
ARTICLES

European Foreign Trade in the XIX Century: The Development of the Value and Volume of Exports (Preliminary Results)

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GENERAL INTRODUCTION.

The aim of this article — which contains some results of our projected reconstruction of the development of foreign trade in the XIX century¹ — is, above all, to provide an approximate estimation of the growth of European foreign trade in the XIX century that is more accurate than those that have been available hitherto. Paradoxical though it may seem, the data used in tracing the development of the value of European exports have all until now relied, directly or indirectly, on calculations made by statisticians at the end of the XIX century, and especially on estimations made by

¹ This study is part of a group of four articles based on similar topics: « Geographical structure and trade balance of European foreign trade from 1830 to 1910 » (which will appear in a later issue of this review), « Foreign trade of the Third World in the XIX century », to appear shortly and « World foreign trade: development of the value, volume and geographical structure of exports from 1800 to 1970 (preliminary results) » in preparation.

² M. G. MULHALL, in his 1880 study (« *The Progress of the World* ») attempted an initial assessment of the development of the trade of various countries for 1830 and 1878 (pp. 45-46 and 534). But the basic material most often used is the table in his *Dictionary of Statistics* (4th edition, London 1898, p. 128) which shows the development of the value of combined imports and exports for the major countries and for Europe as a whole (also for the world).

Mulhall² and Von Neumann-Spallart.³ These estimations formed the basis of the calculations made by the League of Nations⁴ and they became, to a great extent, the most important source for the study of world trade for the period between 1876 and 1913.

The fact that the basic data derive from calculations made at the end of the XIX century does not in itself imply that they are invalid. But their analysis reveals that some estimations were rather imprecise, while a certain number of countries (of little importance, it is true) were omitted. On the other hand, there have been until now no estimations available of European exports alone before 1870. Our work has involved making completely new calculations according to the data for individual countries, (see the methodological appendix) and tracing the series of figures back to 1800, or at least until 1830.

As regards the volume of European exports, Kindleberger's calculations⁵ have provided us with a reasonably reliable estimate. However his calculations go back only to 1870, while several new indices of export prices have been published between 1955 (the date of Kindleberger's calculations) and the present, and these permit a more complete and accurate analysis of the subject. Lastly, Kindleberger's index is deliberately restricted to industrialized Europe. So here too we decided to go back to the beginning and construct an index of prices of European exports (see the methodological appendix).

The methodological appendix at the end of this article shows the unreliability of some data (especially those from the first half of the XIX century) — the reader is referred to it. Here we shall merely warn readers not to place too much confidence in the figures we propose and point out that the geographical definition of Europe

² See note on previous page.

³ F. X. VON NEUMANN-SPALLART, *Uebersichten der Weltwirtschaft 1880*, Stuttgart 1881 and subsequent editions. The latter were continued by F. VON JURASCHEK and edited in Berlin.

⁴ *Industrialization and Foreign Trade*, Geneva 1945.

⁵ C. P. KINDLEBERGER, *The Terms of Trade. A European Case Study*, New York 1956; and *Industrial Europe's Terms of Trade on Current Account 1870-1953* in «The Economic Journal», March 1955, pp. 19-35. These data were included and extended to 1960 in the study by A. MADDISON, *Growth and Fluctuation in the World Economy 1870-1960*, in «Banca Nazionale del Lavoro Quarterly Review», June 1962.

followed in this study includes Russia (also Asian Russia), but excludes European Turkey (by its 1913 borders). Lastly we should note that the problem posed by the effect of the creation of new trade deriving from the foundation of a certain number of states (especially in the Balkans) has been resolved by postulating for these countries (and for the period before their foundation) a développement in exports approximating to that of other European countries with similar characteristics.

As the essential aim of this article is to present the results of our calculations and estimates, the accompanying analysis will be very limited. No attempt has been made to analyse the causes of the evolution nor to interpret the consequences of the development of foreign trade on economic activities as a whole, or, in particular, on the process of development. We have tried to provide a solution to some of these problems in our recent study — « Commerce extérieur et développement économique de l'Europe au XIX siècle », which will appear in 1974.

A) Evolution of European exports in current values.

This section will be devoted firstly to the development of exports in Europe as a whole, and secondly to the development of the respective importance of the various European countries. The data referring to the volume of exports will be presented and analysed in section B of this article.

1) Exports of Europe as a whole.

Table 1 sums up the results of our calculations of the growth of the current value of total European exports during the XIX century. Following the well justified tradition, we have included in the XIX century the years of the XX century up to the outbreak of the World War. The data are given in current dollars, therefore in dollars of the gold parity in existence before the 1934 United States devaluation, in what are generally termed « old gold dollars ».⁶

⁶ The devaluation of 31st January 1934 was 41% in relation to gold.

TABLE I

EUROPEAN SPECIAL EXPORTS, IN CURRENT VALUES, 1800-1913
 (pre-1933 gold dollars; territorial boundaries of 1913; three year annual averages,
 except 1913)

	Total exports		Per capita exports	
	Value (millions of dollars)	Annual rate of growth (%)	Value (dollars)	Annual rate of growth (%)
1800	(670)		(3.3)	
1810	(680)	*	(3.2)	*
1820	(680)	*	(3.1)	*
1830	655	*	2.7	*
1840	875	2.9	3.4	2.1
1850	1200	3.2	4.4	2.6
1860	2160	6.0	7.5	5.4
1870	3260	4.2	10.4	3.6
1880	4050	2.2	11.8	1.3
1890	4630	1.3	12.1	0.3
1900	5490	1.7	13.0	0.7
1910	8650	4.7	18.2	3.6
1913	10550	6.8	21.3	5.6

* Not significant.

Note: The slight rounding off of the figures does not imply a corresponding margin of error, especially for the pre-1850 figures. The rates of growth have been calculated from figures that were not rounded off at all.

Sources: Our calculations, see text and methodological appendix.

The margin of error in these figures (see the methodological appendix) is very small, not to say negligible for the period 1880 to 1913, when valid statistics provide 100% of the data. For the period 1860 to 1870 valid statistics provide 75% of the data, while 23% derive from estimations containing a small margin of error. For 1850 the rates are 61% and 37% respectively. This amounts to a margin of error that is on the whole fairly small. On the other hand, for 1840 the proportion of very reliable figures is no more than 55%, and for estimations with a small margin of error, 30%. These rates fall to respectively 53% and 11% for 1830. From 1800 to 1820 the development is based on relatively reliable statistics and estimations concerning countries where foreign trade must have represented about 50% of the European total. It is obvious that the margin of error of even those statistics considered as valid is much more important for the first than for the second

half of the XIX century. As a general rule the data with wide margins of error will appear in brackets.

From 1800 to 1900 the value of European exports rose from just below 700 million dollars to 5,500 million, and even reached 8,700 million in 1910, representing an increase in the ratio of 1 to 13 in one century (1810-1910). From 1830 (from which year the data become more reliable) to 1913 the ratio of increase was 1 to 16. Compared with the previous century (and very probably to previous centuries), these are extremely rapid increases. Still in terms of value European exports probably did not improve during the XVIII century in ratios above 1 to 3 or 1 to 4.⁷ Of course, as we shall see later, the ratios of the XIX century were relatively modest compared with contemporary times.

If the first thirty years of the XIX century are excluded — and they are not significant, given the margins of error of the figures, the troubled nature of the years 1800-1815 and the very strong drop in prices — four main periods can be distinguished in the rhythm of the growth in value of European exports in the XIX century. The first, which lasted till 1850 or, more precisely, until 1846-47, if yearly data are used as a basis,⁸ was marked by relatively moderate growth in exports, of about 3% per year. The second period, covering the years 1846-47 to 1865-68, showed a sharp acceleration of growth (the expansion rate exceeded 5%). The third period, lasting until the years 1896-97, is a phase of very slow growth, the annual rate being below 2%. The last period which ends with the begin of the war was marked by a very strong increase in the value of exports, of about 5%, the growth being particularly rapid from 1903 to 1907 and from 1909 to 1913.

Although the data relating to the volume of trade are more important, we should note that the analysis of the development of value of exports is of definite interest. In fact they were the only data available, especially during the XIX century, and the analysis of the development of foreign trade was almost exclusively based

⁷ In England this increase was 1 to 5 but in France only 1 to 3.

⁸ Until 1870, based on the data for individual countries; after 1870, based on MADISON's data (*Growth and Fluctuation...*, op. cit.) for Western Europe.

on these figures. In this context the acceleration of trade after 1846, that is after the repeal of the Corn Laws in Great Britain, must be stressed. This rapid expansion in trade was certainly not unrelated to the success of free-trade ideas on the Continent, just as the slackening in the expansion of the value of exports from 1865-68 was not unrelated to the protectionist reaction in Continental Europe. Although this article is not intended to be analytical, we shall return to this problem at greater length when studying the development of the volume of foreign trade.

As the population of Europe more than doubled during the XIX century, growth in terms of per capita exports⁹ was more moderate, although still very rapid in comparison with previous centuries. Between 1830 and 1913 per capita exports rose from about three dollars to more than twenty-one dollars.

In Table 2 we have placed the XIX century data in a wider historical context, by comparing them with the increases recorded in the course of the XX century. We should immediately point out that the figures for the current value of European exports until 1913 have been corrected in order to make them more or less comparable with contemporary data. The correction involved adding an arbi-

⁹ We have calculated the data used for the growth of the population of Europe on the basis of the most recent estimations available for the different countries. For Russia we have decided to increase the figures in the data from before 1870. Below are the results of these calculations (the population of Europe not including European Turkey;⁶ Russia: including her Asian territories; in millions):

	Europe	Russia	Europe total
1800	151.5	50.0	201.5
1810	158.0	52.0	210.0
1820	167.5	55.0	222.5
1830	180.5	59.0	239.5
1840	193.0	63.5	256.5
1850	203.5	68.5	272.0
1860	215.5	74.0	289.5
1870	228.5	84.5	313.0
1880	245.0	97.5	343.0
1890	265.0	118.0	382.5
1900	288.0	133.0	421.0
1910	313.5	161.0	474.5
1913	324.5	168.5	493.0

⁶ The population of European Turkey (1913 boundaries) was 1.9 million in 1913. It must have been about 1 million around 1800 and about 1.5 million around 1880.

trary estimated value of the extra trade brought about by the creation of new political entities after the First World War to European exports up to 1913.¹⁰

TABLE 2

EUROPEAN SPECIAL EXPORTS IN CURRENT VALUES, 1830-1970
(territorial boundaries of 1970^(a); 1830 to 1890: three year annual averages)

	Total exports		Per capita exports	
	Value (millions of dollars)	Annual growth rate (%)	Value (dollars)	Annual growth rate (%)
1830	685		3	
1860	2260	4.0	8	3.3
1890	4840	3.9	13	1.6
1913	11025	3.6	22	1.9
1929	16050	2.4 ^(b)	30	1.9 ^(b)
1953	35220	3.3 ^(b)	60	2.8 ^(b)
1970	167970	9.6	238	8.4

^(a) European Turkey is not included; see text for corrections to make date for 1830 to 1913 more or less comparable with those that follow.

^(b) If an arbitrary period of six years is omitted from the calculation to account for the effects of the war, the annual rate rises to 3.8% for total exports and 3% for per capita exports from 1913 to 1929, and to 4.5% and 3.8% respectively for 1929 to 1953. The 1934 revaluation however makes all these rates insignificant for the period from 1929 to 1953.

Note: The slight rounding off of the figures does not imply a corresponding margin of error. The rates of growth have been calculated from figures which were not rounded off at all.

Sources: 1830-1913 see Table 1 and text; 1929-1970 based on publications of the League of Nations and the United Nations

We shall restrict our analysis of this table to the most essential points, as we shall return to this problem when examining the more important data concerning the growth in the volume of exports. But as we have noted above, the data in current values are nevertheless important for the very reason that they are very often used. The important points to note at this stage are the irregularity of

¹⁰ On the basis of the world trade network in 1928 (*The Network of World Trade*; League of Nations, Geneva 1942, appendix III) we have calculated the importance of additional exports resulting from reciprocal trade between Russia and the U.K. on one hand and the countries which previously formed part of these political entities on the other hand. In 1928 the total of these exports represented 4.3% of total European exports or 4.5% of total European exports minus this trade. This rate of 4.5% has been applied to the figures for exports between 1830 and 1913. We have decided to correct the old data rather than recent ones in order to enable readers to up date the recent figures, when this becomes necessary.

XX century development compared with that of the XIX century, and the very rapid expansion of recent years.

The irregularity of development in the XX century had basically been due to the effects of the great crisis in the 1930s which took the form of a drastic slump in both world and European trade. The combined effect of a reduction in the volume and prices of exports brought the value of European exports from a peak of 16.1 thousand million dollars in 1929 to 13.4 thousand million in 1930 and 5.9 thousand million in 1933. This movement had reached a bottom in 1935 with an amount of 5.5 thousand million old dollars.¹¹ But because of the dollar devaluation of January 1934, European and world trade increased, in statistical terms, by 70%, due to this alone (although in fact everything remained the same otherwise). A slump of such proportions never took place in the XIX century (at least not between 1820 and 1913). In the same way the expansion recorded since the end of the Second World War is also an entirely new phenomenon if we consider its pattern and duration. We shall return to this aspect of the problem in the section devoted to the volume of trade.

Before going on to examine the relative share of the individual countries in total European trade, we should point out that the

¹¹ The following shows the development of European exports (Europe including Russia, but excluding Turkey) for the period between the two World Wars and the post-war period after the 1939-1945 war, in millions of current dollars:

1913	11025 (a)	1931	9660	1950	24370
		1932	6530	1951	33330
1925	13710	1933	5920	1952	34400
1926	13520	1934	9450 (b)	1953	35220
1927	14780	1935	9340	1954	38310
1928	15240	1936	9820	1955	42910
1929	16050	1937	11230	1956	47700
1930	13350	1938	10210	1957	51550
				1958	51920
				1959	56820
				1960	64210

(a) Made roughly comparable with the later data.

(b) After this year they are expressed in dollars according to the new parity after the devaluation of January 1934; expressed in old gold dollars, they would be 3580 million dollars for 1934. The conversion rate used by the statistics services of the League of Nations was one new dollar = 0.5906 old dollars.

Sources: Our calculations based on the « Statistical Year-book » and the « Memorandum on Trade and Balances of Payments », League of Nations, and U. N. statistics.

European share in total world trade developed in roughly the following way.¹²

1800	70%	1913	57%
1830	67%	1929	60%
1850	66%	1953	43%
1870	68%	1960	50%
1900	60%	1970	54%

The decline of the European share in world trade in the course of the XIX century and especially after 1870 was due primarily to the extremely rapid expansion in the exports of non-European developed countries — North America, Australia, Japan — whose relative share in world trade grew from some 8% in 1830 to 20% in 1913. From this it can be concluded that the share of the developed countries as a whole in world trade was practically the same in 1830 as in 1913. However these rates do not take into account the diverging development of prices, which led to a perceptible variation in these rates. Unfortunately we cannot examine these issues more closely in the framework of this article.

2) The relative shares of individual countries.

The great increase in the value of European trade was accompanied by a substantial modification in the relative shares of the different European countries in total exports. As regards the three major trading powers — the U.K., France and Germany — which together accounted for more than 60% of European trade, this was shown particularly in the rapid advance of Germany, which overtook France as early as 1880 and practically caught up with the U.K. at the end of the period (in 1913, Germany accounted for 23% of European exports, against 24% for the U.K.). For the U.K. the XIX century can be divided into two distinct phases.

¹² For more details see our article « Le commerce extérieur mondial: évolution de la valeur, du volume et de la structure géographique des exportations de 1800 à 1970 »; in preparation.

TABLE 3

RELATIVE SHARE
OF EUROPEAN COUNTRIES' EXPORTS IN THE EUROPEAN TOTAL, 1830-1970
(percentages; on the basis of three year annual averages, except 1970)

	1830	1860	1880	1890	1900	1910	1970 ^(a)
Austria-Hungary	(4.7)	5.8	7.4	6.5	7.0	5.6	3.0 ^(c)
Belgium	(2.9)	4.0	5.9	6.1	6.7	7.3	6.9 ^(e)
Bulgaria	—	—	0.1	0.1	0.2	0.3	1.2
Denmark	—	0.9	1.1	1.1	1.4	1.5	2.0
Finland	—	0.2	0.4	0.4	0.7	0.6	1.4
France	(15.9)	19.2	16.3	15.3	14.4	13.4	10.6
Germany	—	18.4	18.2	17.4	19.6	20.4	22.8 ^(b)
Greece	—	0.2	0.2	0.3	0.3	0.3	0.4
Italy	—	5.1	5.3	3.8	4.9	4.5	7.9
Netherlands ^(f)	—	1.6	2.1	3.2	4.1	4.0	7.0
Norway	—	0.7	0.7	0.7	0.8	0.8	1.5
Portugal	(1.6)	0.7	0.6	0.5	0.6	0.4	0.6
Romania	—	—	1.1	1.1	1.2	1.3	1.1
Russia	(7.9)	5.6	6.7	8.3	6.6	8.9	7.6
Serbia	—	—	0.2	0.2	0.2	0.2	1.0 ^(g)
Spain	(2.3)	2.3	2.9	3.4	2.1	2.2	1.4
Sweden	(1.2)	1.0	1.4	1.8	1.8	1.8	4.0
Switzerland	(4.0)	3.6	3.6	2.9	2.9	2.6	3.1
United Kingdom	(27.5)	29.8	26.0	26.6	24.7	23.7	11.3 ^(d)

(a) Data not strictly comparable with those of previous periods.

(b) Total for the two Germanys (excluding trade between them).

(c) Total for Austria and Hungary (excluding trade between them).

(d) Total for Great Britain and Ireland (excluding trade between them).

(e) Belgium and Luxembourg.

(f) Very approximate percentages; see appendix for reservations about statistics for the Netherlands.

(g) Yugoslavia.

Sources: See text.

The first, lasting until about 1870, showed a constant increase in the country's share in European trade; about 27% in about 1800 to approximately 31% in about 1870. From this time there was a continuous, although irregular, decline. And if, on the eve of the First World War, the U.K. was still the foremost trading power of Europe (and of the world, closely followed by the U.S.A.), as early as the post-war years it was supplanted by the U.S.A., joined, in 1930, by Germany. However we should point out that because of the very great importance of the re-export trade, the U.K.'s relative share in world trade was more important than her share measured by domestic or special exports alone suggests. Thus

in 1900, from the point of view of total imports, the U.K. still accounted for 31% of the European total, as against 25% for special exports. And in this respect the U.K. remained the foremost power in world trade until the eve of the Second World War and did not yield second place to Germany until 1965.¹³ This shows how slowly the processes of readjustment take place in the network of world trade.

TABLE 4

RANK OF THE 10 LEADING EUROPEAN TRADING POWERS (a)
(on the basis of total of special exports)

Rank	1830	1860	1910
1	United Kingdom	United Kingdom	United Kingdom
2	France	France	Germany
3	Germany	Germany	France
4	Russia	Austria-Hungary	Russia
5	Italy	Russia	Belgium
6	Austria-Hungary	Italy	Austria-Hungary
7	Switzerland	Belgium	Italy
8	Belgium	Switzerland	Switzerland
9	Spain	Spain	Spain
10	Portugal	Sweden	Sweden
Share of the 10 countries (a)	89%	96%	93%

(a) Not including the Netherlands because of the uncertainty of its trade statistics. In 1830 and 1860 the Netherlands would probably occupy 9th or 10th place, in 1910 probably 7th or 8th.

For the other countries the most significant changes concerned Belgium, Portugal, Switzerland and Italy. Belgium is the country whose relative share in European exports grew most rapidly. Belgium went up from eighth place in 1830 to fifth in 1910. On the other hand Portugal — which was, around 1800, still the fifth or sixth most important trading power in Europe (it is true that at that point its exports had reached a rather exceptional peak) — fell to eighth or ninth position as early as 1830, and was in seventeenth place in 1910. Only Serbia and Bulgaria had a lower export figure. Switzerland and Italy both fell back in relative terms but to a less extent than Portugal (see Table 3).

¹³ Without taking into account the territorial changes in these two countries.

As a general rule it can be stated that trade development was more favourable than the European average in countries located north of a line passing roughly through the centre of France, while the opposite was true for the countries situated south of this line. However in the framework of this article we cannot obviously undertake an analysis of the causes of those diverging trends.

Table 5 shows the changes in the per capita exports for certain periods. These statistics are of twofold interest. Firstly, and this is not specifically related to the fact that the figures given are for the XIX century, they reveal the rather divergent patterns of demographic growth and territorial changes, thus providing certain comparative growth processes with a better perspective. This is the case especially with Germany and France. Due to the combined effect of the loss of Alsace-Lorraine coupled with very slow demographic growth, France was clearly outstripped, as we have seen, as the second European trading power in terms of total exports. But translated in terms of per capita exports the picture alters radically, because in this case France's exports increased relatively faster than those of Germany.

The second reason which makes these per capita export figures interesting is that in view both of the absence of reliable national accounting data for many of the countries, and of the lesser differences between levels of development in the XIX century, these figures provide a rough picture of the differences in export rates in relation to the national product of the different economies.

The great disparity between the individual countries as regards per capita exports will be noted. Thus for 1860 the margin between the group of countries with a low per capita export rate (comprising especially Russia, Spain, Italy, Austria-Hungary, Greece etc.) and the group with a high export rate (U.K., Switzerland, Belgium) is of the order of 1 to 6. Although some countries with low export rates experienced a more rapid growth in exports than the average, and were thus promoted to an intermediate group, the gap between the two groups still increased and reached 1 to 11 in about 1910. The coefficient of variations (for the 16 countries reported both in 1860 and 1910) increases from 8.3% to 45.7%.

TABLE 5

PER CAPITA SPECIAL EXPORTS
OF INDIVIDUAL EUROPEAN COUNTRIES, 1830-1970
(current dollars; three year annual averages, except 1970)

	1830 (a)	1860	1880	1900	1910	1970 (e)
Austria-Hungary	1	4	8	8	9	285 (g)
Belgium	5	19	43	55	85	1058 (b)
Bulgaria	—	—	2	3	5	236
Denmark	6	12	20	29	45	681
Finland	1	3	8	14	18	492
France	3	11	15	20	29	349
Germany	3	11	16	19	27	488 (f)
Greece	—	2	2	3	5	73
Italy	2	4	7	8	11	246
Netherlands (d)	5	10	21	43	59	903
Norway	4	9	15	19	29	633
Portugal	3	4	5	6	6	99
Romania	—	—	9	10	17	91
Russia	1	2	3	3	5	53
Serbia	—	—	4	5	7	82 (i)
Spain	1	3	7	6	9	71
Sweden	3	6	13	19	28	844
Switzerland	12	31	50	48	60	820
United Kingdom	8	22	30	33	48	323 (h)
<i>Europe as a whole</i>	3 (b)	7	12	13	18	238
Europe-Russia	3 (c)	9	15	18	25	336

(a) The data are approximate for most of the countries.

(b) About 2.8.

(c) About 3.3.

(d) Very approximate data; see appendix for reservations about statistics for the Netherlands.

(e) Data not strictly comparable with those of previous periods.

(f) Total for the two Germanys (excluding trade between them).

(g) Total for Austria and Hungary (excluding trade between them).

(h) Belgium and Luxembourg.

(i) Total for Great Britain and Ireland (excluding trade between them).

(j) Yugoslavia.

Sources: See text.

As has often been remarked with reference to contemporary figures, the importance of per capita foreign trade in the XIX century was in general in inverse proportion to the size of the country but in proportion to the level of development. It is therefore not surprising to find Switzerland, the U.K. and Belgium at the top of the classification table (see Table 6). The extremely high level attained by Switzerland results from factors stated above — to which can

be added a rather low rate, for the period, of locally produced food (whence the necessity arose to sell other products in order to balance trade) — and from the policy of industrialization in the textile sector, which relied partially on the import of cotton yarn (relatively little especially before 1850 came from local spinning-mills) and on the export of highly elaborated goods. But as Belgian exports increased much more quickly, Belgium snatched first place from Switzerland an early as 1890.

TABLE 6

CLASSIFICATION OF THE 10 LEADING EUROPEAN COUNTRIES
IN TERMS OF PER CAPITA EXPORTS^(a)

Rank	1830	1860	1910
1	Switzerland	Switzerland	Belgium
2	United Kingdom	United Kingdom	Switzerland
3	Belgium	Belgium	United Kingdom
4	Denmark	{ Denmark	Denmark
5	{ Germany	{ France	{ Norway
6	{ France	{ Germany	{ France
7	{ Norway	Norway	Sweden
8	{ Portugal	Sweden	Germany
9	{ Sweden	{ Portugal, Italy	Finland
10	Italy	{ Austria-Hungary	Romania

(a) Excluding the Netherlands because of the uncertainty of its trade statistics. In 1830 the Netherlands would probably occupy a rank before Italy, in 1860 before Norway and in 1910 a place close to that of Denmark.

For the entire XIX century the U.K. remained leader of the major countries by a long way in terms of per capita exports. In this field the most important changes have taken place in recent decades. At present both Germany and France have outstripped the U.K. in this field; Germany did so, decisively and some time ago, while France has surpassed the U.K. only narrowly, and a short time ago.¹⁴ Moreover, while in 1910 the per capita exports of the U.K. exceeded those of Continental Europe (without Russia) by

¹⁴ These figures are scarcely changed if corrections are made to take Ireland's independence into account.

about 100%, in 1970, for the first time for at least two centuries, the per capita exports of Continental Europe (without Russia) exceeded those of the U.K.

B) *Growth in the volume of European exports.*

As we have already noted, the preliminary nature of the conclusions presented here becomes more marked for data on volume than for those concerning current values.¹⁵ In order to reduce the text the reader is referred to the appendix for methodological problems and other issues of the same kind (sources, margins of error etc.). Here, apart from presenting and analysing the data, we shall only refer to problems of methodology in the briefest terms. This section, as the previous one, will be devoted first to the growth in the volume of trade of Europe as a whole, then to that of individual countries.

1) *Development of the volume of exports from Europe as whole.*

Table 7 contains the essential findings concerning the development of prices and the volume of European exports. The price index which we have drawn up here is a weighted average between the various indices available. The statistical coverage is relatively good until 1880 (about 75%). Before this date, calculations on a national basis were extremely rare and before 1830 the index only in fact consisted of the average between U.K. and French prices. But

¹⁵ However one should not place too much faith in the potential modifications made possible by improved data. Thus the differences between Kindleberger's index of export prices (see introduction) and the index we have calculated are relatively minor, in spite of the fact that for some countries the basic data have been revised meanwhile and that our index includes a greater number of countries. Thus, on the same 1900 = 100 basis, the two indices (three years annual average around the year quoted) are as follows.

	Kindleberger index	Our index	Differences
1870	133.1	132.0	+ 0.8%
1880	113.4	118.6	- 4.4%
1890	100.0	103.8	- 3.7%
1910	105.9	105.3	+ 0.6%

because of the structure of their exports these two countries are fairly representative of the whole of Europe (especially with the corrective we employed: see appendix). For the period from 1840 to 1870, for which there is no price index for German exports, we have drawn on a valid estimate of the volume of German exports, (see appendix).

TABLE 7

EUROPEAN SPECIAL EXPORTS VALUE, EXPORT PRICES
AND VOLUME, 1800-1913
(three year annual averages; except 1913)

	Current value (millions of dollars)	Export prices 1899-1901 = 100	Exports in constant values 1899-1901		
			Millions of dollars	Index 1899-1901 = 100	Annual growth rate (%)
1800	(670)	(312.0)	(216)	(3.9)	*
1810	(680)	(310.0)	(219)	(4.0)	*
1820	(680)	(229.3)	(297)	(5.4)	(3.1)
1830	655	150.9	434	7.9	3.9
1840	875	137.0	645 (a)	11.7	4.0
1850	1200	124.3	936 (a)	17.0	3.8
1860	2160	141.4	1516 (a)	27.6	4.9
1870	3260	132.0	2509 (a)	45.7	5.2
1880	4050	118.6	3415	62.2	3.1
1890	4630	103.8	4461	81.2	2.7
1900	5490	100.0	5490	100.0	2.1
1910	8650	105.3	8215	149.6	4.2
1913	10550	110.8	9525	173.5	5.1

* Not significant.

(a) For these dates the volume of exports does not derive solely from the correction of value by the price index; see text and appendix.

Note: The slight rounding off of the figures does not imply a corresponding margin of error. The rates of growth have been calculated from figures which were not rounded off at all.

Sources: Our calculations; see text and appendix.

As export prices dropped greatly the growth in the volume of exports during the XIX century was much more rapid than the increase in their value. From 1830 to 1910, the growth in volume was about 1 to 38, against 1 to 13 in value, and in terms of annual growth rates 3.4% and 2.4% respectively. There was a very rapid acceleration in the growth rate compared with the previous century (and most probably with previous centuries). It can be held that during the XVIII century European exports grew at an annual rate of about 0.7%-1.4%.

In the XIX century four phases can be distinguished in the pattern of growth in the volume of exports. The first, which probably began in about 1815-1820 and lasted until 1845-47, showed a relatively rapid growth in the volume of European exports, about 3%-4% per year. To a certain extent this must have been a process of recovery, for the period from 1796-1815 was disturbed by wars. Although the available data are not very reliable, it is likely that the level of European foreign trade around 1815 was no higher than in 1790.¹⁶ However the principal cause of the rapid expansion of trade lay in the effects of industrialization — increased demand for raw materials, the initial reductions in transport costs and rapid population growth¹⁷ all promoted international trade.

The second phase, from 1845-47 to 1873-75, was marked by an extremely rapid expansion in the volume of European trade. The annual rate of growth was about 4.5%-5%. In all probability a similar medium term period of such rapid expansion in European foreign trade — and consequently, given the dominant role of Europe, in world foreign trade — had never occurred before. In the course of these 28-29 years the volume of European exports multiplied fourfold. Of course the policy of free trade adopted by the U.K. from 1846 (especially with the repeal of the Corn Laws) was a vital factor in this rapid increase in international commerce. Liberalisation of trade had an increasing role when, after the success of the British (between 1846 and 1856 the value and volume of U.K. exports doubled) almost all the European countries, led by France, freed their tariff systems after 1860. But it must be stressed that the rate of trade expansion slackened before the protectionist reaction in Europe, whose outset can be placed in 1879 when German legislation was modified.¹⁸ Indeed, from 1873-75 a slacken-

¹⁶ However it should be noted that for the U.K. this period was marked by a rather rapid increase in exports. But this was offset where total European figures are concerned by a fall in the volume of trade of the Continental European countries (especially France, Germany and Italy).

¹⁷ Where it is generally estimated that the population of Europe grew at an annual rate of about 0.5%-0.6% during the second half of the XVIII century, according to our calculations this rate would have reached approximately 0.8% from 1810 to 1850.

¹⁸ For the history of customs tariffs in Europe and especially the effects of liberalism on the European economy, we refer the reader to our book: *Commerce extérieur et développement économique de l'Europe au XIX^e siècle* (chapter II) to appear in 1974.

ing in the annual rate of expansion was evident and in the period from 1873-75 to 1900 the average annual rate of growth of the volume of exports fell to 2.5%, almost half that of the previous decades. As Table 7 shows, from 1890 to 1900 the rate was even nearly as low as 2%, which in terms of per capita increase was little more than a mere 1% (see Table 8).

In contrast, the 13-14 years preceding the First World War were marked by a very rapid expansion in the volume of European exports. From 1900 to 1910 the annual growth rate in volume was 4.2%, and even reached 5.1% between 1910 and 1913; that is an annual average rate of 4.3% from 1900 to 1913. If this rate is not exceptionally high in comparison with expansion registered during the XIX century (it was even lower than the probable rate for the decade from 1850 to 1860), it is worth pointing out, however, that it is only in the contemporary period that a similar rate of expansion was to be equalled, or even exceeded. In fact, (see Table 8) even laying aside the great crisis of the 1930s, characterized by a slump in the volume of European and world exports which was unprecedented in contemporary history,¹⁹ it must be emphasized that the very rapid expansion in the volume of foreign trade in Western Europe in the years 1921-1929 (annual rate 11%) was to a great extent the result of a process of recovery after the depression caused by the war and the crisis of reconversion; European exports did not recover their 1913 volume until 1927.

On this subject it should also be noted that after the Second World War the 1937-39 volume of exports for Western Europe had again been attained as early as 1950's and the 1929 level by 1951. Consequently the extremely high rate of growth in the volume of foreign trade which has taken place from 1953 until the present has little to do with a recovery process.²⁰

¹⁹ From 1928 to 1932 the volume of exports from Western Europe fell by 36% and world exports by 27%. And, what is even more exceptional, even in 1937, which was the best year of the '30s in economic terms, the volume of European or world trade had not yet reached the 1928 level. (See A. MADDISON, *op. cit.*, and «Statistical Yearbook 1969 United Nations», New York 1970, p. 54).

²⁰ Even in terms of per capita volume, the 1953 level of exports exceeded that of 1937 by 43%.

TABLE 8

VOLUME OF EUROPEAN SPECIAL EXPORTS,^(a) 1800-1970
(1800-1900: three years annual averages: at prices of 1899-1901)

	Total exports			Per capita exports		
	Millions of dollars	Index 1899-1901 = 100	Annual rate of growth (%)	Dollars	Index 1899-1901 = 100	Annual rate of growth (%)
1800	(226)	(3.9)		(1.1)	(8.2)	
1840	674	11.7	*	2.6	20.0	*
1860	1583	27.6	4.4	5.5	40.1	3.7
1880	3569	62.2	4.1	10.4	76.3	3.2
1890	4662	81.2	2.7	12.2	89.4	1.6
1900	5737	100.0	2.1	13.6	100.0	1.1
1913	9953	173.5	4.3	20.2	148.1	3.1
1929 ^(a)	11143	194.2	0.7 ^(b)	21.1	154.8	0.3 ^(b)
1953 ^(a)	12974	226.1	0.6 ^(b)	22.0	161.1	0.2 ^(b)
1970 ^(a)	53494	932.4	8.7 ^(c)	75.9	556.8	7.6 ^(c)

* Not significant.

(a) The data for 1800 to 1913 have been corrected in order to make them relatively comparable to those that follow (see text preceding Table 2). The development of the volume of exports from 1913 to 1970 is based on the index of export prices for Western Europe (that is, 82% of total European exports), an index which has been applied to the total of European exports (sources: A. MADISON, *op. cit.*, and « Statistical Yearbook » and « Monthly Bulletin of Statistics » of the U. N.; various nos.).

(b) If a period of six years is excluded arbitrarily from the calculation to account for the effects of the war, the annual rate for 1913 to 1929 rises to 1.1% for total exports and 0.4% for per capita exports; for 1929 to 1953 it is 0.8% for total exports and just over 0.2% for per capita exports.

(c) From 1970 to 1972 the annual rate of growth has been 7.5% for the volume of total exports and 6.5% for per capita exports.

Note: The slight rounding off of the figures does not imply a corresponding margin of error. The rates of growth have been calculated from figures which were not rounded off at all.

Sources: Our calculations; see text and appendix.

The speeding up of the rhythm of growth in the volume of exports which started in the first years of the XX century occurred at a time when most European countries (but not the U.K.) were still strengthening the protectionist aspects of their tariff legislations. In addition to the factor of economic growth, which is always decisive in explaining changes in the development of foreign trade, the influence of the rapid expansion of trade with what is now called the Third World must be stressed in order to account for the rapidity of this growth. While it can be estimated that from 1870 to 1900 the volume of European exports to the Third World grew at an annual rate of about 3.0%, from 1900 to 1910 the rate was 5.6%.²¹

²¹ In both cases this is an approximate estimate of the volume; we have arbitrarily assumed that prices of exports to the Third World had developed in an identical way to the prices of the total exports.

In addition to this relative independence of tariff policies, as shown in the preceding analysis, it should also be mentioned that changes in the growth rate of the volume of exports also took place independently of price movements. Phases of speeding up or slackening in the pace of growth occur in time of both increasing and decreasing price. Thus, among the four decades where trade volume increased the most rapidly, two of those occur when prices were decreasing (the 1840's and the 1860's) and two when they were increasing (the 1850's and the 1900's). The same point may be made for Europe as a whole with regard to the growth of foreign trade in relation to demographic growth. It is true that in this field the differences are less marked, for the variations in demographic growth rates occurred within rather narrow limits (from 0.6 to 0.9% per year).

Furthermore it is because of milder variations in the demographic rates (and also, because of the relatively modest expansion in per capita exports, at least in certain period) that the variations in the growth rates of the volume of per capita exports are much more marked than for the total exports. Thus (see Table 8) the annual growth rate in the volume of per capita exports from 1840 to 1860 was about 4.4%, while it fell to 1.3% from 1880 to 1900, and then almost recovered the previous rate from 1900 to 1913. 1913 to 1953 was a period of near stagnation, for the 1913 level was not reached again until 1952, almost half a century later. On the other hand the annual rate of growth climbed to 7.6% from 1953 to 1970, that is more than double than any previously achieved over a medium term period.

If we examine the development on a medium or long-term basis, the XIX century as a whole was distinguished by a rapid expansion in the volume of foreign trade, in comparison not only with previous centuries but equally with the period from 1913 to 1950. While the volume of European exports grew 3.9% per year from 1830 to 1913, from 1913 to 1950 this rate was only 0.4% owing to the effects of the two World Wars and the crisis of the 1930s. On the other hand, the past twenty-five years have been truly unique in history. During the quarter century between 1948 and 1973 the annual rate of growth in the volume of exports in Western Europe

has been around 8.5%. From 1946 to 1973 it was even above 9%, which brought about a ninefold increase in the volume of per capita exports. It should be noted that the inclusion of the Eastern European countries would not essentially affect these rates. As was the case in the XIX century, (see below), this extremely rapid expansion in foreign trade during the last few decades has not affected all the European countries equally. Without examining individual examples, we can point out that the volume of exports of the Common Market countries (in its pre-1973 form) increased from 1953 to 1970 by 10.5% per year, while the corresponding rate for the E.F.T.A. countries (in its pre-1973 form) was only 6%.

2) *Development in the volume of exports of individual countries.*

The scarcity of data for the period before 1860 and the greater margin of error has led us to concentrate on the second half of the XIX century. However it should be pointed out that for the first half of the XIX century the expansion in volume of exports was markedly more rapid in the U.K. than in France.

TABLE 9

ANNUAL RATE OF GROWTH IN THE VOLUME OF SPECIAL EXPORTS
FOR SOME EUROPEAN COUNTRIES

(on the basis of three year annual averages; percentages)

	1860-1870 (a)	1870-1880	1880-1890	1890-1900	1900-1910	1860-1910
Belgium (d)	6.4	3.5	2.1	2.2	5.6	4.3
Denmark	—	—	2.2	3.3	4.2	3.6 (b)
Finland	5.6	3.9	1.6	3.9	3.7	3.8
France	5.7	3.0	1.7	1.7	2.6	2.9
Germany	6.7	2.3	2.2	4.2	5.7	4.2
Italy	5.5	2.0	—0.7	3.7	3.4	2.6
Norway	—	2.9	3.0	1.1	4.6	2.9 (c)
Sweden	7.3	3.4	3.6	1.8	3.0	5.0
United Kingdom	3.8	2.6	2.7	1.0	3.8	2.8
Europe	5.2	3.1	2.7	2.1	4.2	3.4

(a) Finland 1861-1870; Italy 1862-1870.

(b) 1875-1910.

(c) 1865-1910.

(d) Respectively from 1861 to 1873; 1873 to 1883; 1883 to 1893; 1893 to 1902; 1902 to 1913; and 1861 to 1913.

Although the rates of growth differed appreciably from one country to another, it should be noted that the fluctuations in the rate of growth were fairly uniform, in particular during the thirty years from 1860 to 1890 and in the decade from 1900 to 1910 (in comparison with the previous decade). In practically all European countries the decade from 1860 to 1870 — the first of the free trade period — was marked by a rapid expansion in the volume of exports. However it should be pointed out that growth did not speed up in all cases in the countries for which we have data for the previous decade as well. In two instances (Belgium and the U.K.) there was a slackening in growth, in one case (France) there was no change, and in two cases (Germany and Sweden) an increase. The second decade of the free-exchange period was distinguished by a general falling off in the rhythm of growth in the volume of exports. The decade 1880 to 1890 was less uniform but was general marked by a new drop in expansion.

A strong revival expansion in sales from protectionist Germany from 1890 to 1900 (in fact from 1893) contrasted with a new slow down in sales from the free trade U.K. Indeed this decade saw the smallest growth in the volume of British exports ever recorded for the whole period from 1790 to 1910. This contrast between British and German development intensified the controversy between the supporters and opponents of modification in British tariff policy.

From the period from 1860 to 1910 as a whole the growth in volume of sales was very rapid in Sweden, Germany and Belgium. On the other hand it was fairly slow in France, the U.K. and especially in Italy. As far as Denmark and Norway were concerned the rates of growth were probably between 4.5% and 5.0% and 3.5% and 4.0% respectively for the entire period.

For those countries for which there are no statistics available for the development of the volume of trade, on the basis of both the data referring to the increase in the value of exports and the approximate indications of the prices, it can be concluded that, for the period from 1860 to 1910, the growth in the volume of exports was certainly more rapid than the European average in the following countries: the Netherlands, Russia, Bulgaria, and probably also in Greece. On the other hand it was probably slower in Por-

tugal, Serbia and Switzerland. In Austria-Hungary, Spain and Romania the growth must have been fairly close to the European average.

International differences in the rates of demographic expansion in general tend to reduce noticeably the differences in growth rates in terms of the expansion of per capita exports. The following are the annual growth rates in the volume of per capita exports for the period from 1860 to 1910:

Belgium	3.3%
Denmark	(3.0-4.0%)
France	2.7%
Germany	3.1%
Italy	1.9%
Norway	(2.5-3.0%)
Sweden	4.3%
United Kingdom	2.0%
<i>Europe</i>	2.4%

Of these the only country distinctly different from the others was Sweden, whose growth in per capita foreign trade was almost double than the average for the other European countries. France — which in terms of total growth in exports was below the European average — exceeded this average in terms of per capita growth. Compared with the contemporary period the disparity between the growth rates in the volume of per capita exports was smaller in the XIX century.

SUMMARY.

As the aim of this article is essentially to present the results of our calculations on the development of European exports in the XIX century, the analysis accompanying the table has been deliberately restricted. The most important data for these calculations are to be found in Tables 1 and 7, which indicate respectively the development of the total and per capita exports of European in current values from 1800 to 1913, and the development of prices and the volume of European exports for the same period.

In *current* values the exports rose from less than 0.7 thousand million dollars in 1830 (the dates from which the statistics are more

reliable) to 10.6 thousand million in 1913, that is an increase of the order of approximately 1 to 16, or 2.4% per year. Per capita exports rose from less than three dollars in 1830 to just over 21 in 1913. As regards the pace of growth of the value of exports, the period from 1830 to 1914 can be divided into four phases: 1830-1846/47: annual growth rate 3%; 1846/47-1865/68: 5%; 1865/68-1896/97: 2%; and 1896/97-1913: 5%.

Throughout all the XIX century the U.K. remained the foremost trading power in terms of total exports. Moreover her share in the total European exports continued to grow until 1870, rising from 27% in 1800 to 31% in 1870. From 1870 she fell back steadily, — and in 1913 Germany, which had overtaken France in 1880, almost caught up with the U.K. (22.8% and 24.2% respectively). For the other countries it appears that in general foreign trade expanded more rapidly than the European average in countries located north of a line passing roughly through the center of France, while the opposite was true of the countries lying to the south of this line.

As is generally the case for contemporary statistics, the importance of per capita foreign trade was, in the XIX century, in inverse proportion to the size of the country, and in proportion to the level of development of the country. The disparity between the different European countries in terms of per capita exports, which was already pronounced at the beginning of the XIX century, became even more strongly marked (see Table 5). Between 1860 and 1910 the coefficient of variation of exports per capita increased from 8.3 to 45.7%.

As export prices on the whole fell during the XIX century, European exports expanded much more rapidly in *volume* than in value. From 1840 to 1910 the volume of exports expanded at an annual rate of about 3.6%.

As regards the pattern of growth in the volume of exports, the XIX century can be divided into four phases. From 1815/20 to 1845/47 the annual rate of growth was about 3%-4%. To some extent at least this must have been a period of recovery. From 1845/47 to 1873/75 growth was very rapid; 4.5%-5.0%. It is very likely that such a medium term rapid expansion in European

trade — and in consequence, given the dominant role of Europe, world trade — had never occurred previously. The free trade policy (practised by the U.K. already since 1846 and by other countries mainly after 1860) contributed greatly to this acceleration. But it must be stressed that the slackening of pace in trade expansion (between 1873/75 and 1900 the annual rate fell to 2.5%) preceded the protectionist reaction in Europe which can be traced to 1879 at the earliest. The relative independence of the rates of expansion of foreign trade in relation to developments in commercial policies is also confirmed in the fourth phase. Between 1900 and 1913, when protectionism was gaining ground in practically all Continental European countries, a new period of rapid growth took place — and the volume of exports grew by 4.2% per year.

The rate of expansion of European foreign trade was equally independent of the main trends in prices. Taking Europe as whole, the same can be said of the relationship with demographic expansion.

For the period from 1860 to 1910 the growth in the volume of exports was very rapid in Sweden, Germany Denmark, Norway and Belgium. On the other hand it was relatively slow in France, the U.K., Switzerland and especially in Portugal and Italy. Despite these differences the fluctuations in the rate of growth of the volume of exports were fairly uniform; the phases of speeding up and slowing down coincide very well in practically all countries.

If the growth rates recorded in the volume of European exports during the XIX century are placed in a wider historical context, two essential conclusions emerge. In comparison both with previous centuries and with the following fifty years the XIX century is clearly distinguished by a very rapid expansion in the volume of international trade. However the three decades since the end of the Second World War have been truly unique in economic history; the volume of European exports has grown during this period by 9% per year, that is by more than double any growth previously experienced in a period of comparable length.

METHODOLOGICAL APPENDIX AND SOURCES.

The reader will find here below information on the methods which have been used and on the principal sources. We have deliberately reduced this section to a minimum.

Current value of exports.

The evolution in current values of European exports was calculated by starting from the series of statistics available for the individual countries, and then completed by estimates in cases of missing data (see below). The figures in local currency have been converted into dollars according to the rates of exchange in force for each of the periods under consideration.

For a certain number of cases and for certain periods (particularly before 1850) the only series available are in constant values. In these cases we have converted such data into current values, using a local index of export prices, when available (this was the case for France, particularly for the pre-1850 statistics), or, where there is no such information, by using approximate information based on the movement of prices in other countries. It should be noted that the additional margin of error caused by this lack of statistics is of little importance for the period from 1850 to 1913, the exports involved representing less than 5% of the total. For the Netherlands, apart from the problem of constant values, there was also the problem that a valid series of special exports before 1913 was not available; we have accepted, following Svernilson²² and Maddison,²³ the correction that a third of so-called 'special' exports were in fact re-exports.

The basic data used for the calculation of the European total can be separated into three groups; the first comprises the various regular statistical series; the second estimates of various authors; and the last our own extrapolations. The relative importance of each of these sources obviously varies greatly. From 1880 to 1913 the statistical coverage is practically 100%. For 1870 statistics

²² I. SVENNILSON, *Growth and Stagnation in the European Economy*, United Nations, Geneva 1954.

²³ A. MADDISON, *op. cit.*

represent some 78% of the total, estimates (with a very narrow margin of error) 21%, and the extrapolations only 1%. For 1860 those figures were respectively 72%, 26% and 2%, and for 1850 61%, 37% and 2%. The proportion of actual statistics for 1840 falls to 55%, that of the reasonably valid estimates to 30% and the extrapolations are 15%. For 1830 they were 53%, 11% and 36% respectively. For the earlier periods these proportions were not greatly changed, but the margin of error of each of the three series of data increased very appreciably.

The extrapolations that we made were of two kinds. The first were figures for the countries whose political creation took place during the period under consideration — in particular in the Balkans. In these cases we made the arbitrary assumption that their exports during the period before their foundation had developed similarly to countries with a comparable economic structure. The second group concerned countries for which, as far as we knew, there were neither statistical series nor valid estimations; in this case we estimated the increases in exports arbitrarily, taking as a basis the general economic development of these countries (see below for discussion of the margins of error).

Finally we should note that, except for the data for 1913 and the years after 1913, figures are based on the annual average for the three years around each given date.

Index of export prices and volume of exports.

The price index calculated in this article is a weighted average drawn from the various indices of exports prices available for the individual countries. The relative importance of the exports of each country for the period under consideration was used as weight. In other words it is a Paasche type index.

Apart from the price indices for the total exports of the different countries, we have also incorporated the French and German indices for the prices of food-stuff exports, in order to compensate for the lack of indices for certain countries whose exports consisted mainly of agricultural products. We have arbitrarily assigned to the average of these two indices a weighting of some 7% of the total.

For the period from 1880 to 1913, the indices relating to individual countries account for a volume of exports of about 76% of the European total (not including the partial index of food-stuff products). This proportion was about 60% for 1870 and 55% for 1860. Between 1810 and 1830 the proportion was only about 47% (U.K. and France). But for the period from 1840 to 1870 the calculation of the volume of exports was improved by the introduction of the German series (see below).

The volume of European exports was obtained by applying the index of export prices to the data for current values. However from 1840 to 1870 — a period for which there were no available indices on German export prices — we took into account the availability of valid estimates of the development of the volume of exports of that country. To the figures in constant dollars between 1898 and 1901 for exports from Europe excluding Germany, we have added an extrapolation in constant dollars of German exports, which were derived from the index of the volume of these exports. Finally an average was made of the series thus obtained and the series obtained by the traditional method.

Margins of error of the data.

First we shall examine the series of exports in current values. The margin of error can be considered to be very low, almost negligible, for the data for the period from 1880 to 1913. In fact, as we have just seen, the statistical coverage for this period was 100%. Certainly, as in the contemporary period, official series of statistics on foreign trade contained a margin of error varying in magnitude from one country to another. But it is fairly probable that this margin was not much greater around 1880 than it is today. For the data from 1860 to 1870, owing to the absence of certain statistics, the *additional margin of error* as regards the European total must probably be below 5%,²⁴ even by deliberately over-

²⁴ We have assumed arbitrarily (rather a high estimate as this concerns not an individual country but a group of countries) a margin of error of 25% for the extrapolated data and 10% for the reliable estimates.

estimating this margin. This additional margin of error must have been about 6% for 1850²⁵ and 11% for 1840,²⁶ and 17% for 1830.²⁷ For the pre-1830 data (and to some degree for those between 1830 and 1850) the greater margin of error of the statistics themselves must be borne in mind. Smuggling was certainly of greater statistical importance (although it is true that it had greater influence on import figures). It can be estimated, again quite arbitrarily, that the margin of error of these figures for the period from 1800 to 1820 might have reached 20% to 25%.

With regard to the volume of European exports, the additional margin of error introduced by the price indices must be borne in mind, together with the absence of such indices for some countries in certain periods (see above). However the relatively uniform growth in prices somewhat reduces the effects of this deficiency. It is very difficult to estimate the size of the additional margin of error for the data on volume in comparison with the margin of error of the data on current values. For the period from 1870 to 1913 it must have been very narrow, and quite narrow from 1840 to 1830. On the other hand, for the data from 1810 to 1830, as we have seen, are dealing only with the weighted average of the French and British indices, which are perhaps not sufficiently representative of the development of the rest of Europe, although they represent about 50% of European exports.

The preliminary nature of the results.

We have termed the results presented here 'preliminary' in the sense that we wish to continue our researches and reduce the margin of error of the figures which we have put forward. In the field of current values the improvement could only be made at the

²⁵ We assume a margin of error of 30% for the extrapolated data and 15% for the reliable estimates.

²⁶ We assume a margin of error of 35% for the extrapolated data and 20% for the reliable estimates.

²⁷ We assume a margin of error of 40% for the extrapolated data and 25% for the reliable estimates.

cost of a vast amount of research, which is impossible for an isolated researcher to contemplate. As an illustration we can add that the time taken just to assemble the basic data presented here was between six to eight months, and that in order to halve the margin of error in the data for before 1860 about thirty to fifty months' work would probably have to be devoted to reconstructing the missing series or improving those that are unreliable.

However, in the field of export prices, and thus of the volume of exports, we expect to be able to present improved series by about 1975. We are planning to elaborate an entirely different index of export prices for the European countries as a whole: instead of aggregating indices of export prices of countries we plan to aggregate export prices indices of a wide range of commodities. The weighting will be based on calculations we hope to make on the development of the commodity structure of European and world exports.

Geographical coverage.

Europe, as defined in this study, comprises the whole of Europe including Russia, but excludes the European part of Turkey (in its 1913 boundaries). The impossibility of separating validly, for many periods, the exports of the Asian part of Russia, together with their slight importance, have led us to include this region in Europe both for trade and population statistics. This is, however, a fairly common practice.²⁸ The exclusion of European Turkey is justified by the impossibility of separating the exports of this area from those of Turkey as a whole. It is worth pointing out here that in comparison with the population of Europe in 1913 (as it is defined above), which was about 493 million, the European part of Turkey had a population of only slightly less than two millions, and Asian Russia some 25 millions, out of about 173 millions for Russia as a whole.

²⁸ Especially by the statistics office of the League of Nations and those of the United Nations and so by almost all the various statistics offices.

SOURCES.

A) *Exports in current values.*

It is impossible to quote here in full all the sources we used. In fact, for each country concerned our research has followed the three following phases:

- 1) Where available, historical statistical abstracts.
- 2) Statistical abstracts for the periods under consideration (general statistical abstracts and statistical abstracts of foreign trade).
- 3) Studies on the historical development of foreign trade.

This whole process of data collecting necessitated the consultation of more than 200 volumes or texts representing more than 100 titles.

This systematic research was completed by making use of the international sections of certain statistical abstracts, notably those of France and Germany, and a series of secondary sources, listed below:

Foreign Commerce Yearbook (US Department of Commerce), various years, Washington.

J. R. McCULLOCH, *A Dictionary of Commerce and Commercial Navigation*, London 1844.

Mouvement général du commerce et de la navigation des principaux pays étrangers (« Annales du commerce extérieur », from 1888), Paris.

M. G. MULHALL, *A Dictionary of Statistics* (4th edition), London 1899.

F. X. VON NEUMANN SPALLART, *Uebersichten der Weltwirtschaft 1880*, Stuttgart 1881 and subsequent editions.

Statesman's Year-Book (from 1864 et seq.), London.

Statistical Abstract of Foreign Countries (US Department of Commerce), Washington 1909.

Statistical Abstract for the Principal Foreign Countries (from 1873), London.

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