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The role of geo-economic space elements in the development of national economic interests

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The role of geo-economic space elements in the development of national economic interests.

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On the base of special literature [1-10] several elements of modern world geo-economic space could be defined. This “hotbeds” of economic activity, which can “change” and color visual boundaries and content of regions are, first of all, ports and port-cities, post-industrial zones, global cities. Indeed, we face all the time with the specific forms characterized different counties.

So, in Mexico such phenomena, as maquiladoras pulled off to the border with the USA a huge amount of labor force from the poor south regions of Mexico in the second half of the 20th century. Assembly parts imported from the USA in a free trade Mexican zone. Mexican labor force which was six times cheaper then that one of the country of origin was used for manufacture products. Then assembled products backed to the USA. Currently about 1.3 million Mexicans was employed in one or more of approximately 3000 maquiladoras [1]. Although maquiladoras operate as a production enclave, they have had a very positive effect on national economy. Foremost, mexican labor qualification, both of workers and supervisors, as well as staff and technical levels became rather higher. The main reason for establishing maquiladoras as labour cost savings in a location close to the United States precludes those firms from using American technicians and middle management. So, with the exception of the top level, the maquiladoras’ staff is Mexican. Accordingly to these facts Mexico might be departing from a region it never belonged to from an economic standpoint, although it will continue to be one of its cultural and ideological cores. Geography and economic reality might prove to be stronger than culture and language [2].

But not only economic reason could provoke such changes. Existence and development of the transport net strongly affect on transformation of regions’ economy and can change the vector of economic development. As more business activities are intensified along with globalization in the regions where these transport hubs are situated, the hubs and places themselves are transforming. Spatially, it has been evident that dual hub port systems appear in megacity regions such as the ports of Hong Kong and Shenzhen in the Pearl River Delta, the ports of Singapore and Palapas in Singapore–Malaysia, and the ports of Shanghai and Ningbo in the Yangtze River Delta. For our theme very important an understanding of

port-hinterland connections and the possible relocation of some functions inland due to hub port congestions [3].

Authors [4] emphasize several stages Western and Asian model of port development and as a consequence different level of port-hinterland connection.

| WESTERN PORT CITY MODEL | | Period | ASIAN HUB PORT CITY CONSOLIDATION MODEL | |
|---|--|----------------------------------|---|---|
| Primitive cityport Close spatial and functional association between city and port | | Ancient-medieval to 19th century | | Fishing coastal village Small community of natives practice self-sufficient local trade |
| Expanding cityport Rapid commercial and industrial growth forces port to develop beyond city confines with linear quays and break-bulk industries | | 19th to early 20th century | | Colonial cityport Dominant external interests develop both port and city for raw products exportation and geopolitical control |
| Modern Industrial cityport Industrial growth (esp. oil refining) and introduction of Ro-Ro and container facilities requires separation and increased space | | Mid-20th century | | Entrepot cityport Trade expansion and entrepot function, modern port development from sea reclamation |
| Retreat from the waterfront Changes in maritime technology induce growth of separated maritime industrial development areas | | 1960s - 1980s | | Free trade port city Export-led policy attracts industries using port facilities through tax-free procedures and low labor cost |
| Redevelopment of the waterfront Large-scale modern port consumes large areas of land and water space, urban renewal of original core | | 1970s - 1990s | | Hub port city Increasing port productivity due to hub functions and territorial pressure close to the urban core |
| General port city Rising environmental concern for intermodal transport, city economy develops alike non-port cities | | 1990s - 2000s | | Global hub port city Maintained port activity and new port building due to rising costs in the hub, possible hinterland expansion |

Fig. 1. Stages in the evolution of Western and Asian port-city interfaces. Sources: From Sung-Woo Lee, Dong-Wook Song, Cersar Ducruet [4, p.380].

However, these patterns did not foresee different evolutions in specific regions, but shows the evolution of city and port separation in Western countries and an Asian consolidation model mainly inspired by the cases of Hong Kong and Singapore.

The Asian case shows important deviations due to the fact that containerization has been a tool for endogenous development. Most developed Asian countries not only welcomed global networks passively but developed a strategy for productivity and innovation through the appropriation of foreign technologies. For transforming economy, as Russia is, with catching developing period, for our point of view, Asian case is more useful to formulate an our specific model of port-city interaction in a regional and local perspective.

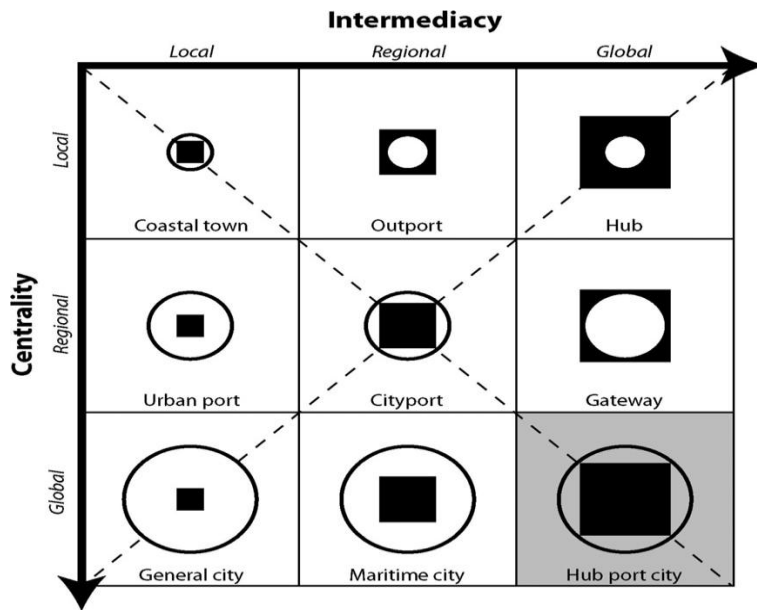


Fig. 2. Hub port city within the matrix of port–city relationships. Source: From Sung-Woo Lee, Dong-Wook Song, Cersar Ducruet [4, p.382].

Fig.2 helps to position the hub port city concept and its global position among other types of port cities and port–city relationships. It's important because on this stage of evolution urban and port connection is the strongest; the economic result for national economy is the most significant.

Except global effects such as facilitating of trade, ports play essential role for countries and regions of base. Ports are the source of new firms, innovation, jobs. It could become the locomotive for the whole region, its transport system and services.

A study of approximately 150 port impact studies indicates that on average one million ton of port throughput is associated with 800 jobs [5, p.26].

Almost all of the 10 world regions with the largest amount of patent applications in shipping are home to one or more large global ports, including Houston, Los Angeles/Long Beach, Tokyo, Oakland and Rotterdam [ibid., p.28].

At the same time ports render negative environmental effect: air, water and soil pollution. For example, air pollution of ships at berth in the port of Bergen costs to it city between EUR 10 and 22 million [ibid., p.33].

But at the same time the effects of pollution, dust and noise are all very localized, other regions are also subject to the negative impacts, but these effects are more diluted than the impacts in the port-city. Moreover, negative environmental impact depends on the size of the port. According to [6] the largest 25 ports in the world account for around half of the shipping emissions in all ports in the world.

If the costs and negative effects from ports are localized, whereas the benefits from the port activity could spread not only at the local level, but at the national and even supranational level.

According to [4] we can underline some particulars for modern hub port-city: 1) port functions: serving major sea routes, shipping line concentration; 2) urban functions: financial attractiveness, air transport hub, 3) port-city evolution: rapid diversification, maintain logistic quality.

According to another point of view [5, p.48] long-term competitiveness of any port is dependent on the: 1) maritime connectivity; 2) effective port operations and 3) strong hinterland connections.

Using these characteristics, we tried to clear up the directions and prospective of Ust-Luga port development, which is one of the forward-looking geo-economic elements in the St.-Petersburg coastal region.

Commercial Sea Port of Ust-Luga - the most promising port of the Baltic port pool. Ust-Luga is located in the north-western Russia, Leningrad region, in the Luga Bay of the Gulf of Finland near the village of Ust-Luga. It's about 150 km from the city of St.-Petersburg. Commercial Sea Port of Ust-Luga has multipurpose terminal YUG-2 and Auto-Railway Ferry Terminal.

Multipurpose Terminal YUG-2 is designed for handling a wide range of cargo: new cars, high and heavy cargo, containers, project and general cargo. Multipurpose Terminal YUG-2 is one of the best terminals in the Baltic Sea meets the stringent requirements of carmakers, it is confirmed by regular grading, which are held by Ro-Ro carriers. Cars dispatch is possible as by road and by railway. Using the newest technical equipment allows to handle all types of cargo. Production personnel of JSC "Commercial Sea Port of Ust-Luga" was trained at Liebherr in Austria. Berths construction allows to accept vessels, equipped with Ro-Ro ramp, vessels with a vertical way of loading and vessels with mixed type of loading also. Great depths allow to receive Ocean PCTC vessels [11].

Commercial Sea Port of Ust-Luga has an exclusive right to provide stevedoring services at the terminal, located on the Auto-Railway Ferry Terminal. Since 1st of January 2011 all kinds of terminal works including loading and unloading of ships, cargo movements, warehousing and freight forwarding are made by personnel of Sea Commercial Sea Port of Ust-Luga. Auto-Railway Ferry Terminal is bordered by the western part of Multipurpose Terminal Yug-2. There two berths for ships with straight ramp, including rail-ferries. Total

terminal area is about 38,2 hectares. Auto-Railway Ferry Terminal is processed only by ships rail-ferry line Ust-Luga - Baltiisk.

In recent years, increasing the port's capacity is very intense - for compared to 2010 (11,8 million tons) in 2011, the total turnover of the port doubled (22,7 million tons) in 2012, turnover increased even doubled - to 46,6 million tons. In 2013, the planned increase in turnover to 65-67 million tons.

Table 1. Statistics of Ust-Luga port turnover, 2008-2012.

| Year | Port turnover, million tons | Automobiles, thousands |
|------|-----------------------------|------------------------|
| 2008 | 6,4 | 3 |
| 2009 | 10,3 | 17 |
| 2010 | 11,8 | 65,5 |
| 2011 | 22,7 | 133,8 |
| 2012 | 46,6 | 167,4 |

Source: Year report 2012 of "Ust-Luga company" ltd.

Ust-Luga port has favorable geographical position. Such indicator, as maritime connectivity, not only refers to number of connections with other ports, but also the place of a specific port in networks (centrality). So, there are various indicators to measure port centrality, including degree centrality, betweenness centrality and clustering coefficient. Larger ports are generally more connected and more centrally positioned in maritime networks, which is logical, but there is not a perfect correlation between size and port centrality; some large ports manage to be much more connected than other ports of similar size [5, p.50]. Ports that are closely located to each other can have the same profile of maritime connections, as is the case of Hong Kong and Shenzhen, but also be complementary to each other with respect to maritime connections. For example, the port of Hamburg has strong maritime connections with Asia, whereas the nearby port of Bremerhaven has strong maritime connectivity with North America, which provides synergies between the two ports. The ports of St.-Petersburg coastal region, Russia has high value of degree centrality – about 100 (it is the number of adjacent neighbors of a node) and the betweenness centrality – about 100 (expresses the number of shortest paths going through each node) which is compared with Vancouver (138;140 consequently). And just in that time, the ports of St.-Petersburg coastal region has low clustering coefficient, which estimates whether the adjacent neighbors of a node are connected to each other.

There are various performance indicators for port operations, that all provide part of the picture of port performance. We assume that effective port operations are dependent on the quality of inputs and the quality of organization and institutions [5]:

a) quality of inputs needed for port operations: labour, equipment and land.

b) quality of organisation and institutions includes planning, port information systems, competition and coordination between ports.

Also a competitive port must have interfaces between major oceanic maritime trade and economic activities of ports and inland terminals that provide intermodal structures and connections between the forelands and hinterlands. Obviously, business transactions require an adaptation to hinterland means. Conversely, the amplification capacity of transport modes may allow the expansion of trade. These bonds of mutual causality are now present in the traffic of port cities. The quality and capacity of hinterland modalities, roads and relays are essential to any expansion of trade. Strong hinterland connections require certain provisions within the port. This includes direct rail access to the quays, smooth interconnections with the railway network outside the port and canals linking berths with inland waterways.

In view of the fact that the port of Ust-Luga began its development recently, it is difficult to estimate some of these parameters. Moreover, some time and efforts will be required to construct the residential infrastructure for employees and training centers for port personnel, to realize recreational areas. Notable that, close to the port there are unique small ethnic settlements of 'vod' Finno-Ugric group. Votian (language) is listed in the Red Book of the peoples of Russia. In our opinion, lack of actual passenger services that are in demand is also the problem of Ust-Luga port development. Although there is a theoretical possibility of the ferry service for passengers between St. Petersburg and the Russian enclave of Kaliningrad region, but in fact there are unnecessarily high prices, at times exceeding the travel by train or plane, and lack of services. Visiting the Leningrad region and St. Petersburg by the foreign tourists is even more complicated, because the port of Ust-Luga is located on the site with a limited entry for foreign citizens.

With regard to the experience and development model of foreign countries, especially the Asian version with its model of port and urban areas joint development, the port of Ust-Luga could not only become a full part of the global geo-economic chain, but also the engine of development for individual districts of the Leningrad region and the entire St. Petersburg maritime region.

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