

FRENCH IMPORTS TO THE BALTIC, 1670-1850

A QUANTITATIVE ANALYSIS

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In this paper, a quantitative analysis of direct French imports to the Baltic is presented, based on a converted version of the Sound toll registers online for the period 1670-1850. It is examined how the available transport space, that was employed in direct trade between France and the Baltic, was used. The dominant products taken on board are analysed; the geography of French imports to the Baltic is discussed. Structural changes in the volumes imported to the Baltic of the main product categories are interpreted as the result of the reconfiguration of the role of Russian and Prussian ports in the Baltic, the decline of Dutch commercial dominance and the emergence of modern structures of commercial exchange.

Keywords: seventeenth century, eighteenth century, international trade statistics, globalization, economic history, France, northern Europe, Sound.

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Ever since the pioneering research of Pierre Jeannin and his colleagues (Jeannin 1954, 1964; Desfeuilles 1959, 1961), the commercial relations between France and the Baltic in the early modern period have received considerable attention from the French as well as from the international scholarly community (for examples, see: Sée 1925; Bamford 1954; Jeannin 1968; Pourchasse 2006). Nevertheless, the Baltic still plays a secondary role in the historiography of early modern French international trade, which is largely dominated by two major themes: the French Atlantic trade and the continental blockade (Marzagalli 2007). A few notable exceptions notwithstanding (*in casu* the research of Pierrick Pourchasse), most research on French-Baltic commercial relations takes the form of case-studies focusing on one (or a few) specific aspects of these relations, such as a specific product or product group, trade at one or a few ports or bilateral trade relations between France and one of the Baltic States (e.g. Fox 1968; Kirchner 1975). Interestingly, the majority of these case-studies maintains a focus on the seventeenth and eighteenth centuries, while very few historians of Baltic trade have attempted to look beyond the French revolutionary wars further into the nineteenth century. In this sense, the historiography of French-Baltic commercial relations illustrates a remarkable discrepancy that continues to exist between the study of international trade and of the industrial revolution in the historiography of the early modern European economy, in general, and of the Baltic as an economic unity, in particular. While the historiography of early modern Baltic trade almost without exception makes a break in the last decade of the eighteenth century, the historiography of the industrial revolution – as a rule – continues well into the nineteenth century. Commercial distribution and international trade relations have thus become largely separated from changing patterns of production in the industrial revolution, even though both are undeniably intertwined. The consequence of this divide between international trade, on the one hand, and industrial revolution, on the other hand, is that the underlying “big picture”, viz. the gradual extension of a distribution-based commercial infrastructure with a production-based commercial infrastructure during the latter part of the eighteenth and the first half of the nineteenth century,

becomes invisible. This has led to misleading statements regarding the rise and decline of Baltic international trade streams in the eighteenth century as well as to erroneous assumptions about the stagnation and backwardness of the Baltic in the emerging industrial economy of the first half of the nineteenth century (Rönnbäck 2010).

To some extent, the source material that is at the disposal of researchers dealing with the role of the Baltic in the early modern European (or perhaps even world) economy can explain why international trade and the industrial revolution are treated separately by economic historians. Until quite recently, the foremost important source for research into the economic history of the Baltic were the so-called Sound toll tables, or better: *Tabeller og skibsfart*, which Nina Ellinger Bang and Knud Korst compiled in the first half of the twentieth century (Bang and Korst 1906-1933). Despite severe, but often justified criticism with regard to these tables (extensively reviewed in Jeannin 1964), a very large number of studies on a wide range of topics dealing directly or indirectly with the Baltic has been based on this seven-volume quantification of the original Danish Sound toll registers. The Sound toll tables cover the period 1497-1783 and therefore do not include any information about the last 74 years of the original Sound toll registers. In the early 1950s, a group of French historians headed by Pierre Chaunu made an attempt to compute the period from 1784 to 1793 of the Danish Sound toll registers. Two journal articles notwithstanding, the project has not resulted in the publication of a database (Desfeuilles 1959; Desfeuilles 1961). In the 1970s, the Danish historian Hans Christian Johansen undertook a similar effort, which eventually led to the release of an electronic database of the Danish Sound toll registers for the years 1784 to 1795, also published on microfiches as an appendix to Johansen's dissertation (Johansen 1983). This database has recently been converted to contemporary standards for historical databases by the Dutch historian George Welling (Welling 2009-10). Baltic trade in the first half of the nineteenth century attracted scholarly attention only quite recently, when Ahonen and later Rönnbäck "discovered" the so-called Sound Toll Accounts, which cover 1773-1856. But these data are neither available to the public nor do they allow adopting a long-term perspective (Ahonen 2005; Rönnbäck 2009).

Since 2013, however, the situation has changed drastically with the release of STRO, the electronic database of the Danish Sound toll registers, which so far covers the period 1634-1857 (STRO 2013). The full potential of STRO has not yet been unveiled, since the cargo registrations in STRO – an essential part of the electronic database – have not been standardized yet, not to speak of their categorization or a conversion of pre-modern weights and measures to their metric equivalents.¹ Undisputedly, advances in this direction would greatly enhance the possibilities of the electronic database, while also stimulating the use of STRO. Moreover, it would enable economic historians of the Baltic to overcome previous source-related limitations, allowing for an encompassing history of Baltic trade which neither ends in 1800 nor ignores the effects of the industrial revolution.

In this paper, I present a quantitative analysis of **direct** French imports to the Baltic, based on a converted version of the Sound toll registers online for the period 1670-1850. The perspective adopted in this paper requires some clarification. The primary goal of the present quantitative analysis is to examine how the available transport space, that was employed in direct trade between France and the Baltic, was used: which were the dominant products taken on board, where were the ships loaded in France and where were they unloaded in the Baltic between 1670 and 1850? As a consequence, the value of French-Baltic trade will not be discussed in this paper, rather an attempt will be made to assess the volume of French imports, expressed in *tonnes* of 1000 kg, calculated on the basis of registrations in the original Sound toll registers. Neither will the much-debated passiveness of French international commerce and the predominance of Dutch intermediaries in its execution be discussed here², nor will there be room to examine indirect French imports to the Baltic, which were controlled by the Dutch and Hamburg for much of the period covered in this paper. Issues related to the conversion of pre-modern weights and measures and the standardization of cargo items registered in the Sound will be dealt with at length, since the reliability of the methods

1. Such undertaking constitutes a fundamental part of the senior doctorate-project (*Habilitation*) of the present author and this contribution may be seen as a preview of its potential results.

2. These topics have been discussed at length by several authors (Sée 1925; Bamberg 1954; Pouchasse 2006).

applied to the original “raw” data is decisive for the robustness of the quantitative analysis based upon them.

The remainder of the paper is structured as follows. In section 1, I briefly introduce the electronic database of the Sound toll registers online. In section 2, I explicate the method employed to convert “raw” STRO data about French imports to the Baltic into a new data series in which (almost) all quantities shipped through the Sound from France are converted into metric tonnes. This conversion constitutes the basis for the descriptive analysis in section 3 and a tentative interpretation of its results in the final section 4.

1. STRO

The Sound Toll Registers are the records of the toll levied by the king of Denmark on the passage of ships through the Sound, the strait between Denmark and Sweden connecting the North and Baltic Seas (Scheltjens and Veluwenkamp 2012). They are stored by the Danish National Archives. The more than 700 volumes of the Sound toll registers that have been preserved include a practically uninterrupted series from 1574 to 1857 and some scattered records for the period between 1497 and 1574. They hold information on about 1.8 million passages. For each individual passage, both westward and eastward, the Sound toll registers contain the passage date, the name of the shipmaster, his domicile, his port of departure and – from the mid-1660s – his port of destination, the composition of the cargo and the toll paid. STRO is a relational database set up to make the Sound toll registers’ data instantaneously available to all via www.soundtoll.nl.

The next section contains a detailed description of the method employed to transform the “raw” data of the electronic database of the Sound toll registers online. More general descriptions of this method have been published previously (Scheltjens 2009; Scheltjens 2015); therefore, I will focus on matching decisions and conversion steps that were particularly relevant for the conversion of the data set on French imports.

2. Converted STRO: method, results

Registration of cargo items in the Sound was done on the basis of freight letters (Scherer 1845). Cargo items and their measures were translated into Danish, registered quantities were copied and the sum of customs due was calculated separately for each cargo item. While the calculation of customs was done according to a number of rules described in various customs treaties, there is no mention of any conversion of weights and measures used in the freight letters to local (Danish) equivalents. On the contrary, the 1645 Treaty of Christianopolis / Kristianopel and its confirmation in 1701 state that the size of measures of goods upon which custom payments are due is that of the place where the good had been loaded.³ This allows us to *localize* the weights and measures found in the Sound traffic database, stating that the registered point of departure of the ship is the point of reference for establishing the metric equivalents of the weights and measures declared at the Sound customs office.⁴

Conversion of STRO data into metric equivalents could be achieved by means of the conversion of combinations of good, measure and port of departure of the good. This, however, presupposes the homogenization of STRO data, which was executed first. The homogenization and categorization of French imports to the Baltic was a complex undertaking. Two major issues had to be dealt with: reduction of the amount of variation in the “raw” data and simplification of the product description. Reduction was achieved through homogenization of source-related variations, such as spelling variations in the product denominations, and of database-related errors, such as typing mistakes. Simplification was achieved through a process in which cargo descriptions were divided into their constituent parts, with the isolation of the main product

3. The original Dutch text of the 1645 and 1701 treaties is cited on page 88 in (Scheltjens 2009).

4. Obviously, a certain degree of uncertainty remains. It is possible that a ship departed from a different place than the one given at the Sound as point of departure. Also, it may be possible that the ship loaded additional cargo items at ports located between the registered point of departure and the Sound. In both cases, the Sound toll registers usually do not provide these data. It must be stressed, however, that both cases mentioned would involve providing false or incomplete documentation at the customs office in Elsinore. Numerous scholars have tackled this issue, providing very different indications of the percentage of fraud. Calculation of matching scores of registrations in the Sound traffic database and similar sources outside of the Sound might possibly narrow down the range. One potential method for cross-checking the Sound traffic database with other sources (*in casu* French customs statistics) is discussed at length in this issue by Daudin and Charles.

denominator as its aim. The level of complexity of “raw” cargo descriptions in STRO is highly dependent on the type of product that is described. For cargoes of wine, for example, the price per unit as well as rough indications of its type and sometimes its geographical origin are part of the cargo description. During the process of simplification, complex cargo descriptions, such as “Bordeus win a 52 Dr.” (*Eng.* Bordeaux wine at 52 rixdollars) was divided among 4 columns. “win” was put in the main data field; the other items – bordeus, 52, Dr. – were put in data fields describing the additional features of the cargo item. Further reduction of variation was achieved through homogenization of the various data items: “win” became “Vin”, “bordeus” became “Bordeaux”, etc. Similarly, the origin and value per unit of measurement are often included when cargoes of wine are described. As a result, the information provided in the main column corresponds to a general description of the cargo, excluding its additional features (see table 1). All in all, cargo descriptions were divided into a maximum of 13 constituent parts:

Table 1. The division of cargo descriptions in STRO into their constituent parts

Original	Bordeus win a 52 Rd.	
ID		
Size		Indication of size, mostly for timber products, as found in the original product description
Unit of size		
Basic material		Type of wood, type of skin, etc., as found in the original product description
Origin	Bordeaux	Geographical indications of origin, as found in the original product description
Type		Indications in the original product description such as big, small, dry, fine, green, etc. Mostly applicable to textiles
Product	Wine	The core of the product description, as registered in STRO
Use		Indications of the use of the product, e.g. with glass: “for windows”, with timber: “for construction”
Amount per package		e.g. For cases of wine: 50
Unit of packaging		e.g. For cases of wine: bottles
Price	52	Price of one unit as found in the original cargo description
Currency	Rd.	Currency of one unit as found in the original cargo description
Etc		
Remarks		

A frequency table based on the 162.856 “raw” cargo registrations of French imports to the Baltic in STRO between 1670 and 1850 reveals that STRO contains 8.654 unique cargo descriptions, the frequency of which is unequally distributed. The top 10% of unique cargo descriptions accounts for 92,4% of all cargo descriptions. Slightly more than 33% of all cargo descriptions in STRO occur more than once, which means that the lower 66% of all unique cargo descriptions – 5.754 in total – appear only once in the database. These cargo descriptions represent only about 3,5% of all cargoes passing the Sound between 1670 and 1850. Logically, the simultaneous homogenization and simplification processes were executed from the top down. The cargo descriptions with the highest frequency were processed first and the process was cut off at a minimum frequency of 3. In total, 5.350 of the 8.654 unique cargo descriptions concerning French imports to the Baltic could be homogenized, simplified and converted. The missing items account for about 14% of all relevant cargo registrations (see table 2 below).

The homogenization of weights and measures and of quantities in the “raw” STRO data was dealt with in an analogical way. In the case of quantities, descriptions written in full text, roman numbers, fractions or a combination of these, were converted to their equivalent in the decimal system. Reduction of variation in weights and measures was achieved through a dual process. First, homogenization of variant spellings was pursued; then, denominations of equivalent weights and measures in different languages were linked with the help of the information provided by Horace Doursther in his *Dictionnaire universel des poids et mesures anciens et modernes* (Doursther, 1840). This dictionary, published in 1840, comprises the works on historical weights and measures of well-known predecessors like Kelly and Nelkenbrecher, and adds to this vast amount of information the results of a study of commercial reports, tariff lists and the like. Though recognized by Bob Allen and Tommy Murphy as an extremely exhaustive source providing metric equivalents for all the measures (Allen and Murphy, 2005), Doursther’s dictionary is still largely unknown in the scholarly community. It has been used solely as a reference work from which short explanations of a specific measure and its value at one or a few specific places were distracted (e.g. McCusker, 1973).

The general scope of Doursther's dictionary has remained largely unexploited. In this paper, Doursther's dictionary was put to use as an "engine" for the standardisation of weights and measures in STRO for the period 1670-1850.

Apart from being exhaustive and global in scope, there is another reason for selecting Doursther's dictionary over other dictionaries and compilations of premodern weights and measures, and that is language. While reference works for specific geographic regions, micro-regions and even places may certainly be more accurate and detailed than Doursther's dictionary, they are in most cases detached from the international context of weights and measures, providing only their local names, without referencing to 'international' equivalents. In a setting like ours, this would be a major disadvantage. Doursther's dictionary regroups weights and measures under one heading, provides (cross-)references to translations of these measures into various languages and adds information about the local names of measures in the conversion details. Typically, Doursther provides the following information about a measure: lemma and corresponding names in other languages; references to analogous measures employed in different geographical regions; location, local name(s), rules for conversion and corresponding values; metric values; description of products to which the metric equivalent applies; reference to analogous measures employed at the mentioned location; reference to other, related locations. These data were matched with the weights and measures denominations in STRO. Sometimes, quantities of goods were counted rather than measured. Only in an exceptional case does Doursther provide information about these 'numerals'. For other cases, like *skok* (60 pieces) or *dægge* (12 pieces), I have relied on information from *Den Danske Ordbog*.⁵

French imports to the Baltic were registered in STRO with 80 different weights and measures (see A1). Taking into account regional differences between weights and measures, as well as differences in the weight of different products⁶, a total of 5.350 product-measure-origin-combinations was applied to the

5. *Den Danske Ordbog: Moderne Dansk Sprog*. On line resource: <http://ordnet.dk/ddo>.

6. I do not mean differences in relative weight.

registra-tions of French imports to the Baltic. A number of combinations with unknown weights and measures were excluded from further processing. Equally so, the so-called *Kiøbmandskaber* (merchant's goods) and *Kraemmeri* (pedlar's goods) were left out, since their value was "measured" *ad valorem*. Further conversion of these entries into metric tonnes appeared to be too problematic. The remaining combinations of product-measure-origin were linked to the database of French imports to the Baltic and then used to estimate the tonnage of French goods shipped to the Baltic. The relative weight of goods was not taken into account during this process, even though the author is well-aware of the distortion this may have caused to some of the data. All in all, however, the potential differences are small and including relative weight would give a false impression of precision that cannot be attained when working with pre-modern statistical sources. The tonnage estimates presented here are no more than – but also no less than – estimates, based on available knowledge on pre-modern weights and measures and on available records of ship movements through the Sound.

The process of adding metric equivalents to all product-measure-origin-combinations was painstaking to say the least. Clearly, neither all products mentioned in STRO nor all places of origin of the goods were listed with such detail in Doursther's dictionary of pre-modern weights and measures. Therefore, a procedure in several steps was developed in order to add as many metric values to the list of product-measure-origin-combinations. In order to overcome the limitations of Doursther's dictionary a categorization of goods into a number of types and the categorization of places into a set of different regions was executed to achieve better results. The matching procedures were the following (described more extensively in Scheltjens, 2009; Scheltjens, 2015):

- Boolean matching
- matching based on identical measure and location, with product similarity (using type of good as matching category)
- matching based on identical measure and product, with geographical similarity (using region as matching category)
- matching based on identical measure, with location selected according to a pre-defined set of rules and product specifications either missing, similar or considered irrelevant

- matching based on measurement similarity, standardization and conversion of non-weights and non-measures
 - Boxes and cases
 - Pieces (stykker, tylt, dusin, skok, etc.)

Upon completion of the fifth matching procedure, the data that could be extracted from Doursther's dictionary was exhausted. The remaining combinations of product-measure-origin were mostly non-weights and non-measures, like kister, casse, balle, skok, etc. which were converted to metric equivalents in two steps. First of all, the relevant "numerals" were converted to the actual "number" they contain, e.g. skok is 60 pieces, zimmer is 40 pieces, 1 kiste is 1 piece. Then, the weight of the product transported in boxes, cases or as separate pieces was estimated on the basis of historiography. Many of the decision made with regard to these product-measure-origin-combinations are open to debate, since they require specialist knowledge that has proven to be extremely hard to find. In some cases, the metric equivalents used are merely *guesstimates*. The conversion of the measures 'barrique / fad' and 'dusin' into metric equivalents may serve well as examples of the way in which such difficulties were dealt with.

Table 2. The conversion of wine loads in fad or barrique to a metric equivalent

Origin	Product	Metric value	Frequency
Bordeaux	Wine (Vin)	226,29	24199
Nantes	Wine (Vin)	240	470
St. Martin	Wine (Vin)	226,29	424
Bayonne	Wine (Vin)	304,39	297
Seudre	Wine (Vin)	240	139
Libourne	Wine (Vin)	226,29	97
Dunkerque	Wine (Vin)	226,29	69
La Rochelle	Wine (Vin)	228,29	62
Other ports	Wine (Vin)	226,29	377

The conversion of the important measure "barrique" to a metric equivalent was based on information found directly in Doursther's dictionary, such as the metric values for the barrique in Bordeaux, Nantes, Bayonne and La Rochelle (Doursther 1840). The metric value for the other places of origin of loads of wine in barrique was equalled to the barrique of Bordeaux. A different method had to be

applied to the conversion of goods, of which the quantity was counted, for example in dusin, or a dozen (12 pieces).

Table 3. The conversion of product registrations in dusin (12 pieces) to a metric equivalent

Origin	Product	Metric value	Frequency
Le Havre de Grace	Socks (Strømper)	0,375 kg	5
Dieppe, Rouen	Cardes (Karder)	3,792 kg	1
Le Havre de Grace	Skins (Skind)	106,2 kg	1

The weight of the 12 pairs of socks that were loaded at Le Havre de Grace, was based on an indication by Doursther, that a dozen socks were estimated at $\frac{3}{4}$ pound for the payment of the Sound dues (Doursther 1840). The estimated weight of 0,312 kg for one piece of cardes is a *guesstimate*, equal to the weight of one square yard of Spanish cloth of fine quality (Mann 1971; Schammas 1994). The weight of one piece of skin, loaded at Le Havre de Grace, is based on the average weight of several types of skins, mentioned in the 2013 Compendium of the FAO. The calculated average is 8,85 kg per piece, or 106,2 kg for a dozen.

In total, 41.576 Sound passages, specifying 162.856 commodities, were registered with a French port of departure. The main variables of this data set, including port of departure, port of destination, domicile of the shipmaster, quantities, weights and measures and commodities, have been standardized, after which a conversion to metric tonnes was executed. Obviously, a complete standardization of the data set could not be attained. Nevertheless, as is specified in table 4 below, more than 95% of all passages from French ports and more than 85% of all commodities that they carried were successfully standardized and converted. The percentage of passages that was “lost in conversion” is somewhat higher in the 1670s, but declines rapidly afterwards. From 1700 onwards, an almost stable number of passages is missing in the converted data set. There are several possible reasons for data to be lost during the standardization and conversion process. Among them, missing and unrecognised data items in the electronic database are the most important. The percentage of cargo items that was “lost in conversion” requires some further specification. In table 4, the number of cargo items per passage is specified and it is calculated

how many cargo items related to one unique passage are missing. These calculations reveal that on average, every ship importing goods from French ports had 3,92 different items on board, but logically, the higher the number of different items on board, the higher the number of missing cargo items in the converted data set. This logic is reflected in table 4, which shows that for 27.087 passages carrying 55.585 cargo items there was no data lost in conversion. The average number of cargo items on board was just above two; these were easy cases. One cargo item was lost during the standardization and conversion processes in 8.654 passages with 48.640 registered cargo items. But with an average number of cargo items of 6,62, one missing item does not distort the overall reliability of the converted data set. The same may be said for passages with two, three and more missing cargo items; in all cases, the missing cargo items represent only a minor part of the total number of different items on board. All in all, in this way, the volumes of 140.128 cargo items out of a total of 162.856 were successfully converted to metric tonnes, representing the majority of the items on board of about 95% of all ship departing from French ports between 1670 and 1850. 22.728 cargo items, or 14%, could not be standardized and converted. Nevertheless, it may be assumed that the converted data set reflects the volume and structure of French imports to the Baltic in a reliable way.

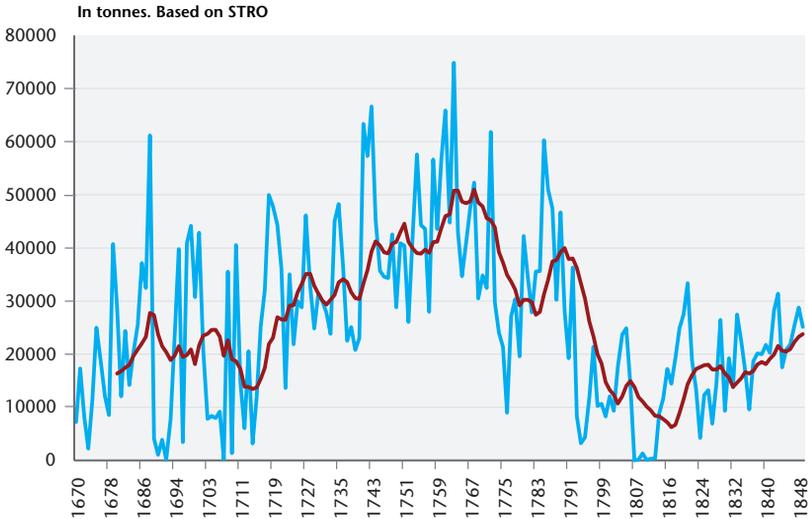
Table 4. Statistical overview of the results of the conversion of cargo registrations in STRO to their metric equivalents

	Passages matched	Cargo items		Average number of cargo items
		missing	matched	
Complete	27.087		55.585	2,05
Missing				
1 item	8.654	8.654	48.640	6,62
2 items	2.832	5.664	20.706	9,31
3 items	874	2.622	8.219	12,40
4+ items	525	2.684	6.978	18,40
all items		3.104		
	39.972	22.728	140.128	3,92
Missing passages	1.604			
Total passages	41.576			
Total cargo items			162.856	
Matching score	96,37%		86,04%	

3. Descriptive analysis

The volume of French imports to the Baltic between 1670 and 1850 varied greatly from 74,855,95 tonnes in 1763, at the end of the seven-years' war and 24,29 tonnes in 1807, when the Continental Blockade was in full force. Between these two extremes, significant annual fluctuations occurred. Differences in imported volume of more than 100% between single years were no exception. Nevertheless, four major periods can be distinguished when 11-year moving averages of the volume of French imports to the Baltic between 1670 and 1850 are observed (see Figure 1).

Figure 1. French imports to the Baltic, 1670-1850

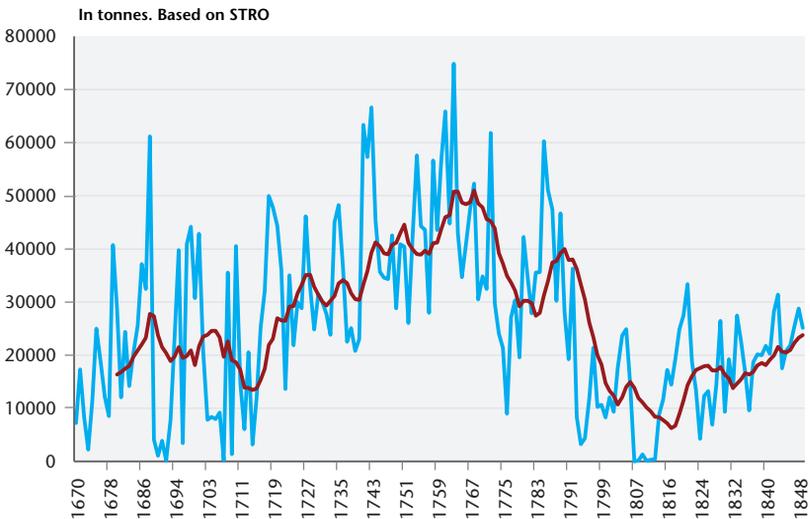


The first period was marked by stagnation and decline, probably caused by the outbreak of the Great Northern War in the Baltic. This period lasted until about 1714, which means that French imports embarked on a secular trend well before the Peace of Nystadt was signed in 1721. The rise of French imports to the Baltic would continue almost without interruption until the late 1760s, after which a long period of decline set in, which would last until 1813. Only during the 1780s there was a brief upswing in the volume of French imports to the Baltic, but it was short-lived and eventually killed off by the massive disturbances caused by the French revolutionary wars of the early 1790s. Between 1763 and

1813 French imports to the Baltic would decrease by an average of 1,99% annually; in other words, by 1813 French imports had become almost non-existent. Afterwards, French imports to the Baltic slowly started to climb out of their state of depression, but even though the volume of imports rose by an average of 7,86% each year, our data suggest that it never resumed its previous state.

Expressed in volumes of goods transported through the Sound, salt was the dominant commodity of French imports to the Baltic during the entire period observed, but the volumes imported declined steadily after 1763 and they would hardly recover in the nineteenth century (see Figure 2). In fact, whereas the volumes of French salt imported to the Baltic correlated very strongly with overall French imports until 1763 – the correlation coefficient between salt and total French imports between 1670 and 1763 was as high as 0,99 – other commodities (wine and brandy, overseas goods, syrup and fruits) increasingly determined the composition of French imports to the Baltic in the latter part of the eighteenth century.

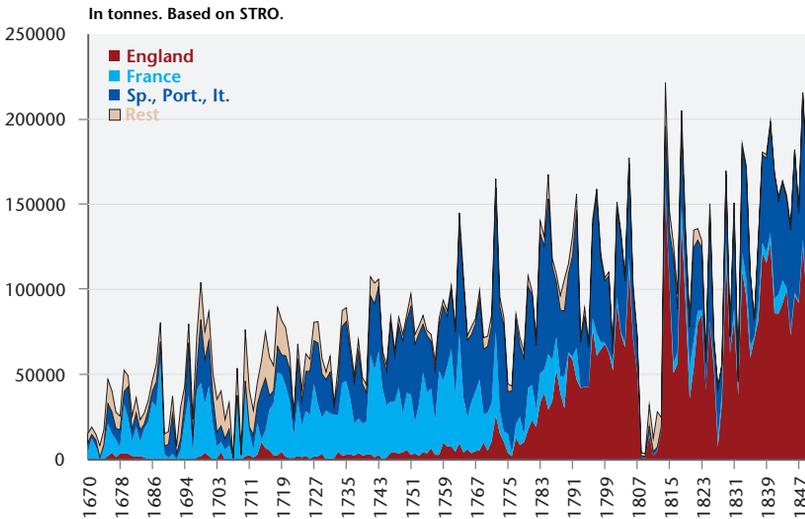
Figure 2. French salt imports to the Baltic, 1670-1850



French salt was imported to the Baltic primarily from places such as St. Martin, Le Croisic, Bourgneuf, Seudres and – after 1800 – Cette. Until the end of the eighteenth century, the main destinations of French salt were Danzig and Riga. After 1800, only

Riga and the vague destination “Baltic Sea” would remain; Danzig and Königsberg disappeared completely as destinations of French salt. French salt imports to the Baltic were usually complemented with imports of Spanish, Portuguese and to some extent Italian salt (Unger 1959), but while these managed to maintain a stable position in salt imports to the Baltic until 1850 at least, the French salt imports, that used to be significant until the late 1760s, were almost completely substituted with English salt imports – originating almost exclusively from Liverpool⁷ – in the final quarter of the eighteenth century (see Figure 3).

Figure 3. The geography of salt imports to the Baltic, 1670-1850



Whereas the volumes of French salt imported to the Baltic correlated very strongly to overall French imports to the Baltic until about 1740, other commodities started to determine the volume of French imports to the Baltic during the eighteenth century. Three major product groups can be distinguished here:

7. At that time, the emergence of Liverpool’s salt trade dated already back more than a century. However, it was only when the transport communications between Liverpool and the saline district of Cheshire were improved, coal supply was made more efficient and rock-salt mining took off around 1760, that the door was opened for massive exports of salt to the Baltic. According to Iredale, foreign customers took 80% of Cheshire’s salt production (Iredale 1967; see also: Smithers 1825; Poole 1854; Barker and Harris 1993).

(1) wine, brandy and vinegar, (2) fruits, nuts and syrup and (3) sugar, coffee and tobacco. This categorization differs somewhat from the categorization used by Giliane Besset in his analysis of Bordeaux's exports to Russia in the second half of the eighteenth century (Besset 1982). Besset makes a distinction between wine, colonial goods (*denrées coloniales*) and regional products, such as *eau-de-vie*, vinegar and prunes (*autres produits régionaux*). Rather than considering *eau-de-vie* and vinegar to be "regional products", I have categorized them alongside with wine, of which both were a by-product⁸. Moreover, I have included fruits, nuts and syrup as a separate category, because of the significant volumes that were imported from France to the Baltic in the second half of the eighteenth century (see below). Differently from Besset, I have not included indigo, alongside with sugar and coffee, as one of the overseas goods, since its volumes were very small during the eighteenth century and its importation to the Baltic was irregular (Besset 1982). On the contrary, I have included tobacco as the third overseas product, entering the Baltic from France. From about 1740 onwards, the volumes of these product groups occupied an increasing share of French imports to the Baltic, reaching a peak in the early 1790s, right before the existing structure of French imports to the Baltic became obsolete in the aftermath of the French Revolution (see Figure 4).

French imports of wine to the Baltic experienced an almost uninterrupted growth between 1670 and 1805, when their volume reached a peak of almost 16.000 tonnes. Only during two periods, from 1767 until 1778 and from 1793 until 1802, a temporary setback in the volumes of French wine imports can be observed. Like French salt imports, the wine trade did not fully recover after the Napoleonic wars, with annual imported volumes stabilizing at about 50% of its 1804/1805-level. It would take until 1837 for French wine imports to the Baltic to embark upon a novel growth

8. *Eau-de-vie*, or brandy in English, is a distillate that results from wine (*brûler les vins*), which served a dual purpose: by burning the wine, the volume of the harvest of wine grapes was reduced by 4/5 or even 5/6, while at the same time, *eau-de-vie* was used to mix it with white wine, a process associated with Dutch wine traders active in France in the early modern period (Dion 2010). Vinegar is "a liquid produced by the further fermentation of wine or other alcoholic liquor, (...)" (Cox and Dannehl 2007).

period, with growth rates that were much higher than during the eighteenth century.

The major port of departure of French wine, brandy and vinegar imports to the Baltic was Bordeaux, whose imports were increasingly complemented with Mediterranean imports from Cette after 1760. The wines that were imported to the Baltic from Bordeaux, Cette and other places often are described in some detail in the Sound toll registers. Thus, next to unspecified wine cargoes, such categories as “Stadsvin”, “Hoglands vin” or plain “French Wine” regularly appeared⁹. The fact that the descriptions of the types of wine imported from France were so imprecise, may be due to a large extent to the technique of mixing, sweetening or strengthening wines (*tirer, soutirer, mutter ou frelater les vins*)¹⁰ before importing them to the Baltic, which was typically associated with Dutch and Hamburg wine traders (Besset 1982; Dion 2010), was frowned upon by Colbert (Dion 2010) and Peter the Great alike (Besset 1982), but nevertheless continued to be common practice throughout the eighteenth century. Furthermore, Bordeaux and Cette also served as the port of departure for some quantities of Picardan (white wine from the Languedoc), Muscat, Madeira, Basque, Spanish and Portuguese wine.

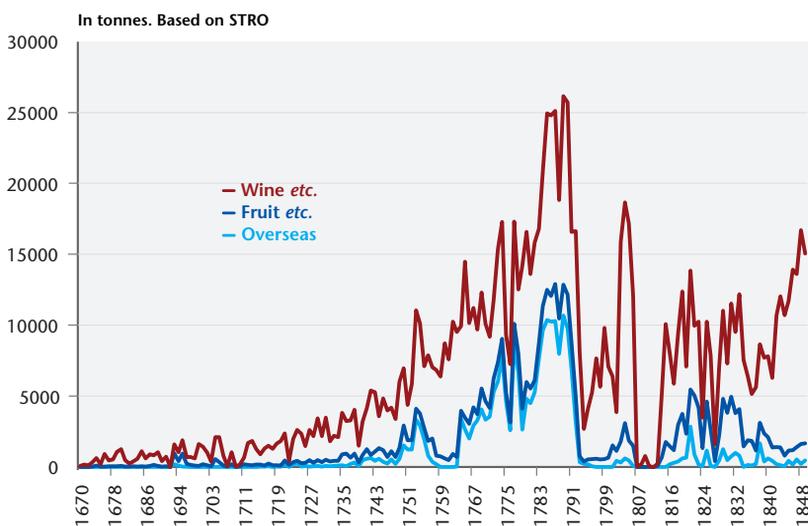
The major ports of destination of French wine in the Baltic were Lübeck, Stettin, Copenhagen, St. Petersburg and Danzig. The latter used to rank second after Lübeck until 1760, when Stettin became increasingly important as importer of French wine, brandy and vinegar, benefitting from the favourable conditions for international trade that were introduced by the Prussian government in the late 1740s and early 1750s (Gaziński 2000). Danzig definitively lost its significance in the immediate aftermath of the first partition of Poland (1772). By that time, Lübeck and Stettin had become firmly established as the primary ports of entry of French wine, brandy and vinegar in the Baltic. It is remarkable that, after

9. “Stadsvin” means wine produced in the S^{én}échaussée de Bordeaux, a kind of administrative unit surrounding Bordeaux, which stretched from Bordeaux to Saint-Macaire (on the Garonne and Castillon (on the Dordogne). The term “Hoglands vin” (pays haut) is used to describe French wines coming from further inland than the S^{én}échaussée, such as Agenais or Bergerac. In both cases, it is white wines that are produced mostly in these areas (Dion 2010; Besset 1982).

10. Taken from page 424 of Dion’s *L’histoire de la vigne*, who cited the French mid-seventeenth century economist Jean Eon on this issue (Dion 2010).

1760, the geographical pattern of French wine imports became increasingly complex; next to Lübeck and Stettin, the capitals of Copenhagen and St. Petersburg received increasing quantities of wine, while more and more different, smaller ports started to participate actively in French imports to the Baltic. Among those ports, the most significant were Stockholm, Königsberg, Riga, Rostock, Elsenaur and Flensburg, which jointly accounted for about 20% of total French imports of wine, brandy and vinegar to the Baltic between 1670 and 1850. Taken together, all ports except the “big five” received just over 200.000 tonnes of wine during this period, whereas the five biggest ports received a total volume of wine imports that was just below 600.000 tonnes.

Figure 4. French imports of wine, brandy and vinegar; fruits, nuts and syrup; overseas products, 1670-1850



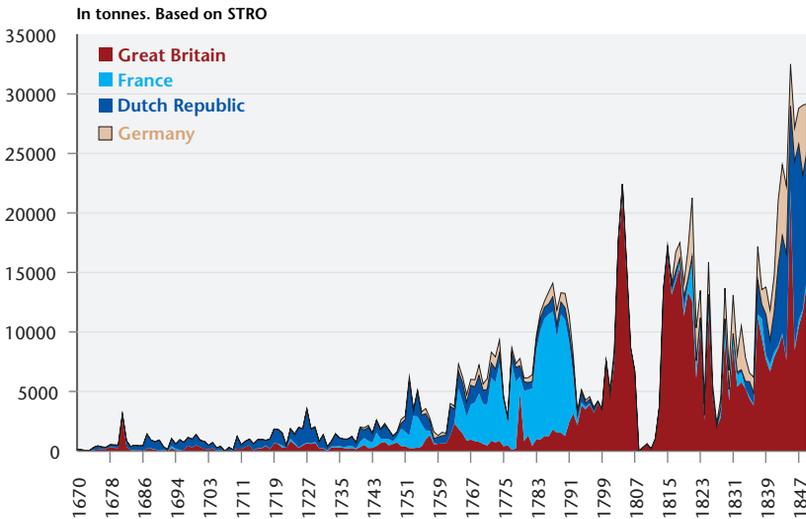
French imports of fruits, nuts and syrup correlated quite strongly with those of wine, until the late 1830s at least, and the geographical pattern of these imports was largely identical as well. Bordeaux and Marseille were the dominant ports of departure of French imports of fruits etc. to the Baltic, whereas – before all else – Stettin, Lübeck and – until 1772 Danzig – as well as the emerging Baltic capitals of St. Petersburg, Stockholm and Copenhagen were the dominant recipients of French fruits, nuts and syrups.

The pattern for overseas goods was different. French imports of overseas goods to the Baltic took off immediately after the Great Northern War. The volumes of sugar, coffee and tobacco that were imported to the Baltic originated primarily from Bordeaux, at first, and were complemented with modest imports from Nantes from the 1750s onwards as well as from Le Havre de Grâce and La Rochelle from the late 1760s. The volume of imports rose considerably between 1721 and 1756. French imports of overseas products to the Baltic were completely interrupted during the Seven Years' War, but resumed at a higher level in 1764. Between 1764 and 1792, the volume of overseas products imported to the Baltic rose to an all-time high of almost 10.000 tonnes in 1789, after which a rapid decline set in, probably under the impact of the Revolutionary Wars on French international commerce. Adversely affected by the French Revolution and, more importantly, the Revolt on Saint-Domingue, which caused a complete interruption of sugar imports to Bordeaux (Crouzet 1964; Marzagalli 2008), almost no French imports of overseas products to the Baltic were executed between 1794 and 1803. With the exception of the years 1821 and 1838, French imports of overseas products remained well under 1.000 tonnes annually, thus having fallen back to pre-1750 levels. In part, the decline of French imports of overseas products to the Baltic can be explained by the changing role of Hamburg as a redistributor of French sugar to the Baltic. The volumes of sugar re-exported from Hamburg into the Baltic accounted for 2.000-3.000 tonnes annually after 1815, and – as such – they could not compensate for the overall decline in the volume of French imports to the Baltic during and after the Napoleonic era. Before all others, it was Great Britain that substituted French imports of overseas goods to the Baltic from the mid-1790s onwards (see Figure 5). Thus, interestingly, the decline of French imports of overseas goods in the nineteenth century bears witness of a geographical reorientation of imports that was similar to that of salt.

The main destinations of French imports of overseas products to the Baltic were Stettin, St. Petersburg, Stockholm, Copenhagen and Danzig, whereby Stettin clearly stands out as primary port of entry during the second half of the eighteenth century. A notable difference to the geographical patterns observed for wine and fruit imports to the Baltic is the absence of Lübeck, which received only

2,2% of all French imports of overseas goods to the Baltic between 1670 and 1850. If we combine the insights gathered with regard to the volumes of French wine, fruits and overseas products to the Baltic, it may be assumed that Lübeck primarily played a role as port of entry for wine and fruits, of which part would be re-distributed to other ports in the Baltic, whereas Stettin became to serve mostly as port of entry for goods that had the Prussian hinterland – first of all Berlin – as their final destination (Gaziński 2000; Straubel 2004). Schmidt and Gaziński have stated that only 25% of all goods arriving at the port of Stettin actually stayed there (Schmidt 1864; Gaziński 2000).

Figure 5. Geography of imports of overseas goods to the Baltic, 1670-1850



To sum up, the major port of origin of products, other than salt, which were imported to the Baltic, was Bordeaux. For individual product categories Bayonne, Cette, Marseille, Rouen, Nantes and Le Havre de Grâce were significant. The major destinations of French wine, fruits and syrup and overseas goods were Lübeck, Stettin, St. Petersburg, Copenhagen, Stockholm and Danzig, which ranked in the top for each of these product categories. The volumes of French imports to Danzig went in the opposite direction of the overall trend of French imports to the Baltic; Danzig's position was under pressure after the first partition of Poland and the economic battle against Danzig clearly left its traces in the volume of

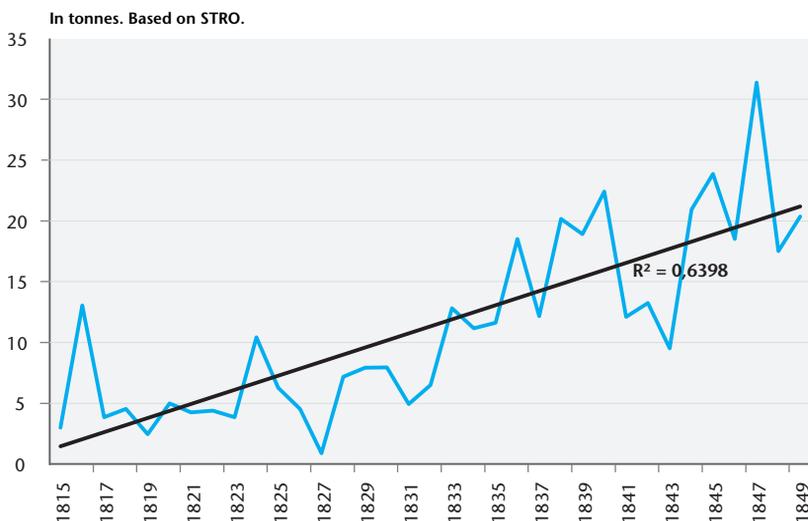
French wine, fruits and overseas products imported to the Baltic (Rachel 1928).

Indeed, the overall volumes of French imports to the Baltic collapsed during the time of the Continental Blockade and until 1850 at least they would not even come close to returning to late-eighteenth century levels. Only the imported volumes of wine, brandy and vinegar eventually reached new heights in the late 1840s. However, during and after the Napoleonic Era, further structural changes occurred in the composition of French imports to the Baltic. The total number of different products imported to the Baltic almost doubled compared to the second half of the eighteenth century, which in conjunction with the observed overall decline of imported volumes, indicating that a new type of less voluminous (but arguably more valuable) commodities started to gain momentum in the first half of the nineteenth century.

After 1815, the French imports of salt, fruits and wine were complemented increasingly with imports of natural dyestuffs such as Campêchewood (*lignum campechianum*) and St. Martinswood, fustic (dyer's mulberry, yellow wood), krapp (*rubia tinctorum*), and verdigris; of oils, such as olive oil and turpentine; of gipsstone, winestone and brimstone (sulphur); lead; cotton wool, skins (mostly goat, rabbit and lamb) and (white) leather; soap, caoutchouc (predominantly Senegal and Arabic), paper and other products. Until 1815, the share of these products in French imports to the Baltic was negligible; between 1815 and 1850, their share rose from about 3% to more than 20% of the total volume of French imports to the Baltic.

A first observation that can be made, is that the restructuring of the composition of French imports to the Baltic after 1815 also had a profound impact on its geography. The “new” products were exported from three different regions in France: in the North, exports of “new” products were dominated by Le Havre de Grâce and Rouen – or perhaps: the Seine estuary; in the south, Bordeaux remained significant; in the Mediterranean, Marseille and Cette were the gateways for “new” products imported to the Baltic.

Figure 6. Share of “new” products in French imports to the Baltic, 1815-1849



Most importantly, cotton wool, linen and skins were imported to the Baltic from the aforementioned French ports. The imports of cotton wool and white leather to the Baltic followed an almost bilateral pattern, with Le Havre de Grâce on the supply side and St. Petersburg on the receiving end. Skins followed the same pattern. Soap was exported almost exclusively from Marseille and imported in larger quantities to Stockholm, Lübeck, Riga and Rostock than to St. Petersburg; lead, on the other hand, was exported from Marseille and occasionally from Le Havre de Grâce, Nantes and Dunkerque, to be imported to St. Petersburg. Yet another pattern could be observed in the exchange of gummi, which went from Bordeaux and Marseille to St. Petersburg during the decades following the Restauration. Paper was distributed from Bordeaux to St. Petersburg, Lübeck, Stettin, Copenhagen and Danzig.

The imports of dyestuffs from France to the Baltic show an equally diverse pattern of regional specialisation in the production and supply of goods, on the one hand, and a high to almost complete concentration of the demand in one or – at best – a few ports in the Baltic. Verdigris, or Spanish green, was imported to the Baltic mostly from Bordeaux and less frequently from Marseille and Cette. Krapp, on the other hand, a dyestuff that is also known

as *garance* in French, was imported almost exclusively from Marseille, which in this case served as the entrepôt for the increasing volumes of *garance* cultivated in the Vaucluse and the Bouches du Rhône regions¹¹. Campêchewood¹², St. Martinswood¹³ and fustic, or yellow wood, were imported to the Baltic almost exclusively from Le Havre de Grâce and Bordeaux. St. Petersburg was by far the most important destination of these dyestuffs coming from France; in fact, Stettin was the only port that received significant quantities of Campêchewood, St. Martinswood and fustic, while obtaining insignificant shares of the other dyestuffs. Similarly, turpentine was exported almost exclusively from Bordeaux to be imported to St. Petersburg, Stettin, Copenhagen, Königsberg and Lübeck.

These “new” products, that had been imported from France to the Baltic only in very small volumes before 1815, were all light (except lead) and many of them were of high value. This becomes clear when the details in the *Tableau général* for 1840 are observed, which not only include estimates of the quantities (in kilogrammes) of goods exported from France, but also a calculated value of these exports, resulting from multiplication of the registered volumes with a so-called “taux d’évaluation”¹⁴. Though these calculated values are not a reliable offprint of the actual value of French exports, they are nevertheless useful as a rough indication of the significant impact of the shift in the composition of cargoes imported from France to the Baltic. For several reasons, which cannot be discussed in detail within the framework of this article, matching the data from the *Tableau général* with the converted data from the Sound toll registers is a painstaking task. For starters, the geographical units do not match: exports to Russia

11. After earlier, unsuccessful attempts, rubia tinctorum was implemented successfully in 1756 in southern France by Jean Althen, the son of a provincial governor in Persia. The main production areas around 1840 were Vaucluse and Bouches du Rhône (Peeters 1975).

12. Campêchewood was exported almost exclusively from the town of Campeche in Mexico, where the exports were concentrated when the town was still under Spanish rule. Schneider estimated the exports of Campêchewood to France between 1837 and 1840 at about 113 tonnes (Schneider 1981).

13. St. Martinswood comes from northern Colombia and was exported mostly from Riohacha, Sabanilla and Santa Marta to France, England and the United States. Santa Marta gave this type of red dyestuff its popular name (Schneider 1981).

14. This value should not be confused with the price paid for these products. It is – so it seems – an estimated value, made arbitrarily by French customs officers.

registered in the *Tableau général* also include exports to the Black and White Seas. Moreover, the usual problems with statistical sources apply, such as: under-registration, the use of different categories and product descriptions, the use of different weights and measures as well as different rules for their conversion¹⁵, and so on. What the data from the *Tableau général* do confirm, however, is the discrepancy between light and more expensive goods, on the one hand, and cheaper bulk goods, on the other hand, that made its appearance in French imports to the Baltic after the Napoleonic Wars. The following figure, which visualizes the relation between the “taux d’évaluation” and the share of the good in the total value of French exports to Russia in 1840, shows that only one expensive good really stands out, *tissus de soie et du fleuret*, which had an average “taux d’évaluation” of 119,24 *francs* and a total value of 4.782.688 *francs*, and thus accounted for 26,20% of the estimated value of French imports to Russia in 1840. Together with the other products that had a “taux d’évaluation” of more than 20 *francs*, the share of expensive goods in the total value of French exports to Russia was 41,04%. On the other hand, the figure also shows that there were ten products with a “taux d’évaluation” between 0,03 *francs* (*sel marin*) and 5,01 *francs* (*librairies*) per kilogramme, that accounted for another 40,58% of the total value of French exports to Russia¹⁶; among them, the highest volumes were achieved by salt (average *taux* = 0,03 *francs*; volume = 5.316.859 kg), wines (average *taux* = 0,48 *francs*; volume = 4.943.460 litres), krapp (average *taux* = 1,00 *francs*; volume = 783.670 kg), cotton (average *taux* = 2,00 *francs*; volume = 592.166 kg), fruits de table (average *taux* = 0,70 *francs*; volume = 590.775 kg) and coffee (average *taux* = 1,20 *francs*; volume = 528.320 kg) (*Tableau*, 1841). Assuming that most of the “other goods”, that are not specified in the summary table of French exports to Russia in 1840, but account for 15,71% of the total exported value¹⁷, also had a “taux d’évaluation” lower

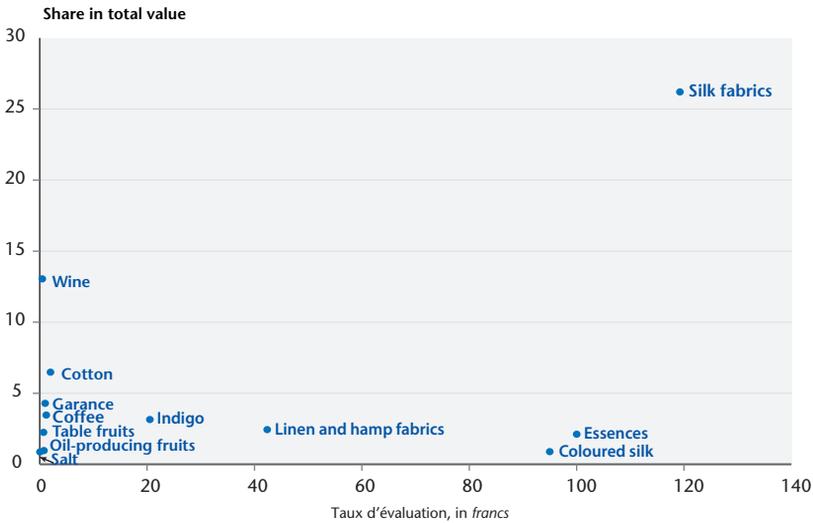
15. Most of the volumes in the *Tableau* are given in kilogrammes or litres (for wine), but no rules for conversion from one *barrique* to its equivalent in litres could be found in the source.

16. Interestingly, other than “*librairies*”(5,01 *francs*) there are no goods with an average “*taux d’évaluation*” between 5 and 20 *francs* per kg.

17. The remaining 2,67% of total exported value is made up with “*poterie, verres et cristaux*” and “*machines et mécaniques*”, of which only the value in *francs* was entered into the summary table (*Tableau*, 1841).

than 5,00¹⁸, the total share of “cheaper” goods in French exports to Russia was probably as high as 55%.¹⁹

Figure 7. Relation between “taux d'évaluation” and share in total exported value of main products exported from France to Russia, 1840



Based on: Tableau général, 1841: 57.

4. Interpretation

The composition of French cargoes entering the Baltic changed significantly between the late-seventeenth century and the mid-nineteenth century. The salt-dominated pattern of the early period was gradually expanded with the addition of goods, such as wine, fruits and syrups, and sugar, coffee and tobacco. In the first half of the nineteenth century, “new” products gained a significant share in French imports to the Baltic, thus witnessing a shift from the former bulk-oriented imports of salt and wine to the Baltic

18. It is possible to reconstruct the composition of these “other goods” and to find their respective “taux d'évaluation” by going through the lengthy “État de développement...” in the Tableau général. Such undertaking, however, lies well outside the scope and aims of the present paper.

19. A brief comparison with the value of French exports to other destinations in Northern Europe provides some food for thought. The share of cheap goods (average taux of less than 5,00 francs) exported to Sweden was 64,72%, to Denmark 68,74%, to the Hanseatic towns 48,32% and to Prussia 40,51%. Assuming that most of the unspecified goods probably had a taux of less than 5 francs, the estimated share of these cheap(er) goods in the total value of French exports to Sweden was as high as 87,70%, to Denmark 84,64%, to the Hanseatic towns 68,97% and to Prussia 64,59%.

to “light” imports of highly valued goods, that served the emerging industrialisation of Prussia and parts of the former Polish-Lithuanian Commonwealth (Jedlicki 1968; Wandycz 1974). What remained was a modest continuation of the traditional French imports of salt, wine and overseas goods to the Baltic, complemented with rising imports of “new” products. The origins and destinations of French imports to the Baltic changed accordingly and express the rise of Prussia and Russia as “new” great powers in the Baltic, which found its dramatic climax in the partitions of Poland in the latter third of the eighteenth century and which consequently led to the reconfiguration of the role of Russia’s and Prussia’s Baltic ports in international trade. Insofar as French imports to the Baltic are concerned, Danzig, Königsberg and Riga were largely replaced by Lübeck, Stettin and St. Petersburg in the course of the eighteenth century. On the French side, international trade at the traditionally predominant port of Bordeaux was complemented by a rising share of the Mediterranean ports of Marseille and Cette as well as by the growth of Le Havre de Grâce in northern France. The latter’s development after 1815 must be seen in light of the growing imports from southern America (before all Brazil) (Schneider 1981), of which part was re-exported to the Baltic, but also the take-off of industrialisation processes in the northern part of France, where Paris turned into the “capital of cotton” during the first decades of the nineteenth century (Woronoff 1989; Poussou 1993).

Relevant in this context are the respective trade and tariff policies of the emerging Great Powers in the Baltic, but also of the Free and Hanse City of Lübeck, which are likely to have affected the directions and volumes of French imports to the Baltic throughout the entire period observed here. Several developments deserve to be mentioned in this context. First of all, there was the 1716 commercial treaty of the Hanseatic cities of Bremen, Hamburg und Lübeck, which formed a firm basis for these hanseatic towns to compete with the Dutch as middlemen in Baltic trade and transport (Semenov, 1858). Secondly, Russian foreign economic policy and its fierce support of the newly founded capital of St. Petersburg during the first half of the eighteenth century as well as the more comprehensive tariff policies that were established under Catherine the Great (among others expressed in the Commercial Treaty

of 1766 and the Franco-Russian Commercial treaty of 1787) provided a firm background for directing and redirecting foreign imports to Russian ports in the Baltic (Martens 1902). Finally, Prussia's relentless support of the port of Stettin as its primary port of international trade, which started almost immediately after Prussia regained control over Stettin from the Swedes in 1720 and which intensified in the second half of the eighteenth century, is a decisive element in the explanation of the geography and volume of French imports to the Baltic (Rachel 1928).

The changes in the structure of French imports to the Baltic also denote the decline of Dutch commercial dominance in the Baltic, which had relied to a large extent on its role as middleman in commercial operations between the Baltic and the southern European Atlantic coast. Indeed, Prussian and – later – Russian economic policies were not only directed towards increasing domestic production and the promotion of (early forms of) industrialization; they also showed a significant concern with the establishment of a domestic services sector. In particular, the development of a maritime transport sector received much attention from Prussian and Russian policymakers. Prussian efforts were directed primarily towards the establishment of a maritime transport services sector in Stettin, while the Russian government undertook several initiatives to support the establishment of a Russian mercantile fleet, not at the least through the invitation of foreign shipmasters to obtain a Russian passport and to continue operations under Russian flag. The latter's policies were unsuccessful, at least insofar as data on the nationality of shipmasters carrying French imports to the Baltic is concerned. Prussia's policies, on the other hand, clearly brought forth the establishment of a Prussian mercantile fleet (mostly Stettin), which, jointly with the mercantile marines of Sweden (mostly Stockholm), Denmark (mostly Copenhagen) and Lübeck, took over the role of the Dutch as carriers of French imports to the Baltic in the latter third of the eighteenth century. Remarkably, Lübeck was the dominant provider of carrier services for French direct imports to St. Petersburg. Unfortunately, it is impossible to establish to what extent these direct imports carried by shipmasters domiciled at Lübeck was an extension of re-export trade of French goods from Lübeck to St. Petersburg, that was boosted in the 1830s by the establish-

ment of the St. Petersburg-Lübeck steamship company, which organised a regular steamship connection between the two ports employing two and from 1835 onwards three steamships of a size of about 200 tonnes (Schiebe, 1838; Possart, 1840). Moreover, French commercial statistics of the late 1830s and beginning of the 1840s reveal that steamships, sailing under the French flag, were used between Le Havre and some other French ports like Calais, Dunkerque, St. Valéry and the Baltic.²⁰ These steamships reflect the gradual decline of the traditional port of Bordeaux and the rapid rise of “industrial” ports, such as Le Havre after the Restauration (Amphoux, 1932; Soulas, 1940).

Generally speaking, what can be observed in the development of French imports to the Baltic between the mid-seventeenth and the mid-nineteenth century is the gradual replacement of traditional with modern structures of commercial exchange. First indications of the decline of France’s traditional commercial exchange, which had relied very strongly on the redistribution of overseas goods as well as on the exportation of agricultural produce, became apparent in the 1780s (Marzagalli 2008). Marzagalli rightly describes, that “[a]lors que le coeur économique de l’Europe occidentale se transférait vers le Rhin, défavorisant les ports français sur l’Atlantique, la domination coloniale européenne aux Amériques était remise en cause” (Marzagalli 2008). In the decades following the American independence, large parts of the continent, in the North as well as in the South and on the American West Coast, became accessible to all parties interested in establishing direct commercial relations. France was forced to reconsider its previous role, not at the least because it had lost many of its former colonies and was left with only Martinique, Guadeloupe, French Guyana, Senegal, Réunion and a modest representation in India (Schneider 1981). There is no doubt that the French Revolutionary wars of 1793-1814 have played a decisive role in the restructuring of French imports to the Baltic: it is

20. In 1839, 8 steamships (2577 tonnes) departed to Russian ports in the Baltic from Le Havre, while 59 departed (13.924 tonnes) to the Hanseatic towns Bremen, Hamburg or Lübeck. In 1840-1841 the number of steamships heading for Russian ports in the Baltic rose to 12 (2742/2752 tonnes) annually, whereas the number of steamships destined to the Hanseatic ports remained constant at 65 steamships, carrying about 10.000 tonnes. Unfortunately, the *Tableaux généraux* do not allow specifying how many went to each of the Hanseatic ports (*Tableau* 1840; *Tableau*, 1841; *Tableau*, 1842).

precisely during this period of war and revolution that the French international economy was forced to reconsider the structure of its international commercial exchange, while at the same time being confronted with the threats of the British Industrial Revolution. The result seems to have had a triple character, as can be observed in the following table.

Table 5. Average annual volume of French imports to the Baltic, selected products

In tonnes. Based on STRO

Product	Le Havre	Bordeaux	Marseille
Average annual volume, 1764-1793			
Wine	7,932	2.903,155	108,768
Coffee	53,240	626,890	26,492
Sugar	203,788	3.758,196	0,671
Cotton	0,004	1,163	10,355
Campeche- and St. Martinswood	0,055	4,083	0,491
Krap (garance)	0,000	0,000	0,000
Average annual volume, 1815-1849			
Wine	105,363	2.851,509	330,530
Coffee	21,897	91,922	0,307
Sugar	132,302	173,885	27,464
Cotton	69,324	2,569	3,099
Campeche- and St. Martinswood	220,947	140,884	12,880
Krap (garance)	3,878	2,361	215,191

After 1815, in South-West France, the merchants of Bordeaux tried to resume their former position, some by trying to restore overseas commerce in its former glory, focussing on sugar and coffee; others by transforming and adapting to the new circumstances of the nineteenth century (which explains the rise of Campêchewood and St.Martinswood) (Marzagalli 2008). Regardless of these attempts, Bordeaux remained mostly an entrepôt for wine in the first half of the nineteenth century. Continuity and adaptation also was characteristic of the French ports in the Mediterranean, like Marseille, where overseas goods remained of limited importance, while krap, or *garance*, emerged as a “new” regional product, cultivated for international commerce. Quite differently, in northern France, change was the dominant feature of the structure of French imports to the Baltic: both the volume and the

composition of Le Havre's international trade underwent dramatic changes during the French Wars. The rise of Campêchewood and St. Martinswood, on the one hand, and of cotton, on the other hand, is remarkable. They are clear indications of the changing nature of France's domestic economic development that had a lasting impact on the structure of French imports to the Baltic.

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Appendix

Table A1. Weights and measures used for French imports to the Baltic

Measure	Min.Value	Max.Value	Frequency
1/2 ahm	75,40	75,40	2
1/2 anker	19,045	19,045	12
1/2 bouteljer	0,452	0,452	389
1/2 fad	76,17	76,17	6
1/2 flasker	0,452	0,452	24
1/2 kister	20	20	1
1/2 liespfund	3,39	3,39	1
1/2 oksehovede	114,255	114,255	372
1/2 pibe	231,85	231,85	106
1/2 ris	1,5	1,5	1
1/2 skippund	67,82	67,82	1
1/2 stk.	113,1	113,1	2
1/2 tønde	76,17	76,17	15
1/4 bouteljer	0,226	0,226	95
1/4 oksehovede	54,3	54,3	26
1/4 pibe	115,92	115,92	54
1/4 tønde	34,78	34,78	2
1/8 pibe	54,3	54,3	10
Ahm ¹	150,80	150,80	134
Anker	38,09	38,09	544
Balle ²	30	108,85	731
Boisseau ³	9,1	78,04	186
Both	412,25	412,25	34
Bouteljer	0,905	0,905	1230
Bundt	16,33	16,33	25
Bushel	36,35	36,35	1
Centner ⁴	48,95	50	37
Chaldron	2692	2692	3
Dægge ⁵	3,16	181,9	55
Dusin ⁶	0,375	106,2	8
Eendeel			3
Fad ⁷	226,29	304,39	26134
Fierdinger	31,392	31,392	3
Flasker	0,905	0,905	75
Fod	226,2	226,2	99

Table A1 (continued)

Measure	Min.Value	Max.Value	Frequency
Hectolitres	100	100	2
Hundert	19760	19760	4
Kander	1,932	1,932	2
Kasse	40	40	487
Keel	21538	21538	1
Kilogram	1	1	30
Kiste	40	40	667
Kurv	40	40	508
Ladning			54
Læst ⁸	2325	2918	13164
Liespfund	7,99	7,99	88
Liter	1	1	932
Lof	68,2	68,2	3
Mille	100	100	1
Monts	1250	1250	106
Moyen	811,2	811,2	66
Oksehovede ⁹	197,57	304,92	15902
Ottinger	2,1736	2,1736	1
Pakke ¹⁰	3	108,85	20
Par	0,031	0,031	170
Pibe ¹¹	377	608,77	3863
Pignatelli	0,506	0,506	1
Pund ¹²	0,40655	0,5091	33735
Quardeel	345	345	53
Quintal	50	50	1
Rigsdaler			4380
Ring	720	720	4
Ris	3	3	3043
Ruller	36,4	36,4	6
Sække	81,06	81,06	163
Scheffel	47,23	47,23	9
Skieppe	17,39	17,39	2
Skippund ¹³	122,38	148,32	7239
Skok ¹⁴	18,96	16200	61
Stein	15,43	15,43	14
Stk. ¹⁵	0,01	304,39	11859
Tierce	150,8	150,8	1576

Table A1 (continued)

Measure	Min.Value	Max.Value	Frequency
Tolft	216	216	1
Tønde ¹⁶	135,11	135,11	1413
Tons ¹⁷	904,8	979,01	6
Tylt ¹⁸	144	216	23
Unknown	0	4000	9224
Viertel ¹⁹	6	7,61	811
Wage	71	71	4
Wohl	30,6	30,6	2

1. The *ahm* is the semantic equivalent of the French *tierce*, equalling 150,80 litres in Bordeaux.

2. Though not strictly speaking a measure, Doursther considered that the wide use of *bales* in all forms and sizes made it necessary to include at least some of its uses in his dictionary. The majority of entries of French imports measured in *balles* are imports of paper, for which the following calculation was made: 1 bale of paper = 10 rames of paper = 4800 sheets of paper, which corresponds to about 30 kg. The heaviest were linen bales which Doursther estimates as follows: 1 bale of linen = 60 small packs = 240 livres avoirdupois = 108,85 kilogrammes. A bale of coffee from Brasil is set by Doursther at 73,44 kg. This value was extended to almonds, kork and korkholt in my conversion.

3. In Bordeaux, one *boisseau* was equal to one *demi-setier* de Paris, or 78,04 kg. The *boisseau* coming from Nantes was estimated at 9,1 kg. For several French ports, no specification of the metric value of the *boisseau* could be found. In these cases the value of the old *boisseau* de Paris, equal to 13,01 kg was used.

4. *Centner* is the semantic equivalent of quintal, which equals 50 kg in Bordeaux and 48,95 kg in other French ports.

5. *Daegge*, or 10 pieces, was used to count very different types of textiles and skins. For light textiles, the weight was estimated at 3,16 kg, or 0,316 kg per piece. The weight of one piece of skin was estimated at 8,85 kg, which is the average of weight of goat, sheep and bovine skins as found in the 2013 Compendium of the FAO. The weight of a *daegge juchter* (better: *juften*) was estimated at 181,9 (or 18,19 kg for one piece).

6. Products of very different size and origin were counted in *dusin* or *dozen*. In this conversion, a *dozen* socks were estimated to weight 0,375 kg. This estimate is based on Doursther's indications, which state that "A Elseneur, pour les droits du Sund, on compte que la douzaine chaussettes de cotton pèse ¾ livre (...)" (Doursther 1840).

7. The *fad* or *oksehovede* is the semantic equivalent of the *barrique*. The predominant *barrique* of Bordeaux, contains 226,29 litres as well as the *barrique* of Bayonne (304,39 litres), Nantes (240 litres) and La Rochelle (228,29 litres). The value of the *barrique* of Bordeaux was also applied to other French ports. Potential differences in the actual type of *barrique* used, depending on the origin of the wine transported in them, e.g. the *barrique* of Bourgogne (205,46 litres) or Champagne (205,46 or 182,63 litres), could not be taken into account.

8. The *last* is a well-known measure with different values. For French imports to the Baltic, the most common value is that of one *last* of salt, which is equal to 2325 kg. *Lasts* of other products are assumed to be equal to the *ancien last* of Amsterdam: 2918 litres.

9. *Oksehovede* is a semantic equivalent of *barrique*, see footnote 7.

10. See footnote 2.

11. *Pibe* is the semantic equivalent of the *pipe* or *botte*, very complex measures that may represent very different values. In this paper, the *pipe* at Bordeaux is 377 litres; the *pipe* of Bayonne is 608,77 litres and the *pipe* of Nantes is 480 litres. All other *pipes* are assumed to be 377 litres.

12. *Pund* is the semantic equivalent of *livre*. In most cases, the value of the *ancienne livre poids de commerce* was used: 0,4895 kg. The value of the *livre* in Bayonne was 0,485 kg; that of Bordeaux, Dieppe, Nantes 0,4944 kg; Calais 0,510 kg; Dunkerque 0,428 kg; Marseille 0,4079 kg; Morlaix 0,4915 kg; Rouen 0,5091 kg; Toulon 0,40655 kg.

13. *Skippund* is the semantic equivalent of the charge, a weight equal to 146,85 kg in most of France. In Nantes, the charge equals 148,32 kg; in Marseille 122,38 kg.

14. One *skok*: 60 pieces. Its minimal estimated value is that of 60 pieces of cloth, where one piece weights 0,316 kg; its maximal value is that of 60 masts, where one mast weights 270 kg.

15. *Stk*. Means *stykker*, or *pieces*, but for wine and brandy, it may also refer to *stück*, which is equal to one *barrique*. Depending on the cargo item, its weight differs from 0,01 kg – *guesstimate* for one clove - to 304,39 kg – equalling one *barrique* in Bayonne.

16. The *tønde*, or *tonne* in French, presents a major conversion problem. Strangely, Doursther's dictionary hardly lists any French values for the tonne or its semantic equivalents *baril* and *fass*. I have converted all measurements in tonne to the value given for the tonne of Amsterdam: 135,11 litres.

17. Following Doursther, a *ton* of liquid goods is 904,8 litres; of dry goods 979,01 kg.

18. One *tylt*: 12 pieces. One *tylt brædder* (a type of timber) is estimated at 144 kg; one *tylt dehler* (or: planks) at 216 kg.

19. *Viertel* – semantic equivalent of *velte*, which equals 7,54 litres in Bordeaux and Marseille; 7,61 litres in Bayonne and Cette, but only 6 litres in Nantes.