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THE SUSTAINABLE DEVELOPMENTS OF THE PORT INDUSTRIES WITHIN THE SOUTH BALTIC REGION – A COMPARATIVE CASE STUDY APPROACH

Abstract

This comparative study refers to five ports of the South Baltic Region, namely Rostock (Mecklenburg – Vorpommern, D), the port complex of Szczecin and Świnoujście (West Pomerania, PL), ports of Gdańsk and Gdynia (Pomerania, PL) and Klaipeda (Klaipeda District LT). The ports of Gdańsk and Gdynia and the port of Rostock seem to be undergoing sustainable development while the port of Szczecin and Świnoujście needs improvements in the market share, while the port of Klaipeda needs reinforcement of the inplace port industry (a number of companies and employment). Both containers and the ro-ro traffic are labour-saving characterized by raising efficiency that in turn makes the labour elasticity low and does not induce a noticeable number of jobs. There is, however, an exception such as in the case of Gdańsk and Gdynia, when the port throughput allows and creates incentives for the development of port-related logistics services and employment.

Keywords: port industries, sustainable development, employment

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Introduction

The South Baltic regions comprise the so-called coastal EU regions in the sense that their socio-economic well-being to a large extend depends on the port industries development. This comparative study refers to five ports of the South Baltic Region, namely Rostock (Mecklenburg-Vorpommern, D), the port complex of Szczecin and Świnoujście (West Pomerania, PL), ports of Gdańsk and Gdynia (Pomerania, PL) and Klaipeda (Klaipeda District LT). The port economy is complex and encompasses diverse activities, both in scope and scale, and therefore there are no clearly defined general terms for the phenomenon. The methods of the study include research based on primary (qualitative) and secondary information resources. The latter consists of desk research, analysis of available reports, studies, press releases and database regarding economic and labour situation in the relevant ports and port sectors. In order to achieve consistency of the data, the single port has been given some priority over an overall cross-regional comparability due to the scarcity and diversity, and low accessibility of the statistics, especially in the case of Germany and Lithuania.

The inter-port and cross-cutting analysis encompasses traffic evolutions, economics and employment and, thereafter, the potentials for the sustainable development of the relevant ports in terms of the economics and employment (with environmental aspects excluded) have been elaborated.

1. Port traffic in transition

During the last decades the port of Rostock has foregone quite transition from the former universal towards ferry/roll-on/roll-off and combined cargo centre. At present ferry/ro-ro traffic constitutes more than 56% of the total port throughput. The strengths and the most advanced port activity relate to roll-on/roll-off traffic and ferry freight transported to/from Denmark, Sweden and Finland. Any fluctuation in this segment of trade and shipping has a direct influence on Rostock port throughput and economics, as seen in the Figure 1.

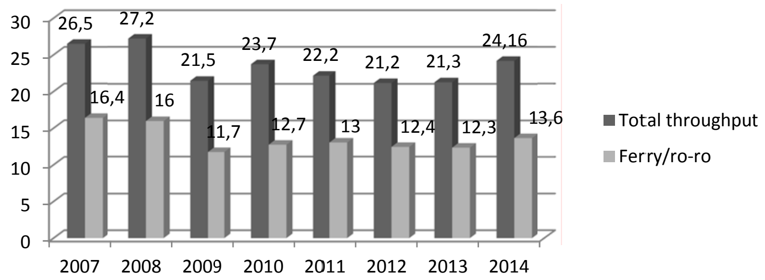

Figure 1. Port of Rostock cargo handling dependence on the ro-ro throughput in 2007 –2014 (mln t.)

Source: own elaboration.

In the **port complex of Szczecin and Świnoujście**, a noticeable growth of ports cargo throughput amounting to to 23.4 million tons has been recorded in the recent years, mostly because of the development of ferry cargo traffic whose share in the overall traffic increased in 2014 to nearly 32% of the total transshipment (Figure 2)

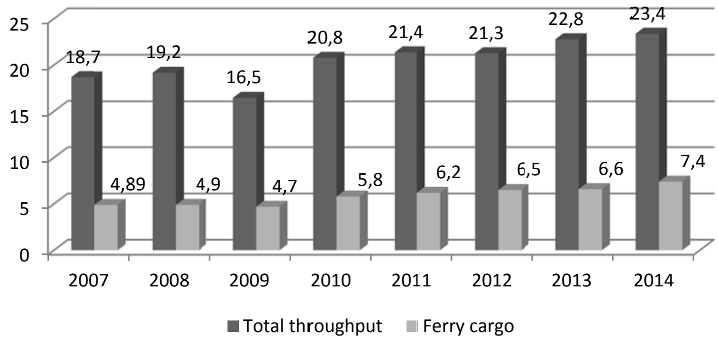

Figure 2. Ports of Szczecin and Świnoujscie cargo handling throughput in 2007–2014 (mln t.)

Source: own elaboration.

Both **ports of Gdynia and Gdańsk** handled 51.7 million tons and 2.1 million TEU in 2014. The most striking change is that the seaports of Gdańsk and Gdynia has recorded a fast developing container traffic, which increased for both ports from 4.3 million tons in 2006 (12.5% of the combined turnover), to

15 million tons in 2014 (29% of the total throughput). These radical and still progressing changes are clearly visible as depicted in Figure 3.

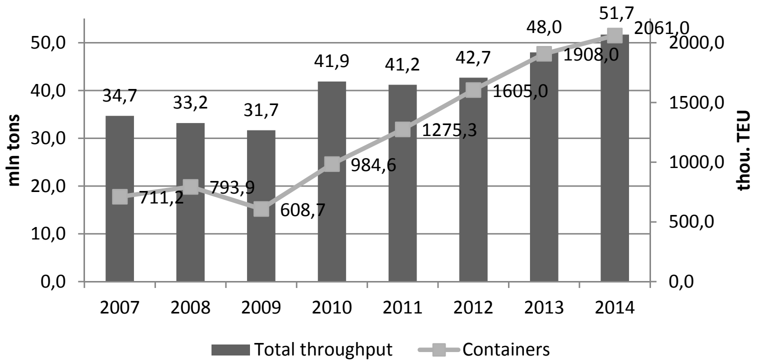

Figure 3. Ports of Gdansk and Gdynia total cargo (mln t.) and container handling (thous. TEU) throughput in 2007–2014

Source: own elaboration.

The capacities of the **Klaipeda port** to handle cargo have substantially increased over the last decade and since 2010 the port has been recording more than 30 million tons of annual throughput. In 2014 Klaipeda seaport cargo-handling turnover increased to 36.4 million tons. What is important in terms of the sustainable port industry development, the share of the Lithuanian cargo in the overall port turnover has raised to nearly 60% recently, while the transit traffic share has been reduced to 40%. In the latter case, it is the Belarusian cargo supplemented by the Russian transit traffic that dominates. Back in 2000, the traffic structure was quite opposite, 64% used to be transit and 36% – the Lithuanian trade. This trend in the Klaipeda port industry has been outlined in the Figure 4.

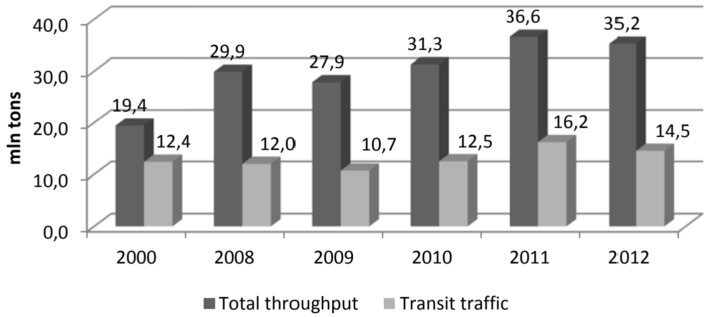

Figure 4. Total and transit cargo throughput in the port of Klaipeda (mln t.) in 2000–2012
Source: own elaboration.

2. Port economics and employment

Approximately 5500 people work at the seaport overview of companies and authorities in the **port of Rostock**. There are presently about 150 companies located at the port involved in production, storage and cargo handling, or providing services for the shipping, transport, cargo and goods handling industries. Some 3800 people are professionally engaged in the port services such as cargo handling, providing services for shipping, transport and logistics as well as forwarding and other port-related activities. In the port of Rostock, the number of port companies, organizations and authorities rendering port services is about 80, of which 18 companies are engaged in cargo handling and storage operations, about 20 companies are dealing with transport and logistics, 13 entities are involved in ship brokering, some 20 companies are active in other port-related services, supplemented by authorities, organizations and institutions (Peron 2011). The structure of the companies in the seaport has changed from the smaller number of large enterprises, to the bigger number of smaller companies in recent years. Employing over 170 employees, the Hafen-Entwicklungesellschaft Rostock, is among the largest employers in the port services sector. The second large employer of port workers is the EUROPORTS Germany with its subsidiary companies. There are also about 20 companies of maritime industry located within port area, with the largest employers in the port area being the EEW Special Pipe

Construction, the Liebherr-MCCtec Rostock, the BIOPETROL INDUSTRIES AG, and the Grosstanklager Olhafen Rostock.

The current economic and employment developments in the port industry in the Mecklenburg – Vorpommern region as specified in Table 1 below can be characterized as follows (Bernacki 2015).

Table 1. Economy and employment in the port of Rostock in 2011

Sectors of port economy	No of companies	Employment	Sales revenue (Mio EUR)
Total port services and port maritime industry, where in:	150	5 500	900
Cargo handling and storage, services for shipping, transport and logistics, forwarding and other port related services	**80**	**3 800**	**691**

Source: own elaboration.

- port industry distinguishes both in the economic and employment terms, while the port market structure remains concentrated,
- port labour is mostly engaged in the ferry, ro-ro and intermodal solutions supplemented by transport and logistics services.

The cargo handling and storage in the **seaports of Szczecin and Świnoujście** is performed by 91 companies giving jobs to 1965 port employees. The total sales of this subsector of the port industry amounted, in 2011, to EUR 155 million. After employment had been reduced in port-handling in the last decade, at present it gets stabilized, also because of the substantial developments in a number of small and medium size enterprises. In the biggest stevedoring company about 500 port workers have found employment. Other activities supporting maritime transport are the port-navigation services such as pilotage, towage and mooring, some dredging works within port basins, other port and maritime services. There are totally 130 port entities involved in that kind of business with the total employment of 512 persons and sales of EUR 46 million. The activities of maritime transport agencies consist of shipping agencies, ship brokering and forwarding, inspections and supervising, also of port governance. In this port subsector, 1165 people are employed in 103 companies and the 2011 recorded sales amounted to EUR 212 million (*Maritime Economy* 2012).

At present the port industry in the West Pomeranian region, as outlined in Table 2 below, is characterized in terms of economics and employment by the following (Bernacki 2015):

Table 2. Economy and employment in the ports of Szczecin and Świnoujście in 2011

Sectors of port economy	No of companies	Employment	Sales revenue (Mio EUR)
Total port industries, where in:	**324**	**3 642**	**413**
Cargo handling and storage	91	1 965	155
Pilotage, towage and mooring, dredging works within port basins, other port and maritime services	130	512	46
Shipping agencies, ship brokering and forwarding, inspections and supervising also port governance	103	1 165	212

Source: own elaboration.

- activities of numerous agencies like forwarding, shipping and brokering also other port related services dominate in the port industry in terms of sales revenue,
- cargo handling sector is supported by many small and medium size companies what creates grounds for employment in the port industry,
- the most labour-intensive sectors refer to handling and storage services followed by the activities of transport intermediaries like shipping agencies and forwarding.

In two **ports of Gdynia and Gdańsk** there were 199 stevedoring companies recorded in 2011, with the total employment of 2646 people and with the total sales of EUR 209 million. Other activities supporting maritime transport consist of 113 entities with the employment of 1335 people and with the total sales of EUR 120 million. There are 246 companies involved in the sector of maritime agencies. They give jobs for 2180 people and have recorded sale revenues of EUR 504 million (*Maritime Economy* 2012).

The port industry of the Pomeranian region as exemplified in Table 3 below is presently distinguished by the following (Bernacki 2015):

Table 3. Economy and employment in the ports of Gdynia and Gdańsk in 2011

Sectors of port economy	No of companies	Employment	Sales revenue (Mio EUR)
Total port industries, where in:	**558**	**6 161**	**833**
Cargo handling and storage	199	2 646	209
Pilotage, towage and mooring, dredging works within port basins, other port and maritime services	113	1 335	120
Shipping agencies, ship brokering and forwarding, inspections and supervising also port governance	246	2 180	504

Source: own elaboration.

– in the economic and labour terms, the port industry is dominated by port logistics, forwarding and maritime agencies and this segment supports handling and storage activities,
– port industry features sound results as regards sales revenue and number of employees, and the structure of the sector is much diversified in number and size of companies,
– the most labour-intensive segment refers to cargo handling and storage followed by shipping agencies, ship brokering and forwarding.

The total employment in various port-related activities in **Klaipeda** has been estimated for 2730 people. The number of stevedoring companies comprises over 30 entities, of which 7 biggest stevedoring companies employ totally 2159 port workers while the rest ten port operators employ 481 persons (Viederyte 2012). The five biggest stevedoring companies are, respectively, Klasco (967 employees), Klaipedos Nafta (316), Bega Klaipeda Stevedoring (300), Klaipedos Smelte (285), and Klaipedos Terminalas (250). In the remaining companies the employment ranges between 20–100 stevedores (Foresight Study 2012). There are also some 99 shipping agencies active in the port and numerous forwarding companies. The Klaipeda Free Economic Zone has been operational since 2002, and there are 17 companies employing 1,285 persons. The total number of employees in the port authority of Klaipeda port, as of mid-2013, amounts to 259 persons (*Competitive Position of the Baltic States Ports* 2013).

The developments in the Klaipeda port, in terms of its economics and employment as elaborated in Table 4 below present the following features (Bernacki 2015):

Table 4. Economy and employment in the port of Klaipeda in 2010

Sectors of port economy	No of companies	Employment	Sales revenue (Mio EUR)
Total shipping and port activities, where in:	309	2 730	727
Handling and storage	**30**	**2 159**	**575**

Source: own elaboration.

- port industry distinguishes in economic terms while the number of employees is quite limited,
- port market structure is much concentrated in cargo handling and storage while the segment of other port-supporting activities record many small companies which are quite sensitive to changes in the level of transshipment and market size,
- the most labour-intensive segment refers to cargo-handling and storage but the number of employees, in general, remains on the same level regardless transsshipment developments.

Advances in the port industries of the South Baltic Region have been depicted in Table 5 and are presently distinguished by the following.

The port industries of Klaipeda and Rostock, if measured by the number of companies, are much concentrated while the industry structure both of the ports of Szczecin and Świnoujście and ports of Gdańsk and Gdynia is much deconcentrated and diversified.

In economic terms, measured by weighted sales revenue, the ports of Gdańsk and Gdynia are followed by those of Rostock and Klaipeda as well as of Szczecin and Świnoujście.

Table 5. Economy and employment in the port industries of the South Baltic Region in 2011

Seaports	No of companies	%	Employment	%	Sales revenue (Mio EUR)	%
Total, where in:	**992**	***100***	**15 762**	***100***	**2 512**	***100***
Port of Rostock	80	*8.1*	3 800	*24.1*	691	*27.5*
Ports of Szczecin and Świno-ujście	324	*32.6*	3 642	*23.1*	413	*16.4*
Ports of Gdańsk and Gdynia	558	*56.3*	6 161	*39.1*	833	*33.2*
Port of Klaipeda (2010)	30	*3*	2 159	*13.7*	575	*22.9*

Source: own elaboration.

As regards the number of employees, the leading ports of Gdańsk and Gdynia and the port of Rostock are supplemented by the ports of Szczecin and Świnoujście and the port of Klaipeda.

3. Prospects for port labour markets development

The **port of Rostock** represents apparently a kind of matured port industry, already developed at the relatively high level in terms of output and employment. The Rostock port is highly dependent on the ro-ro traffic, characterized by the highly productive but labour-saving technology. Therefore, a significant increase in the port-handling workforce is not expected there, the primary objective is to maintain the number of jobs already acquired. The logistics solutions – a possible source of employment raise – have less favorable conditions for development because the ro-ro traffic used to create weak incentives for such trends. In the port industry a moderate growth in employment, and only in the segment of the logistics services linked to the combined ro-ro traffic has been forecast. However, a high demand for labour is expected in the maritime industry located in the port and in its vicinity.

The **seaports in the West Pomeranian Region** (Świnoujście and Szczecin) need investments for further development, otherwise both the throughput and thereafter employment in the port sector will remain unchanged. The construction of an LNG Terminal in the external port in Świnoujście is scheduled for operation at the end of 2015. The Terminal will be manned by 81 persons, of which 42 employees are in operation and 29 persons in maintenance, both groups of the terminal staff are required to have high engineering qualifications.

The second investment relates to the deepening of the 67 km long Świnoujście – Szczecin fairway to 12.5 m depth. As regards the feasibility study (Bernacki 2012), the deepening of the port of Szczecin access fairway will in the long run induce the additional 6.74 million tons of throughput, whereas the port accumulated employment will increase by 1547 persons. There are no promising perspectives for the employment increase unless the investment multiplier will come into play in the ports of Szczecin and Świnoujście.

The **seaports of the Pomerania Region (Gdańsk and Gdynia)** are in a dynamic development trend, mostly because of the high growth rate recorded in the container throughput in both ports of Gdańsk and Gdynia. Yet, due to the raising in the volume container handling, it is unlikely that the employment in the stevedoring and other port services will follow this positive trend at the same rate. The simple reason is labour-saving solutions applied in the container handling. The employment elasticity of containers transshipment is rather low. Therefore, only a moderate raise in the number of employees in the stevedoring and related companies has ben envisaged. However, the long lasting trend of the employment reduction in the cargo handling and storage seems to be over in the Polish ports. It is likely that the port-related logistic services will continue to develop and this is embedded in the dynamic increase in the container throughput and emerging logistics and distribution centres in the ports of Gdynia and Gdańsk and their vicinity. The port logistics value-added services are of the labour-intensive type and they will create a large demand for workforce. Several small- and medium-size logistics companies are already on rise in the port areas and it is expected these positive developments will induce a high demand for the port logistics labour.

The **Klaipeda port** has successfully stabilized grounds for the sustainable development due both to the increased share in cargo traded for the domestic use and, additionally, the rise in throughput. The diversified structure of commodity handling suggests that there are incentives for the port labour increase, however, the growth rate is to be moderate because, in the past, over-employment was concentrated in a few stevedoring companies; a widely accepted rule in all ports of the erstwhile communist countries. Therefore, the rationalisation of employment, also cross-sector, and the internal shifts in labour force have predominated in the port labour markets. It is only in the recent years that port throughput developments have created grounds for a raise in demand as regards the dock labour force. A slight but steady increase in the demand for stevedores and workforce involved in other port-related services has been assumed. This trend can also relate to the personnel of port logistics services, however, in such as case, it needs further and out-of-the port area developments of logistics markets in Lithuania.

The comparison of the port industries in terms of a forecasted demand for labour in the South Baltic Region has been depicted in Table 6.

Table 6. Forecasted demand for labour force and by segments in the ports of the South Baltic Region

Segments of port industry	Projected demand for labour force in the port industry of the South Baltic Region			
	High (H)	Moderate (M)	Low (L)	
	(annual growth rate > 5%)	(annual growth rate 3%–5%)	(annual growth rate < 3%)	
	Rostock	Szczecin and Świnoujście	Gdańsk and Gdynia	Klaipeda
Handling and storage	L	M (conditional only)	M	L/M
Maritime transport agencies, brokering and forwarding	L	M	M	M
Logistics Value Added Services	M	L/M	H	M
Maritime industry	H	L	M/H	M

Source: own elaboration.

Summary

The ports of Gdańsk and Gdynia and the port of Rostock seem to be, in the terms of traffic, economics and employment, in the way of sustainable development, while the port complex of Szczecin and Świnoujście needs improvement in the market share, and the port of Klaipeda – the reinforcement of in-place port industry (a number of companies and employment).

When analyzing certain segments of the port economy, one should distinguish economic developments from the employment effect they induce. Both the containers and ro-ro traffic are labour-saving characterized by raising efficiency which, in turn, makes the labour elasticity low and does not induce a noticeable number of jobs. The same holds true for the transshipment of bulk cargo, however, with the exception of, labour-demanding, chemicals.

There is, however, an exception: the Pomerania Region where the port throughput allows and creates incentives for the development of port-related logistics services and employment. Logistics, especially value-added services, is a labour-intensive sector if dynamically developed in the context of the container throughput. It is supposed to induce high demand for labour force. The advanced mechanisation and automation in transshipment lead to labour-saving solutions, while logistics and forwarding, also as regards maritime agencies, are labour-intensive.

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ROZWÓJ ZRÓWNOWAŻONY PORTÓW MORSKICH REGIONU POŁUDNIOWEGO BAŁTYKU ANALIZA PORÓWNAWCZA WYBRANYCH PORTÓW MORSKICH

Streszczenie

Badaniami porównawczymi objęto pięć portów regionu południowego Bałtyku, a mianowicie Rostock, zespół portów Szczecin i Świnoujście, porty w Gdańsku i w Gdyni oraz port w Kłajpedzie.

Wydaje się, że porty w Gdańsku, Gdyni i Rostoku znajdują się na ścieżce zrównoważonego rozwoju w kontekście przeładunków, efektów gospodarczych i zatrudnienia, podczas gdy porty w Szczecinie i Świnoujściu powinny zwiększyć udział w bałtyckim rynku usług portowych, natomiast w porcie Kłajpeda wymagany jest rozwój mocy produkcyjnych – wzrostu liczby przedsiębiorstw portowych i zatrudnienia. Przy przeładunkach kontenerów i ładunków tocznych stosowane są efektywne lecz pracooszczędne technologie. Wskaźniki elastyczności zatrudnienia dla tego rodzaju działalności portowej kształtują się na niskim poziomie i nie tworzy to nowych miejsc pracy. Wyjątkiem są porty w Gdańsku i w Gdyni, gdzie wzrost przeładunków kontenerów prowadzi do rozwoju usług logistycznych i wzrostu zatrudnienia.

Słowa kluczowe: porty południowego Bałtyku, rozwój zrównoważony, zatrudnienie