ECONOMIC TRENDS

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Growth Potential for Maritime Trade and Ports in Europe

Global economic development in recent decades has been characterised by a rapidly progressing intensification in world trade and the international division of labour. As a result of the expansive development of international merchandise trade, cargo shipping has been one of the fastest growing economic sectors. The progressive global integration processes, the future reduction in trade barriers and the expected increase in prosperity in numerous regions of the world will also call for a marked expansion in world trade and cargo shipping. This designates maritime logistics as an economic sector with favourable perspectives for development. What growth rates can be expected for EU maritime trade? And what impact will these have on Europe's ports?

The development of international merchandise trade progressed at an exceedingly dynamic rate during the postwar period. Between 1950 and 2000, trade volume increased at an average of 6% annually. Following a drop in merchandise trade in 2001, this positive trend has continued during the past few years. These developments in international trade have been determined by various factors. Economic growth has a strong influence on trade volume. A comparison with the development of gross domestic product (GDP) manifests a close association between international trade and GDP, whereby trade in goods has shown a much greater increase over time than production (cf. Fig. 1). This development has been driven by progressive globalisation and the intensification of the international division of labour.

The dynamic development of world trade is generally seen in relation to the progressive dismantling of national trade barriers which has taken place since the end of World War II. On a multilateral level, liberalisation efforts have concentrated for some time on tariff reductions.[1] Through the reduction of state-imposed market access barriers other trade-inhibiting factors have gained in relative importance. In many cases, transport costs now constitute a far more serious trade barrier than tariffs. Transport costs are affected by numerous factors. Predominant is the geographical distance between the trading partners. In addition to the geographical factors, which are generally invariables, certain determinants of transport costs can be influenced by government and corporate activities. Especially significant in this connection are the construction and maintenance of transportation routes (including seaports, river ports and airports), which are among the components of government infrastructure policy that are most important for trade.

Since, generally speaking, the trade-inhibiting effects of transport costs are comparable to those of government trade barriers, it is not surprising that reductions in transport costs are regarded as a primary determinant in the increase in international trade. An examination of the development of the share of freight costs in import values, however, does not suggest that transport costs continued to decline after 1990, while trade increased appreciably during this period (cf. Table 1). The price-driving effects of the increased demand for transport have evidently been compensated for by the price-lowering technical progress that has clearly been made in the transport sector.

Competitive Advantages of Maritime Cargo Shipping

There is a close relationship between the development of maritime transport and world trade. The expansion of international trade has resulted in an increase in demand for transport services, whereby a large share

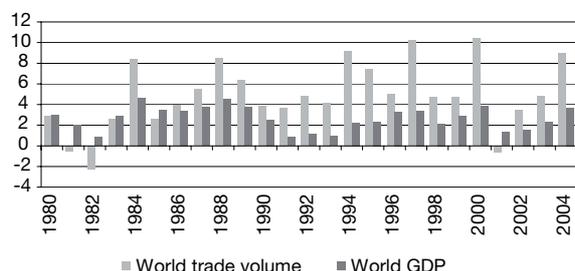* Economist, Behörde für Wirtschaft und Arbeit, Hamburg, Germany.

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[1] Cf. Richard S e n t i : WTO – System und Funktionsweise der Welthandelsordnung, Zurich 2000.

Figure 1
Annual Change in World Trade Volume and Gross Domestic Product in %

S o u r c e: World Trade Organisation (WTO): World Trade Report 2005, Geneva 2005.

Table 1
Estimated Share of Total Freight Costs in World Trade

Year	Total freight costs for imports (in US $ m)	Import values (c.i.f.) (in US $ m)	Freight cost share of import value (in %)
1980	123.2	1,856.8	6.6
1990	173.1	3,314.3	5.2
1994	219.3	4,063.3	5.4
1995	247.3	4,688.6	5.3
1996	259.9	4,954.0	5.2
1997	270.8	5,166.4	5.2
1998	285.8	5,028.6	5.7
1999	284.8	5,280.5	5.4
2000	342.6	6,147.1	5.6
2001	364.0	5,960.5	6.1
2002	337.9	6,097.3	5.5
2003	379.2	7,052.9	5.4

S o u r c e: United Nations Conference on Trade and Development (UNCTAD): Handbook of Statistics 2005, New York and Geneva 2005.

of this demand falls to sea shipping, which is the preferred means of transport in world trade. Conversely, technological changes in sea shipping have led to considerable increases in capacities in sea transport and have thus vigorously spurred the expansion of world trade. Especially significant here are the introduction of container shipping, the use of new handling and warehousing technologies, and the application of modern information and communication technologies. It is estimated that maritime trade accounts for approximately two thirds of total merchandise trade.[2] It is therefore not surprising that maritime world trade has developed as dynamically as international goods trading as a whole. Since the mid-1980s, the transport volume in metric tons has more than doubled (cf. Fig. 2). The annual growth rate of seaborne trade since then has been 3.7% on average. During the same period of time total cargo shipments, measured in ton-miles, rose by an average of 3.9% annually.

The various carriers' share of the transport volume depends on numerous factors, whereby competition between the various carriers can only exist if this is permitted by geographical factors. Sea shipping has clear advantages over air transport if large amounts of goods are to be transported at relatively low cost. Air transport, on the other hand, is characterised by its ability to deliver the merchandise quickly. Since approximately 70% of the earth's surface is covered with water, and since maritime shipping offers considerable cost advantages in many sectors, it is not surprising that shipment by sea generally enjoys an outstanding position in interregional trade. Due to various competitive advantages of maritime cargo ship-

ping no major shifts in the market shares of different carriers are to be expected in the future. This applies to bulk goods, in any case, but also to a major portion of other goods, in terms of transport volume or transport capacity.

In intercontinental trade, especially, opportunities for using land-based carriers are very limited. Competition exists – if at all – among carriers that serve the hinterland areas and are therefore complementary to ocean shipping. This means that coastal and inland carriers, rail and road traffic and pipelines generally also profit from an expansion in seaborne trade. Hence, low quality in the connections with the hinterland and the harbours would have a negative effect on the scope of seaborne trade. Recently, the European Commission pointed to this aspect, stating that it regards the threatened capacity overload of trans-European traffic networks as a serious danger to the competitive ability of European business and the optimal utilisation of the globalisation of trade.[3]

Seaborne EU Trade

Parallel to the expansion in world merchandise, foreign trade on the part of the member states of the European Union has also increased substantially since World War II. To a considerable extent, this trade is conducted by the six member states that are among the ten leading world trade nations (Germany, France, Netherlands, Italy, UK and Belgium). Combined, these

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[2] Cf. Shashi K u m a r, Jan H o f f m a n n: Globalisation: The Maritime Nexus, in: Costas T. G r a m m e n o s (ed.): The Handbook of Maritime Economics and Business, London 2002, pp. 35-62,

[3] Cf. European Commission (EC): White paper: European transport policy for 2010: time to decide, COM (2001) 370 final, Luxembourg 2001.

Figure 2
Development of World Seaborne Trade
(in m tons)
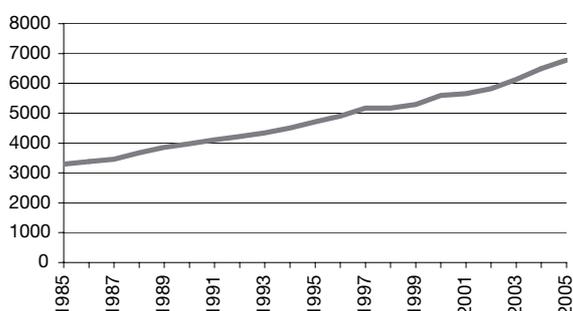
Table 2
External Foreign Trade of the EU by Mode of Transport, 2004

	Extra EU-Trade			
	Value in m euros	Share in %	Volume in m tons	Share in %
Sea	859.1	47.1%	1430.0	71.7%
Road	259.7	14.2%	100.8	5.1%
Rail	25.1	1.4%	89.3	4.5%
Inland waterway	6.5	0.4%	24.9	1.3%
Pipeline	53.4	2.9%	279.1	14.0%
Air	473.7	26.0%	9.8	0.5%
Other	145.4	8.0%	59.7	3.0%
Total	1,822.9	100%	1,993.6	100%

countries accounted for almost 30% of world trade in 2004. The cumulative share of all 25 EU member states was 40.4% in 2004.[4] Sea traffic plays a dominant role in the external foreign trade of the European Union (cf. Table 2). Its share of total extra-EU trade (in tons) amounted to 71.7% in 2004. Following at a great distance were pipelines with 14% and road transport with 5.1%, while 4.5% fell to rail transport. The share of air transport, at 0.5%, was very low. If the value of the external foreign trade of the EU (in euros) is analysed, however, the share of air transport, at 26%, was much higher, while that of sea transport sank to 47.1%. Road transport took third place with 14.2%, while pipelines had a 2.9% share of trade by value in 2004.

The total amount of goods transported by sea in extra-EU trade can be estimated for the year 2005 at just under 1.5 bn tons. The amount that was imported by the EU was considerably greater than the amount exported. More than three quarters of the total volume (77.6%) constituted imports and less than a quarter (22.4%) were exports. If the seagoing trade is analysed by value, the disparities are much smaller. In this case, imports into the EU account for a share of 54.6% and exports for 45.4%. This leads to the conclusion that the EU exports goods of far greater value than those it imports. The ratio between value and volume of EU exports in 2005 was almost three times as high as that of EU imports.

European Shipping Areas and Ports

Official EU statistics differentiate between four European sea areas: the Baltic Sea, North Sea, the At-

lantic and the Mediterranean Sea, whereby the term "shipping area" does not refer to the routes taken by the ships, but merely denotes a geographic delimitation. The four European sea areas comprise 471 ports in all, each of which handles a total of more than 1 m tons of cargo annually, as well as numerous smaller ports. The largest shares of total cargo handling in the four European shipping areas belonged in 2004 to the North Sea area (43%), followed by the Mediterranean (26%), the ports on the Atlantic (19%), and the Baltic Sea area (12%). The great importance of the North Sea area stems in part from the fact that the hinterland of the North Range of European seaports, extending from Le Havre to Hamburg, are very densely populated in comparison to the EU average. This means that the North Range offers a comparatively large market, with correspondingly intense trade relations. Map 1 shows the 10 largest ports in each of the various shipping areas.

The total amount of goods handled in the European shipping area differs considerably among the individual ports. Each of the four European sea areas contains a single dominant port location in which the volume of goods handled lies far above that of the others. These are Rotterdam, with 21.7% of the total goods handled in the North Sea area, Marseilles with 9.7% of the goods handled in the Mediterranean area, Le Havre with 10.9% of the goods handled in the Atlantic area and Tallinn with a share of 8.9% of those in the Baltic Sea area. Altogether in 2004, the ten largest ports in the North Sea area accounted for 28% of the total cargo handling volume of the 471 ports reviewed. The ten largest Mediterranean ports accounted for 13%, those in the Atlantic area 10%, and those in the Baltic

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[4] Cf. World Trade Organisation (WTO): International Trade Statistics, Geneva 2005.

Map 1
The Ten Largest Ports in each of the European Shipping Areas, 2004

Source: HWWI.

Sea area 6% of the total amount of cargo handled by the 471 ports reviewed.

As in the individual regions of the European trade area, certain ports in the EU hold a generally dominant position. The forty largest EU ports had an approximately 56% share of the total goods handled in the

471 ports that were reviewed. The North Sea ports of Rotterdam, Antwerp, and Hamburg held the top positions in 2004 and, along with the Mediterranean port of Marseilles, accounted for about one fifth of the total goods handled at the 471 largest EU ports. The goods handled by these four ports amounted to about one

Figure 3
Top 40 EU Ports[1], Total Goods Handling[2], Growth
2000 to 2004
(in 1000 tons)

Port	Growth
22 Valencia (32,297)	47.1
20 Barcelona (36,317)	40.8
29 Gioia Tauro (29,403)	35.9
38 Cartagena (23,234)	35.5
3 Hamburg (99,529)	29.3
25 Bremerhaven (31,757)	27.9
15 Taranto (39,368)	18.9
27 Bilbao (31,633)	18.8
10 Amsterdam (49,909)	18.7
2 Antwerp (135,435)	16.8
16 Milford Haven (38,452)	13.9
33 Ravenna (25,406)	13.0
5 Le Havre (71,878)	12.5
39 Sines (22,434)	12.4
8 London (53,289)	11.3
17 Southampton (38,431)	10.5
30 Venice (28,883)	9.9
6 Grimsby & Immingham (57,616)	9.7
19 Göteborg (36,404)	9.4
1 Rotterdam (330,865)	9.4
28 Tarragona (29,607)	9.0
34 Porto Foxi (25,212)	6.2
23 Liverpool (32,233)	6.0
26 Augusta (31,699)	5.9
11 Dunkerque (46,448)	4.8
12 Genoa (45,880)	4.8
7 Tees & Hartlepool (53,819)	4.6
24 Nantes Saint-Nazaire (32,008)	3.8
13 Wilhelmshaven (44,956)	3.6
4 Marseille (90,810)	-0.5
14 Trieste (41,516)	-5.7
21 Forth (34,892)	-15.2
37 Felixstowe (23,413)	-21.1
35 Zeebrugge (24,893)	-23.8
36 Sullom Voe (23,939)	-37.3

[1] Without Algeciras (ES), Tallin (EE), Gdansk (PL), Ventspils (LV) and Klaipeda (LT) as no figures for goods handling are available for this period. The number in front of the name of the port is its position among the 40 largest ports in the European sea areas and the number in parentheses is the total goods handling in 1000 tons in 2004.

[2] The figures for goods handling can contain double counts due to transhipment (the transferring of goods or containers from one ship to another within a port). The figures for goods handling published by Eurostat do not include the weight of the containers themselves.

Source: Eurostat, 2006.

third of that of the top 40 ports. In 2004, Rotterdam handled 10% of the total cargo handled by the largest European ports and was thus dominant within the European shipping areas.

Since individual EU countries are affected differently by the overall growth of EU trade strong growth disparities between European ports can be observed. In comparison with 2000, total cargo handled in the Mediterranean area had grown by more than 21.7% by the year 2004, and in the Baltic Sea area it had approximately doubled. Total cargo handling in the North Sea area grew much more slowly, at 19.3% during this period, than that in the Baltic Sea area. The differences in the increase of port cargo handling in the different regions of the European shipping area are due, in part, to differences in GDP growth between the EU countries during this period, which led to different degrees of expansion in exports and imports. The high growth rate in cargo handling in the Baltic Sea area was greatly influenced by the very pronounced increase in income in the Baltic countries during this period. Since 2000, the development of the top 40 ports has varied greatly (cf. Fig. 3). Whereas certain North Sea ports, especially British ports, suffered marked declines, trade in other ports increased immensely: at the Spanish ports of Barcelona (40.8%), Cartagena (35.5%) and Valencia (47.1%), the Italian port of Gioia Tauro (35.9%), and in Hamburg (29.3%). With the exception of Cartagena, these are ports that specialise in container trade. In Cartagena, on the other hand, the handling of liquid cargo increased considerably, by 36.9%, between 2000 and 2004.
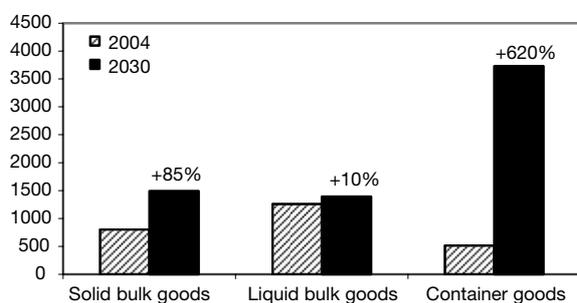
HWWI Forecast for Sea Trade

The development of sea trade up to the year 2030 will be determined primarily by the development of world trade. The HWWI forecast for world trade is based on an augmented gravity model, a standard model of empirical foreign trade research used to explain bilateral flows of trade. It makes it possible to quantify the influence of geographic, cultural, historic and economic factors on trade between two countries. In addition to the main factor income, there are others such as the geographical distance between the trade partners, any shared border, access by sea to the trade partners, population size, economic-political alliances like monetary or customs unions, historical components such as colonial relationships, and numerous other factors. According to an optimistic forecast drawn up by the World Bank, substantial in-

Figure 4
Handling Growth in Europe's Main Ports,
in m tons*

* Ports handling more than 1 m tons.

Sources: Eurostat, 2006; HWWI forecast.

Table 3
Top Port Handling in Year 2030 (2004)

Ranking 2030 (2004)		Port	Average annual growth rates		
			Total handling up to 2030	Container handling up to 2030	Handling* 2030 in 1,000 t
1	(1)	Rotterdam	3.6%	8.1%	825,871
2	(3)	Hamburg	6.6%	8.3%	527,724
3	(2)	Antwerp	5.0%	7.9%	485,853
4	(9)	Algeciras	5.7%	7.9%	217,903
5	(13)	Bremen Ports	6.0%	7.6%	205,396
6	(29)	Gioia Tauro	7.2%	7.2%	179,703
7	(5)	Le Havre	3.3%	7.4%	169,188
8	(35)	Felixstowe	7.7%	8.4%	159,496
9	(23)	Valencia	6.2%	7.9%	155,303
10	(4)	Marseilles	1.5%	7.5%	133,400
11	(21)	Barcelona	5.1%	7.9%	132,925
12	(12)	Genoa	3.7%	7.7%	118,438
13	(8)	London	2.6%	7.3%	104,671
14	(18)	Southampton	3.8%	8.8%	102,214
15	(16)	Taranto	3.1%	8.4%	86,032
16	(10)	Amsterdam	1.6%	7.9%	75,228
17	(11)	Dunkerque	1.6%	8.8%	70,436
18	(7)	Tees & Hartlepool	1.0%	6.9%	69,851
19	(6)	Grimsby & Immingham	0.6%	6.8%	67,645
20	(25)	Bilbao	2.3%	7.6%	58,104

* Handling without container weight.

Sources: Eurostat, 2006; HWWI forecast.

creases in production and income are to be expected in all regions of the world by the year 2030.[5] Based on these expected growth rates, the extrapolated trade growth of 6.6% in the EU would mean a 3.3% increase in trade volume. To estimate the volume of seaborne trade on the basis of the predicted trade volume, it is assumed that the relative share of cargo conveyed by the various modes of transport will remain constant in the long term. Based on this assumption, the volume of shipments by sea will increase by 3.3% annually. Growth in individual groups of goods, especially dry bulk goods, liquid goods, and containerised goods, will show different patterns. Striking is the strong expansion in European container traffic and the stagnation shown in liquid bulk goods (cf. Fig. 4)

The development of oil and coal transport is essentially determined by the demand for energy. According to an HWWI forecast for energy the European demand for oil products will stagnate while gas is expected to increase slightly by 2030. For European handling of dry bulk goods an annual growth rate of 2.4% is estimated. Dominant here is iron ore. For the European forecast, based on the trend in recent years, a moderate annual growth rate of 1.1% is estimated.

Container Trade Booms

Judging from the trade trends of past decades, there is likely to be a healthy 8% rise in goods transported in containers. Dominant here are industrially produced goods and intermediate products. However, the forecasted growth rate remains behind the trend in the handling figures of recent years, which lay at an

[5] Cf. Food and Agriculture Organization of the United Nations (FAO): World Agriculture: towards 2015/2030. Summary Report, Rome 2002.

average of 10% annually. This is due to the fact that growth in the container sector in the past was not only fed by the briskly expanding world trade. In addition to this main component, a major role was also played by the hub strategy, in which large ports serve as ports of call and distribution centres, since the resulting feeder services between large (hubs) and smaller (spokes) ports generated additional handling volume. Furthermore, the increase in the degree of container use in the general goods sector, i.e. the share of general goods shipped in containers, contributed to growth in handling volumes in the container sector. Here, however, a gradual satiation is being observed, so that the contribution to growth is likely to subside. The extent of container use in general cargo transport at the port of Hamburg, for example, amounted to just under 97% in 2005.

Differing Growth Potentials for Europe's Ports

The objective of the following projection is to develop a scenario for the development of handling in individual European seaports. Taken into account are the regions from which the unloaded goods originate, as well as the target destinations to which the goods are to be shipped and the growth rates predicted for

trade with these regions. The basic idea of this scenario is that, especially in the container sector, which is strongly characterised by liner services, relationships between individual ports and regions are quite stable. Table 3 shows the 20 ports with the highest handling volumes in the year 2030, according to the HWWI forecast, with their position in 2004 in parentheses.

It is striking that in this scenario, in some cases, growth in container handling deviates considerably from the average rate of 7.9%. With a rate of 8.8%, ports like Southampton and Dunkerque lie almost one percentage point above the average. Hamburg, Felixstowe and Taranto, at approximately one half of a percentage point above the average, will also expand sharply. Also, ports like Gioia Tauro, Valencia, Felix-

stowe and the Bremen ports profit in regard to total handling.

In particular, decisions involving economic and structural policy, such as the construction of the JadeWeserPort, which are not taken into account, may have an influence on the development of neighbouring ports. Similarly, the development of individual ports can be influenced by decisions regarding strategic and corporate policy on the part of major shipping companies or major port operators who operate several ports. Furthermore, it is also assumed that the port operators will implement the technological and investment measures necessary to avoid long-term capacity bottlenecks and to be able to continue to participate in future increases in handling volumes.