in the heyday of the economic globalization of the late 19th century, most trade treaties were based on bilateral arrangements.³ Hence, the study of bilateral trade makes sense especially for the pre-19th-century world, at least as the crucial first step in understanding regional and global trade patterns.

There are fewer studies of the commodity flows in the early modern period, partially owing to data constraints.⁴ However, new digitization projects such as the Sound Toll Records (<http://www.soundtoll.nl/index.php/en/over-het-project/str-online>), STR, are

¹ On 19th century globalization in general, see, for example, O'Rourke and Williamson (2001); O'Rourke and Williamson (2002); O'Rourke and Williamson (2004). On trade costs in the late 19th and early 20th century globalization, see especially Jacks et al. (2008); Jacks et al. (2010). However, some studies have suggested that institutions such as treaties and tariffs may not have mattered for the late 19th century. See, for example, Schularick and Solomou (2011).

² See, for example, Maddison (2001); Cameron and Neal (2003).

³ Irwin (1993). On mercantilism, see also Ekelund and Tollison (1981) and, a classic, Hecksher (1953, originally published in 1931).

⁴ For a discussion of the importance of studying early modern trade, see, for example, Acemoglu et al. (2005).

changing this situation. There are now opportunities to study longer-term trade between two or more nations.⁵ Nonetheless, studies of international trade still devote most of their attention to greater military and commercial powers, such as Britain, France, Spain, and the Netherlands, on the assumption that, with their extensive fleets and military might, they dictated the flows of trade during the early modern period. While this is not entirely wrong, it is clear that smaller and medium-sized nations often do figure prominently in the international trading system, especially during periods of upheaval. Here we are suggesting that the availability of new comparative data and a shift in the focus of scholarship toward the less analyzed players in the international system can reveal new aspects of the early modern trade flows.⁶

In this article we will present a quantitative analysis of the nature and volume of bilateral trade between Sweden and Portugal in the years 1686-1815, although we must note that some of the data we have only covers the period 1700-1800. In particular, we want to analyze the nature of this trade and long-run changes in it, in order to determine whether institutional changes and wars fundamentally altered its composition, trends, or volumes. Analyzing bilateral data allows us to dig deeper into these trade flows, to ascertain what happened and why, although we are also well aware that this is just the first step towards more comprehensive analysis of multilateral trade relationships. We argue that the trade between Portugal and Sweden hinged on only a few key commodities, most importantly iron from Sweden and salt from Portugal. Our hypothesis is that Portugal was somewhat more dependent on Swedish iron than Sweden was on

⁵ On the limits of early modern globalization, see especially De Vries (2010). For a recent discussion of the Sound Toll Records and similar projects, see, for example, Gøbel (2010); Rönnbäck (2010).

⁶ There some exceptions as regards studies of commodity trade, for instance Pinnilla and Serrano (2008), but even that article focuses on late 19th century Spanish wine trade. On early Dutch shipping, see Van Zanden and Van Tielhof (2009). On earlier efforts to discuss bilateral trade flows and the role of weaker states, see Moreira and Eloranta (2011).

Portuguese salt, especially since Sweden could import the salt that it needed from other regions. Second, we argue that certain institutional arrangements and changes affected the opportunities for trade between these two countries; these included not only the consular networks but also convoys organized by the Swedish state for shipping in the Mediterranean area and trade agreements with several countries. In addition, institutional arrangements with other countries outside these trade networks and / or agreements may also have had a positive or negative impact on Swedish trade and shipping to Portugal; most importantly, the role of Portugal in Swedish salt imports was determined by these institutional conditions. Third, we argue that exogenous shocks, wars in particular, had both positive and negative impacts. Neutrality was typically a boon for trade, but being a participant in a conflict usually (though not necessarily) harmed the trade between the parties, whether the war took place in the Baltic or in the Atlantic.

We focus on institutions and conflicts as the primary factors influencing the bilateral trade flows between these two nations. Bilateral trade flows are often analyzed on the basis of the economic size of the countries involved and the distance between them, the items traded, and other endogenous and exogenous factors.⁷ The quantitative model we will test in this article takes account of some of these factors, such as the economic conditions in both nations and the influence of neighboring countries as potential markets. There are, of course, a multitude of models available to analyze trade in multilateral settings, although the historical applications that concentrate on periods before the 19th century are quite rare. Typically, many of the recent studies have analyzed large panel data sets with pooled regression techniques, by applying some variations of the gravity models (building from the classic Heckscher-Ohlin model based on factor endowments) to incorporate distance into the analysis.⁸ But in accordance with de Groot et al. (2004), for example, alongside di-

⁷ See, for example, Srivastava and Green (1986).

⁸ On intra-industry trade and models, see, for example, Bergstrand (1990). For analysis

stance as a measure of the “gravity” between two nations, utilizing institutions in bilateral trade analysis makes a lot sense.⁹ Institutions, defined here in the Northian sense as the rules of the game governing the functioning of trade (and the economy), set the formal and informal framework for the transactions.¹⁰ In our case, the institutions are represented by major formal institutional changes, such as treaties; informal practices are harder to quantify. Distance would be another potential explanatory factor, although it would work better in multilateral settings and during periods when technological change can alter its impact. Equally, conflicts can disrupt some of those institutions but also create new opportunities for trade, a point we will investigate below.

The rest of this article is organized as follows: Section 2 reviews the historiography and institutional changes pertaining to the two countries in question. Section 3 discusses the various shipping practices and their implications for the aggregate trade. Section 4 examines the composition of the trade and analyzes its growth and changes in cargo capacity. Section 5 presents analysis of the sensitivity of trade to economic fluctuations and our overall quantitative results. Section 6 concludes the article with a summary of its main findings and indicates possible paths of future research.

2. Institutional Changes, Conflicts, and Trade in Portugal and Sweden

A necessary preface to an examination of the basic characteristics of trade between Portugal and Sweden is a brief discussion of some of the institutional and historical conditions that affected it. In par-

of the OECD countries’ trade, see Wang et al. (2010). Interaction effects are explored in Baltagi (2003). See O’Rourke and Williamson (2005) for a good overview of the impact of trade on economic growth since 1500 from the standpoint of macroeconomic theory.

⁹ de Groot (2004).

¹⁰ For further discussion, see North (1990, 1993). In the context of merchants and trade, see, for example, Acemoglu et al. (2005) and Greif (2000).

ticular, conflicts were an almost constant influence on the political relations governing international trade in the early modern period. For example, during the 18th and the early 19th centuries, Portuguese external trade was conditioned either by Portugal's neutrality or by its participation in the many conflicts of the period, specifically as an occasional belligerent in: the War of the Spanish Succession (1701-1714); the Fantastic War (1762-1763), the Roussillon War and the War of Catalonia (1793-1795), the War of the Oranges (1801), the *Guerra Peninsular* (Peninsular War, with three French invasions: November 1807 – March 1811) and *Guerra de la Independencia Española* (Spanish War of Independence, May 1808 – April 1814), in which, at the end of the third French invasion, Portugal and Britain aided Spain against France. These departures from the neutrality policy, typically motivated by the Anglo-Portuguese alliance and cooperation, did not deter Portugal from continuing to invest in its foreign trade and maintaining its empire. Meanwhile, Sweden too was an active participant in the wars of the period, starting with its 1688-1691 participation in the War of Grand Alliance, although between wars Sweden practiced a policy of neutrality. The conflict that severely curtailed Sweden's political and economic power was the Great Northern War (1700-1721), which was followed by a series of wars against Russia in the 18th century. Sweden's entry into the Napoleonic conflicts came in stages, with more extensive involvement after 1805. Ultimately, while Sweden lost Finland during these conflicts, it gained Norway. But before this, Sweden was a major player in the North European trade.

Trade treaties constituted important institutional steps in the expansion of Portuguese and Swedish bilateral and multilateral trade. For example, the Methuen Treaty of 1703 provided an added incentive for trade between Portugal and Britain, facilitating exports of Portuguese wine and imports of English textiles, except for cotton fabrics. In addition, the expansion of Anglo-Portuguese trade increased the demand for Brazilian gold up until the second half of the 18th century – this gold was a strategic resource for managing the

fluctuations in the aggregate trading patterns.¹¹ Overseas colonies provided another dimension for the Portuguese economy, in contrast with the case of Sweden, which extended its reach mainly to northern Europe during the 17th century. The existence of an exclusive colonial network within the Portuguese empire during the 18th century stimulated Portuguese external trade, with the empire acting as a trading post for the sale of colonial products in the international market via the metropole (mainly Lisbon). However, from the Napoleonic wars until Brazil's independence,¹² this network was gradually weakened by the opening of Brazilian ports to foreign shipping in 1808 and further undermined by the Trade and Navigation Treaty of 1810 between Portugal and Britain, which opened the door to imports of cotton fabrics, a measure that contributed greatly to delaying Portugal's industrialization. Meanwhile, the extensive Swedish consular network offered similar advantages to Sweden during this turbulent era.¹³

Another key component of Portugal's foreign policy was neutrality. As Cruz (2011: 21) underscores, during the 18th century Portuguese diplomats sought to maintain "two strategies that were not always compatible: those of the preservation of neutrality and the preservation of the alliance with England". Thus, during the 18th century Portugal sought to expand its commercial activities into areas, like the Baltic Sea, where it often became embroiled in conflicts with other powers. Subsequently, the merchant class's inability to take additional risks hindered the growth of Portuguese shipping

¹¹ "Mining in Brazil placed the gold (...) by its inherent characteristics, and guaranteed the means of payment that offset the negative trade balances, aggravated by the increase of imports of manufactured goods, mainly British, to supply the domestic market and that of the colonies, which was in expansion". Costa et al. (2013), 3.

¹² For further information on the historical background of Portuguese external trade and the performance of the Portuguese economy during the 18th century and the first half of the 19th century, see Macedo (1990, 1989, 1982), Alexandre (1993), Pedreira (1994), Serrão (1993), Costa (2005) and Moreira (2013, 2015). Brazil became independent in 1822, but was not recognized by Portugal until 1825 with the Tratado de Paz e Amizade (Treaty of Peace and Friendship).

¹³ Müller (2006); Müller and Ojala (2002).

and trade with northern Europe, especially during the Napoleonic invasion and the trade embargoes.¹⁴ The neutral foreign policy position of Portugal and its empire, together with Portugal's external dependence on Britain owing to its late industrial development and the lack of agricultural products, led to the intensification of Portuguese international trade, while at the same time Portugal maintained a protectionist customs policy. For its part, Sweden also maintained a protectionist policy, which helped it against the Dutch and the Danes with trade to and from Sweden, although protectionism hardly boosted shipping as a whole. Moreover, Sweden's policy of neutrality benefited it in wartime and peacetime alike, enabling it, during conflicts, to exploit its status as a neutral among the key players.¹⁵

Analysis of the institutional determinants of trade flows is not a particularly new approach, but it can offer us new insights especially into trade policies. During the 18th century, the Portuguese institutional and legal framework in the economic and financial sphere became more centralized, with more extensive intervention by the state.¹⁶ For example, the institutional reforms of the reign of D. José I were associated with the so-called Pombaline policies (attributed to Sebastião José de Carvalho e Melo, the Marquis of Pombal, who was D. José's First Minister), which were implemented following the successful reconstruction of the capital after the earthquake of November 1, 1755.¹⁷ The Pombaline legislation consisted of important administrative and financial reforms that led to the creation of the Royal Treasury in 1761, with the introduction of a centralized accounting system for government revenue and expenditure. The new institutions created by the Pombaline administrative policies included an entity that registered the entry and exit of goods, the *Contadoria da Superintendência Geral dos Contrabandos e Descaminhos dos*

¹⁴ Cruz (2011), 119-120.

¹⁵ See, for example, Müller (2004) for further discussion.

¹⁶ Subtil (2005), 369.

¹⁷ See Costa (2005) and Pereira (2009).

Reaes Direitos (General Superintendence of Accounting for Smuggling and the Embezzlement of Royal Duties).¹⁸

Another significant institution was the *Junta do Comércio destes Reinos e seus Domínios* (Chamber of Commerce of these Kingdoms and their Domains), created in 1755, which had vast responsibilities for retail-trades surveillance in Lisbon, was active in oversight, prevention and enforcement measures against contraband, and exercised some judicial powers bearing on trade and matters concerning navigation and the *Aula de Comércio* (School of Commerce). The Law of June 5, 1788 elevated it to the *Tribunal Supremo* (Supreme Court) with a new designation, *Real Junta do Comércio, Agricultura, Fábricas e Navegação* (Royal Chamber of Commerce, Agriculture, Manufacturing and Navigation). At the time, the institutional reforms in Portugal were unquestionably conditioned by the difficulties involved in auctioning contracts and managing financial resources in connection with the necessities of war. The institutional changes¹⁹ made especially during the period of the Pombaline government were crucial to ensuring the wartime and peacetime operation of trade, by reorganizing the Portuguese state or setting up monopolistic structures within the Portuguese empire according to mercantilist principles.

The Swedish state also became a much more consolidated, mercantilist entity that controlled many aspects of trade relations in the 17th and 18th centuries. Swedish economic history writings on 18th century foreign trade have traditionally stressed the importance of the 1724 Navigation Act in explaining the notable increase in Swedish foreign trade during the 18th century.²⁰ Recently, Leos Muller has emphasized other institutional factors in the growth of Swedish long-distance shipping with southern Europe, such as the estab-

¹⁸ For more details on the role of this institution in the trade statistics, see Moreira (2015).

¹⁹ The role of formal and informal networks of individuals is an important issue in the history of the development of Portuguese seaports during the early modern period, and specifically in the 18th century. Research has also revealed their central importance for a qualitative and quantitative re-evaluation of maritime dynamics in the period and shown how war shaped formal and informal institutions. See, especially, Polónia (2011, 2012)

²⁰ Heckscher (1949); Högberg (1969); Magnusson (2000); Vallerö (1969).

shment of consular networks and the peace agreements with the Barbary States of North Africa. However, multiple variables, such as neutrality, domestic trade policy decisions and the demand for Swedish products, impacted that trade, and it is exceedingly difficult to evaluate the role of each of these in the growth of trade.²¹

Knowledge of the target markets is certainly vital in commerce in any period. Alongside the practical problems due to great distance, one constraint on the Swedish shipping companies' expansion in direct trade with the Mediterranean region was surely a lack of market knowledge compared with the Dutch or the British.²² Among the objectives of building a consular network in the Mediterranean was that of overcoming the impediments that kept shipping companies from trading in different cultural environments, thereby lowering transaction costs.²³ We argue that despite the special political attention dedicated to Mediterranean shipping, shipping between Sweden and Portugal actually developed along similar lines to Swedish shipping as a whole during the 18th century. There were no major changes in the structure of imports and exports during the century. However, the fact that the structure of the trade fluctuated strongly from year to year and that many of the shipmasters participating in this trade sailed only occasionally between Sweden and Portugal indicates that Swedish shipmasters and merchants were well informed about the current market situation in southern Europe and could actively respond to current demand.

Finally, thanks to the establishment of various organizations to oversee trade and the centralization of government in these two nations, we have abundant sources and data for the analysis of this trade. For example, the Portuguese statistical trade data produced by the decree dated May 14, 1774, namely the annual Portuguese trade balances, a significant innovation made in the *Contadoria da*

²¹ Müller (2004); Müller (2006). On the importance of salt imports in Swedish foreign trade and policy, see especially Carlén (1997).

²² Johanson and Vahlne (1977); Johanson and Wiedersheim-Paul (1975).

²³ See, for example, Müller and Ojala (2002).

Superintendencia dos Contrabandos de Descaminhos dos Reaes Direitos, allow us to trace the evolution of Portuguese trade until 1831. Given its breadth and coverage, as well as its similarity to the data on the Swedish side, this dataset constitutes a highly useful tool for our case study. The major source this study exploits is the recently published and digitized STR database, supplemented with statistical and archival data from both Portugal and Sweden, including governmental records and some company archives. The Sound Toll data do not include all Swedish ships visiting Portuguese ports. In 1803, for example, a Swedish consul in Setúbal reported that a total of 94 Swedish ships had visited the town, whereas the Sound Toll accounts show that only 63 Swedish ships headed to Portugal that year. However, some of the Swedish ships in Portugal may have already left the Baltic during the previous year(s), or have sailed from Gothenburg, or been engaged in international freight carrying trade.²⁴ Regardless of these discrepancies, we have a plethora of data to work with.

3. Nature of the Bilateral Trade

One of the major political aims of Swedish economic policy in the 18th century was to expand the country's merchant fleet, according to the tenets of mercantilism. In the second part of the 17th century, some of the long-distance shipping from Sweden, above all to the Mediterranean, was in Dutch hands. During the Great Northern War (1700-1721), Dutch and British merchants gained importance.²⁵ The situation changed, even if not immediately, with Sweden's Navigation Act of 1724, which in practice allowed foreign ships only to bring in goods produced in their home country. Furthermore, a government measure of 1731 denied Swedish ships the opportunity of

²⁴ Riksarkivet Sverige (RA), Board of Trade, Consular reports, Setúbal 1803.

²⁵ See especially Magnusson (2002); Heckscher (1953); Müller (2008); Müller (2004), 61-62.

taking full salt cargoes from Baltic ports (Lübeck or Danzig) or from the Netherlands, forcing Swedish companies to send their ships further south.²⁶ (This is not to say that no Swedish ships had previously gone to the Portuguese salt ports; during the late 17th century some 20 Swedish vessels sailed annually to Portugal.) The political pressure in the first part of the 18th century increased Swedish shipping to the Mediterranean and compelled merchants to put long-distance commerce on a more permanent footing. After a fairly rapid change following the Great Northern War, it was the Swedish shipping companies and merchants that had to respond to the new conditions governing salt imports. During the 18th century, trade between Sweden and Portugal was almost entirely in Swedish hands: 89 per cent of the ships sailing from Sweden to Portugal through the Danish Sound were Swedish (including Finnish); the bulk of the remainder originated from the Dominions of Sweden (mainly Pomerania), Britain or the Netherlands (see Table 1). Portuguese ships did not participate in this trade to any great extent.

In wartime, Denmark was able to block shipping to and from the Baltic via the Danish Sound. For instance, at the beginning of the Great Northern War in 1700-1710, Swedish trade to Portugal was still rather vital, with a total of 127 ships sailing to Portugal, of which 98 per cent under the Swedish flag. The situation changed during the next decade, with Sweden at war with Denmark from 1710 until 1719. Subsequently, the volume of trade collapsed. Annually only two ships sailed from Sweden to Portugal, and all were registered in a neutral country, mainly the Netherlands or Britain. Some of these, however, could have been “out-flagged” on paper but have been actually owned by Swedes (out-flagging was quite a common practice at the time).²⁷ Other early and mid-18th-century conflicts in-

²⁶ Kaukiainen (2008), 128-129. Somehow this act has received little attention in research on Swedish long-distance salt shipping. See Carlén (1997).

²⁷ On the Setúbal salt exports to Northern Europe during the period of turmoil of 1700-1730, see Lindberg (2008), 185. On out-flagging, see, for example, Ahonen (1988). For further details on the Portuguese salt trade in this period, see Amorim (2008) and Rau (1984).

volving Sweden (such as the Russo-Swedish war of 1741-1743, and the Seven Years' War) did not have similar dismal repercussions on Swedish long-distance shipping to Portugal. However, during the Russo-Swedish War of 1788-1790, trade volumes plunged once more, as Denmark was again an enemy of Sweden, although the temporary repeal of the Navigation Act permitted Sweden to maintain some ties with the Mediterranean.

TABLE 1
**Nationality of the Ships Sailing from Sweden to Portugal
via the Danish Sound, 1700-1800**

Shipmaster's Home Country	Number	%
Sweden	2,891	89
Dominion of Sweden	86	3
Great Britain	67	2
Netherlands	62	2
Prussia/Mecklenburg	62	2
Denmark	30	1
Norway	13	0.4
Portugal	9	0.3
France	3	0.1
Russia	3	0.1
Italy	2	0.1
Spain	2	0.1
United States	2	0.1
Total	3,232	100

Source: Sound Toll Registers Online (www.soundtoll.nl).

Trade between Portugal and Sweden was thus quite active, with an annual average of almost 30 Swedish ships used in it (Table 1), but it still lacked an established status, or at least we cannot find ships and shipmaster that specialized in it. In the Sound Toll Registers, a great majority of the Swedish captains sailed only occasionally to Portugal. As the total of 3,000 passages includes over a thousand individual captains, only a minority of captains had more active connections with southern Europe. Analyzing the shipping activity and routes of

the captains who sailed to Portugal, in some cases we find that their routes to and from Sweden appear mostly to be random. However, some shipmasters did spend almost their entire career sailing to Portugal or southern Europe.²⁸ In addition, some Swedish companies may have concentrated especially on the Portuguese trade, but the Sound Toll accounts we use in this study do not show the names of these companies. From the data provided by the Swedish consul in Setúbal, we can infer that some Finnish merchants (Finland was part of Sweden at the time) were indeed quite active in the Portuguese trade: In the years 1800-1801, the merchant house Sneckendahl from Pietarsaari (Sw. Jacobstad) had four vessels in Setúbal, and several others trading houses had at least three ships there.²⁹

On the Portuguese side, according to Lopes, Frutoso and Guinote,³⁰ in the period 1796-1799 Setúbal was the second Portuguese port, after Lisbon. Danish and Swedish vessels predominated there, accounting for roughly 60 per cent (70 per cent in 1799) of the ships that entered Setúbal, clearly surpassing the British in the Setúbal salt trade. Vessels from Sweden and Denmark also made up a significant share of those entering Lisbon in the years 1787-1793 and 1796-1799, as Table 2 shows.

However, it was common for ships that faced difficulties in trading with some ports and nations to change their flags for political and military reasons. A thorough identification of the ships that entered the port of Lisbon would help solve this problem, mainly by cross-checking sources on the names of the ships with their origin. Creation of an online database with the information found in Lisbon's Municipal Historical Archive would be crucial to the analysis

²⁸ The sheer amount of data concerning shipmasters is daunting, and variant spellings of names make the data laborious to work with. Therefore, the observations concerning shipmasters are only preliminary. For instance, Stockholm captains like Anders Molitor, Rasmus Rahm and Oluf Berlin spent all of their careers sailing between Stockholm and Portugal (or the Mediterranean). Shipmaster Isach Hulst from Karlshamn sailed only between Amsterdam and Karlshamn in first half of his career, but then specialized in sailing between Karlshamn and Setúbal.

²⁹ RA Board of Trade, Consular reports, Setúbal 1801-1803.

³⁰ Lopes et al. (2005), 1-28.

of Portuguese naval history and also for the construction of a wider instrument with which to advance the international debate on maritime history, but that is beyond the scope of this study.

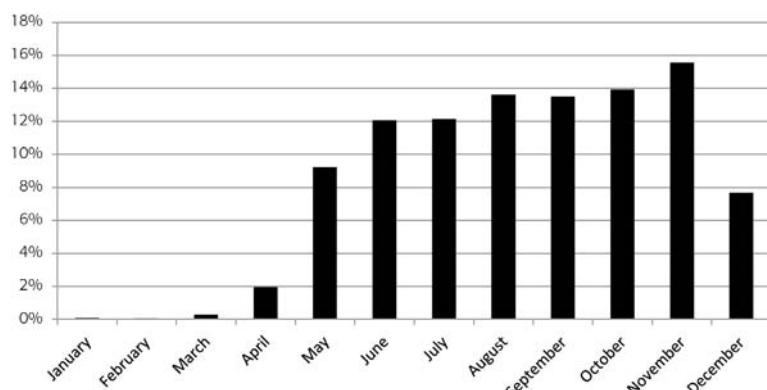
TABLE 2
 Nationality of Ships Entering the Port of Lisbon (per cent)

	1787	1788	1789	1790	1791	1792	1793	1796	1797	1798	1799
British	28.5	31.5	35.8	32.8	32.4	38.0	27.7	31.8	41.7	42.3	52.2
French	11.8	14.9	9.1	5.6	6.7	4.8	0.7	0	0	0	0
Dutch	6.1	8.3	7.2	7.7	10.6	9.6	6.7	0	0	0	0
Danish (1)	5.1	5.0	2.7	4.8	5.0	4.1	6.7	8.6	12.0	10.3	8.5
Swedish (2)	6.4	3.1	0.2	0.7	5.5	4.3	8.6	8.8	7.5	6.8	7.9
Total (1) + (2)	11.5	8.1	2.9	5.5	10.5	8.4	15.3	17.4	19.5	17.1	16.4
American	3.1	5.3	8.4	7.7	6.5	5.7	10.9	12.9	8.6	5.6	7.0
Ragusan ¹	-	-	-	1.7	2.7	1.8	-	-	-	-	-
Venetian	-	-	-	-	-	1.8	-	1.8	-	-	-
Hamburg	-	-	-	-	-	-	-	2.4	2.4	3.0	1.5
Prussian	-	-	-	-	-	-	-	-	4.4	3.8	2.4

Source: Almanaque para o ano de... (adapted from Lopes et al., op. cit., p. 12).

¹ From Ragusa, now Dubrovnik, an independent state with its own flag until 1808.

FIGURE 1
 Monthly Shares (%) of Ships Sailing from Sweden to Portugal through
 the Danish Sound (1700-1815; No. = 2,948 ships)



Source: Sound Toll Registers Online.

The most obvious factor hindering opportunities for trade between Sweden and Portugal was winter, when storms and ice restricted shipping to and from the Baltic. According to the Sound Toll Registers, there was a constant flow of ships from Sweden to Portugal from May until November.³¹ The first vessels would leave Sweden in the spring, while some set sail for the southern waters as late as December. Some captains even managed to make two voyages a year from Sweden to Portugal, starting their first journey in the spring and the second in the autumn. Convoys are also commonly mentioned as an important feature in Swedish Mediterranean shipping. However, when we look at the sailing practices recorded in the Sound Toll Registers, sailing in convoys does not appear to have been prevalent, and it seems that the majority of vessels sailed alone from Sweden to Portugal. According to the Sound Toll Registers, only in 22 per cent of cases involving ships from Sweden bound for Portugal were there two or more similar kinds of ships declared at the Sound during the same day. It has also been suggested that the ships sailing in convoys often assembled in Gothenburg, where they would begin their journey together, but long waiting times made this uncommon.³² In order to analyze the shipping practices further, we briefly examined the two groups of ships sailing from Sweden to Portugal. The first convoy, of seven ships, passed the Sound straits in August 1772 and the second, comprising eight vessels, in June 1785. The fact that the ships in both cases reported their destination accurately for the customs officials in Denmark indicates the orderliness of the shipping activity. The ships could have declared their destination in general terms to be the Mediterranean, but in the convoys the shipmasters knew precisely where they were going to sell their cargoes of iron, steel, copper, and shipbuilding materials. The

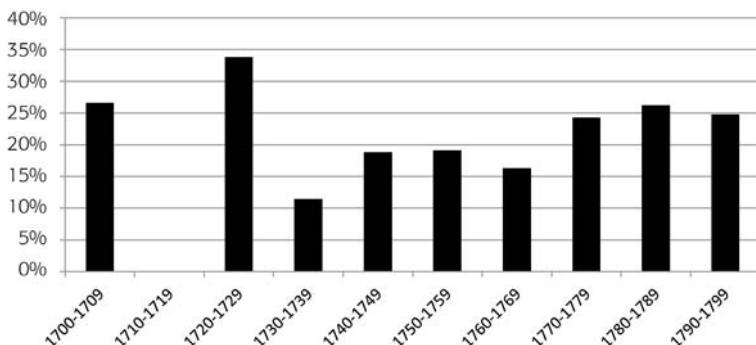
³¹ Most of the books analyzing 18th-century trade note that the ships sailing to the southern European salt ports left Sweden in the autumn, even though the STR data shows that in case of Portuguese trade it was also fairly common to depart in the early summer. See, for example, Pihkala (2001) and Müller (2004), 51.

³² On convoying and the Convoy Office, see especially Müller (2004), 65-70.

ships in the convoys sailed to Lisbon, Porto, Viana do Castello, and Aveiro. The reason why the shipmasters decided to sail in convoys was not because they were unfamiliar with the route to Portugal, nor was it probably related to security issues either, for both years were a period of peace for Swedish shipping; possibly the captains chose convoying in order to decrease insurance costs.

The Sound Toll data indicate that sailing in a convoy became slightly more common during the early part of the 18th century. It should be borne in mind that convoys did not necessarily come together before the Sound, as in many cases they only started in Gothenburg. Nevertheless, in the 1730s and 1740s approximately 15 per cent of the ships sailed in a convoy, and at the end of the century the share was 25 per cent (see Figure 2).³³ Sailing in convoys peaked in the 1720s, likely because Sweden did not sign a peace treaty with Algiers until 1727. Safety improved for Swedish ships during the 18th century in Portuguese waters as well, thanks to several peace agreements, but the popularity of convoying nevertheless tended to increase. Convoys guarded by Swedish (and in some cases also by Danish) men-of-war

FIGURE 2
Percentage of Ships Sailing in a Convoy (> 3 Vessels) from Sweden
to Portugal (No. = 3,234 ships)



Source: Sound Toll Registers Online.

³³ These are rough estimates and serve mainly to give an idea of the growth of this phenomenon, not the actual shares. For instance, ships could join convoys in the North Sea area or wait for other ships for a couple days, thereby joining either Swedish or foreign convoys.

grew in importance during the turbulent years of the first decade of the 19th century. The consular reports from the Mediterranean area testify to the wide use of these services.³⁴ While convoys certainly increased security in wartime, they also limited the possibilities of ship-owners and masters – the speed of a convoy was in practice that of the slowest vessel, and the ports of entry and departure were determined by the needs of the convoy, not by the individual ships.

4. Structure and Growth of the Bilateral Trade

Trade between Sweden and Portugal was highly concentrated in both countries, both geographically and in terms of the range of products. In Sweden, 65 per cent of the trade went to or departed from Stockholm, while in Portugal Swedish trade centered on the Lisbon area. This was mainly a consequence of the organization of domestic trade through staple towns entitled to engage in foreign trade and shipping in the mercantilist system. Most commonly, vessels sailed first to Lisbon to sell their iron cargo and then went on to Setúbal to take on salt for the return journey.³⁵ Among Swedish exports, 75 per cent of the cargo volume consisted of bulk iron. The Portuguese exports are an excellent example of the extent to which early modern trade involved bulk products. Measured from Sound Toll Registers, salt made up 99.1 per cent of the cargo tonnage, with the remaining 0.9 per cent consisting of wine, fruits, sugar, and various luxury items.³⁶ Finally, let us recall that colonies, especially Brazil, were important destinations for Portuguese goods and re-exports, and that Swedish iron, like other goods, was exported to Brazil via several global ports.³⁷

³⁴ For further details, see Ojala (1999), 262–263.

³⁵ This article measures the importance of ports using Sound Toll Registers Online (www.soundtoll.nl), thus excluding the Swedish ports on the North Sea from its calculations.

³⁶ In Swedish Board of Trade tables, published beginning in 1738, the cargoes from Portugal to Sweden appear to be more diverse, but the share of salt in total cargo volume was still very large.

³⁷ Evans and Rydén (2007). On re-exports, see especially Marzagalli (1996).

There is one striking phenomenon in Swedish-Portuguese trade during the 18th century, which expanded without becoming more diverse or including new products; on the contrary, bulk commodities dominated bilateral exports. If the shipmasters and merchants could best turn a profit from trade in small, luxury goods, why did the share of these products not increase especially in the trade from south to north? The explanation may have to do with the decline in real wages in 18th-century Sweden. Although GDP increased during the century, GDP per capita followed a downward trend due to rapid population growth. Even if the elites were still eager to buy foreign luxury items, the requisite purchasing power did not extend to the lower strata. As the demand for luxury goods stagnated, the composition of merchandise trade between the Baltic (Sweden) and the South (Portugal) remained very similar.

TABLE 3
 Distribution of Various Swedish Export Products between
 Portuguese Ports during the 18th Century³⁸

Iron	Steel		Timber	
Lisbon	56%	Lisbon	34%	Lisbon
Porto	21%	Porto	32%	Porto
Portugal	12%	Portugal	18%	Portugal
Others (Aveiro, Viana do Castelo, Setúbal, Vila do Conde, Figueira da Foz, Fiane)	12%	Others (Aveiro, Viana do Castelo, Setúbal, Vila do Conde, Figueira da Foz, Fiane)	16%	Others (Aveiro, Viana do Castelo, Setúbal, Vila do Conde, Figueira da Foz, Fiane)
Tar	Miscellaneous		Copper	
Lisbon	71%	Lisbon	81%	Lisbon
Porto	15%	Porto	8%	Porto
Portugal	7%	Setúbal	7%	Portugal
Others (Viana do Castelo, Aveiro, Vila do Conde)		Others (Viana do Castelo, Aveiro, Figueira da Foz)	5%	Others (Viana do Castelo, Aveiro, Setúbal)

Source: Sound Toll Registers Online.

³⁸ The shares are only preliminary estimations. They are based not on volumes or values, but on a list of how many times a cargo of a given product, say, iron was reported

In Portugal there were some differences among the destinations of Swedish cargoes. While a majority were destined for Lisbon, most of the steel, for example, went to Porto or other destinations. The exports of Swedish and Finnish tar and timber, both essential for shipbuilding and maintenance, went mostly to Lisbon. Lisbon also received the majority of valuable miscellaneous products such as building materials, manufactured goods, grain, and colorants (Table 3).

Throughout the 18th century, the salt trade and the securing of salt supplies came under political scrutiny in Sweden.³⁹ Sweden appointed several consuls to the main Mediterranean ports, underscoring the importance of this trade. Despite the substantial political debate, from time to time remote areas in Sweden (the Västerbotten region and Finland, for instance) suffered from shortages of salt. As Anders Chydenius, a member of Riksdag (the Diet), pointed out, there were no restrictions on salt exports in foreign salt ports, and certainly there was no lack of salt in those ports. In his view, Swedish shipping to foreign ports was generally substantial and should have been able to secure the necessary supplies of this essential product.⁴⁰ The occasional scarcity of salt was, then, related to Sweden's mercantilist trade policy. Like the rest of trade, salt imports were concentrated in Stockholm and Gothenburg, from where salt was shipped on to other parts of the realm. This was because of the staple restrictions: Swedish towns were divided between those with rights to foreign trade and shipping, i.e. staple towns, and those only entitled to engage in domestic trade. So international trade was concentrated in a handful of towns – most notably, Stockholm and Gothenburg – from which other towns purchased imported products and to which they carried their own export items. From a business perspective, mercantilism and the concentration of foreign

to be destined to a certain port. For instance, if one ship had one barrel of tar going to Lisbon and another had 50 barrels for Aveiro, they have a similar impact on the percentages. As the sample covers a period of over 100 years, the shares should illustrate the general time series trends fairly well.

³⁹ Carlén (1997).

⁴⁰ Chydenius (1765).

trade made it possible for the state to control the trade, as can be seen in the well-preserved customs documentation. Obviously, privileged and partly monopolized trade had benefits for those with the right to trade, especially the key merchant houses in Stockholm.⁴¹ Even after the staple legislation was partly repealed in the 1760s, the trade remained largely in the hands of the same merchant houses until the turn of the 19th century, thanks to these merchants' long experience and their contacts with buyers and sellers abroad.⁴²

The North Sea was the foremost region for Swedish foreign trade in the 18th century; almost 40 per cent of exports went to Britain; the Netherlands, Poland, German states, and France were other important export markets for Sweden. By contrast, imports were divided more evenly among all of these main trading partners. In the course of the century, Baltic and Mediterranean destinations tended generally to grow in importance vis-à-vis the North Sea ports in Swedish foreign trade.⁴³ In southern Europe, Portugal was traditionally – and especially in the 18th century – Sweden's leading trading partner. Even though commerce with Portugal accounted for only 5 per cent of total Swedish trade, the commercial relations were extensive. From time to time, certain products were especially important in this bilateral trade: in the 1720s over 50 per cent of Swedish board exports went to Portugal, and in the mid-1750s a quarter of Setúbal's salt went directly to Sweden.⁴⁴

In general, the bilateral trade with Portugal was rather ideal for Swedish vessels. The ships had cargo to transport in both directions, and only in some cases were the returning ships loaded partly with ballast. Among the factors that lured Swedish ships to ports in the Mediterranean was the possibility of engaging in freight shipping

⁴¹ See especially Müller (1998); Samuelson (1951); Nyberg (2006).

⁴² Alanen (1957), 127; Höglberg (1969), 162; Hautala (1963), 94-96. Even though the Sound Toll records do not capture trade from Gothenburg, they nevertheless are likely to give a fairly accurate picture of the overall trends and shares.

⁴³ See, for example, Höglberg (1969). Also, *Historisk statistik* (1972), 153.

⁴⁴ On the importance of southern Europe and especially Portugal, see Höglberg (1969), 124. See also Lindberg, (2008) and, *inter alia*, *Historisk statistik* (1972), 48, 98.

there during winter. The fairly low profits from bulk cargoes transported from Sweden to Portugal were compensated for by the possibility of participating in more lucrative freight shipping during the period when the Baltic was iced over. However, as Figure 1 suggests, shipping activity was not concentrated in the autumn, so it would appear that freight shipping in the Mediterranean was still of limited importance.⁴⁵ Nonetheless, there were a few Swedish and Finnish merchant houses whose ships engaged in the profitable freight carrying trades already during the 18th century. By the turn of the 19th century, this activity increased with the rising demand for cargo-carrying capacity under neutral flags during the revolutionary and Napoleonic wars. The Swedish consuls in Setúbal reported quite a few Swedish ships entering and departing from the town during first years of 19th century: 133 in 1800, 91 in 1801, and 94 in 1803. Several of them were ordered to sail to a destination other than a Swedish port: of the 46 Finnish ships that visited Setúbal in 1800, 1801, and 1803, almost half were heading for some other destination than the Baltic. In this case, though, nine ships were bound for Gothenburg, which again underscores the importance of this westernmost town for Swedish trade and shipping.⁴⁶

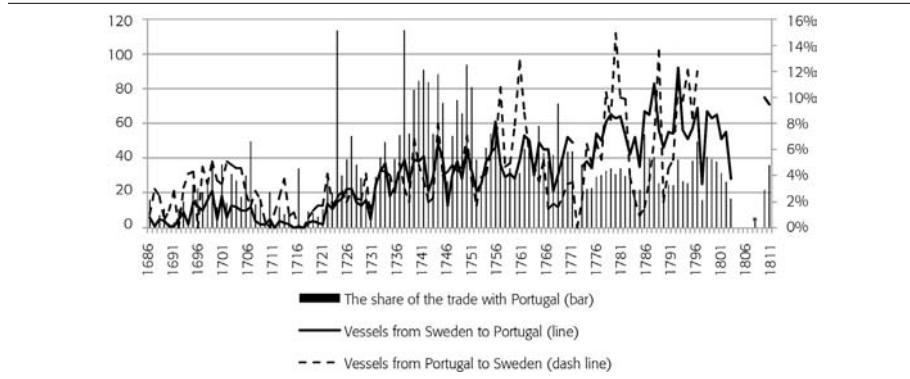
During the 18th century, bilateral trade between Sweden and Portugal increased significantly, yet remained constant as a proportion of aggregate Swedish trade. The growth of Swedish export trade to Portugal was quite linear from the end of the Great Northern War to the early 19th century, and no particular growth trend can be discerned from the Sound Toll accounts during the revolutionary wars. However, other sources indicate that freight carrying especially was growing. During the 18th century total Swedish shipping increased by 140 per cent, while that to Portugal grew by 141 per cent⁴⁷ (see also Figure 3).

⁴⁵ See Müller (2004) for further discussion. It is quite likely that some ships made long journeys between several ports, but this cannot be verified here.

⁴⁶ RA Board of Trade, Consular reports, Setúbal 1800, 1801, 1803.

⁴⁷ Estimated by comparing the averages in the periods 1723-1727 and 1796-1800.

FIGURE 3
Number of Ships Sailing between Sweden and Portugal (Left Axis) and the Share of Swedish Ships Heading to Portugal of All Swedish Ships Passing Westward through the Sound (Right Axis), 1686-1815



Source: Sound Toll Registers Online.

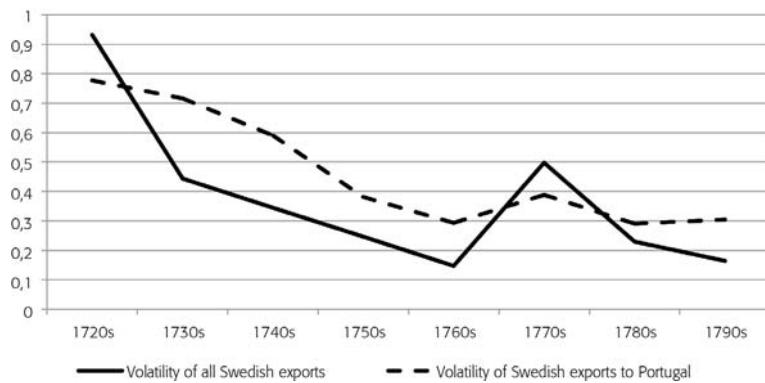
Note: The number of ships gives a fairly good idea of the development of import and export volumes (tonnage). However, in measuring the volume of trade it is necessary to take account of the differences in levels: the Portuguese exports were 1.7 times greater than the Swedish (see Table 2). For 1775, there are no data on Swedish shipping to Portugal in the STR; for 1807, the Sound data are incomplete; and for the years 1808-1812 the data are entirely absent.

Trade from Portugal to Sweden increased in a similar fashion, though it suffered a clear downturn in the late 1760s and throughout the following decade. Portuguese salt was easily supplanted by salt from other parts of the Mediterranean, and in fact salt imports from Spain increased during those periods. The salt trade as a whole was volatile, and some high growth rates (both negative and positive) can be observed, for example, after the Great Northern War and during the Russo-Swedish War (1788-1790), but also in times of peace. It is more difficult, however, to assess the causes of these fluctuations in the trade.

The long-term impacts of institutional changes on trade growth can be seen, in more general terms, in the overall expansion of trade and shipping, and we can also analyze the direct short-term impacts. For instance, none of the treaties with the Barbary States seemed to usher in an increase in Swedish shipping to southern Portugal. Can we therefore conclude that the impact of public efforts to build a better institutional framework for Swedish long-distance shipping was

negligible? Even if there was a very similar decline in the volatility of both long-distance shipping and all shipping (see Figure 4), did these treaties and the development of better institutions (like the consular service) stabilize the trade? Even though we cannot find any obvious positive short-term impacts of these variables on the volume of trade, which a more detailed quantitative analysis could perhaps reveal, they did play an important role in the long term by enabling merchants to develop lasting business networks.

FIGURE 4
Changes in Trade Volatility: All Swedish Exports and Swedish Exports to Portugal, Measured by the Number of Vessels



Source: Sound Toll Registers Online.

Finnish seaports provide a practical case study of what happens when security agreements, previously offered by the state, come to an end, i.e. they highlight the importance of institutions. After 1809, when Finland seceded from Sweden to become an autonomous part of the Russian Empire, ships from Finnish seaports sailing to southern waters ceased to benefit from the protection formerly offered by Swedish agreements, consular services, and convoys protected by men-of-war. A dramatic decline in long-distance shipping from Finnish ports ensued, but after the Second Barbary War in 1815, which increased security in Mediterranean, Finnish long-distance shipping rebounded to a similar level to those recorded in the years when Finnish ships were officially sailing under the Swedish flag.

The cargo-carrying capacity of ships, which increased along with ship size, does tell us at least indirectly of possible productivity changes, since the larger ships were usually more productive, at least in terms of men on board.⁴⁸ So it is interesting to examine the size of the vessels and the efficiency of use of cargo space in 18th-century Swedish trade with Portugal. The ships that set out on the long voyages from Sweden to Portugal and back were of various sizes. The largest vessels were over 300 ship *lasts* (circa 550 reg. tons), the smallest well under 100 *lasts*.⁴⁹ The average cargo transported from Portugal to Sweden was 335 tons per ship, while ships from Sweden to Portugal carried an average cargo of approximately 196 tons.⁵⁰ It is likely that the ships were usually fully laden, both on the outbound voyage to Portugal and on the return journey.⁵¹ However, the value of trade was unbalanced, favoring Swedish imports from Portugal.⁵² Salt was a cheap commodity and, at the same time, a heavy bulk commodity requiring a lot of cargo capacity. So Portuguese merchants could conduct only part of the trade as a swap, they had to settle the balance in cash. For instance, in the years 1738-1740 the average annual imports of Portuguese goods came to 209,000 *daler silvermynt*, while Sweden exported, on average, goods worth 408,000 *daler silvermynt* (ratio = 0.51). During the years 1769-1771, the ratio was 74,000 *riksdaler specie* to 207,000 *riksdaler specie* (ratio = 0.36).⁵³

Average vessel size did not increase in Swedish long-distance shipping during the 18th century, assuming that the ships were always similarly laden, but instead we find a slight decreasing trend in the size of the vessels (Figure 5). One hypothetical resolution to this relates to the use of cargo capacity. Some scholars have asserted

⁴⁸ Ojala (2011).

⁴⁹ Unfortunately, the Sound Toll Registers do not provide information about ship sizes in this period.

⁵⁰ Sound Toll Registers Online.

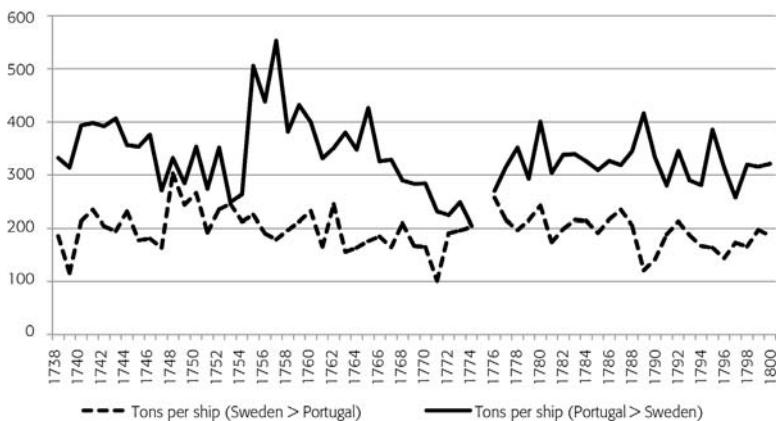
⁵¹ The ratio between *last* and tonnage in this context: 1 *last* is equal to 1.85 tons. For more on the *last-tonnage* ratio, see Ojala (1999).

⁵² See, for example, Müller (2004), 99

⁵³ *Historisk statistik* (1972), 154-155.

that ships were more fully laden in wartime than in peacetime, with different cargo compositions.⁵⁴ In our case, it appears that during the Russo-Swedish War (1741-1743) cargo capacity was better utilized (assuming that vessel size remained constant) compared with the three pre-war and three post-war years. The same phenomenon can be observed during the Russo-Swedish War of 1788-1790 among ships sailing from Portugal to Sweden, but not among those sailing from Sweden to Portugal. The absolute peak in vessel size or use of cargo capacity occurred in 1755-1759 among ships sailing from Portugal to Sweden. This may be related to the Seven Years' War, in which both countries were involved.

FIGURE 5
The Average Cargo Tonnage of a Single Ship in the Trade
between Sweden and Portugal



Source: Sound Toll Registers Online.

5. Fluctuations in the Bilateral Trade

Swedish goods – especially tar and sawn timber, but also ships and other naval stores – found booming demand in European markets in times of war, but selling these products was considerably

⁵⁴ Kanstrup (2010), 379.

more difficult in times of peace. Since demand for and exports of Swedish goods were influenced so strongly by trade conditions and business fluctuations, it is worth investigating the fluctuations among the different product groups and comparing the situation with Portuguese exports to Sweden.⁵⁵ Our comparison of the sensitivity of export variability uses export volumes, not values.⁵⁶

TABLE 4
Volatility of the Different Product Groups

Product Group	Coefficient of Variation	Product Group	Coefficient of Variation
Iron	46%	Salt	63%
Steel	47%	Wine	111%
Timber	41%	Sugar	178%
Miscellaneous	101%	Fruits	64%
Tar	88%	Miscellaneous	145%
Copper	213%		
<i>Total</i>	45%	<i>Total</i>	65%

Source: Sound Toll Registers Online.

Comparing the fluctuations of trade in different product categories, we find that trade in the most important export goods was the most stable component. Among Swedish exports, the small fluctuation of iron exports contrasted with the fluctuations of other products and indicates that bulk iron was basically not sensitive to business fluctuations. Moreover, exports of steel and timber were less sensitive to changes than were those of copper, tar, and miscellaneous products. As to Portuguese exports to Sweden, these were generally

⁵⁵ Regarding the importance of the economic fluctuations in Europe for the export of Swedish goods, see, for example, Alanen (1964), 118.

⁵⁶ The measure used here is the payment of duties in Oresund, the most comparable for all product groups. As the customs payments were specific rate duties and the ratio of customs payment and amount did not change during our observation period, the comparison of volumes is a practical solution. The reason why *ad valorem* duties were not used at the Sound was that the market prices of products fluctuated so acutely as to render them impracticable. The specific rate duty benefited both the shipmasters and the customs officials by making it unnecessary to argue about the value of the product.

more volatile (see Table 4). Was Portuguese demand for Swedish naval stores more constant than Swedish demand for Portuguese salt? Swedish demand for Mediterranean salt was rather stable. However, a shipmaster's decision whether to purchase a salt cargo from Portugal or from Spain depended largely on the current price levels, and so the number of journeys to Portugal fluctuated considerably.⁵⁷ In general, when it comes to Portuguese exports to Sweden, it strikes the eye that trade in the leading export goods was rather stable, while sales of luxury items fluctuated more markedly. Among the product groups selected, sugar was the most volatile. As with copper exports, there were several years in the statistics when no sugar was imported from Portugal (originally from Brazil) to Sweden, but in some years the volumes were fairly high. Even though the various types of fruit can be considered as imported luxury goods, Swedish imports of these commodities were actually as stable as those of salt. The demand for fruit varied only slightly, and supply from Portugal was steady. Instead, wine exports fluctuated to a greater extent, for two obvious reasons: wine was even more of a luxury item than fruit, and it could be imported from other countries as well.

We will now examine the structural characteristics of some of the time series in the trade between Sweden and Portugal. As seen in Table 5, the composition of both the time series – the number of Swedish vessels sailing west through the Sound and Portugal's percentage share in Swedish foreign trade – underwent disruptions in the mid-1720s and in 1777. This implies that institutional factors may have played a bigger role than we have observed here so far. This is also in line with Leos Müller's findings.⁵⁸ In turn, Portuguese exports to the Baltic remained fairly stable, although the number of ships shows a break in trend in 1746, while Sweden's share in Portuguese foreign trade remained remarkably stable, with no structural changes. Moreover, as Figure 6 indicates, the number of Swedish vessels was also affected by the Napoleonic conflicts in the early 19th century.

⁵⁷ Müller (2008), 101.

⁵⁸ See especially Müller (2004).

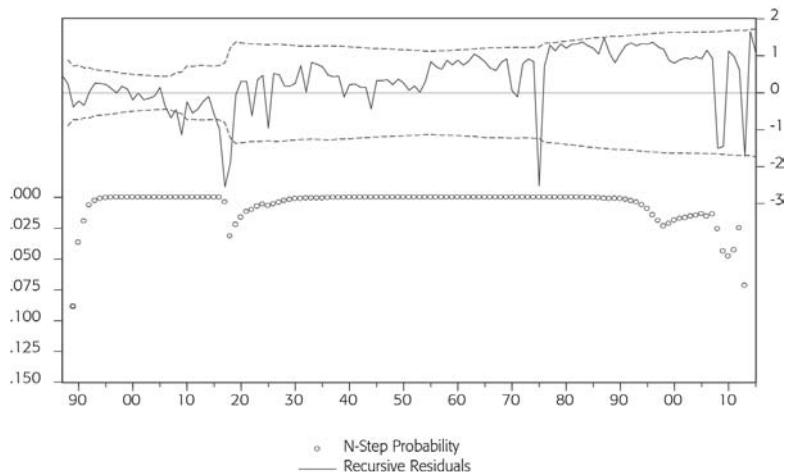
TABLE 5
**Breakpoints in the Time Series: Swedish (Portuguese) Merchant Ships
 Sailing West (East) through the Sound and the Share of Portugal
 (Sweden) in Swedish (Portuguese) Foreign Trade**

Break Years			
Swedish Vessels (Period: 1686-1815)	Portugal's Share (1738)	Portuguese Vessels (Period: 1686-1800)	Sweden's Share (1738)
1726	1725	1746	—
1777	1777	—	—

Sources: See previous figures and tables.

Note: The test used was the Bai-Perron test, which allows for the presence of multiple breakpoint years. Regular ADF unit root tests rejected the null of a unit root for all except for Portugal's share of Swedish foreign trade. We additionally conducted the Zivot-Andrews test, which helps pinpoint the possible joint occurrence of a structural break and unit root. The test overwhelmingly indicated 1723 as the year of such an occurrence. All series converted to logs prior to testing.

FIGURE 6
**N-Step Probability of a Structural Change in the Time Series:
 Swedish Vessels Sailing West through the Sound, 1686-1815 (in logs)**

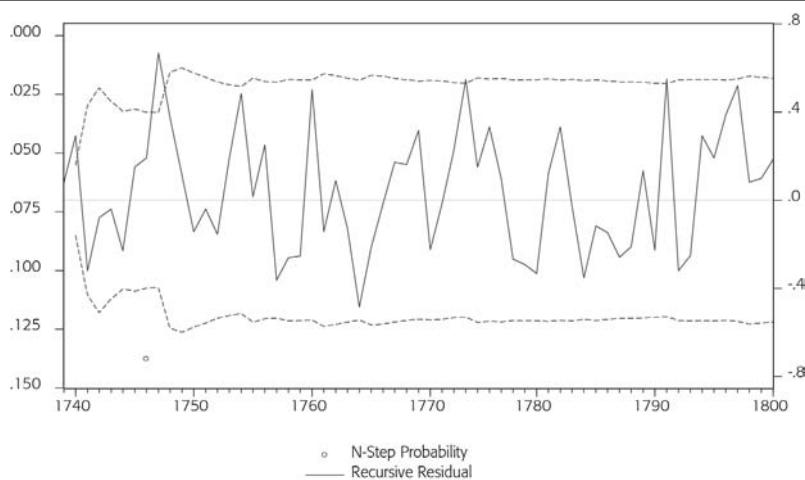


Sources: See previous figures and tables.

In addition, we decided to examine whether there were major disruptions in the composition of the various items of trade. We tested for this by calculating the coefficient of variation (standard deviation of the major trade products divided by the mean value) for the years 1738 to 1800. We again used the Bai-Perron test to check

for multiple structural breaks, as in Table 5 above. In the Swedish trade to Portugal, the coefficient of variation exhibited only one breakpoint year, 1776, whereas the Portuguese trade to Sweden was again much more stable, with no discernible structural breaks (and neither series seemed to have a unit root either). As seen in Figure 7, the Portuguese trade seems to have been highly cyclical in addition to being stable by nature. This may have to do with the market conditions in the Mediterranean for salt and wine.

FIGURE 7
N-Step Probability of a Structural Change in the Time Series: Coefficient of Variation for Portuguese Foreign Trade Products with Sweden, 1738-1800



Sources: See previous figures and tables.

Next we tested a simple model for the determinants of the bilateral trade flows. The model is not explicitly based on others, since, as noted in the Introduction, there are few models applicable to this type of analysis. We analyzed the number of vessels going in either direction, as well as the percentage share of one country in the other's foreign trade; i.e., these variables – vessels and trade share – were the dependent variables, with the following group of independent variables: 1) autoregressive component ($t-1$); 2) economic conditions in the exporting and importing nations, measured by real

GDP per capita (also tested using real wages, with statistically less significant results); 3) economic conditions and performance in economic leaders, namely London, Amsterdam, and Paris, measured as an average of real wages in the city); 4) economic conditions in the Baltic area, via real wages (average of Gdansk wages); 5) wars involving the exporting or importing nation, as a dummy; and 6) impact of institutional changes as dummies (e.g. trade treaties, or, in the case of Sweden, also the spread of the consular network). The rationale here is that the economic conditions in both countries, in the neighboring areas (such as Gdansk in the Baltic region, in terms of demand and supply), and market conditions in the dominant trading countries (proxied by cities like London and Paris) should serve as a good baseline estimation of the trade flows. Moreover, we analyzed further the impact of short- and long-run institutional changes, wars, and other shocks to these trade flows, in a multivariate framework. In addition to the trade flow data, we used the best available wage and income estimates in our regression analyses. While the results could be interpreted as less reliable if only one kind of proxy for economic development were used, in this case both the wage and GDP variables produced similar results, giving us more confidence in the findings.⁵⁹ The rest of the data has been constructed from qualitative sources, as explained under Table 6.

As seen in Table 6, which reports the best outcome regressions, most of the independent variables had no statistical impact on the two trade flow variables. For Sweden, the bilateral trade flows were highly autoregressive processes, implying similar results to those of the breakpoint tests, i.e. stability and path dependence. Moreover, the economic conditions in both countries, unlike in the surrounding areas, had a positive demand impact on their trade. Wars produced

⁵⁹ On real wages, see especially Allen (2001); Broadberry and Gupta (2006); Van Zanden (1999). The Swedish GDP series are fairly reliable, given the ample sources backing the calculations, and they have gone through several rounds of estimations. See, for example, Schön and Krantz (2012) and Edvinsson (2013). The Portuguese series are more conjectural, but they too have been constructed using sound principles of economic logic, with the best sources available.

TABLE 6
Determinants of Swedish Trade to Portugal, 1686-1815

Independent Variables	Dependent Variable: Swedish trade share	Dependent Variable: Swedish trade share	Dependent Variable: Number of vessels	Dependent Variable: Number of vessels
Autoregressive variable (t-1)	0.41***	0.54***	0.24	0.28**
Sweden's real GDP per capita	-1.73*	–	2.02*	1.90**
Portugal's real GDP per capita	0.59	2.15***	-0.60	–
London real wage	0.23	–	1.94	–
Amsterdam real wage	-1.20	–	-6.27	–
Paris real wage	-0.44	–	-0.44	–
Gdansk real wage	0.64	–	-1.41*	–
Portugal's wars	0.19	–	-0.28	–
Sweden's wars	-0.09	–	-0.25	-0.41**
Sweden: trade treaties	-0.15	-026*	0.21	–
Portugal: trade treaties	–	–	1.22***	–
Sweden: consular network	-0.00	–	0.01	0.03***
N	87	129	95	129
Adj. R ²	0.46	0.50	0.35	0.49
DW	2.06	1.95	2.21	2.00

Sources: Real GDP per capita from Palma and Reis (2014) and Schön and Krantz (2012). Real wages from Allen (2004) and Söderberg (2010), except for Finland, provided by Ilkka Nummela, and Portugal, by PWR- Portugal: Prices, Wages and Rents in Portugal 1300-1910 – <http://pwr-portugal.ics.ul.pt/>. Trade treaties (dummy set as 1 when treaty enacted, otherwise 0) provided by Cristina Moreira and Jari Ojala. Consular network expansion (including those in northern and southern Europe only for Sweden) from Müller and Ojala (2002). Information on wars provided by Cristina Moreira and from Karonen (1999).

Note: Both estimations also include a constant. The results listed include the full regression, with all the independent variables, and the best representation, using HAC consistent standard errors. We also tested for up to one lag for each of the real wage variables and real GDP per capita, which were expressed in logs (same as the dependent variables). A group unit root test revealed no singular unit root processes, while individual tests indicated that some of the series were I(1). Johansen cointegration test indicated one possible cointegration vector, so we proceeded with standard OLS regressions. The variable for Portugal's trade treaties was excluded in the baseline regression for the trade treaties owing to multicollinearity.

a possibly negative impact on the trade flows, so, overall, wars probably hurt their aggregate trade. Expansion of the consular network had a slight positive impact, as did Portuguese trade treaties for vessels. However, the institutional changes in Sweden tended to have

a slight negative impact or none at all, whereas institutional changes in Portugal possibly increased trade.

The results for Portugal were fairly similar (see Table 7). Again, trade flows were autoregressive, although the overall adjusted R² was smaller for both estimations than in the case of Sweden. Portugal's wars may have helped trade (i.e., the trade share) slightly, while trade treaties also had a similar impact, providing stability. Moreover, it seems that Portugal was quite closely connected to the British economy (and possibly the French economy as well), since increases in London real wages produced an increase in Portugal's trade with Sweden. Untangling that connection would likely require examining the trade flows between all three countries or in a broader multilateral setting.

TABLE 7
 Determinants of Portuguese Trade to Sweden, 1686-1800

Independent Variables	Dependent Variable: Portuguese trade share	Dependent Variable: Portuguese trade share	Dependent Variable: Number of vessels	Dependent Variable: Number of vessels
Autoregressive variable (t-1)	0.44***	0.49***	0.15	0.24***
Portugal's real GDP per capita	-1.78	–	-1.51	–
Sweden's real GDP per capita	0.80	–	-1.13	–
London real wage	2.41	–	1.50	2.79***
Amsterdam real wage	-1.74	–	-4.18	–
Paris real wage	-1.36	–	0.09	–
Gdansk real wage	0.60	–	-0.43	–
Sweden's wars	-0.11	–	-0.04	–
Portugal's wars	0.28**	–	-0.07	–
Portugal: trade treaties	–	0.45***	–	–
Sweden: trade treaties	-0.06	–	-0.12	–
Sweden: consular network	0.01	–	0.01	–
N	84	114	84	114
Adj. R ²	0.27	0.24	0.37	0.40
DW	2.27	2.20	2.08	1.95

Sources: See Table 6 for details.

Note. The same caveats apply as in Table 7. The variable for Portuguese institutional changes was omitted from the full regression owing to multicollinearity.

6. Summary and Conclusion

Economic globalization in the 19th century has received much attention from economic historians in the last two decades. Research has pointed out convergence patterns, increasing industrialization, and rapidly growing trade especially in the West. While the studies limited to the 19th century may indicate price and commodity flow convergence, there have been relatively few studies of the early modern period or, for example, the 18th-century European trade patterns. Typically this has been due to lack of data; however, many new projects are now producing large comparative databases that are changing this state of affairs. Moreover, there have been even fewer studies that concentrate on the smaller or medium-sized (depending on the criteria used to measure them) European states, owing to the assumption that for trade flows they count less than the bigger players. Fortunately scholars have begun to challenge this simplified assumption, recognizing that smaller or medium-sized states could be quite important especially during times of crisis. Here we are specifically interested in the impact of institutions and wars on trade flows in a bilateral setting, as some of the recent literature assigns relatively little importance to those factors during the late-19th-century globalization.

In this article we analyzed the nature and volume of trade between Sweden and Portugal in the 18th century. Examining just two countries may seem limited at first. We argue that this approach enabled us to analyze the long-term trade flows in detail, while we acknowledge that multilateral trade relationships should be analyzed next. In particular, this article suggests that trade between Portugal and Sweden was dependent on only a few commodities, namely iron from Sweden and salt from Portugal. The salt imports from Portugal to Sweden were plainly more volatile than the iron and timber exports from Sweden to Portugal. This suggests that it was easier to compensate for the salt trade with imports from other areas, while Portugal was marginally more dependent on the iron and timber shipments from Sweden (and Finland). The overall importance of

the trade relations between Portugal and Sweden can be discerned from the fact that in some years around the middle of the 18th century almost one fifth of Swedish shipping beyond the Danish Sound was directly targeted to Portugal. In the years when this share was below ten per cent, this was almost always due to some external shock affecting trade and shipping.

We show that institutional arrangements and changes influenced the opportunities to trade between these two countries. Sweden's mercantilist Navigation Act led to a situation in which over 90 per cent of the shipping with Portugal was in the hands of Swedish shipping companies. The reason why Portuguese ship owners did not participate in this trade lie in the competitive advantages – low capital and labor costs – that Swedish shipping enjoyed. Institutional arrangements with other countries outside these trade networks and/or agreements may also have had a positive or negative impact on Swedish trade with and shipping to Portugal; most notably, the role of Portugal in Swedish salt imports was determined by these institutional conditions. Overall, the bilateral trade flows between the two nations were quite stable, although the Portuguese flows were more cyclical than the Swedish. Wars had a slight negative or positive impact on trade, although not uniformly, whereas institutional improvements tended to increase trade most of the time. The economic conditions in either country mattered only in the Swedish case, and economic developments in the surrounding regions typically had relatively little impact on their trading behavior, although Portugal seems to have been more sensitive to the British and possibly the French markets.

For many of its findings, this article draws on sources in both countries as well as on the Sound Toll registers. Thus, it has brought forth new information on bilateral trade between parts of Scandinavia and Portugal (in some ways a proxy for the Mediterranean, at least in terms of the commodities) from the late 17th century to the end of the Napoleonic Wars. It is important to analyze countries beyond the usual emphasis on great powers – the smaller and medium-sized military and commercial powers may have been crucial

players in the international trade networks. This highlights a weakness of this article, which focuses only on trade between two countries. Multilateral trade flows could add many new dimensions to the analysis of Swedish and Portuguese trade, especially the changes in target markets during periods of crisis, but that is beyond our scope here. Still, we think that our results are important for a deeper understanding of the trade patterns during this turbulent period.

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