Chapter 3
Container Port Competition in Europe

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Abstract Port competition has become a complex and multi-faceted concept due to changes in the market environment of ports and the resulting intensification of rivalry between operators in the same port, between neighbouring ports, between multi-port gateway regions and between entire port ranges. This chapter discusses port competition in Europe with a main focus on container ports and terminals. It provides an in-depth theoretical and empirical description of port competition in the second most important container port system in the world after Asia. The chapter aims to provide the reader with a clear insight on the current status, drivers and issues in European container port competition.

3.1 Introduction

The globalization of production and consumption, the emergence of a global transport network together with changes in inter-port relations, port-hinterland relationships and logistics have created greater competition among ports. Shippers, logistics service providers and shipping lines do not necessarily choose a port, but they select a chain in which a port is merely a node. In order to respond to the requirements of trade and international supply chains, ports need to accommodate and handle more and larger ships and hinterland transport modes faster. Therefore, construction, expansion, planning and management of ports are increasingly complex and costly. These trends and the expansion of the role of the private sector in port activities have forced ports to become more market-oriented, more innovative and more responsive to the needs of all actors involved in the trades which pass through the port. Seaport managing bodies have to play an active role in the marketing sense (in encouraging

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C.-Y. Lee, Q. Meng (eds.), *Handbook of Ocean Container Transport Logistics,*
International Series in Operations Research & Management Science 220,
DOI 10.1007/978-3-319-11891-8_3

ships and cargo to use the port), in contributing to efficient supply chains and in enabling trade and regional development.

Against this background, port competition has become a complex and multi-faceted concept. The nature and characteristics of competition depend among others upon the type of the competing ports (e.g. feeder port, hub port) and the cargo group (e.g. containers, liquid bulk, dry bulk, non-containerized general cargo). For example, the excellent maritime accessibility of the port of Rotterdam for ULCCs (Ultra Large Crude Carriers) has rendered this port a very strong position in North-Western Europe for the handling of crude oil. In container transport a distinction has to be made between the large load centres or main/hub ports and the smaller regional or feeder ports. The load centres are primarily competing for deep sea intercontinental liner services, in which large ships of up to 18,000 TEU are being deployed. Regional ports are striving for connections to as many nearby load centres as possible and for having a good regional hinterland connectivity.

Heaver (1995) points out that terminals are the major focus of competitive strategy, not ports. Along these lines, we can define port competition as competition for trades, with terminals as the competing units, logistics, transport and/or industrial enterprises as the chain managers of the respective trades and port authorities and port policy makers as co-developers of the broadly defined port complex. Competition between ports has increasingly been replaced by competition among market players who often are present in more than one port (cf. global terminal operators such as PSA, DP World, Hutchison Port Holdings and APM Terminals, see Notteboom and Rodrigue (2012) for a detailed analysis) or multimodal logistics and transport service providers who, in addition to operating various transport modes, have also combined stevedoring, storage, forwarding and other activities in one ‘bundle’ for shippers. Port competition can also involve rivalry among port authorities in view of offering the best facilities (both material and non-material) to all actors involved in the supply chains of the various trades (e.g. stevedoring companies, shipping companies, shippers and multimodal operators).

This chapter discusses port competition in Europe with a main focus on container ports and terminals. This chapter provides an in depth theoretical and empirical description of port competition, and does not review or present economic models of port competition (see De Borger et al 2008 and Luo et al 2012, for two papers that take such an approach).

After Asia, Europe features the second most important container port system in the world in throughput terms. Close to 50 European container ports have regular intercontinental services to the rest of the world, while another 80–90 (smaller) container ports play a more regional intra-European role. The aim of this chapter is to provide the reader with a clear insight on the current status, drivers and issues in European container port competition.

This chapter is structured as follows. In a second section we further develop the concept of port competition by looking at the different geographical and functional levels port competition can take place. Then, we analyze recent dynamics for all cargoes handled in the European port system. The fourth section focuses on container ports. A last section brings the discussion on container port competition to a more strategic level and presents conclusions.

3.2 Different Geographical and Functional Levels of Port Competition in Europe

The complex nature of seaport competition manifests itself in the number of levels that can be distinguished in relation to competition (Verhoeff 1981).

A first level concerns intra-port competition which has been extensively discussed in De Langen and Pallis (2006). Private port companies in a certain port, often compete, for handling cargoes (terminals) and for providing other port services (e.g. towage, bunkering). For the port authority or the port itself as a whole, such competition can serve as a management method to improve the efficiency of port activities. Competition between operators or providers of facilities within the same port can generally increase port efficiency and improve services. However, exceptionally the need to realize economies of scale (and reach the so-called Minimum Efficient Scale or MES, see Kaselimi et al. 2011), to offer modern technologies and the existence of enough competition from operators in other ports may justify an operational monopoly of port activities in one port (World Bank 1992). The 'playing field' for intra-port competition is very often influenced by basic infrastructural investment decisions by port or regional authorities. For example, in many larger ports not all container terminals have the same draft conditions thereby reducing the choice for very large container vessels. So even if there are a handful of terminals in a large port area, the largest container vessels might be able to call at one terminal only.

The second level is that of the multi-port gateway region, a term coined by Notteboom (2009; 2010) and later also applied by e.g. Feng and Notteboom (2013) and Liu et al (2013). The locational relationship to nearby identical traffic hinterlands is one of the criteria that can be used to group adjacent seaports. Also the port calling patterns in the liner service networks of shipping and hinterland connectivity profile can help to group ports to a multi-port gateway port (Notteboom 2009). When the ports concerned have a separate management, the neighboring gateways are vying for the same hinterland cargo flows. Later in the chapter, we will deploy the concept of 'multi-port gateway regions' as one way of looking at container port competition in Europe. Many stevedoring companies are expanding their activities over more than one port of such a port region. The increasing 'footloose' character of shipping companies, pushes port authorities and port companies into fierce competition. On port authority level, the battle is mainly focused on offering the best basic infrastructural (docks, quays) and 'infostructural' (IT) facilities, the best logistic/distribution facilities and the lowest port user costs. On the terminal level, the competition mainly focuses on price, handling time and productivity. When ports in the same gateway region do not fall under the same national government, as is for example the case for the Rhine-Scheldt delta ports in the Low Countries, government policies can have an impact on the conditions and level of competition among sub-groups (e.g. Dutch ports against Flemish ports).

Regional authorities often aim to secure complementary product-market developments in neighbouring (rival) ports of the same port region (see Notteboom et al. 2009, for an edited book on issues regarding 'ports in proximity'). As such regional

authorities try to provide a framework in which each seaport can operate i.e. manage its port-specific advantages, while at the same time encouraging cooperation.

The third level of competition is the port range which can be defined as a group of ports situated at the same seashore and sharing more or less the same hinterland. Within port ranges one can generally observe fierce intra-range competition. Within the Hamburg-Le Havre range, the most important port range in Europe, the initiatives in the field of port cooperation taken so far, are primarily based on exchange of information (aimed at improving mutual understanding) instead of real structural cooperation. The vigorous intra-range competition in the Hamburg-Le Havre range is reinforced by the fact that the ports are spread over different countries (Belgium, Germany, the Netherlands and France), each following their own port policy. Several mainports situated in different countries are competing for the status of nodal point of nodal points within a European transport network. The Netherlands for example is sparing no effort in trying to consolidate the position of Rotterdam as a European gateway i.e. mainport. The same is true for Belgian ports like Antwerp and Zeebrugge. On the other hand, the ports of countries such as Germany, France and Italy, whose industries generate considerable import-export trade, try to channel goods transport as much as possible to their own port infrastructure. For example, the ports of Hamburg and Bremen are striving to keep the competitive edge over Rotterdam and Antwerp, particularly as regards the goods produced by the industries situated in the Ruhr area in the western part of Germany.

The fourth and last level of port competition involves the rivalry between port ranges. As will be demonstrated later, the gradual completion of one European transport network and the increasing hub-feeder port relations has intensified inter-range competition in Europe, e.g. between the Hamburg-Le Havre range and the Mediterranean ports. Intra-range competition requires a common approach to port development, as different policies distort the 'playing field' and thus lead to inefficient freight flow patterns. However, such a common approach is often complicated even when supra-national authorities, like the European Commission, are involved. Cooperation between ports in different ranges exists, for example, the port authorities of Zeebrugge (Belgium) and Götenborg (Sweden) and a terminal operator together formed 'Gothenbrugge Ltd.', a company focused on the coordination of investments in roro-facilities and the realization of fast transport connections between both ports.

In the next sections we will analyse port competition in Europe at all levels, except the intra-port competition level.

3.3 Total Throughput in the European Port System

With a total throughput of an estimated 3.79 billion t in 2012, the European port system ranks among the busiest port systems in the world. Growth was particularly strong in the pre-crisis period between 2000 and 2008, partly driven by fast growing container throughput, i.e. an average annual growth rate of 10.5 % in the period 2005–2008 and 7.7 % in the period 2000–2005. The economic crisis which started

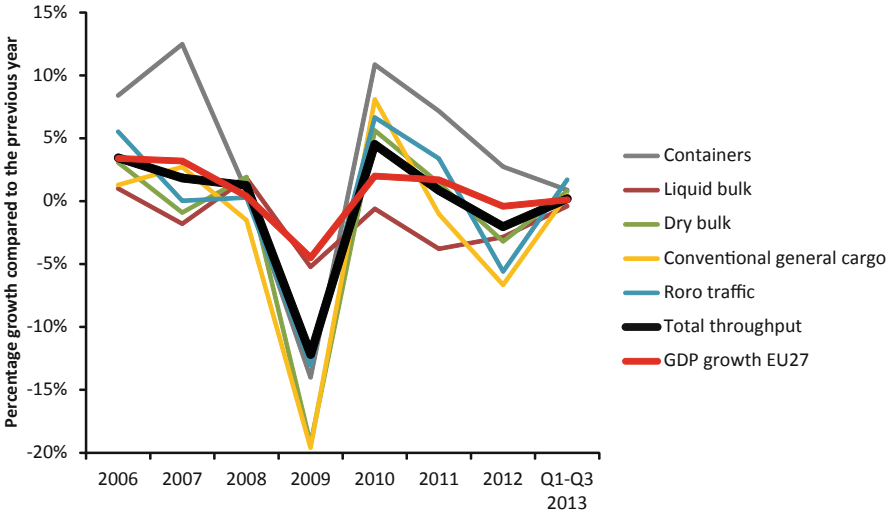

Fig. 3.1 Year-on-year growth in total EU port traffic (basis = ton) and EU27 GDP (Note: growth figures for Q1-Q3 2013 are estimates based on a sample of about 60 European ports included in the Rapid Exchange System database)

to have its full effect in late 2008 made an end to the volume growth in the European seaport system. Total cargo volumes handled by European ports decreased 12.2 % in 2009, from 4.18 billion t in 2008 to 3.67 billion t in 2009. The throughput figures bounced back in 2010 to 3.84 billion t (+ 4.5 % compared to 2009), but more recent years did not bring further throughput recovery to pre-crisis levels (Fig. 3.1). In 2011 growth was merely 0.8 % and in 2012 the European port system recorded a mild drop of 2 % in cargo handlings. The first three quarters of 2013 brought a very modest growth of only 0.2 % compared to the figures of the first nine months of 2012. Important to note is that the European port system is still not back at pre-crisis cargo volumes. Total cargo throughput in European ports in 2012 was still 10 % below the 2008 volumes. 2013 points to a very small change compared to 2012. Next to dry bulk and conventional general cargo, liquid bulk flows seem to face a hard time to turn the tide. Only container traffic in European ports has managed to rise above the 2008 level (by a modest 6 %).

Figure 3.1 also provides more detail on the traffic evolution for five cargo groups: liquid bulk (mainly oil and oil products), dry bulk (major bulks such as iron ore, coal and grain, but also minor bulks such as minerals and fertilizers), containers, roll-on/roll-off cargo and conventional general cargo (steel, forest products, heavy lift, etc.). The latter two cargo groups were initially affected the most by the crisis with a volume drop of nearly 20 % in 2009. The recovery in 2010 was too weak to undo the 2009 effect. The year 2012 brought volume losses, after a stagnation in 2011. Container traffic was also heavily affected in 2009, but since 2010 the European container port system shows some growth again, be it at a much lower rate than

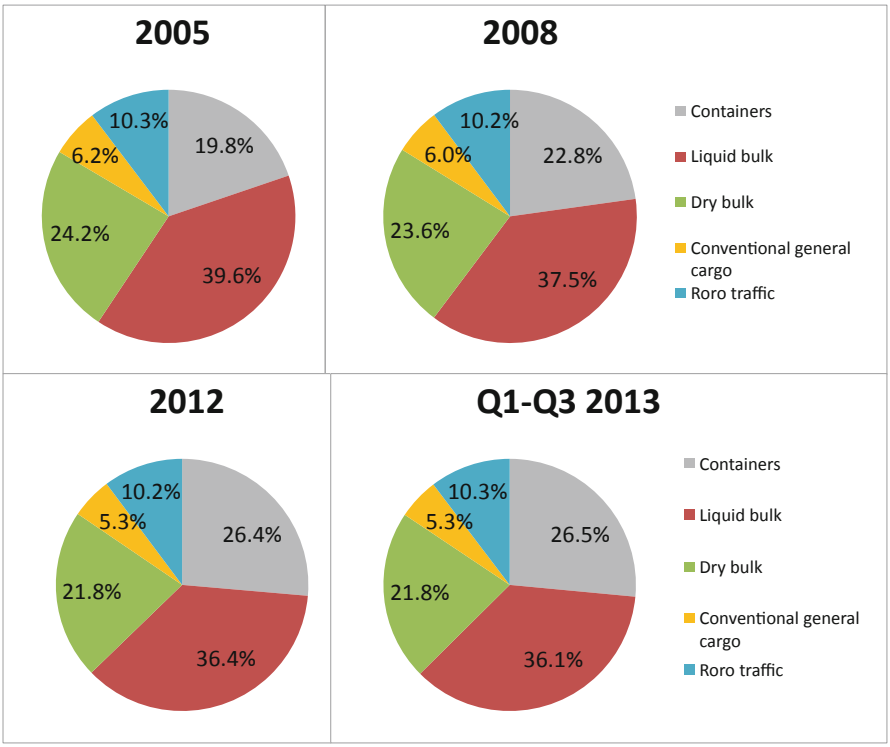

Fig. 3.2 Distribution of cargo flows in the EU port system

before. Liquid bulk volumes initially recorded a rather modest decline in 2009, but growth figures have remained negative since. The first three quarters suggest that the year 2013 will be a year of overall stabilization with almost zero growth in all cargo groups. The growth pattern per individual port can look very different from the overall pattern. For example, in the first nine months of 2013 liquid bulk volumes in the European port system decreased by an estimated 0.4 % (based in the RES sample of ports) with quite diverging growth figures for some of the main liquid bulk ports. Rotterdam recorded a small decline of 2.4 %, Antwerp showed a massive increase of 32 % (mainly due to recent large scale investments in tank storage facilities) and Le Havre remained fairly stable at + 0.8 %. In the same period, Nantes-St-Nazaire saw a 13.3 % drop in volumes and Marseille of − 11.2 %, while Sines grew by 20 % and Bilbao by 14.7 %.

The differences between the growth paths of the respective cargo groups changed the cargo type distribution in the European port system (Fig. 3.2). Liquid bulk still accounts for the largest share, but its relative importance has dropped from about 40 % in 2005 to 36.4 % in 2012. The share of container traffic continues to grow.

A comparison of the year-on-year growth figures in the European port system with the GDP growth figures for the EU27 reveals that ports overreact to swings in

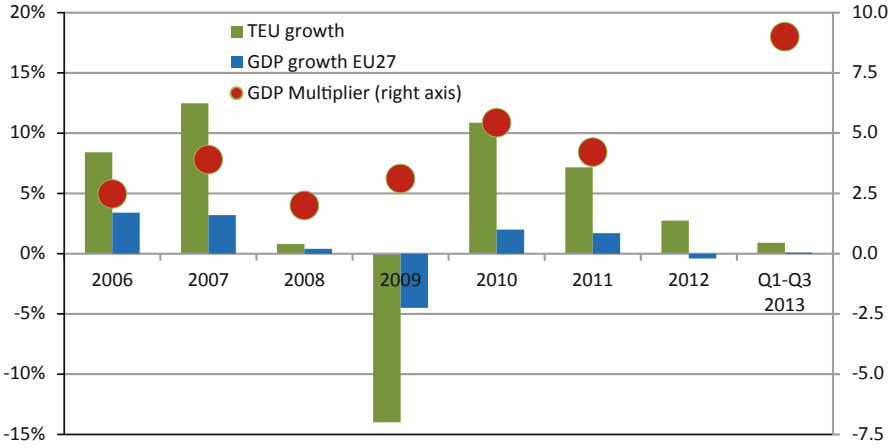

Fig. 3.3 The GDP multiplier in the EU container port system

economic growth. When the economy booms, seaports typically show high to very high growth figures. However, an economic crisis has a very pronounced negative effect on cargo volumes in seaports. The year 2013 seems to be a year of stabilization with almost zero growth in both GDP figures and cargo throughput. Figure 3.3 shows the evolution in the European GDP multiplier, i.e. here the ratio between world TEU growth and world GDP growth. The results point to a complex relationship between container port traffic and economic growth in Europe. This phenomenon is further illustrated in Fig. 3.4 which shows the container growth in a number of container ports around Europe in the period 2008–2012. The highest growers can be found all over Europe, including countries such as Greece, Portugal, Spain and Italy which have been severely affected by the government debt crisis. The weakest performers in terms of growth are also found all over Europe, including in countries with the best economic status in the Eurozone (such as Germany). In other words, seaports in countries with the weakest economies of Europe do not necessarily underperform compared to seaports in stronger countries. The main reason underlying this observation is that quite a few ports rely heavily on container flows which are not related to the immediate hinterland, but on flows that are distantly generated.

3.4 Dynamics in the European Container Port System

This section discusses recent developments in the European container port system. We are particularly interested in the impact of the crisis on the port hierarchy in Europe. Are new container ports and port regions emerging as challengers of established ports and regions? Are some port regions in Europe gradually losing their significance? How is the balance between north and south evolving?

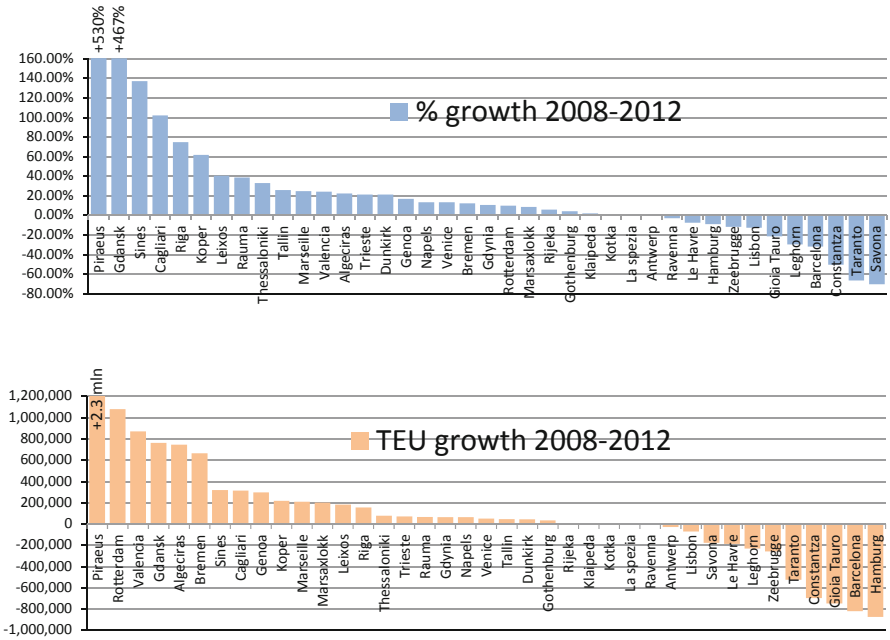

Fig. 3.4 Strong growth differences between individual ports—TEU traffic

3.4.1 Total Port System

With a total maritime container throughput of an estimated 95.2 million TEU in 2012, the European container port system ranks as the second busiest container port system in the world. Growth has been particularly strong in the period 2005–2007 with an average annual growth rate of 10.5 %, compared to 6.8 % in the period 1985–1995, 8.9 % in 1995–2000 and 7.7 % in 2000–2005. The economic crisis made an end to the steep growth curve. Total container throughput increased from 90.7 million TEU in 2008 to 95.2 million TEU in 2012 or an average annual growth of 'only' 1.26 %. The year 2009 is at the root of this slow pace given a y-o-y drop in container volumes of about 14 % in 2009. Between 2009 and 2012 traffic volumes have recovered at a rate of 6.87 % per year. An overall growth of 0.9 % in TEU was realized in the first nine months of 2013. For 2014 most sources predict a revival of container volumes in Europe. For example, the 'North Europe Global Port Tracker' of Hacket Associates and the Institute of Shipping Economics and Logistics (ISL) in Bremen expects a growth for North-Europe in incoming container traffic of 16 %. For the entire European port system import growth would reach 9 %. At the export side, the forecasted growth in North Europe amounts to 11 % (mainly driven by Asia and North America).

Table 3.1 provides an overview of the fifteen largest container ports in the European Union. Saint-Petersburg, which handled 2.52 million TEU in 2012 and has

Table 3.1 The top 15 European container ports (1985–2013, in 1000 TEU). (Source: Updated from Notteboom (2010) based on statistics individual port authorities)

in 1000 TEU

R	1985	1995	2005	2008	2009	2012	2013	%	Note 2013	*R*
1	Rotterdam 2655	Rotterdam 4787	Rotterdam 9287	Rotterdam 10784	Rotterdam 9743	11866	11621	-2.1%	final	*1*
2	Antwerp 1243	Hamburg 2890	Hamburg 8088	Hamburg 9737	Antwerp 7310	Hamburg 8864	9254	4.4%	final	*2*
3	Hamburg 1159	Antwerp 2329	Antwerp 6488	Antwerp 8664	Hamburg 7008	Antwerp 8635	8578	-0.7%	final	*3*
4	Bremen 986	Felixstowe 1924	Bremen 3736	Bremen 5448	Bremen 4565	Bremen 6115	5859	-4.2%	estimate	*4*
5	Felixstowe 726	Bremen 1518	Gioia Tauro 3161	Valencia 3597	Valencia 3654	Valencia 4470	4328	-3.2%	final	*5*
6	Le Havre 566	Algeciras 1155	Algeciras 2937	Gioia Tauro 3468	Algeciras 3043	Algeciras 4071	4338	6.6%	final	*6*
7	Marseille 488	Le Havre 970	Felixstowe 2700	Algeciras 3324	Felixstowe (*) 3021	*3700*	-			*7*
8	Leghorn 475	La spezia 965	Le Havre 2287	Felixstowe (*) 3200	Gioia Tauro 2857	Piraeus *2734*	3163	15.7%	final	*8*
9	Tilbury 387	Barcelona 689	Valencia 2100	Barcelona 2569	Marsaxlokk 2330	Gioia Tauro *2721*	-			*9*
10	Barcelona 353	Southampton 683	Barcelona 2096	Le Havre 2502	Zeebrugge 2328	Marsaxlokk 2540	-			*10*
11	Algeciras 351	Valencia 672	Genoa 1625	Marsaxlokk 2337	Le Havre 2234	Le Havre 2304	2463	6.9%	growth 9m	*11*
12	Genoa 324	Genoa 615	Piraeus 1450	Zeebrugge 2210	Barcelona 1801	Genoa 2065	1999	-3.2%	growth 9m	*12*
13	Valencia 305	Piraeus 600	Marsaxlokk 1408	Genoa 1767	Southampton (*) 1600	Zeebrugge 1953	2000	2.4%	estimate	*13*
14	Zeebrugge 218	Zeebrugge 528	Southampton 1395	Southampton (*) 1710	Genoa 1534	Barcelona 1750	1719	-1.8%	final	*14*
15	Southhampton 214	Marsaxlokk 515	Zeebrugge 1309	Constanza 1380	La spezia 1046	Southamption (*) *1600*	-			*15*
	TOP 15 10450	TOP 15 20841	TOP 15 50067	TOP 15 62697	TOP 15 54072	TOP 15 65388				
	TOTAL Europe 17172	TOTAL Europe 33280	TOTAL Europe 73729	TOTAL Europe 90710	TOTAL Europe 78011	TOTAL Europe (est.) 95220				
	Share R'dam 15.5%	*Share R'dam 14.4%*	*Share R'dam 12.6%*	*Share R'dam 11.9%*	*Share R'dam 12.5%*	*Share R'dam 12.5%*				
	Share top 3 29.4%	*Share top 3 30.1%*	*Share top 3 32.4%*	*Share top 3 32.2%*	*Share top 3 30.8%*	*Share top 3 30.8%*				
	Share top 10 52.6%	*Share top 10 53.8%*	*Share top 10 58.2%*	*Share top 10 58.8%*	*Share top 10 58.8%*	*Share top 10 58.5%*				
	Share top 15 60.9%	*Share top 15 62.6%*	*Share top 15 67.9%*	*Share top 15 69.1%*	*Share top 15 69.3%*	*Share top 15 68.7%*				

(*) Estimate

witnessed strong growth in the past few years is not included in the ranking (as Russia is not an EU member). A number of the listed ports act as almost pure transhipment hubs with a transhipment incidence of 75 % or more (i.e. Gioia Tauro, Marsaxlokk, Algeciras) while other load centres can be considered as almost pure gateways (e.g. Genoa and Barcelona to name but a few) or a combination of a dominant gateway function with sea-sea transhipment activities (e.g. Hamburg, Rotterdam, Le Havre, Antwerp).

About 68 % of the total container throughput in the European port system passes through the top fifteen ports, compared to 61 % in 1985. Since 2008 no major shifts have taken place in the traffic shares of the top 3, top 10 and top 15 ports, although the top 3 ports have lost some ground. Nearly one third of all containers are handled by the top three ports. Worth mentioning is that the dominance of market leader Rotterdam weakened in the late 1990s, but in the past decade the port's position has remained quite stable. Overall, the figures suggest a continued high concentration of cargo in only a dozen large container ports. While the crisis has not significantly altered the rankings, a number of ports lost some positions while others gained. For example, the Belgian port of Zeebrugge initially overcame the crisis very well by climbing to the ninth position in 2010 but afterwards lost traffic and now is in position 13. The Greek port of Piraeus showed the most volatile traffic evolution. Piraeus' volume peaked at 1.6 million TEU in 2003, but strikes and unrest led to a throughput of only 433,000 TEU in 2008. In 2010, the container port started a remarkable recovery path partly pushed by the arrival of Cosco Pacific as operator of the Pier 2 facility. Piraeus reappeared in the top 15 ranking in 2011 and held position 8 in 2012 with a total volume of 2.7 million TEU. In 2013 COSCO Pacific has announced to further expand. Under the terms of the agreement, COSCO will spend 230 million € to increase Piraeus's cargo handling capacity by two thirds over the next seven years to an annual capacity of 6.2 million TEU.

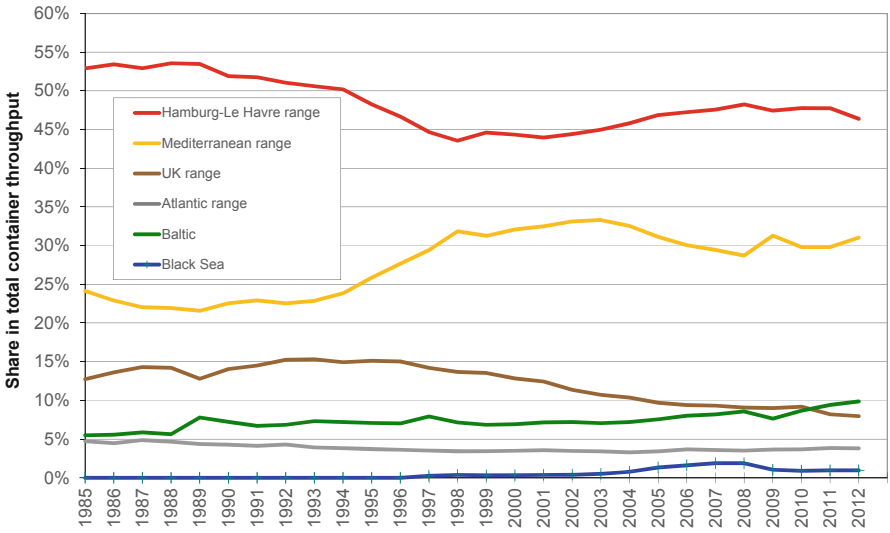

Fig. 3.5 Traffic shares of port ranges in the European container port system (source: updated from Notteboom 2010)

3.4.2 Port Ranges

At port range level, the container ports in the Hamburg-Le Havre range (which includes all ports along the coastline between Le Havre in France and Hamburg in Germany) handle about half of the total European container throughput (Fig. 3.5). The share of the Mediterranean ports grew significantly between the late 1980s and the late 1990s at the expense of the ports in the Hamburg-Le Havre range. The significant improvement of the share of the Med was mainly the result of the insertion of transhipment hubs in the region since the mid-1990s (Gioia Tauro, Marsaxlokk, Cagliari, Taranto to new but a few). At the start of the new millennium, the position of the northern range gradually improved while the Med ports and the UK port system lost ground. The crisis seems to have stopped this trend as from 2009 the traffic balance between the Med and the Hamburg-Le Havre range remained quite stable. However, the position of the UK ports (Southeast and South coast only) continued to weaken. The Baltic port region has clearly strengthened its traffic position in the past few years. The strong growth path of European ports in the Black Sea area (Romania and Bulgaria) suddenly stopped in crisis year 2009.

3.4.3 Multi-Port Gateway Regions

When we group seaports within the same gateway region together to form so-called multi-port gateway regions some interesting intra- and inter-regional dynamics can be

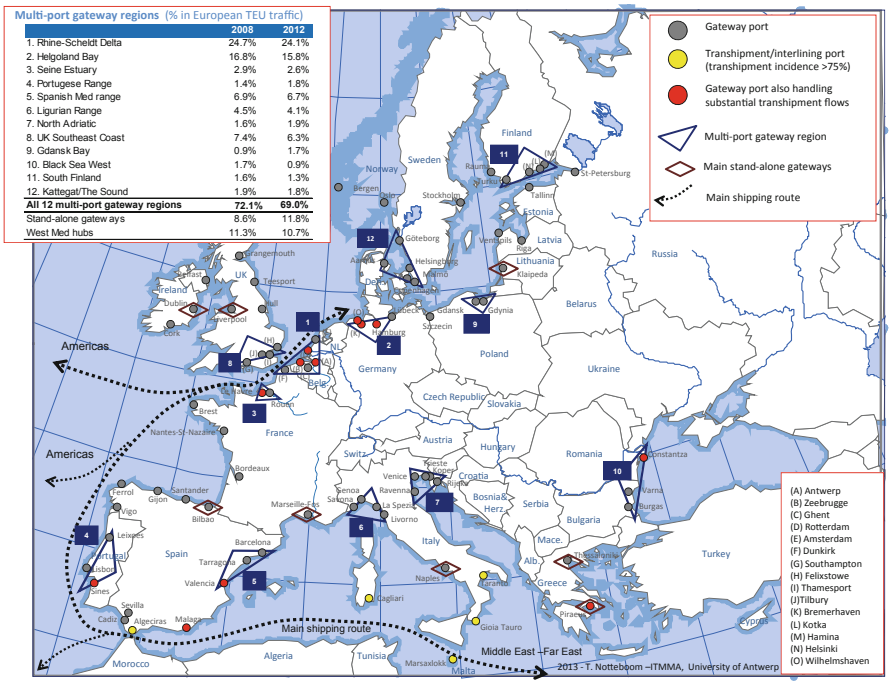

Fig. 3.6 Multi-port gateway regions in the European container port system. (Source: updated from Notteboom 2010)

unveiled. Figure 3.6 provides an overview of the main multi-port gateway regions in Europe as well as transhipment hubs and stand-alone gateways. Stand-alone gateways are somewhat isolated in the broader port system, as they have less strong functional interactions with adjacent ports than ports of the same multi-port gateway region. In the next sections we will draw some conclusions based on the changing positions of the port regions between 2008 and 2012 and some preliminary figures for 2013.

3.4.3.1 The Rhine-Scheldt Delta: The Largest European Container Port Region

The Rhine-Scheldt Delta and the Helgoland Bay ports, both part of the Le Havre-Hamburg range, together represent some 40 % of the total European container throughput in 2012. The market share of the Rhine-Scheldt Delta shows moderate fluctuations since 2008 with 24.7 % in 2008, 25.5 % in 2009, 26 % in 2010, 25 % in 2011 and 24.1 % in 2012. In 2013 the Rhine-Scheldt Delta saw a TEU decline of 0.9 % (Rotterdam: − 2.1 % and Antwerp: − 0.7 %). The year 2014 promises to be a key year to the ports given new capacity coming on stream (e.g. Maasvlakte 2) and the full impact of the schedules announced by the P3 Network (MSC, Maersk

Line and CMA CGM), the G6 Alliance and other shipping lines and groups. The Rhine-Scheldt Delta port region has one of the largest terminal capacity reserves in Europe. The massive Deurganck dock in the port of Antwerp, which opened in 2005, provides ample room for traffic growth. The PSA terminal and the Antwerp Gateway Terminal at the dock together handled less than 2 million TEU in 2012 while the design capacity of the dock amounts to some 9 million TEU. Recently a decision was taken to move MSC's volumes (some 4.5 million TEU per year) from the Delwaide dock on the right bank to the Deurganckdock and to concentrate all future P3 Network traffic on the left bank. A deepening program of the river Scheldt was completed a few years ago in view of guaranteeing access to the largest container vessels such as the triple 'E' class within an acceptable tidal window. The current Maasvlakte 2 developments in Rotterdam include the construction of two large scale container facilities, each with a capacity of between 4 and 5 million TEU: a terminal for APM terminals and the Rotterdam World Gateway which will be operated by a consortium led by DP World. The first phases of both terminals will come on stream in 2014. ECT, part of Hong Kong based Hutchison Port Holdings, has room for further capacity growth by extending the current 1.5 km quay of its Euromax terminal. The terminal capacity in Zeebrugge includes PSA's new and still heavy underutilised Zeebrugge International Port (ZIP) facility and spare capacity at the APM Terminals facility in the outer harbour. The strong hinterland ambitions of the Rhine-Scheldt Delta ports are supported by a range of hinterland concepts and products such as a strong orientation on barge transport, rail shuttles into the distant hinterland, ECT's European Gateway Services network (see Veenstra et al, 2012 and Rodrigue and Notteboom 2009 for more details) and similar efforts by terminal operators DP World and PSA, and a dense network of inland terminals and European distribution zones in or in the vicinity of the ports. To secure growth in the future, the ports are actively targeting transshipment markets in the Baltic, the UK and southern Europe and hinterland areas in southern Germany, Italy, South France (cf. Lyon area) and Eastern and Central Europe, next to a continued focus on their cargo rich core service areas (the Benelux, western Germany and northern France).

3.4.3.2 German Ports back on Their Feet After a Dramatic 2009

The North-German ports in the Helgoland bay gained traffic share in Europe from 13 % in the late 1990s to 16.8 % in 2008. Bremerhaven's volume surge and Hamburg's pivotal role in feeder flows to the Baltic and rail-based flows to the developing economies in East and Central Europe were the main causes. However, sharp volume drops in 2009, i.e. minus 28 % in Hamburg mainly due to a loss of transshipment flows to Rotterdam and minus 16 % in Bremerhaven, brought the traffic share below 15 %. In the past three years their position recovered to 15.8 %. In 2013 Hamburg recorded a healthy growth of 4.4 % (mainly attributed to regaining part of the Baltic T/S market back from Rotterdam) while Bremerhaven witnessed a volume drop of 4.2 %. The deepening of the Elbe river is high on the agenda in Hamburg as the port is currently facing some restrictions to accommodate the largest container vessels.

The region welcomed newcomer Wilhelmshaven in 2012 when the JadeWeserPort was opened for business. With a volume of about 76,265 TEU in 2013, the new large scale terminal facility clearly has to make its mark. Short-term prospects to attract new business have improved by the announcement that the P3 Network would include the port on two of its services on the Europe-Far East trade. Newcomer Wilhelmshaven is actively pursuing transshipment business, given that it can attract volumes more quickly than gateway traffic, which is more difficult to attract, mainly because of the time required to develop intermodal services. Note that rail services have been established primarily using in-house rail/intermodal firms, and prices to/from Wilhelmshaven and inland points have been matched with those to/from Hamburg and Bremerhaven to the same inland destinations.

3.4.3.3 'Renaissance' of the Seine Estuary

The Seine Estuary, the third region in the Le Havre-Hamburg range, suffered from a gradual decline in its market share from 5.5 % in 1989 to 2.9 % in 2008. The 'Port 2000' terminals in Le Havre, a new hinterland strategy, the completed port reform process and the HAROPA initiative aimed at closer cooperation between Le Havre, Rouen and the inland port of Paris should support a 'renaissance' of Le Havre. These initiatives did not have their full effect in 2012 as the region's share in European container traffic declined further to 2.6 %. However, the year 2013 reversed this trend with an impressive growth of 6.9 % in the first nine months of 2013. Several shipping lines (such as MSC) and shippers have committed new volumes to this port area. The port also hopes to benefit from the P3 alliance.

3.4.3.4 The Portuguese Port System Aims for hub Status

Portuguese ports Lisbon, Leixoes and Sines are trying very hard to expand business by developing a transhipment role as well as tapping into the Spanish market (particularly the Madrid area) through rail corridor formation and dry port development. After a long period of declining market shares, the Portuguese port system succeeded to lift its European share to 1.8 % in 2012. The port of Sines recorded the strongest traffic growth mainly due to increasing volume commitments of MSC and a further extension of the PSA/MSC operated terminal facility. Sines more than doubled throughput since 2008 to reach 553,063 TEU in 2012. In the first nine months of 2013 traffic grew by a staggering 76.5 %, thereby surpassing the two other ports which each have a cargo base of around 500,000 to 600,000 TEU.

3.4.3.5 Spanish Med Ports show a Diverging Growth path

Among the major winners before the crisis, we find the Spanish Med ports with a growth of the European share from 4 % in 1993 to 6.9 % in 2008. While the share

remained rather stable the past few years, the growth path of the individual ports is quite different. Barcelona was hit hard by the crisis with a volume drop from 2.57 million TEU in 2008 to 1.8 million TEU in 2009. Container activities (particularly sea-sea transshipment) did not recover after 2009, mainly due to lower feeder volumes and the Catalan port closed 2013 at 1.72 million TEU. Barcelona continues to aim for better connectivity with central European hinterlands (see Van den Berg and De Langen 2011). At the other extreme, Valencia recorded a spectacular and consistent growth (also during 2009) from 3.6 million TEU in 2008 to 4.47 million TEU in 2012. However, the 2013 throughput saw a decline of 3.2 %. MSC's choice to use the port as a hub for the region boosted transshipment volumes and consolidated the port's fifth position in the European ranking. While Tarragona remains a smaller player in the region, the port saw strong growth in 2008 when DP World and ZIM Lines took over the Contarsa terminal. Since then throughput amounts to some 200,000 to 250,000 TEU.

3.4.3.6 Ligurian Ports Challenged to Outgrow the Italian Hinterland

The Ligurian ports have difficulties in keeping up with other regions in Europe. The ports jointly represent some 4.5 % of the total European port volume, a decline compared to 6–7 % throughout the 1980s and 1990s. In the first nine months of 2013 Genoa recorded a traffic drop of 3.2 % while La Spezia saw a growth of 2.6 %. The Ligurian ports rely heavily on the cargo rich economic centres in northern Italy. While they also aim at attracting business from the Alpine region, the southeast of France and southern Germany, success in these areas has been limited so far partly because of intense competition from northern ports supported by a strong multimodal offer in terms of rail and barge shuttles.

3.4.3.7 North Adriatic to Become a Southern Gateway to Europe?

Just like the Ligurian ports, the North-Adriatic ports have been facing lower than average growth rates. However, since the crisis year 2009 the tide seems to have turned. The cooperation agreement NAPA (North Adriatic Ports Association) underlines the ambition of the region to develop a gateway function to Eastern and Central Europe and the Alpine region. The strategy should also enable the region to develop larger scale container operations. The NAPA ports are determined to lure trade from northern ports via upgraded rail links and shorter transit times from Asia. For example, Trieste has a harbor that's 18 m deep and able to handle the largest container ships at full load. The Italian port offers shuttle train services to destinations in Germany, Austria, Hungary, Slovakia and the Czech Republic, and is targeting countries as distant as Poland, one of the main markets for Hamburg. Still the Adriatic ports are facing scale differences with the northern hub ports which affect the possibilities to develop a vast intermodal hinterland network. With 'only' 1.8 million TEU in 2012

the Adriatic ports only handle a fraction of the volumes of the two leading multi-port gateway regions of the Hamburg-Le Havre range (i.e. 22.9 million TEU in the Rhine-Scheldt Delta and 15.1 million TEU in northern Germany).

3.4.3.8 The Direct call vs. Feeder Challenge in Ports of the UK Southeast Coast

The UK ports witnessed a rather significant decrease in market share. Many of the load centres along the southeast coast of the United Kingdom faced capacity shortages in the early 2000s while new capacity became available only gradually. Quite a number of shipping lines opted for the transhipment of UK flows in mainland European ports (mainly Rhine-Scheldt Delta and Le Havre) instead of calling at UK ports directly. With the prospect of new capacity getting on stream there is hope for more direct calls and potentially an increase in market share.

Since mid-2013 the combination of bigger ships, larger alliances and the new London Gateway terminal are affecting the UK container port system. Thamesport has lost virtually all deep sea services partly because of draft restrictions in the River Medway approach channel. Evergreen moved its UK cargo from Thamesport to Felixstowe while other lines such as Hapag-Lloyd, OOCL and NYK moved their transatlantic services from Thamesport to Southampton. The volume drop in Thamesport started already earlier with 'only' 300,000 TEU handled in 2012, compared to close to 800,000 TEU in 2008. Also Tilbury's traffic is likely to be affected negatively by larger ships sizes and the opening of DP World's London Gateway terminal. Both Thamesport and Tilbury, as well as other smaller container ports such as Great Yarmouth, will likely focus more on niche and short sea intra-European services.

The new London Gateway terminal complex will face competition from UK ports Felixstowe and Southampton, but also from mainland European ports such as Rotterdam, Zeebrugge, Antwerp and Le Havre which offer competitive feeder services to the UK. The large scale London Gateway terminal of DP World can be regarded as the embodiment of the UK ambitions to attract more direct calls. The terminal was developed on an old Shell site along the Thames. The port will add 3.5 million TEU to the UK's port capacity and will help to meet the demand for extra capacity in the UK. The full impact of London Gateway on competitive dynamics between mainland European ports and UK ports will become clear in the coming years. It remains to be seen how DP World is going to balance its many stakes in large scale terminals across the region: the company is investing heavily in the Rotterdam World Gateway facility on Maasvlakte 2 and has a vested interest in filling the Antwerp Gateway terminal. London Gateway received its first vessel in November 2013. The terminal can accommodate vessels with a draft of up to 17 m at any state of the tide. Maersk, MOL and Deutsche Afrika Linien already decided to shift their UK port of call on the South Africa service from Tilbury to London Gateway. Rail links are already in place connecting the terminal with the big centres, with DB Schenker Rail UK taking a lead role in the provision of those services. In June 2013, Marks & Spencer

confirmed to invest in a new distribution centre within the terminal area to open in 2016.

3.4.3.9 The Gdansk bay: Attracting Direct Deep sea Calls in the Baltic

In the last couple of years, the ports in the Bay of Gdansk are witnessing a healthy growth and an increasing traffic share in Europe (now 1.7 % compared to 0.9 % in 2008 and 0.5 % in 2004). For a long time, the Polish load centres were bound by their feeder port status, competing with main port Hamburg for the Polish hinterland. However, in the last decade the Polish port reform process gave impetus to the development of new container handling facilities. While Gdynia has benefited from volume gains, Gdansk attracted most attention as volumes increased from 163,704 TEU in 2008 to 928,905 TEU in 2012. Growth remained very strong in the first nine months of 2013, i.e. 30.2 % more volume compared to the same period in 2012. The DCT facility in Gdansk serves as a port of call on one of the main Europe-Far East services of Maersk Line. Emma Maersk class vessels with a capacity of 15,500 TEU not only bring Asian cargo, but also pick up North American container flows via other European ports of call before heading to Gdansk. Since August 2013 the 18,000 TEU Triple E vessels of Maersk Line call at DCT Gdansk in Poland.

The Gdansk case provides empirical evidence that deep sea calls in the Baltic can be viable despite the existence of competitive hub-feeder networks linked to Hamburg and other major northern ports. The port is determined to become a hub for Central and Eastern Europe and Russia. With a throughput of well over 1 million TEU in 2013 (note that St-Petersburg remains the largest container port in the Baltic with 2.52 TEU handled in 2012), the port has ambitious plans to ultimately expand the terminal's annual capacity to around 4 million TEU by 2016. The port is even challenging the established notion of 'Hamburg-Le Havre range' by proposing the notion of 'Gdansk-Le Havre range'.

3.4.3.10 The Rise and Fall of European Black sea Ports?

The Black Sea ports, Constantza in particular, were on the rise in the early 2000s from virtually no traffic to a European share of 1.7 % in 2008. Constantza attracted terminal investments given its potential to serve as a gateway to Eastern Europe and a transshipment hub for the Black Sea area. The crisis abruptly ended this unfolding success story: Constantza's container throughput fell sharply from 1.38 million TEU in 2008 to 594,299 TEU in 2009. In the following years the port could only present a modest growth to reach 684,059 TEU in 2012, still far from the record of 1.4 million TEU in 2007. Early on in its development, Constanta was very much seen as the transshipment gateway for the Black Sea and reached a transshipment incidence of some 75 % in 2008. However, times have changed quite significantly as traffic patterns in the region have evolved. When the crisis hit many container lines changed their liner services in search of cost-efficient logistic solutions. A number

of direct services from the Far East into the Black Sea region were cancelled, negatively affecting transshipment volumes. As a result, in 2012 almost three-quarters of the volumes handled at the port consisted of local import and export containers, with the remaining quarter being transshipment. Still, Constanza handles the largest vessels operated in the Black Sea (some 8,000 TEU). Terminal productivity plays an important role in the future development of container terminals in the Black Sea region, where operators in both Ukraine and Russia such as Odessa and Novorossiysk are trying to attract both transshipment and import/export business. The Bulgarian ports of Varna and Burgas remain small players in the container market. The traffic decline in Black sea ports is in sharp contrast to strong growth witnessed by Piraeus and Turkish deep sea ports near the Sea of Marmara. This development demonstrates shipping lines for the time being prefer a hub-feeder model in the Med to service the Black Sea area instead of direct deep sea calls in the Black Sea.

3.4.3.11 Scandinavian Ports

The ports at the entrance of the Baltic and South Finland show a moderate growth path, both losing some ground in a European context. However, the relative decline in their European shares is smaller than in the five years prior to the start of the economic crisis. Scandinavian ports remain highly dynamic players in the market and are European pioneers in far-reaching port cooperation schemes. The ports of Malmo in Sweden and Copenhagen in Denmark were merged in 2001 to form a single company, Copenhagen Malmö Port. It still serves as a successful case in cross-border mergers of two ports. In 2011, the City Councils in Kotka and Hamina on Finland's south coast approved a port merger. The port of Gothenburg in Sweden serves as a good practice in intermodal network development: half of the port's container volume is transported inland via an extensive domestic rail network of container shuttles. The rail network also extends to Norway.

Some of the ports in this region are gearing up to welcome more direct calls of mainline vessels. This is particularly felt in ports like Gothenburg and Aarhus which are already acting as regular ports of call on quite a few intercontinental liner services. While these ports have a good position to act as turntables for the Baltic on many trade routes, the insertion of these ports as regular ports of call on the Europe-Far East trade remains uncertain. The large vessel sizes deployed on this route, the associated reduction in the number of ports of call and the additional diversion distance make regular direct calls to the multi-port gateway region Kattegat/The Sound less viable compared to other trade routes. The P3 Network, the alliance between Maersk Line, MSC and CMA CGM, plans to include Gdansk and Aarhus in its rotation for the BALTIC service with ships of 14,000 TEU while Gothenburg will act as a port of call in the SKAW service with ships of 13,000 TEU.

3.5 Discussion and Conclusion

Container port competition is becoming ever more complex and intense, not only between ports of the same range or multi-port gateway region, but also between ranges and multi-port gateway regions. The current logistics and economic environment makes European container ports increasingly compete not as individual places that handle ships but within transport chains or supply chains. The logistics chain has become more than ever the relevant scope for analyzing port competitiveness. If a seaport wants to attract or retain some of the megacarriers (be it shipping lines, logistics service providers or shippers) it has to position itself as an efficient intermodal hub and logistics service center acting within extensive transport and communications networks.

European integration has created a single European market with economic centres in East and Central Europe, the Nordic triangle and the Iberian Peninsula increasingly making their mark on the European economic scene, thereby giving rise to new load centres and inland transport corridors. While a large part of the throughput of European container ports remains locally generated and stimulated by the ports' centrality with respect to a strong regional hinterland, ports can no longer expect to attract cargo simply because they are natural gateways to rich hinterlands. Seaports are competing fiercely to extend their hinterlands across frontiers (see De Langen 2007, for the case of Austria). The increased competition decreases 'natural' gateways and captive hinterlands. This tendency is further enhanced by the development of intermodal corridors and inland terminals in Europe. By developing strong functional links with particular inland terminals a port might intrude in the natural hinterland of competing ports. 'Islands' in the distant hinterland are created in which the load centre achieves a comparative cost and service advantage vis-à-vis rival seaports (Notteboom and Rodrigue 2005).

At the maritime side, new liner service network configurations and larger ships force ports into head-on-head competition. In the past 20 years the center of gravity of economic development moved to Asia. The Europe-Far East trade gradually overtook the Atlantic to become the most important intercontinental most trade. This geographical shift gave Med ports a new impulse to play a very active part in the deep sea container business. The ever larger vessels push ports to stretch their nautical accessibility profile, their infrastructure and intermodal offer.

The consolidation process in the container handling industry also has a large impact on individual ports. Large terminal operators are becoming more footloose as the network approach loosens their former strong ties with one particular seaport. At the same time, competition has shifted from port authorities to private terminal operators who are establishing terminal networks. The global stevedoring companies have acquired a very strategic position in a port's future. In the present port competition model, ports are frequently pushed into making investment decisions of a speculative nature. Many European container ports make significant investments without any degree of assurance that traffic will increase and shipping lines will

retain their loyalty. Their only belief is that a lack of investments will certainly not increase traffic.

In the analysis of port competition, a supply chain perspective is required. Especially important is the spatial distribution of supply chains. These have a huge impact on container volumes in ports. As a 'rule of the thumb' a large distribution center of about 50,000 m^2 'floor space' may generate 3000–5000 TEU per year. So inland nodes with large volumes of distribution centers (Duisburg, Venlo and Meerhout, to mention arguably the three largest ones in Germany, Belgium and The Netherlands) account for large container volumes (Venlo and Meerhout both > 300,000 TEU, Duisburg > 600,000 TEU). In this sense, the spatial competition for distribution centers is central for understanding port competition (see Ferrari et al 2006).

All these changes in the port environment have an impact on the port hierarchy in the European container port system. First, seaports located far away from each other are now to some extent competing. Ports in the Hamburg-Le Havre range are competing with UK ports, especially for UK-bound transshipment traffic (see Ng and Yu 2006). Competition is also growing between the Mediterranean port system and the Hamburg-Le Havre range, as these two different port systems are in a good position to reach the economic and industrial heartland of Europe.

Secondly, the position of some large load centers is challenged by medium-sized ports and new hub terminals. In Southern Europe new hubs have emerged since the mid-1990s (e.g. Algeciras, Marsaxlokk, Gioia Tauro, Taranto and Cagliari). The term 'west med hubs' in Fig. 3.6 refers to these 'pure' transshipment hubs in the Mediterranean. They all have a transshipment incidence of above 80 %. The success of these ports is partly the result of the fact that a call involves a minimal diversion for a mainline vessel transiting the Mediterranean between the Suez Canal and the Straits of Gibraltar. A lot of carriers are using these Med hubs to shift boxes between linehaul services in order to serve more markets with fewer vessels. However, ports whose competitive strategy is completely based on their intermediacy may find themselves in an unstable and highly fragile position, as this kind of traffic flow is more volatile and footloose and depends solely upon the strategy of shipping lines with respect to their service networks. In Northern Europe, successful upstream ports such as Antwerp and Hamburg as well as existing large coastal ports such as Rotterdam and Bremerhaven are facing competition from new terminal initiatives. Good examples are the JadeWeserPort project in Wilhelmshaven, the port of Gdansk, London Gateway and the development of a container terminal in Amsterdam—that so far failed to attract customers. The new terminal facilities might give shipping lines and alliances more opportunities to use their bargaining power to play off one port against another. Still, as it takes more than cranes and quay walls to become successful, some doubt whether the new terminals will be able to become effective competitors of the existing large ports which are also investing on a continuous basis to strengthen their position even further. However, the fact that some entrants in the container business have not been successful (e.g. the terminal in Amsterdam), does not imply that all new terminal projects in non-hub ports have few chances of becoming successful.

Competition between European container ports focuses mainly on their capacity to attract the maximum container volume in order to justify direct calls. Some of the key factors to success include the proximity to a strong cargo generating and cargo receiving hinterland, a favourable location both nautically as vis-à-vis the hinterland, a strong sea and land connectivity (both in infrastructures but also frequency, quality and price of transport services), a high port and terminal efficiency, the right pricing and a supply chain approach.

Given the fact that the European port throughput in 2013 is likely to remain below the 2008 levels, whereas new capacity has been added (through new ports as Londen Gateway and JadeWeserPort as well as capacity expansion in established ports, as most visible expansion project the Second Maasvlakte in Rotterdam, but investments in expansion in various other large ports) and productivity has increased (partly due to increasing ship sizes and investments in new cranes and other equipment) competition between ports as well as terminals has intensified. There is no longer a market in which all players can record growth—the gain of one port (terminal) is increasingly the loss of another port (terminal).

Especially for port authorities this leads to increasing pressure and ongoing debates about the need to reform port governance structures, as port authorities in Europe are government owned except for the UK, see De Langen (2004) for a theoretical discussion on port governance, Brooks and Cullinane (2006) for a large number of descriptive cases of port governance and Baird (2013) for a description of the changing ownership structures of the private UK ports.

Furthermore, the increasingly complex playing field for port authorities has led to debates about the need for port authorities to move beyond their traditional 'government owned landlord' role and develop new commercial capabilities as well as capabilities to effectively develop and execute investment programs with benefits for the port community at large, such as port community systems, inter-terminal transport, coordination and planning of hinterland services and regulated road access to the port, see Verhoeven (2010) and Van der Lugt et al (2013).

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