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The Rhine; backbone of Dutch-German economic interdependence 1919-1933

Abstract
For a long time, it has been said that Rhine transport plays an important role in Dutch-German economic ties. Nevertheless, this has never been the subject of statistical research. This essay aims to fill this gap for the period 1919-1933. To do so, it charts Dutch, German, Belgian and French freight traffic, both by Rhine barge and by train. Statistical data shows that on the lower Rhine, Dutch ships were in the majority from 1925-on, while on the middle and upper Rhine – where German ships were in the majority – the Dutch share increased significantly as the 1920s progressed. By the end of the decade, Dutch barges were in the majority in overall Rhine shipping. Throughout the period, Belgian and French Rhine shipping was – in comparison – negligible. However, given that – for various reasons – by the end of the 1920s at least 39% of the Dutch Rhine fleet was actually owned by Germans, the 'Dutch' superiority in numbers is more a sign of how the Dutch and German economies were interwoven than anything else.

Rhine shipping concentrated on the Ruhr. The image of the Ruhr as centre of German economic activity is confirmed by German internal transport, where both inland shipping as well as rail freight was focused on the Ruhr. The majority of German exports that was sent by railroad transport also originated in the Ruhr, with only German imports by rail freight being less oriented on the Ruhr itself, and more on the extended Ruhr area, which in addition to the Ruhr consisted of the *Rheinprovinz* and Westphalia. Although transport between the Netherlands and Germany was almost entirely over the Rhine, the Dutch had an important share in rail freight, alternating with France for first place while Belgian railroad transport was consistently less than Dutch railroad freight.

This essay therefore concludes that the economic structure and international economic ties of Germany find a strong expression in the transport sector, with Germany's economic heartland clearly being the Ruhr area. Although transport to and from Belgium and France was also concentrated on the (extended) Ruhr area, for both Germany as a whole and the Ruhr area in particular it was transport to and from the Netherlands that was – by a large margin – the most important. Of all this transport, the vast majority was via Rhine shipping, making the Rhine truly the backbone of Dutch-German economic relations.

'Just a cursory look at the map already reveals the almost natural inevitability of the interweaving of traffic and economy of the Rhine areas with the Netherlands: the close proximity to the border of both economic areas, their integration into the Rhine river system and their economic community with the large ports of the Rhine and the seaports'.[1] Such were the words Konrad Adenauer – at the time mayor of Cologne, later the first Chancellor of West

[1] K. Adenauer, 'Die wirtschaftlichen Beziehungen zwischen dem rheinland und den niederlanden'. In: *Jahresberichten der Nederlandsche Kamer van Koophandel voor Duitschland 1929-1930*, 5-8, there 5. The original text reads: 'Schon ein kurzer Blick auf die Landkarte erfasst die geradezu natürliche Zwangsläufigkeit der Verkehrs- und Wirtschaftsverflechtung der rheinischen Gebiete mit den Niederlanden: die enge Grenznachbarschaft der beiden Wirtschaftsgebiete, ihre Eingliederung in das gemeinsame Rheinstromsystem und ihre Wirtschaftsgemeinschaft mit den grossen Häfen des Rheines und der Meeresküste.'

Germany – chose to open his essay on the economic relations between the Netherlands and the Rhineland for the annual report for 1929-1930. Adenauer concluded ‘The backbone of the economic ties between Germany and the Netherlands is the Rhine’.[2] This essay examines the correctness of Adenauer’s claim. To do so, it first explores the changing relation between the port of Rotterdam and its hinterland and the development of the infrastructure necessary for transport. This is then followed by an analysis of the internal and international transport flows in both Germany and Holland, which – apart from the work done by Rainer Fremdling on Dutch-German railroad traffic, and on German internal trade flows by Nikolaus Wolf – has been a largely neglected subject.[3] In order to be able to put Dutch-German transport into perspective, the competition between the Netherlands, Belgium and France for transport to and from Germany – both by Rhine shipping and railroads – will then be reviewed. Only after all flows of traffic, competition with other ports and between modes of transportation have been assessed, will the extent of Dutch-German dependence in international transport be sufficiently clear to conclude whether Adenauer’s claim was valid.

Rotterdam and the German hinterland

Rhine shipping and railroad traffic with Germany took off when German – more specifically Rheinisch-Westphalian – industrialization started in the 1860’s. Just across the Dutch-German border, partly in the German *Rheinprovinz* and partly in Westphalia, industry concentrated near the Ruhr, a tributary of the Rhine. The area combined large deposits of high quality coal and by way of the Rhine provided a convenient and cheap mode of transportation. The Rhine proved to be uniquely suitable for inland shipping: the water level was always sufficient, and stable due to the regulating influence of Lake Constance. As a consequence, the Rhine was navigable up to Mannheim for ships of 4,000 tons, while Strasbourg could be reached with ships measuring 2.500 tons.[4] Transport in bulk of coal and ores along the Rhine grew at a fast rate as Germany changed from an agrarian- to an industrialized economy. Whereas traffic across the Dutch-German border in 1840 amounted to some 375.000 ton exports – mostly raw materials –

[2] The original text reads: ‘Das Rückgrat der deutsch-holländischen Wirtschaftsverbindung ist der Rhein’.

[3] Rainer Fremdling, ‘Per spoor de grens over: niederländisch-deutsche Eisenbahnbeziehungen, 1853-1938’, in: J.C.G.M. Jansen, ed., *Economische betrekkingen in grensregio’s in een industrieel tijdperk, 1750-1965* (Leeuwarden/Mechelen 1996) pp.37-67; Nikolaus Wolf, ‘Was Germany ever united? Evidence from Intra- and International Trade, 1885-1933’, in: *Journal of Economic History* 69 (3), September 2009, pp. 846-881.

[4] Josef Lülsdorfs, *Die Bedeutung Rotterdams für die rheinische Wirtschaft, insbesondere für die deutsche Rheinschiffahrt* (Köln 1940), 38.

and 128.000 tons imports – mostly merchandise – by 1913 exports consisted of coal and wholly and semi-manufactured products, while imports consisted mostly of raw materials for industry. Dutch ports – especially Rotterdam, to a lesser extent Amsterdam and other ports – profited from this development, and as a result became more dependent on Germany: in 1913 almost 75% of overseas goods where destined for Germany. Just twenty-three years earlier this had been 50%.[5]

While the port of Amsterdam focussed on mixed cargo, Rotterdam concentrated on transport in bulk. Before long, Rotterdam became ‘the bridge that connects the German hinterland and west-German industry to the world market’.[6] Connections to the coalmines and iron industry of the lower Rhine were especially strong, though there was also significant traffic to and from other spheres of industry, such as the chemical- and paper industry.[7] Rotterdam actively attracted as much of Rhine traffic as it possibly could. Acknowledging the importance of accessibility both for inland shipping and large ocean-going freighters as well as the advantages conferred by modern harbour machinery and low harbour rates, the Rotterdam Chamber of Commerce and Industry constantly pressured the Dutch government and the city of Rotterdam to make improvements. With regards to accessibility and machinery, the Chamber was successful: in 1918 it was decided that the *Nieuwe Waterweg* – Rotterdam’s gateway to the sea since 1875 – should be dredged to a significantly greater depth.[8] Its concerns regarding the harbour costs were not heeded however, and these would remain significantly higher than those of Antwerp and Hamburg throughout the period 1919-1931.[9]

The hinterland of the port of Rotterdam did not consist of just the Rhine basin. Rhine traffic extended further east through the Rhine-Herne Canal and the Lippe branch canal – both mainly used for the transportation of coal – and the tributaries Main, Neckar, and Lahn.[10] During the rise of railway transport in the first half of the nineteenth century, railway transport and inland shipping along the Rhine enjoyed a mutually advantageous relationship. In Germany, railroads were constructed at right angles to the Rhine, and rail transport carried

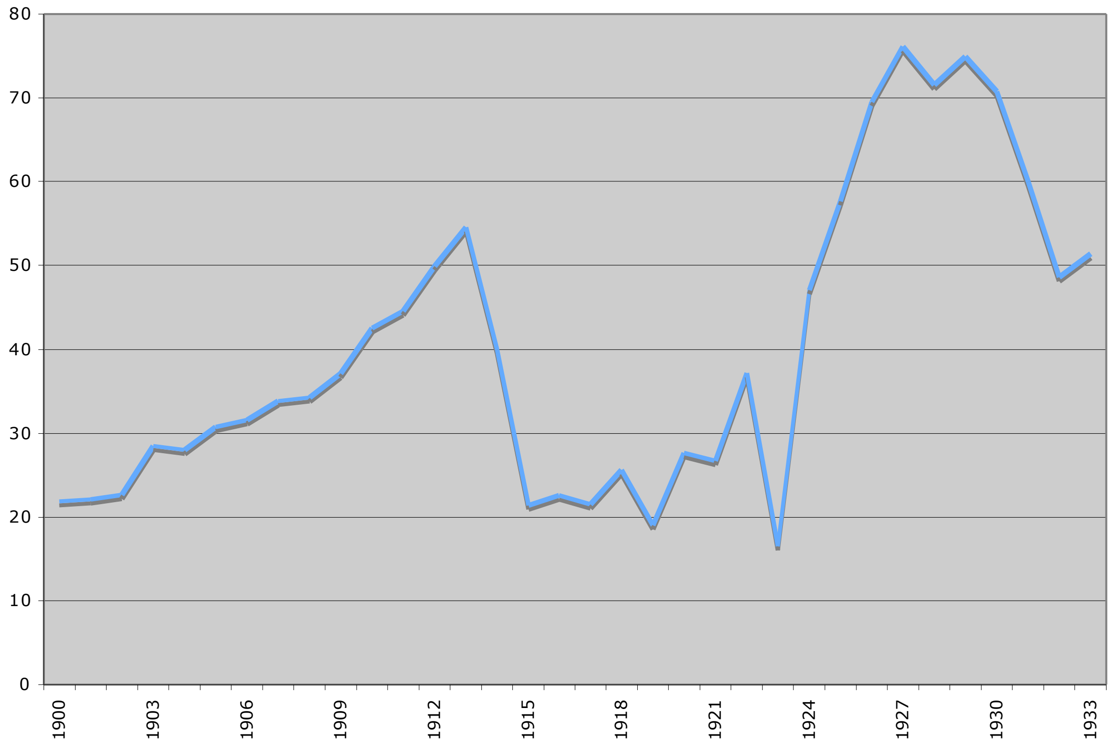
[5] Lülsdorfs, *Die Bedeutung Rotterdams*, 7-8, 53.
[6] Idem, 33.
[7] Idem, 34.
[8] H.J.D. van Lier, *Kamer van Koophandel en Fabrieken voor Rotterdam, 1803-1928* (Rotterdam 1928) 828, 849-853.
[9] J. Verseput, *Kamer van Koophandel en Fabrieken voor Rotterdam, 1928-1955* (Rotterdam 1955) 69-70, 73.
[10] Lülsdorfs, *Die Bedeutung Rotterdams*, 33-34, 38.

goods from specially constructed ports further inland.[11] During the 1860's and 1870's however, the *Rheinische Eisenbahngesellschaft* was laying tracks alongside the Rhine towards the Netherlands.[12] In the Netherlands, the first plans for a railroad connection to Germany were considered in the early 1830's. Primarily intended for transport of goods, it was supposed to connect Amsterdam with Cologne.[13] The plans were aborted however, and the first railroad connecting the Netherlands with Germany would be the Maastricht-to-Aachen railroad, opened in 1853.[14] Far more significant was the establishment three years later of a railroad between Arnhem and Oberhausen.[15] However, while railroad traffic within Germany soon exceeded inland shipping, traffic with the Netherlands remained based on Rhine shipping. For Rotterdam's Belgian competitor Antwerp however, railroads were the main mode of transport to and from its hinterland. By 1913, Belgium boasted the world's highest railroad density, which connected Antwerp to Germany by three major routes: Antwerp – Löwen – Lüttich – Aachen – Cologne (opened in 1853 and widely known as the 'Iron Rhine'), Antwerp – Hasselt – Maastricht – Aachen, and Antwerp – Mönchen Gladbach.[16]

While the German railroads – originally a multitude of private firms – were soon either partially or entirely nationalized, thereby keeping internal competition to a minimum, all facets of Rhine shipping such as ports, ships, etcetera remained in the hands of either private individuals, firms, or German states. Thus, in contrast to the railroads, the Rhine was open to fierce competition. Combined with technological improvements, by the 1890s this led to faster and more efficient inland shipping, which in turn led to Rhine shipping becoming a cheap and viable alternative to railroad freight as Rhine transport costs dropped 78 percent between 1890 and 1913, whereas the cost of rail transport remained stable, even showing a tendency to rise.[17] Combined with rapid industrial growth, the result was a fast expanding Rhine traffic (Chart 1).

[11] A.F. Napp-Zinn, *Binnenschiffahrt und Eisenbahn* (Leipzig 1928) 5; J. Walter, *Enige economische beschouwingen over de Rijnscheepvaart* (Assen z.j.) 99.
[12] Rainer Fremdling,'Per spoor de grens over', 47.
[13] Idem, 40.
[14] Idem, 54.
[15] Idem, 41.
[16] W. Warsch, *Antwerpen, Rotterdam und ein Rhein-Maas-Scheldekanal* (Duisburg 1920) 35.
[17] Jan-Pieter Smits, Edwin Horlings and Jan Luiten van Zanden, *Dutch GNP and its Components, 1800-1913* (Groningen 2000) 146-147; own calculations.

Chart 1: ***Total movement along the Rhine, 1900-1933. In million***



Source: *Rapport Annuel de la Commission Centrale pour la navigation du Rhin, 1933* (Strasbourg 1934)

Rhine shipping contained two basic types of enterprise: large, multi-ship shipping companies and single-ship companies consisting of a captain and his immediate family. In Germany, large shipping companies owned the majority of Rhine barges, as many private individuals were unable to finance the transition to the larger steam-powered barges.[18] The large shipping companies by themselves can also be divided into two groups, to whit those who remained independent, and those who were allied to industrial or trading enterprises, the so-called *Werksreedereien*. The latter – due in part to the demand for transport at fixed prices as well as their expanded possibilities for financing – were the most numerous.[19] While fixed prices in such a competitive market may seem to be a hindrance to delivering a product at the lowest possible price, one should keep in mind that this fixed cost could be very low because the shipping company was assured regular, predictable freight. As they needed their shipping fleet to be as productive as possible, the *Werksreedereien* kept the size of their fleet to a minimum. In busy times, extra ships were simply hired from the ranks of the small private shipping

[18] Walter, *Enige economische beschouwingen*, 71-72.
[19] Lothar Jolmes, *Geschichte der Unternehmungen in der deutschen Rheinschiffahrt* (Köln 1960) 33.

companies.[20] The most important group of *Werksreedereien* consisted of the coal shipping companies. At the end of the nineteenth century coalmines started to seek control of shipping companies, either by establishing their own shipping company – Thyssen established the *N.V. Handels- en Transport-Mij. "Vulcaan" Rotterdam* for this purpose – or by acquiring a controlling interest in an existing shipping company.[21] In 1903 these shipping companies joined in the *Kohlenkontor*, a sales organisation of the *Rheinisch-Westfälischen Kohlensyndikat*.[22] Such joining of forces was common at the time, and is known as horizontal concentration or concentration, whereas the acquisition of a shipping company by a coalmine was known as vertical concentration, or combination.[23] In the Ruhr district a large number of ports were owned by German firms: Wesseling, Walsum, Alsum, Schwelgern, Rheinhausen (Krupp), Gustavsburg (Mathias Stinnes). This was another example of the ongoing process of vertical integration – combining production, storage, transhipment, and shipment – as a result of the fierce competition.[24]

Similar processes occurred amongst the private shipping companies. Due to the increasing number of ships employed in Rhine shipping at the end of the nineteenth century, in 1890 German private shipping companies joined forces in the association *Jus et Justitia*.[25] In 1903 they coöperated with forwarding companies in the founding of the *Vereinigte Spediteure- und Schiffer-G.m.b.H.* in Mannheim. In contrast to the *Werksreedereien*, with the exception of a shipping office in Duisburg-Ruhrort, no further collaborations took place.[26]

In contrast to Germany, France and Belgium, in the Netherlands the small privately-owned shipping companies were a very large part of the fleet as a whole. Dutch Rhine shipping companies were all either subsidiaries of maritime transport companies, or were owned by seaport-related enterprises such as transhipment companies. The parts of the Dutch fleet that were wholly or partially owned by Germans were subsidiaries of German coal shippers or the *Kohlenkontor*, and a number of single-ship companies. In Belgium – like in Germany – the large shipping companies were most important, while in France private shipping companies

[20] Walter, *Enige economische beschouwingen*, 73.
[21] Lülsdorfs, *Die Bedeutung Rotterdams*, 52.
[22] Walter, *Enige economische beschouwingen*,77; Lülsdorfs, *Die Bedeutung Rotterdams*, 52.
[23] Jolmes, *Geschichte der Unternehmungen*, 54.
[24] G. Haelling, *Le Rhin. Politique, économique, commercial* (Paris 1921) 157-159; Jolmes, *Geschichte der Unternehmungen*, 53-55.
[25] Jolmes, *Geschichte der Unternehmungen* 34; Lülsdorfs, *Die Bedeutung Rotterdams*, 52.
[26] Lülsdorfs, *Die Bedeutung Rotterdams*, 52.

were virtually non-existent.[27] Until after the war, France had not been active in Rhine shipping. As part of the reparations payments however, it received a large number of different type Rhine barges and tugboats. From its total available tonnage of 2.2 million tons, Germany had to surrender a total tonnage of about 360.000 tons to the French. From the available tugboats, almost 14% had to be handed over. The ships were divided over six newly founded shipping companies that were strictly coordinated by the French state.[28] The Rhine barges from these four countries were the most active in Rhine shipping, and where almost exclusively used for transporting bulk goods: only about 3% of Rhine traffic consisted of merchandise.[29]

Traffic of goods within Germany

Briefly described, Germany had four major centres for the transport of goods: the Ruhr area – parts of Westfalia and the Rhine province, from Rheinhausen to Walsum – and Mannheim along the Rhine, the ports on the North Sea – primarily Hamburg, to a lesser extent Bremen and Emden – and greater Berlin. The North Sea ports of Bremen and Emden handled goods from mostly the Ruhr area and southern Germany, while Hamburg also handled goods from eastern Germany by way of Berlin.[30] Already before the war, railroads were the predominant mode of transport for both mixed goods as well as bulk goods. Both in rail transport and inland shipping coal was most important, followed by building materials such as soil, bricks, stone, and cement. Nevertheless, there were some notable differences. Inland shipping was geared more toward transporting ores, while iron and steel showed a tendency towards transportation by rail.[31]

Table 1: *Total transport of goods in Germany by rail and inland shipping, compared to Rhine traffic, 1913, 1919-1933*

Year	Inland shipping	Railways **	Total traffic	Rhine shipping	Inland shipping	Railways	Rhine shipping	Rhine traffic as a percentage of inland shipping
	in million tons				in percentages of total traffic			
1913*	97.0	445	542.0	54.6	17.9	82.1	10.1	56.2
1919	*n.a.*	*n.a.*	*n.a.*	19.0	*n.a*	*n.a*	*n.a.*	*n.a.*
1920	44.7	337	381.7	27.7	11.7	88.3	7.2	61.9
1921	42.1	*n.a.*	*n.a.*	26.7	*n.a*	*n.a.*	*n.a.*	63.5
1922	59.3	*405*	464.3	37.2	12.8	87.2	8.0	62.7

[27] Walter, *Enige economische beschouwingen*, 74, 80
[28] Jolmes, *Geschichte der Unternehmungen*, 79-80
[29] Walter, *Enige economische beschouwingen*, 118.
[30] E. Tiessen, *Seehafenverkehr und Binnenschiffahrt im Deutschen Reich, 1913 und 1922* (Berlin 1925)
[31] Napp-Zinn, *Binnenschiffahrt und Eisenbahn*, 33 (table "Mengenleistung von Eisenbahn und Binnenschiffahrt nach Gütergattungen" for 1913 and 1925), 34.

1923	34.5	*246*	280.5	16.5	12.3	87.7	5.9	47.9
1924	71.6	271	342.6	47.1	20.9	79.1	13.7	65.7
1925	86.5	395	481.5	57.7	18.0	82.0	12.0	66.7
1926	102.3	415	517.3	69.5	19.8	80.2	13.4	67.9
1927	111.5	467	578.5	76.2	19.3	80.7	13.2	68.3
1928	107.8	462	569.8	71.7	18.9	81.1	12.6	66.6
1929	110.7	466	576.7	74.9	19.2	80.8	13.0	67.7
1930	105.2	381	486.2	70.8	21.6	78.4	14.6	67.3
1931	86.9	310	396.9	60.0	21.9	78.1	15.1	69.0
1932	73.5	267	340.5	48.6	21.6	78.4	14.3	66.1
1933	78.0	295	373.0	51.4	20.9	79.1	13.8	65.9

Sources: Jahres-Berichten der Zentral-Kommission für die Rheinschiffahrt im Jahre (1920-1933); Verkehr der deutschen Binnenwasserstraßen im Jahre 1926; Die binnenschiffahrt im Jahre 1932; Die Güterbewegung auf deutschen Eisenbahnen im Jahre 1924; Idem, 1925; Idem, 1927; own calculations.

*: Data pertaining to post-war geography of Germany.

**: Data for 1922 are estimates, data for 1923 are incomplete due to the occupation of the Ruhr.

The importance of the Rhine relative to all traffic by inland shipping as well as railroad transport is illustrated in table 1. Disregarding the data for the period 1919-1923 because of a lack of reliable data and the economic turmoil of the era, during the period 1924-1933 inland shipping accounted for – on average – 20 % of all transported goods. Of all inland shipping, over two-thirds consisted of Rhine traffic.[32] When compared to the pre-war situation, at first glance the post-war economic recovery and the resultant growth of transport – especially inland shipping – seems to have been slow. There are, however, a number of factors that should be taken into account. First, one should be aware that a substantial part of this regression was due to a change in the usage and quality of (raw) materials. For instance, the iron ore that was used after the war was of significantly higher quality, and the average kali-content of kali-salts in 1925 was 28.3% versus 21.6% in 1913. Additionally, more coal was processed into higher-grade coal products on-site. The value of the transported goods was thus significantly higher than it was prior to the war. Furthermore, in the interim many factories had switched from steam-powered to electrically operated machines, which were powered by an increasing number of hydro-electric power stations, which lessened Germany's dependence on fuels.[33] Other contributory factors may have been the handing over of an appreciable part of German ships to France and Belgium as part of the reparations stipulated in the Treaty of Versailles, and the instatement in December 1920 of *Staffeltarife*, special rates for rail transport over longer distances.[34] These special rates had already existed before the war, but had never

[32] Own calculations, based on the information contained in table 1.
[33] W. Teubert, 'Der Güterverkehr und seine Veränderungen in der Nachkriegszeit'. Sonderheft 5, *Vierteljahrshefte zur Konjunkturforschung* (Berlin 1928) 30-36.
[34] W. Teubert, 'Der Güterverkehr, Entwicklung und Aussichten'. Sonderheft 33, *Vierteljahrshefte zur Konjunkturforschung* (Berlin 1933) 7-8.

been used on such a large scale.[35] Naturally, the significant drop in Rhine shipping – and transportation in general – in 1923 was the result of the occupation of the Ruhr by French and Belgian forces. With the exception of the period until 1924, the ratio of rail traffic to transport by inland shipping – in tons of goods transported – remained at a fairly constant 4:1.[36]

However, an analysis on the basis of the total tonnage of transported goods does not take into account the distance these goods covered. As a result, it affords only a partial view of the actual flow of goods. In transport analysis, this latter aspect is represented using the ton-kilometre (abbreviated as tkm, the product of weight and distance) as a unit of measurement.[37] This approach is used here merely as a complementary mode of analysis of inland transportation, since although it provides insight into the density of traffic flows, it obscures the actual tonnage of goods that were sent from point A to point B. When represented in ton-kilometre, the share in 1913 of inland shipping in total transport increases from 18% based on tonnage alone to 27%. Comparing transport in 1913 and 1925 shows that in both years 18% of all goods were transported by inland shipping, but that in 1925 the actual flow of traffic by way of inland waterways had decreased to 24%.[38] Railroad freight was therefore transported a greater distance than before the war. According to the same approach, in 1925 36% of the traffic flow in Germany was the result of foreign trade, with 94% of this traffic being in the Rhine- and Ems-Weser area. Almost three-quarters of the entire flow of traffic by inland shipping was generated here, making it – as far as inland shipping was concerned – the transport hub of Germany, especially for foreign trade.[39] Unfortunately, a lack of data means that it is as yet impossible apply this method of analysis to pinpoint the exact share of the Rhine itself, and particularly the different stretches of the Rhine, in this traffic.

Therefore, the importance of the Ruhr area will need to be ascertained by its share in the total tonnage of transported goods and in ship movements. As this was Germany's main industrial centre, it is not surprising that it should be the centre of gravity for transport both by railways and inland shipping. Transport by rail amply demonstrates the importance of the Ruhr industries: between 1925 and 1929 between 22 and 24% of all railroad freight was either

[35] Napp-Zinn, *Binnenschiffahrt und Eisenbahn*, 25, 110-111; Lülsdorfs, *Die Bedeutung Rotterdams*, 94.
[36] Own calculations, based on the information contained in table 1.
[37] O. Teubert, *Die Binnenschiffahrt. Ein Handbuch für alle Beteiligten* (Leipzig 1918) 634.
[38] Napp-Zinn, *Binnenschiffahrt und Eisenbahn*, 28.
[39] Own calculations, based on data provided in: Napp-Zinn, *Binnenschiffahrt und Eisenbahn*,31.

destined for, or originated in, the Ruhr industrial area (Table 2).[40] Even more significant is that during the same period between 46 and 52% of all German exports by rail originated in, or were directed through, the Ruhr.

Table 2: *Railroad traffic to and from the Ruhr* in percentages of total inland and total international railway traffic, 1913, 1922-1931*

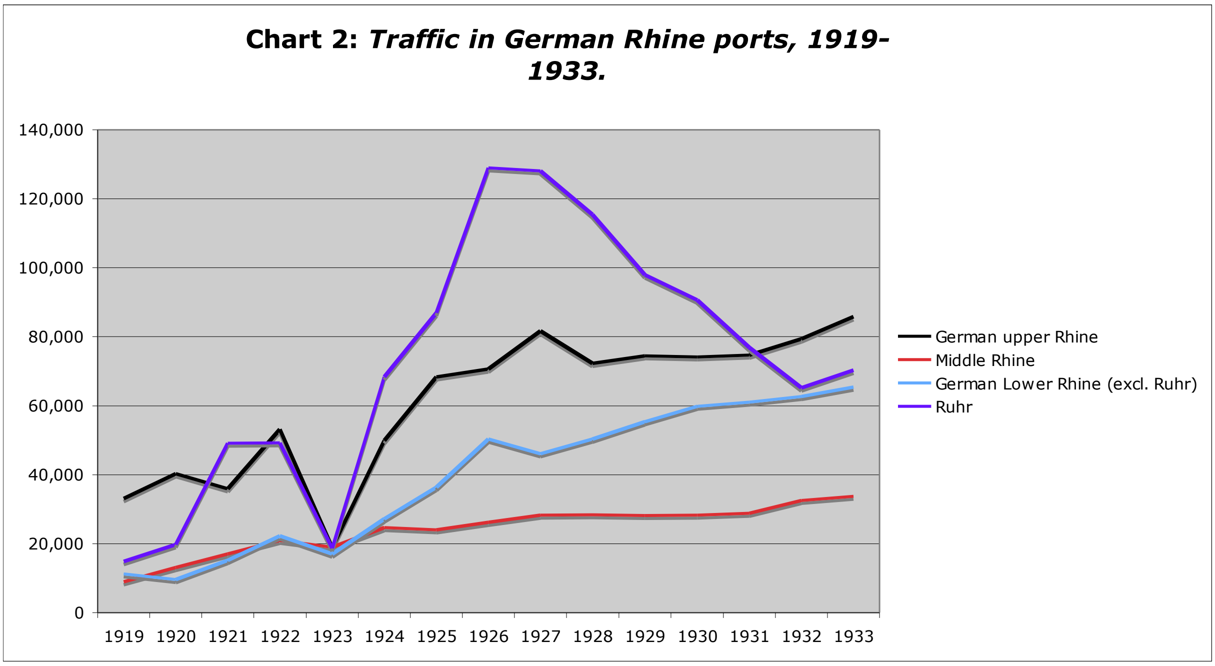
	Inland traffic		Exports	Imports
Year	Outgoing	Incoming		
1913	*n.a.*	*n.a.*	30.8	9.7
1922	21.6	17.9	36.7	10.9
1923	6.1	6.9	2.9	1.7
1924	14.1	11.1	18.3	2.4
1925	24.8	19.7	45.8	6.9
1926	25.4	20.1	51.8	4.7
1927	25.8	20.2	48.6	10.0
1928	23.8	18.4	44.9	10.7
1929	25.9	19.1	47.8	11.1
1930	24.3	17.7	41.9	8.6
1931	23.7	16.5	37.2	6.2
1932	22.6	15.0	39.1	5.8
1933	22.3	15.0	32.6	8.4

Sources: Statistisches Reichsamt, *Die Güterbewegung auf deutschen Eisenbahnen* [1924-1931] (Berlin 1926-1932), Tables 'Inland Verkehr' and 'Ausland Verkehr'; own calculations.
*: The Ruhr consists of the *Bezirke* 22 (Ruhrgebiet in Westfalen), 23 (Ruhrgebiet in der Rheinprovinz), and 28 (Duisburg, Ruhrort, Hochfeld).

Shipping movement – shown in chart 2 – shows the development of Rhine shipping along the upper-, middle-, and lower Rhine, with the Ruhr area – part of the lower Rhine – depicted separately. Rhine traffic, itself such an important part of Germany's transportation of imports and exports, concentrated on the Ruhr. More specifically: exports from the Ruhr ports made up the major part of shipping downstream, while imports via the Rhine were more evenly spread along the Rhine up to Mannheim and Ludwigshafen. And while shipping from the Ruhr ports – the most important of which were Rheinhausen, Duisburg-Ruhrort, Homberg and Walsum/Schwelgern – was mostly downstream, one-third of the traffic of these ports went upstream.[41] Ruhr imports consisted predominantly of iron ore, cereal, and wood, while coal, pig iron and processed iron (such as steel) were exported (Table 3). In both inland shipping and railroad freight, the Ruhr was thus the transport hub through which Germany conducted its

[40] Statistisches Reichsamt, *Die Güterbewegung auf deutschen Eisenbahnen* [1925-1929] (Berlin 1926-1930), Tables 'A. Inland Verkehr' and 'B. Ausland Verkehr'; own calculations.
[41] Walter, Enige economische beschouwingen, 117; *Jahres-Berichten der Zentral-Kommission für die Rheinschiffahrt* [1920-1931]; own calculations.

internal and international transport. With regards to the latter, there was still a choice to be made between modes of transport and seaports.



Sources: Jahres-Bericht der Zentral-Kommission für die Rheinschiffahrt [1919-1933]; own calculations.

Table 3: *Traffic of bulk goods in the Ruhr ports, 1922-1928. In thousand tonnes.*

	I. Iron ore (1)				II. Grain (2)				III. Wood			
Year	Incoming	Outgoing	Canal	Total	Incoming	Outgoing	Canal	Total	Incoming	Outgoing	Canal	Total
1922	6053	742	-	6794	233	33	-	266	121	20	-	141
1923	1922	44	-	1966	93	8	-	101	49	1	-	51
1924	6167	-	-	6167	375	-	-	375	247	-	-	247
1925	8347	-	-	8347	397	-	-	397	326	-	-	326
1926	8060	-	-	8060	467	-	-	467	270	-	-	270
1927	12392	-	24	12416	427	-	1	428	392	-	6	398
1928	8354	1545	21	9920	303	18	1	322	346	135	1	482

	IV. Coal (3)				V. Pig iron and processed iron			
Year	Incoming	Outgoing	Canal	Total	Incoming	Outgoing	Canal	Total
1922	587	7525	-	8112	220	719	-	939
1923	450	2195	-	2644	140	642	-	782
1924	-	18229	-	18229	-	1777	-	1777
1925	-	20331	-	20331	-	1947	-	1947
1926	-	26360	-	26360	-	2884	-	2884
1927	-	20198	3	20569	-	2437	77	2514
1928	4685	12183	1	17161	274	2233	79	2587

Sources: Jahres-Bericht der Zentral-Kommission für die Rheinschiffahrt [1923-1928], overview 'Schifahrtsverkehr in den Rhein-Ruhrhäfen in den Jahren [1922-1928]'.

(1) Iron ore, manganese, pyrite, slag for use in smelting

(2) Grain, corn, wheat, cereal, rye, oats, barley, maize

(3) Including coal briquettes and cokes

Traffic of goods within the Netherlands

'In spite of the fact that in the Netherlands transportation by waterway is one of the most important means of transport, until now little is known on the subject' admitted the Dutch *Centraal Bureau voor de Statistiek* in 1933.[42] In contrast to the detail with which the German *Statistisches Reichsamt* recorded and published the movement of goods throughout Germany as well as its imports, exports and transit traffic, its Dutch counterpart published far less detailed records. As a result, so far it has proven to be impossible to assess the total volume of transport by all modes of transport in the Netherlands. However, ton-kilometric data for the flow of inland shipping in the Netherlands and its provinces do exist, albeit only for the period 1912-1913 and 1917-1924.[43] The province of Gelderland – through which the Rhine flows from Germany – accounted for almost 47% of all water-borne traffic in the Netherlands in the period 1923-1924.[44] Given the very limited activity of the ports there – shown in table 4 –, this means that almost half of Dutch inland shipping was aimed at the German, French and Swiss Rhine. Data for shipping movements in the German, French and Swiss ports shows that Dutch shipping was predominantly to and from the Ruhr, or to more precise: Duisburg-Ruhrort.[45]

Table 4: *Transport of goods of the most important Dutch and Belgian ports with the German, French and Swiss Rhine in thousands of tons, 1919-1931*

	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1931
Dutch ports:												
Nijmegen	18	63	36	55	50	102	85	116	120	134	152	130
Dordrecht	160	186	159	163	131	194	243	260	202	245	228	409
Vlaardingen	*n.a.*	*n.a.*	*n.a.*	*n.a.*	378	1,506	1,776	1,805	2,456	2,415	2,291	1,386
Vreeswijk	109	123	55	64	58	30	61	*n.a.*	*n.a.*	*n.a.*	*n.a.*	*n.a.*
Rotterdam	3,526	6,501	8,777	11,595	7,445	18,704	22,845	32,402	33,268	29,706	32,886	21,630
Amsterdam	449	597	643	916	496	1,635	1,962	2,405	2,300	2,453	2,654	2,098
Other Dutch ports	754	1,684	1,895	2,835	1,261	3,030	4,107	4,941	5,082	5,332	5,263	6,207
All Dutch ports	5,033	9,185	11,583	15,650	9,844	25,287	31,207	41,999	43,507	40,365	43,539	31,949
Belgian ports:												
Antwerp	*n.a.*	*n.a.*	*n.a.*	*n.a.*	1,406	3,941	4,728	6,028	5,737	5,402	4,435	5,219
Ghent	*n.a.*	*n.a.*	*n.a.*	*n.a.*	211	688	1,278	1,563	1,594	923	1,866	2,052
Brussels	*n.a.*	*n.a.*	*n.a.*	*n.a.*	270	304	148	203	220	206	263	623
Other Belgian ports	*n.a.*	*n.a.*	*n.a.*	*n.a.*	354	1,558	2,107	1,942	2,760	2,516	2,742	1,597
All Belgian ports	1,190	4,076	4,626	4,665	2,241	6,491	8,261	9,737	10,310	9,046	9,307	9,492

[42] Centraal Bureau voor de Statistiek, Afdeeling handelsstatistiek, *Mededeeling No.1* (11 December 1933)
[43] J.C. Ramaer, 'Het goederenverkeer in Nederland in de laatste jaren'. In: *Tijdschrift van het Koninklijk Nederlandsche Aardrijkskundig Genootschap*, Tweede reeks dl. XLIII, No.3 (mei 1926) 331-392. The existence of data for tkm per province indicates that the underlying data to reconstruct the flow of traffic by inland shipping should still be available.
[44] Idem, 386 (appendix VIII).
[45] Jahres-Berichten der Zentral-Kommission für die Rheinschiffahrt im Jahre [1920-1933]; own calculations.

Sources: Jahres-Bericht der Zentral-Kommission für die Rheinschiffahrt [1919-1931], "IIa. Übersicht des Gesamthafenverkehrs im Jahr 1920, 2. Verkehr in den niederländischen und belgischen Häfen von und nach dem deutschen Rhein"; own calculations.

Most of this traffic was mass freight – mostly coal and ores, but also raw materials for e.g. the chemical industry, and the paper industry[46] – for which the port of Rotterdam handled most of the transhipment, with Amsterdam a distant second (Table 4). Amsterdam was mostly important in the transhipment of merchandise.[47]

Like inland shipping, railroad freight to and from Germany was for the most part freight to and from the Ruhr. In 1924, of all outgoing international Dutch railroad freight 18% was transported to the Ruhr, while 56% of incoming railroad freight originated in the Ruhr (Table 5). As the German economy recovered, in just two years these percentages would rise to 28 and 71% respectively. Bonds with the extended Ruhr-area – Westphalia and especially the *Rheinprovinz* – also became increasingly strong, as by 1926 it was responsible for 67% of all incoming German railway traffic and 89% of all outgoing rail freight to Germany.

In spite of the enormous growth of the total flow of goods transported by way of the Netherlands to and from Germany, railway traffic remained fairly stable although it shifted more and more towards the Ruhr and the part of the *Rheinprovinz* that lies left of the Rhine. It was Rhine shipping that profited from the growth in transport, as in merely three years Rhine traffic from Germany increased sevenfold, while overall traffic to Germany doubled (Chart 3).[48] As much as the Ruhr was the transport hub for Germany, was it the destination for both Dutch Rhine shipping and railroad freight.

[46] Lülsdorfs, *Die Bedeutung Rotterdams*, 34.
[47] Idem, 8.
[48] Centraal Bureau voor de Statistiek, *Jaarstatistiek voor de In-, Uit-, en Doorvoer* [1923-1926], 16 'Verkeerswijzen bij invoer, uitvoer en doorvoer'; own calculations.

Table 5: ***Rail transport of goods from the Netherlands to and from Germany, 1922-1927. In percentages per destination.***

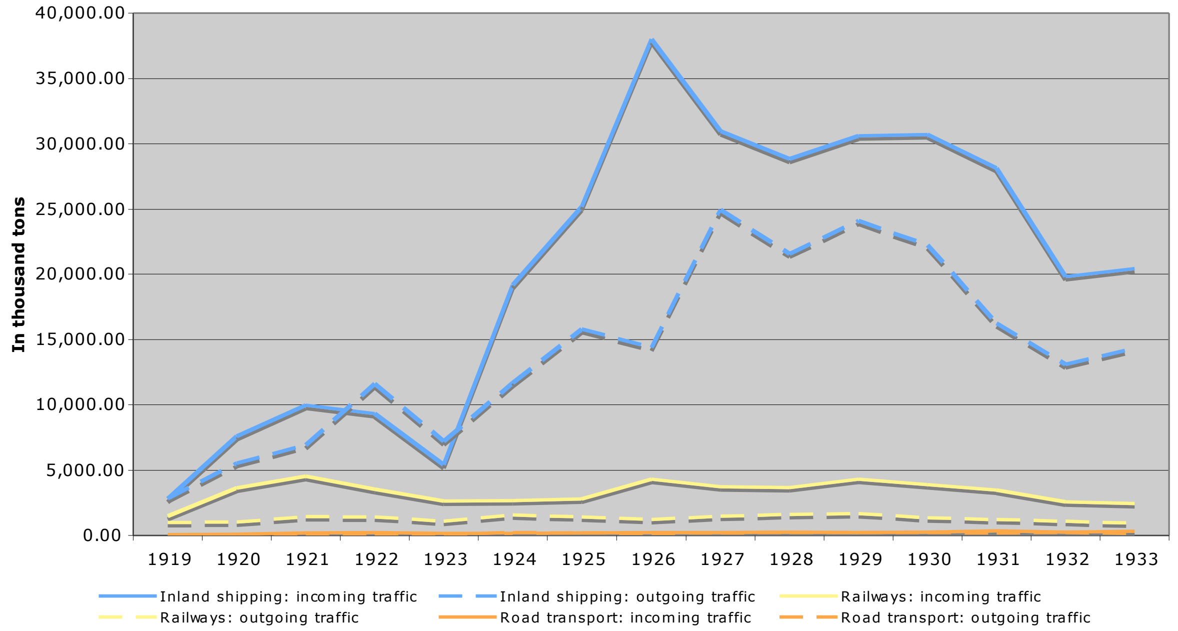
Destination	1922*		1923*		1924*		1925		1926		1927	
	German imports	German exports	I	E	I	E	I	E	I	E	I	O
Provinz Ostpreussen (ohne Häfen)								0.6				
Provinz Pommern (ohne Häfen)		0.1				0.1		0.7				
Elbhäfen	0.1	0.6	0.5	1.1	2.0	0.2	0.7	0.2	2.0	0.1	2.5	0.2
Weserhäfen	0.1	0.7			0.9	0.4	0.6	0.4	0.9	0.7	1.5	1.1
Oldenburg, Reg.-Bez. Lüneburg, Stade usw.	8.0	7.7	15.8	17.6	17.9	2.0	10.5	1.3	10.1	0.4	4.3	0.5
Reg.Bez.Hannover und Hildesheim; Braunschweig usw.					3.1	4.1	1.2	1.8	1.5	0.8	1.4	1.2
Berlin: inneres Stadtgebiet	0.6	0.8	1.7	1.7	4.4	0.7	0.9	0.8	4.8	0.2	4.2	0.2
Provinz Brandenburg	0.1	0.2			1.3	0.4	0.2	0.6	0.2	0.4	0.2	0.3
Reg.-Bez.Magdeburg und Anhalt	0.5	0.3	0.7	1.6		1.2	0.4	0.4	0.5	0.3	0.6	0.6
Reg.-Bez.Merseburg und Erfurt usw.	0.2	2.9	0.5	12.0	1.3	3.0	0.5	2.4	0.7	2.1	0.6	2.2
Thüringen usw.					0.5	1.1	0.2	0.9	0.2	0.8	0.2	1.4
Land Sachsen (ohne Leipzig und Umgebung)	1.0	1.9	1.9	5.5	0.2	3.3	0.2	1.1	1.6	0.7	1.6	0.6
Leipzig und Umgebung	0.1	0.5			0.4	0.6	0.5	0.3	1.2	0.2	1.5	0.1
Provinz Hessen-Nassau, Oberhessen usw.	2.0	5.8	3.1	4.5	3.1	4.8	0.7	3.5	1.8	1.9	2.2	2.0
Frankfurt (Main) und Umgebung							0.4	0.3				
Ruhrgebiet (Westfalen)	0.6	30.0	5.5	3.2	9.3	30.5	9.8	31.6	10.7	40.9	10.6	31.0
Ruhrgebiet (Rheinprovinz)	2.9	4.0	1.9	4.6	8.0	24.2	14.9	31.0	15.1	29.3	14.5	37.1
Provinz Westfalen (ohne Ruhrgebiet), Lippe usw.	1.6	5.0	29.0	25.0	15.9	8.5	4.6	5.7	3.9	8.6	4.1	8.1
Rheinprovinz rechts des Rheins	3.4	8.2	10.1	7.5	8.4	3.9	2.9	2.5	4.0	1.9	4.2	1.6
Rheinprovinz links des Rheins	59.2	22.6	5.8	1.0	13.5	4.6	40.7	9.5	30.9	7.4	29.7	8.0
Duisburg, Ruhrort, Hochfeld	1.2	1.7			0.4	0.8	2.5	1.0	2.3	0.8	1.9	1.7
Bayerische Pfalz (ohne Ludwigshafen)					0.2	0.1	0.4	0.3	0.1	0.2	0.2	0.3
Baden	10.7	2.4	8.9	2.1	1.8	0.3	2.7	0.2	2.4	0.1	6.7	0.2
Württemberg und Hohenzollern	1.3	0.6	4.3	2.0		0.9	0.2	0.4	0.2	0.2	0.5	0.3
Südbayern	3.0	0.8	3.6	2.4	1.8	1.0	0.7	0.8	1.4	0.3	2.0	0.2
Nordbayern	0.4	0.7	1.2	1.5	1.5	1.1	0.9	0.6	0.7	0.5	1.9	0.5
Other areas	3.0	2.5	5.5	6.5	4.0	2.2	2.6	1.1	2.8	1.2	2.8	0.8
Total	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

Sources: Statistisches Reichsamt, *Die Güterbewegung auf deutschen Eisenbahnen* 1925, 17-18, Übersicht 13, Wechselverkehr wichtigerer Auslandbezirke mit inländischen Verkehrsbezirken in den Jahren 1922, 1924 und 1925; Idem 1927, Übersicht 7, Wechselverkehr des Saargebiets und wichtigerer Auslandbezirke mit inländischen Verkehrsbezirken in den Jahren 1926 und 1927; own calculations.

*: Incomplete data.

Areas in grey: combined data

Chart 3: ***Traffic of goods between the Netherlands and Germany by mode of transportation, 1919-1933.***



Sources: Centraal Bureau voor de Statistiek, *Jaarstatistiek van den In-, uit-, en doorvoer over...* [1919-1933]; own calculations.

Table 6: ***Number of ships crossing the Dutch-German border at Lobith* 1919-1931, by nationality***

	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931
Dutch	8,571	16,372	24,406	23,168	15,717	35,213	46,328	64,601	57,634	57,421	60,362	65,695	59,641
German	5,000	6,200	8,266	8,562	3,853	13,116	14,886	24,356	18,065	16,775	17,308	16,231	13,842
Belgian	1,031	2,021	4,057	3,582	1,923	9,385	11,100	15,375	12,297	12,562	13,768	15,015	15,359
French					1,211	3,027	3,189	3,190	2,834	2,745	2,490	2,669	2,756
Swiss					91	122	440	708	640	681	782	1,000	1,008
Luxembourg					23	53	85	215	188	142	150	99	85
British	6	10	8	33	53	98	109	58	8	3	11	2	0
Other	187	26	498	1,642	6	15	6	12	0	0	0	0	0
Total	14,795	24,629	37,235	36,987	22,877	61,029	76,143	108,515	91,666	90,329	94,871	100,711	92,691

Sources: *Jahres-Bericht der Zentral-Kommission für die Rheinschiffahrt* [1920-1931], "VII. Nachweisung...weche im Jahr 1920 bei Lobith über die deutsch-niederländische Grenze gegangen sind. B. Nach den Aufzeichnungen der Königlich Niederländischen Zollstelle in Lobith".
*: Data for ships crossing the Dutch-German border were registered both at Lobith and at Emmerich. The data for Lobith were used because they show a greater internal consistency. Differences between the two datasets are to the order of 2-3%.

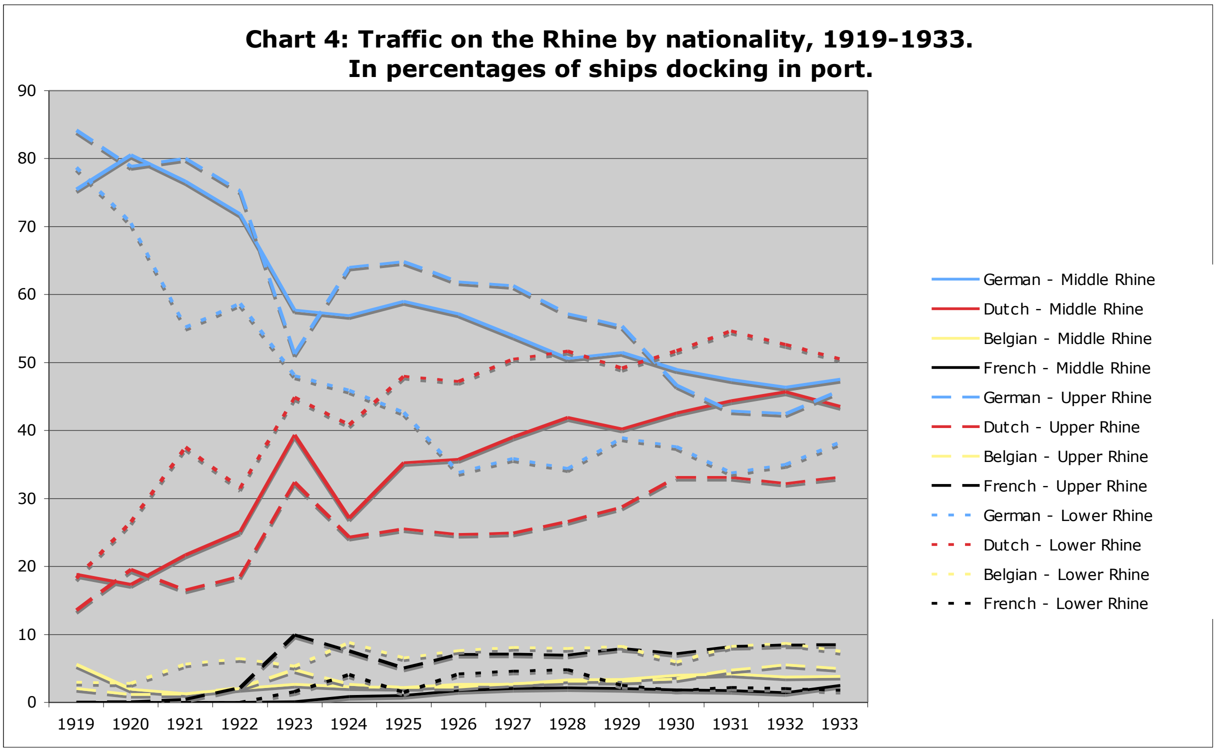
Competition on the Rhine

Germany, the Netherlands and Belgium all had extensive Rhine fleets. Nevertheless, ships under Dutch colours were in the majority on the Lower Rhine (the Ruhr ports), while German ships were in the majority on the Middle- and Upper Rhine.[49] In traffic crossing the German border, ships under Dutch colours were in the majority (Table 6), further reinforcing the earlier

[49] *Jahres-Bericht der Zentral-Kommission für die Rheinschiffahrt 1922*, p.117.

observations on the importance of the Ruhr to Germany, and the importance of the Netherlands to the Ruhr.[50] Part of the reason for the numerical superiority of Dutch Rhine shipping was the fact that German shipping companies (both private skippers and the large shipping companies) were able to finance ships in the Netherlands at significantly lower rates – typically 6% interest – than would have been possible in Germany, where after the war interest rates were 9-10%.[51] As the German shipping companies had lost an appreciable part of their fleet in lieu of reparations payments to France and Belgium, they needed to replenish their transport capacity.[52] Because financing these was both easier and cheaper in the Netherlands, they turned to one of the ten Dutch mortgage banks that specialized in the financing of ships. The shareholders of these banks were – in all probability – all Dutch, as the buying and selling of these shares was restricted.[53] These institutions were more than willing to finance the ships the Germans needed, albeit with the proviso that it should be registered in the Netherlands, in the name of a Dutch *Naamloze Vennootschap* (joint stock company).[54] The companies that were established for this purpose attracted Dutch capital.[55] This interweaving of Dutch and German Rhine transport under Dutch colours had already started before the war, when number of German shipping companies such as Thyssen had transferred their fleet either in part or in its entirety to the Netherlands.[56] That this process continued after the war was only partly due to the fact that the newly built ships that had to be registered in the Netherlands. Several other factors were also important. Both before and after the war, the favourable Dutch tax laws – no tax was due on non-distributed profits - were a major attractive force. Additionally, wages and employer's contributions were significantly lower.[57] And finally, during the post-war economic difficulties in Germany some companies – with approval from the German government – placed their entire fleet under Dutch colours to prevent possible confiscation by the allies.[58]

[50] It should be noted however, that 'Dutch' ships were usually smaller than 'German' ships. However, this is more than offset by the overwhelming majority the 'Dutch' ships enjoyed. Source: Nationaal Archief, Den Haag, Ministerie van Buitenlandse Zaken: DEZ-dossiers (Directie Economische Zaken), 1919-1940, nummer toegang 2.05.37, inventarisnummer 90, Letter by Rijkswaterstaat n.a.v. rapport Nederbragt over de R'damse haven, 29 December 1919; Warsch, *Antwerpen, Rotterdam*, 52.
[51] Lülsdorfs, *Die Bedeutung Rotterdams,* 72.
[52] Jolmes, *Geschichte der Unternehmungen*, 82; Lülsdorfs, *Die Bedeutung Rotterdams*, 72.
[53] Hendrik van Criekinge, *De financiering der scheepvaartondernemingen. Het scheepscredietwezen in België en in de omringende landen* (Leuven 1933) 164.
[54] Walter, *Enige economische beschouwingen*, 77.
[55] Most, *Seehafenausnahmetarifee, Devisenwirtschaft und Rheinschiffahrt: kritische Feststellungen und Bemerkungen zu einer Streitschrift gegen den Rhein* (Jena 1937) 35-36.
[56] Jolmes, *Geschichte der Unternehmungen*, 63, 84.
[57] Lülsdorf, *Die Bedeutung Rotterdams*, 65.
[58] Most, *Seehafenausnahmetarifee, Devisenwirtschaft und Rheinschiffahrt*, 35.



Sources: Jahres-Bericht der Zentral-Kommission für die Rheinschiffahrt [1919-1933]; own calculations.

Just how much of the Dutch Rhine fleet was in German hands is illustrated by the fact that by the beginning of 1933 Germans accounted for 37.4% of all mortgages on ships.[59] According to a report by the *Rheinkommission*, at least 39% of the Dutch fleet of Rhine barges should be regarded as being predominantly German-owned, although they admit that 15% is based on educated guesses. Nevertheless, the authors state that the actual percentage of ships that were mainly owned by Germans probably was significantly higher.[60] Given that already before the war German companies had started to put Rhine barges under Dutch flag for reasons other than financing, and taking into account the German share of 37.4% of all mortgages – which is directly linked to the economic lifespan of a ship and therefore a good indicator for the lower limit of German ownership within the Dutch Rhine fleet as a whole – the estimate of the Rhine commission can be considered to have been extremely conservative. It also explains the structural decline of the share of German shipping versus the rise of Dutch shipping on all stretches of the Rhine (Chart 4).

As the secretary of the Rotterdam Chamber of Commerce and Industry noted in 1927, ‘the building of Rhine ships for German customers has been most important these past few

[59] Lülsdorfs, *Die Bedeutung Rotterdams*, 72.
[60] B. Harms, B. Kuske and O. Most, *Die deutsche Rheinschiffahrt: Gutachten der Rhein-Kommission über die Lage der rheinschiffahrt in der in ihr beschäftigten Arbeitsnehmer* (Berlin 1930) 196-197.

years, and must undoubtedly be counted amongst the factors that create an economic bond between the Ruhr and Rotterdam'.[61] Between 1925 and 1931 the Rhine fleet expanded from circa 5.2 million tons to 7.2 million tons. Because the other Rhine fleets remained stable, most of this expansion can be attributed to the Dutch Rhine fleet.[62] A less desirable side-effect of this building activity was that the total capacity of the Rhine fleet – where signs of overcapacity had already been in evidence before the war – grew even larger.[63] This resulted in lower freight prices, and made Rhine shipping one of the least profitable enterprises.[64] Nevertheless, the extensive German direct investments in the Dutch Rhine fleet and associated activities such as port installations – although financed by Dutch banks – contributed greatly to a Rhine transport system where Dutch and German companies were to a considerable extent integrated. This in turn no doubt enhanced the ability of Rotterdam to compete with other ports.

Competition with other ports

The port of Rotterdam was in constant competition with the Belgian port of Antwerp and Ghent, and the German North Sea ports of Hamburg, Bremen and Emden. Of these ports, the only significant competition came from Antwerp and Hamburg (Table 7). Representatives in the competing ports kept the *Commissie Concurrentiemogelijkheden* of the Rotterdam Chamber of Commerce informed on developments regarding investments, monthly traffic statistics, etcetera, while other representatives were actively promoting Rotterdam in potential growth markets such as Switzerland.[65]

Antwerp was Belgium's most important port, both for seagoing transport as well as inland shipping. For seagoing traffic, Antwerp was much better located than Rotterdam: thanks to the extremely wide estuary of the Scheldt, the port was both easy and safe to enter, while during bad weather ships bound for Rotterdam had to wait for the weather to clear at sea near

[61] NL-HaNa, BuZa / Economische Zaken, 2.05.37 inv.nr.2682, Brief door Van Lier, Secretaris KvK&Fabrieken voor Rotterdam, 6 april 1927.
[62] Walter, Enige economische beschouwingen, 83.
[63] Jolmes, *Geschichte der Unternehmungen*, 82.
[64] Lülsdorfs, *Die Bedeutung Rotterdams*, 74.
[65] Nationaal Archief, Den Haag, Kamer van Koophandel en Fabrieken voor Rotterdam: Secretariaat, 1922-1969, nummer toegang 3.17.17.04, invoer nummer 2375, miscellaneous letters, reports and minutes; NL-HaNa, BuZa / Economische Zaken, 2.05.37, inv.nr.90, Letter by the consul in Switzerland to the Dutch foreign minister, 28 Juli 1920; NL-HaNa, BuZa / Economische Zaken, 2.05.37, inv.nr. 90, Report on transshipment in Rotterdam and Antwerp, dated 19 October 1920; Idem, Letter to the consul in Geneva, 24 September 1920.

Hoek van Holland.[66] However, its position with regards to the Rhine was less favourable. To get to the Rhine, ships had to follow the arduous route Westerschelde – Kanaal van Hansweert-Wemeldinge –Oosterschelde – Keeten – Mastgat – Zijpe – Krammer – Volkerak – Hollands Diep – Dordtsche Kil – Oude Maas to Dordrecht, where they could enter the tributary Waal of the Rhine. Locks as well as the tide would often cause traffic-jams along the route.[67]

In contrast to Rotterdam – which focussed on the transhipment of bulk goods, Antwerp concentrated on merchandise. Port fees and other costs incurred while in port were much higher in the transhipment of merchandise than they were in the handling of bulk. In Rotterdam, costs had always been considerably higher than either Antwerp or Hamburg due to high wages, as well as high port fees.[68] Therefore, a special commission that was tasked with expanding Rotterdam's handling of merchandise – the *Stukgoedcommissie* – tried to get the various parties that were levying these fees – the state, the city council, and various private parties – to lower them. Despite years of effort, the commission never really succeeded.[69] In the transhipment of bulk goods such as grain, ores, or coal, these higher costs were offset by the superior technical equipment in use in Rotterdam.[70] Grain was unloaded more than twice as fast as in Antwerp, while coal and ores were unloaded at two to three times the speed, with even higher speeds available if need be.[71]

Table 7: *Movement of goods through the ports of Antwerp, Hamburg, and Rotterdam, 1887-1932.*

Year	Antwerp	Hamburg	Rotterdam
1887	3.926.558	5.400.513	3.231.564
1902	11.381.740	14.965.654	12.682.054
1910	16.216.631	23.122.194	22.872.353
1913	18.871.934	25.457.910	29.419.482
1920	13.067.740	5.797.362	11.912.691
1924	21.355.850	19.529.164	24.960.262
1929	26.066.683	26.976.154	38.805.017
1932	17.383.209	19.446.144	21.303.249

Source: NL-HaNa, KvK Rotterdam / Secretariaat, 3.17.17.04, inv. nr.1617, Memorandum concerning the interests of the port of Rotterdam regarding annexation of German territory.

[66] Marcel W. van de Velde, Le Port d'Anvers, aperçu de la situation économique et politique du port national Belge en comparaison avec celle des ports de Rotterdam et Dunkerque (Antwerpen ca.1930) 7.
[67] Warsch, *Antwerpen, Rotterdam*, 30.
[68] NL-HaNa, BuZa / Economische Zaken, 2.05.37 inv.nr.875, Brief KvK&F R'dam, 29-11-1922.
[69] Verseput, *Kamer van Koophandel en Fabrieken*, 69-75; Van Lier, *Kamer van Koophandel en Fabrieken voor Rotterdam, 1803-1928*, 852-862.
[70] Lülsdorfs, *Die Bedeutung Rotterdams*, 42; NL-HaNa, BuZa / Economische Zaken, 2.05.37 inv.nr.875, Brief KvK&F R'dam, 29-11-1922.
[71] NL-HaNa, BuZa / Economische Zaken, 2.05.37, inv.nr. 90, Report on transshipment in Rotterdam and Antwerp, dated 19 October 1920.

During the first half of the 1920's competition between the two ports was especially fierce, as both ports tried reclaim the traffic they had lost during the war and the economic troubles of the time. Antwerp gained a competitive edge when – in order to promote their own seaports – in 1919 the French re-instituted the *surtaxes d'entrepôt* (a levy on almost all non-European products) and *surtaxes d'origine* (a levy on a large number of European products) on goods that were not transported directly from the country of origin to a French port.[72] The taxes payable were often greater than the cost of shipping: in 1924, this duty amounted to 33.6 francs per ton, whilst freight costs to Strasbourg were 25-40 francs per ton.[73] When Antwerp was granted exemptions a year later, Rotterdam lost its traffic to Strasbourg.[74] By way of compensation for the *surtaxes,* Antwerp had already instituted a free tug service to the Rhine from its port, and had committed itself to the construction of a canal to the Rhine at Moerdijk.[75] This threatened to further weaken the position of Rotterdam, and caused widespread protests amongst those who had interests in Rhine shipping and opened a lively debate in the press.[76] Ultimately, the construction of a canal in Dutch territory was denied in 1927, causing the resignation of the Dutch minister for foreign affairs who was in favour of the canal.[77] Belgium tried to further improve its position by instituting lower rates for transport by rail from its ports toward the hinterland and vice versa.[78] Despite these Belgian measures, Rotterdam surpassed Antwerp in 1924 (Table 7).[79] And even though until 1924 Antwerp had a larger turnover, an important part of its Rhine traffic arrived in Rhine barges under Dutch colours (Table 8).

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[72] Warsch, *Antwerpen, Rotterdam*, 21; Verseput, *Kamer van Koophandel en Fabrieken voor Rotterdam,* 65; Van Lier, *Kamer van Koophandel en Fabrieken voor Rotterdam, 1803-1928*, 834.

[73] H.S. de Roode, 'The Port of Rotterdam', in: M. de Vries, ed., *Jubileumnummer 1916-1926 In- en Uitvoer: Handels-economisch weekblad voor Nederland en koloniën* (Amsterdam 1926) pp. 131-137, there p.135.

[74] NL-HaNa, KvK Rotterdam / Secretariaat, 3.17.17.04, inv. nr. 2375, Letter to the Minister for foreign affairs concerning the effects of the French taxes on imports, 23 November 1923.

[75] Van Lier, *Kamer van Koophandel en Fabrieken voor Rotterdam, 1803-1928*, 835.

[76] NL-HaNa, KvK Rotterdam / Secretariaat, 3.17.17.04, inv. nr. 2375, Meeting of the Commissie Concurrentiemogelijkheden, 20 November 1923; Idem, Letter from the Rotterdam Chamber of Commerce and Industry to the Mayor of Rotterdam, 23 November 1923; Idem, Letter by Mayor Wytema to the Minister for foreign affairs, 27 November 1923; Idem, Report on French measures favoring Antwerp, 23 November 1923; Idem, Minutes of a meeting of representatives of the Rotterdam Chamber of Commerce with the minister for foreign affairs, 3 December 1923; Th. van Welderen Rengers, *Duitsche stroomingen en het verworpen Nederlandsch-Belgisch Verdrag* (Leeuwarden 1928); A.J. van Vessem, *Een historische onjuistheid. De grondslag van minister Van Karnebeek's tractaat met België* (Utrecht 1926); Idem, *De verrassingen van het tractaat met België* (Utrecht 1926); R.L. Schuursma, *Het onaannemelijk tractaat. Het verdrag met België van 3 april 1925 in de Nederlandse publieke opinie* (Groningen 1975) passim.

[77] Schuursma, *Het onaannemelijk tractaat*, 248-249.

[78] Warsch, *Antwerpen, Rotterdam*, 37-38.

[79] Van de Velde, *Le Port d'Anvers*, 140.

Throughout the period 1919-1931, Rotterdam had a dominant position in Rhine traffic. Even though Antwerp was at times able to secure a lead on a destination such as Strasbourg, such partial dominance was only temporary and of little importance when viewed in context of the total flow of goods to and from the Rhine. In spite of vehement protests over such dominance by those with interests in Rhine shipping, at the time this was clearly recognized at cabinet level and did not result in government action.[80]

Table 8: ***Rhine barges in the port of Antwerp 1923-1931, by nationality***

	German		Dutch		Belgian		French	
Year	Arrivals	Departures	Arrivals	Departures	Arrivals	Departures	Arrivals	Departures
1923	76	43	291	144	284	276	291	207
1924	275	260	870	277	1204	904	670	441
1925	537	313	414	362	1890	1260	608	489
1926	701	382	2172	250	2711	950	543	545
1927	542	441	2514	266	1930	988	481	419
1928	508	344	2148	256	1541	716	550	177
1929	668	338	2125	242	1598	612	522	140
1930	523	229	2043	317	1445	444	498	138
1931	456	425	1727	337	1655	453	548	501

Sources: *Jahres-Bericht der Zentral-Kommission für die Rheinschiffahrt* [1923-1931], "Beilage 1 zu IV, B, a u. IV, c 1, Übersicht der Schiffe und Flösse, welche im Jahre 1924 in den schweizer, französischen, deutschen und belgischen Rheinhäfen angekommen sind"; Idem, "Beilage 1 zu IV, B, a u. IV, c 1, Übersicht der Schiffe und Flösse, welche im Jahre 1924 aus den schweizer, französischen, deutschen und belgischen Rheinhäfen abgefahren sind".

Competition between modes of transport

Closely linked to competition between ports was the competition between modes of transport. The only relevant competition during this period was between rail transport and inland shipping. Although in relative terms large-scale road transport showed explosive growth – between 1913 and 1925 the number of trucks in Germany grew with some 50.000 units, and by 1925 just over 2% of total transport of goods in that country was transported by road – the sector was still in its infancy.[81] As most road transport was local, its importance in international transport was even less: the same year, only 0.9% of freight between the Netherlands and

[80] NL-HaNa, KvK Rotterdam / Secretariaat, 3.17.17.04, inv. nr. 2375, Meeting of representatives of the Rotterdam chamber of commerce and industry with the Minister for foreign affairs, 3 Dec 1923.

[81] Teubert, *Der Güterverkehr und seine Veränderungen in der Nachkriegszeit*, p.43; Table 1; own calculations.

Germany was sent by road (Chart 3).[82] However, competition between railroads and inland shipping was fierce. In Germany, France, the Netherlands and Belgium railroad freight was actively promoted.

As the role of Belgian special railway rates implied, such measures not only served to attract seagoing freighters to a specific (group of) port(s), they were also used to divert traffic from inland waterways. Thus, during this period there was not only a strong competition between ports, but between modes of transport as well. Both types of rivalry were intimately connected. All four major countries along the Rhine employed such measures to attract to their ports the largest possible amount of traffic. In Belgium the *Tarifs des ports de mer* were used to direct Belgian exports to rail transport and Belgian seaports, while the *Transit-Barême* was destined for transit traffic from Belgian seaports.[83] In 1923 France lowered railroad freight charges for transit traffic from its seaports to Germany.[84] The Netherlands employed a different system: when traffic exceeded 15,000 tons per year, a 10% rebate was given at the end of the year. For traffic exceeding 80,000 tons, the rebate was raised to 20%.[85] Whether these ways of attracting traffic worked, remains open to debate. A comparison of the development of these countries' railroad transport to and from Germany shows that (apart from exports to France) traffic with the Netherlands was significantly more important than traffic with either Belgium or France (Chart 5). Yet there are too many variables influencing this traffic – the payment of reparations in kind to France and Belgium, political complications such as the Ruhr occupation – to draw definite conclusions. What these measures did not manage – at least in the case of the Netherlands – was to direct much traffic from Rhine shipping to railroad transport. Railroad transport showed only a very slight growth while Rhine shipping multiplied (Table 1, Chart 3). The share of the railways in freight traffic between the Netherlands and Germany dropped from 30% in 1919 to just over 9% in 1925, and would continue to be around 9% throughout the remainder of the 1920s and early 30s.[86]

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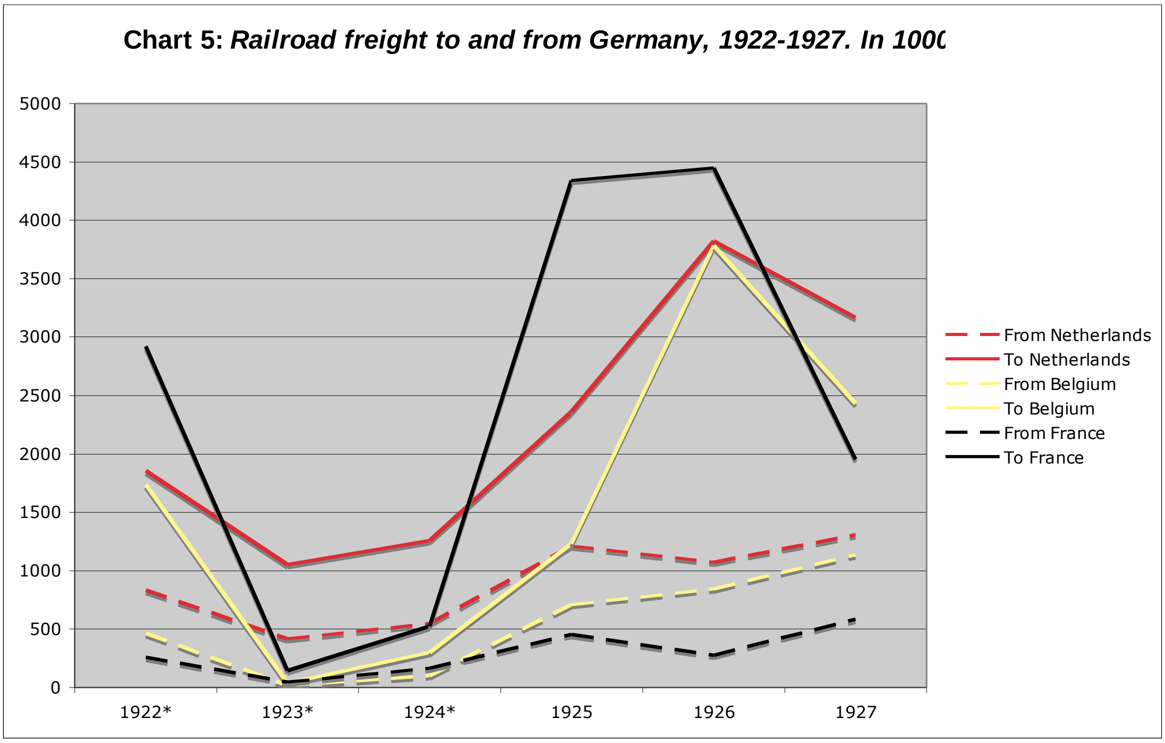
[82] Centraal Bureau voor de Statistiek, *Jaarstatistiek voor de In-, Uit-, en Doorvoer 1925*, 16 'Verkeerswijzen bij invoer, uitvoer en doorvoer'; own calculations.

[83] Warsch, *Antwerpen, Rotterdam*, 37-38.

[84] *Jahres-Bericht der Zentral-Kommission für die Rheinschiffahrt im Jahre 1923* (Strasbourg 1924) 75.

[85] Warsch, *Antwerpen, Rotterdam*, 37-38.

[86] CBS, *Jaarstatistiek voor de In-, Uit-, en Doorvoer* [1919 -1924], 16 'Verkeerswijzen bij invoer, uitvoer en doorvoer'; own calculations.



Sources: Statistisches Reichsamt, *Die Güterbewegung auf deutschen Eisenbahnen [1924-1927]* (Berlin 1926-1930); own calculations.

Unlike the French *surtaxes* and the Belgian special railway rates, the special tariffs that were introduced in Germany did cause considerable political tension between the Netherlands and Germany. Prior to the war, three such tariffs were in force: *Staffeltarife*, *Wasserumschlagtarife*, and *Seehafenausnahmetarife*. The *Staffeltarife* were used by the Prussian *Staatsbahn*, and offered decreasing cost as the distance of transportation increased. For every 100 km after the first 100, cost diminished 5%, meaning that the freight charge for a 1000 km stretch was only 55% per 100 km of the full price. This could potentially reduce the amount of transhipments between inland shipping and the railways. To alleviate this, this kind of transhipment was also granted a reduced freight charge: a special *Wasserumschlagstarif*. As these *Staffeltarife* were only used in special cases and for just a few arbitrarily selected commodities, they never made a great impact before the war.[87] In 1920 the *Staffeltarife* were restored for a number of commodities. The *Wasserumschlagstarife* however, were not. As a result, inland shipping suffered (Table 1). Two years later, *Staffeltarife* were applied to all types of commodity.[88]

Even though they were not specifically intended to promote traffic to and from the German seaports, the *Staffeltarife* were used in advertising by the Hamburg port to attract

[87] Napp-Zinn, *Binnenschiffahrt und Eisenbahn*, 25, 110-111; Walter, *Enige economische beschouwingen*, 104.
[88] Napp-Zinn, *Binnenschiffahrt und Eisenbahn*, 110.

freight from the Ruhr. Misleading statements were not shunned, reported the Dutch consul in Duisburg-Ruhrort in December 1921: in a folder sent to ex- and importers the cost of sending freight via Hamburg was compared to Rotterdam and Antwerp. Naturally, Hamburg was noticeably cheaper. The reason however, was that for transport by way of Rotterdam the cost of railway freight was used instead of Rhine shipping. A corrected specification showed that even with the *Staffeltarife*, routing traffic through Rotterdam was still the cheaper option.[89]

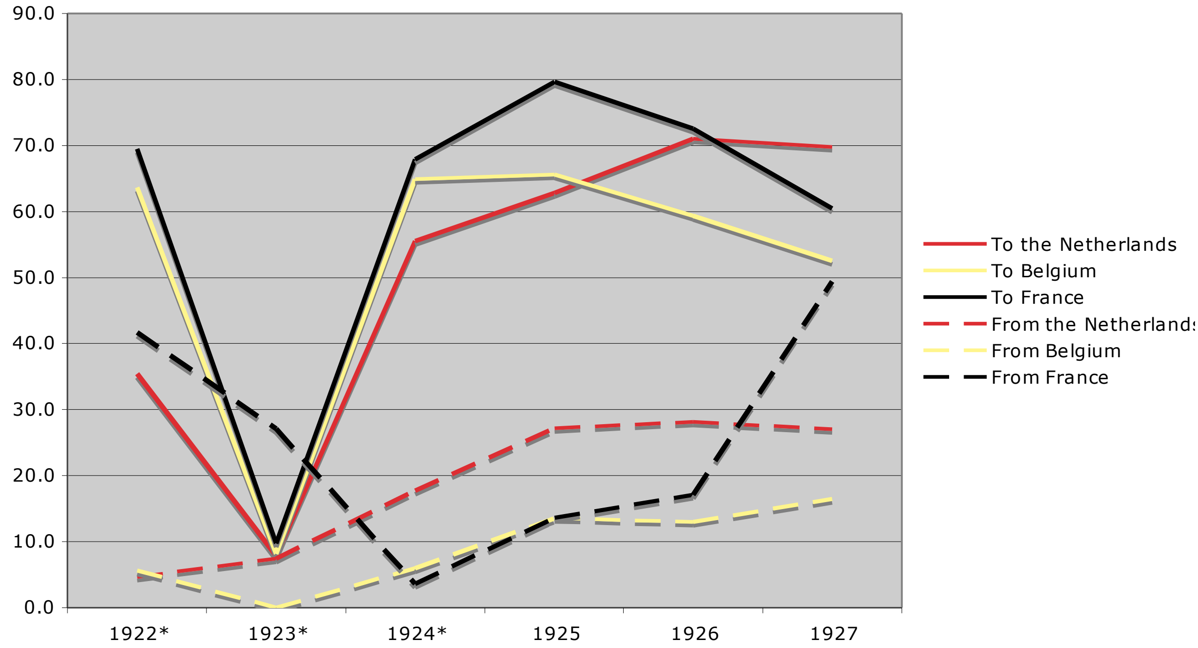
On the first of March 1924, the *Seehafenausnahmetarife* were re-introduced. Unlike the *Staffeltarife*, these tariffs were aimed at diverting very specific traffic at an extremely low freight cost along specific routes to the German seaports, thereby reducing Germany's dependence on foreign seaports and in passing aiding the economic development of these ports. Whereas before the war, its negative effect on inland shipping had been tempered by the *Wasserumschlagstarife*, these were not re-introduced.[90] Moreover, the reduction in cost was now 53 to 56%, compared to the pre-war reduction of 40%.[91] Because of the stipulations in the Treaty of Versailles Germany was obligated to unilaterally grant the same reductions to Belgium and France at their request, and Belgium received a number of special tariffs during the course of the year.[92] The Netherlands tried at that time to negotiate a number of special tariffs, but could do no better than a German promise that it would be treated at the same level as Belgium 'within a reasonable amount of time'. This would be the end of January 1925, when Germany could rightfully withdraw the special tariffs it had been forced to grant the Belgians, and which were duly retracted. Although the Netherlands was now in the same position as Belgium, the German seaports were still attracting traffic with the *Seehafenausnahmetarife* that otherwise might have gone to Rotterdam.

The precise consequences of these tariffs for the amount of traffic with the Netherlands are not clear, but they do not seem to have been serious. The throughput of the port of Rotterdam recovered more quickly and grew faster than that of Hamburg, Rotterdam's most important German rival.[93] According to the Rotterdam Chamber of Commerce and Industry, the port of Rotterdam lost some traffic in merchandise, which they themselves admit was never

[89] NL-HaNa, BuZa / Economische Zaken, 2.05.37 inv.nr.875, 12 December 1921, Report by the Dutch consul in Duisburg-Ruhrort.
[90] Verseput, *Kamer van Koophandel en Fabrieken voor Rotterdam*, 66; Walter, *Enige economische beschouwingen*, 105, Lülsdorfs, *Die Bedeutung Rotterdams*, 94.
[91] *Rapport Annuel de la Commission Centrale pour la Navigation du Rhin 1928*, 59-60.
[92] Van Lier, *Kamer van Koophandel en Fabrieken voor Rotterdam, 1803-1928*, 880.
[93] NL-HaNa, KvK Rotterdam / Secretariaat, 3.17.17.04, inv. nr.1617, Memorandum concerning the interests of the port of Rotterdam regarding annexation of German territory; own calculations.

their strong suit.[94] The annual report for 1928 of the Central Commission for Navigation on the Rhine mentions that the *Ausnahmetarife* caused an important expansion of the port of Bremen.[95] Although Bremen shows an altogether faster recovery than either Hamburg or Rotterdam, it is a relatively small port. To accurately assess the impact of the *Ausnahmetarife* it will be necessary to chart developments in transport for all three North Sea ports by destination and origin in Germany.

Chart 6: *The share of the Ruhr in Dutch, Belgian and French rail transport with Germany, 1922-1927. In percentages.*



Sources: Statistisches Reichsamt, *Die Güterbewegung auf deutschen Eisenbahnen [1924-1927]* (Berlin 1926-1930); own calculations.

In spite of the strong competition and government intervention, Rhine shipping was considerably more important than the railroads in freight transport between Germany and its western neighbours the Netherlands and Belgium. Like Rhine shipping, rail transport of these countries concentrated on Ruhr exports while German imports were geographically more evenly distributed (Chart 6).

Conclusion

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[94] *Kamer van Koophandel en Fabrieken voor Rotterdam 1803-1927*, 834; Verseput, *Kamer van Koophandel en Fabrieken voor Rotterdam*, 67.
Rapport Annuel de la Commission Centrale pour la Navigation du Rhin 1928, 56.

The economic structure and international economic ties of Germany find a strong expression in the transport sector. Statistics for both inland shipping as well as internal railroad transport show that Germany's economic heartland clearly was the Ruhr area. International traffic also centred on the Ruhr, and consisted mostly of shipping along the Rhine. In turn, the Dutch transport sector was focussed on international transport with Germany, specifically the Ruhr area and the (left bank of the) *Rheinprovinz*. Although railroad freight was sizeable, Rhine traffic was considerably more important. When Germany's economic recovery started, it was Rhine shipping which profited.

In shipping to and from the Ruhr, ships under the Dutch flag were in an overwhelming majority. A significant part of these ships however, were actually German. These ships had usually been financed by Dutch banks, and were mostly part of Dutch subsidiaries of German concerns. Nevertheless, this fact does not necessarily refute Adenauer's claim. In fact, it enhances it. Even though mostly financed by the Dutch, these foreign direct investments (that had already started before the war) only added to the interweaving of Dutch and German companies, and therefore their economy.

It is during this period, that Rotterdam surpassed its two main rivals Antwerp and Hamburg as Germany's gateway to the world market. In spite of Antwerp's better accessibility for sea-going vessels and the more extensive Belgian railroad network, both Dutch shipping and railroad traffic with Germany were greater. When German international traffic by way of the Rotterdam is compared with traffic through Antwerp or Hamburg, the Dutch transport sector was clearly Germany's most important partner in international freight.

All in all, the answer to whether Adenauer's claim that 'the backbone of the economic ties between Germany and the Netherlands is the Rhine' holds water can best be summed up as: most definitely, with the addendum that transport flows indicate that the economic centre of the Rhine consisted of the (extended) Ruhr area.