

## SEAPORT PERFORMANCE IMPACT TO STATE ECONOMY: THE METHODOLOGICAL APPROACH

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**Abstract.** From the global economics point of view seaport performance is interconnected with the development of countries which are integral parts of global or regional economies. The maritime industry is regarded as the catalyst of Europe's prosperity and economic development. Seaport activities are associated with international economic cooperation, attracting foreign investment as well as other activities which strengthen the political and economic position of maritime states. Modern economics suggest that in order to evaluate any economic phenomena the country's economic system and its macroeconomic indicators, also social progress and quality of life indicators must be taken into consideration.

**Keywords:** maritime economics, seaport development, measurement of economic performance and social progress

**JEL classification:**

A13 – Relation of Economics to Social Values

F62 – Macroeconomic Impacts

F63 – Economic Development

### Introduction

EU's territory in the Eastern Baltic Sea region includes seaports of Lithuania, Latvia and Estonia: the Klaipėda and Būtingės oil terminal (Lithuania), Liepāja, Ventspils and Riga ports (Latvia), and the seaport of Tallinn (Estonia). Ports of the Russian Federation such as Kaliningrad, Primorsk, Vysotsk, Vyborg, St. Petersburg and Ust-Luga, also operate in the Eastern Baltic Sea region. Processes taking place in aforementioned region illustrate the notion that the development factors of the region's ports are associated with the globalization and influence of each country's national policy. The prevailing economic growth and euphoria at the beginning of the 21<sup>st</sup> century was replaced by stagnation and crisis at the end of the century's first decade, after which, since 2010, the seaport performance results of the ports of Lithuania, Latvia, Estonia and Russia differed. Due to the changes of Russian transport policy, the economic embargo and EU's sanctions against Russia, the region's ports are in decline thus the impact of seaport performance to the related country's economy can be assessed in order to strengthen the international economic and political position of Lithuania, Latvia and Estonia, as well as EU's position, in the Baltic Sea region.

Performance of a modern seaport is closely associated with the geographical and social structure of the port city, state and (or) region of the seaport's location, whereas by standardizing and unifying seaport processes and procedures the seaport is intended to be made more open and operationally integrated, subsequently ensuring the seaport's, country's and the region's competitiveness in the international market (Stopford, 2009). Together with the evolution of seaports, the approach to the port interfaces and relationships with other operators changes accordingly, i.e. the nature of the interaction and interface between the port, city and country is altered. It must be noted, that the Eastern Baltic Sea region is dominated by state-owned and municipal ports, which are typically run by the state controller, therefore while evaluating the seaport's performance and the impact of the port's activities to the national economy, the port manager is interested in a holistic assessment of the activities of the seaport, e.g. linking activities, economic, social or geopolitical factors.

Taking into account the state-seaport relation, the current common port operational concepts and their factors, it may be stated, that the features of Keynesian, monetarism and institutionalism economic theories may be observed in the performance of seaports. The **scientific relevance** of the research is a supplementation of the classical port performance evaluation macro model with the social and quality of life indicators, based on the theories of modern market economy and responding to the needs of modern society.

Scientific research in the field of maritime sector conducted by Lithuanian scholars is scarce and fragmented, e.g. research on the economic efficiency of port logistics systems (L. Sujeta, N. Navickas, 2011, 2012, 2014); clustering prerequisites on developing productivity, innovation and competitiveness of the Lithuanian maritime sector (L. Turkina, J. Belova, 2006, 2008-2010); economic and financial evaluation of companies operating in the maritime sector (J. Belova, R. Mickienė, 2004, 2008, 2010-2015). Summarizing the research on the topic of maritime economics conducted by Lithuanian scholars, it may be asserted, that microeconomic-level studies prevail and that there is a significant lack of fundamental scientific research. A similar situation is observed by assessing the results of foreign research regarding maritime economy: the research is concentrated at analyzing shipping or private port companies, port terminals, operational research, based on the case analysis of leading major ports, mainly focusing on the seaports of Germany, the Netherlands, USA, Singapore, China (P. Cariou, C. Ferrari, F. Parola, 2015; W. K. Talley, 2012; T. D. Heaver, 2012; A. E., 2009, K. Cullinane, 2011; etc.). It is noteworthy, that currently researchers and scientists tend to address the lack of basic fundamental research in the field of seaport performance by publishing results of conceptual research on maritime economics at a macroeconomic level, e.g., the conception of a sustainable seaport, based on the interaction of economic, social and environmental factors (Sislian, Jaegler, Cariou, 2016); the all-embracing conceptual model, which stresses the explanatory power of "financial markets", "institutional factors" and "industry specific variables" as antecedents of long-term aftermarket performance (Satta et al., 2016). On the other hand, the lack of research of port economics at a mezzo-level is evident. This may occur due to the diversity of the research object, seaports and their performance, or the deficiency of basic complex port economics research methodology.

Taking into account the state-seaport relation, the current common port operational concepts and their factors, it may be stated, that the features of Keynesian, monetarism and institutionalism economic theories may be observed in the performance of seaports. The contrast between the assessment of seaport performance based on classical economic theories and the performance of the global maritime sector in modern market conditions raises the **scientific problem of the research**: How to comprehensively evaluate the impact of the seaport's performance to the country's economy, taking into consideration the interaction of the port's and the port city's, private businesses', the state's strategic interests and the interests of the society? It may be assumed, that under the conditions of modern market economy, the evaluation of the impact of the seaport's performance to the country's economy must distinguish the factors of welfare economics and modern economics, i.e. the set of macroeconomic evaluation indicators must be supplemented by the social and quality of life indicators.

The **object** of the research is the interface between the conceptions of seaport performance and fundamental modern market economics theories. The **aim** of the research is to define the methodological approach of the assessment of the seaport performance impact on state economy based on modern market economy theories.

The **tasks** of the research are the following:

1. To analyze the classical paradigms of economics which form seaport performance.
2. To distinguish the indicators of assessing the impact of the performance of seaports to the economy of the city, country and region.
3. To assess the need for the seaport performance impact assessment model, which integrates macro- and micro-economic, also social and quality of life assessment criteria.

The **methods** of the research include the following: systematic review, meta-analysis, analysis of scientific literature, statistical analysis, synthesis, interpretation, generalization.

The first part of the research addresses the most significant classical paradigms that shape the performance of the seaport and include economic growth, formation of efficiency and the seaport's position in the economic system theories. The second part of the research includes the distribution of the indicators of the seaport performance impact assessment model and discusses the possibilities of applying the methodology of integrated operating results and financial condition analysis. The need for the seaport performance impact assessment model, which integrates macro- and micro-economic, also social and quality of life assessment criteria, is substantiated in the third part of the research.

### **Classical Economics Paradigms of Seaport Performance**

The performance of seaports, the maritime business and industry is a crucial part of the global transport system and logistic chain and it also has a significant impact on the economy of the regarded city, country and region by increasing the gross domestic product, employment rates, the development of other economic activities, attracting investment, promoting international cooperation, *etc.* Thus the methodology of evaluating the performance of seaports and the

economic impact of this performance to the country's economy in the region is based on the nature and structure of the research object and the performance of a particular seaport.

The problematics of the impact of seaport performance to the country's and region's economy is analyzed in the view of the content and axioms of two main theoretical paradigms: methodological individualism and methodological holism. The globalization of port performance is expressed in a complex network of regional, transnational and global relations, and it responds to the novel paradigm of knowledge production and the concept of collaborative, networked performance (Held et al., 2002, Bauman 2002). According to Z. Bauman (2002) the generalized concept of the process of globalization is based on the philosophy of postmodernism. The criticism of the postmodern philosophy's idea of an integral worldview preconditioned the predominance of the neo-liberalism and free-market doctrines. The latter is expressed in high mobility of labor and capital. D. Harvey (2005) refers to the mentioned features as "the time-space compression" or defines the features in terms of science of synergy as "inspaced time" and "intimed space". All of this is applied to describe the processes of globalization, the consequence of which is the "shrinkage" of the world, covering all parameters of human life and activities. Alongside with universality, the meaning of location, i.e. *locus*, is also highlighted in the context of globalization, stating that when the financial and information flows of the regarded activities reach a global level, a reverse process of localization begins subsequently framing the operational space.

The transformation of the economy of Lithuania meets the common economic laws and tendencies of the transitional period and in spite of period-specific national characteristics, the unevenness of the country's economic progress is in line with the theoretical laws of uneven development. The dominant economic doctrines are guided by the principle of methodological individualism (at the micro-level), but the methodological holistic paradigm (at the macro-level) is more adequate in describing the economic reality.

Economic theories provide a large variety of methodological approaches in defining and assessing performance. This responds to the tendency of the development of economic thought, related to the key differences between current economic schools (normative and positive) and economic theory (postmodernist, free market, neoclassical, endogenous growth, *etc.*). It also promotes the need for forming a new research methodology, corresponding to modern economic development and operating environment, in order to reach a greater production and exchange efficiency, and social welfare maximization.

Theories which combine both the theory of forming the efficiency of seaport performance and the position of seaport performance in the economic system theory are significant to the analysis of the impact of the seaport's performance to the country's economy (Table 1).

**Table 1:** Classical paradigms of assessing the impact of seaport performance

Paradigm	Theory groups
Economic growth	Keynesian and neo-Keynesian Economic Growth Theory (J. M. Keynes, E. D. Domar, R. F. Harrodd) Neoclassical Growth Theory (R. M. Solow) Endogenous or the New Economic Growth Theory (R. Lucas, R. J. Borros, P. Romer)

Regional economy	Regional Development Theory (W. Isard, T. Teiner, J. Paelinc, P. Nijkamp) Interregional Communication Theory (A. Smith, D. Ricardo) Regional Market and Territorial Price Theory (O. Cournot, P. Samuelson) Regional Specialization and Interregional Trade Theory (A. Smith, D. Ricardo) Innovation Diffusion Theory (T. Hagerstand)
Spatial	Growth Pole Theory (F. Perroux, J.R. Boudville, H. R. Lasuen, P. Pothier)
Local economy	Use of Territory Theory (J. H. von Thunen, W. Alonso) Production Sites and Production of Raw Materials Distribution Vector Theory (A. Weber, D. M. Smith, W. Isard, L. Moses) Central Space Theory (W. Christaller, A. Losch) Territorial Competition Theory (H. Hotelling) General Territorial Balance Theory (W. Isard, A. Losch) Network location theory (S. L. Hakimi, H. Guelicher, C. Werner, P. Haggett, K. Kansky) Localization and External Economy (A. Marshall, E. A. G. Robinson) Market Volatility and Potential Interaction Model (G. K. Zipf, E. L. Ullman, C. D. Harris, W. Warntz) Cyclicity, Causation and Processes Theory (R. M. Hurd, R. Haig, Ch. Colby, Ch. Harris, R. Nurske, G. Myrdal, E. Ullman, P. Krugman) Long-term Cycle Theory (D. Kondratieff, J. Schumpeter, G. Mensch, C. Freeman) Macro-prospects Theory (W. Sombart, J. M. Keynes, Ch. M. Tiebout, A. Pred) Economic Geography and Producer Services Theory, the New Service Economy (W. Christaller, C. Clark, D. Bell, V. Fuchs)

**Source:** Leontief, 1986; Ansoff, McDonnell, 1998; Armstrong, Taylor, 2000; Schaffer, 2000; Miškinis, Augustauskas, 2011

It is noteworthy that following economic growth theories in addition to the obvious and apparent economic growth limitations (lack of resources, environmental requirements, social costs, etc.) together with the increase of production volume, the country's public policy and the value of its effectiveness may be distinguished.

Methods of analyzing regional economic paradigm theories and mathematical models make it possible to illustrate the region's economic space structure, to determine the region's main objects and the links between them, also to distinguish the most significant regional economic statistics groups and by combining various statistical indicators to assess the regional type, inter-regional relations and model the territorial structure of regional economy. By applying the novel theories of regional economics, the identification of region and country (quasi-country) preconditions the application of macro-economic theories (neo-classical, neo-Keynesian) and micro-economic theories, in order to assess the internal regional disparities in cases of quasi-corporations or markets in the region. The following theories are significant for revealing the interdisciplinary nature of the evaluation of the impact of seaport performance to the regional economy: the Economies of Scale Theory; the Economic Geography Theory (Krugman, 1980, 1991; Wang, Olivier, Notteboom, Slack, 2007). The factor of the location of the seaport (the geographical factor) is crucial not only for assessing the environment of the seaport, but also for determining and defining the position of the seaport in the local and global logistics chain. In the particular case the geographical location of the seaport is a factor of the seaport's integration into the

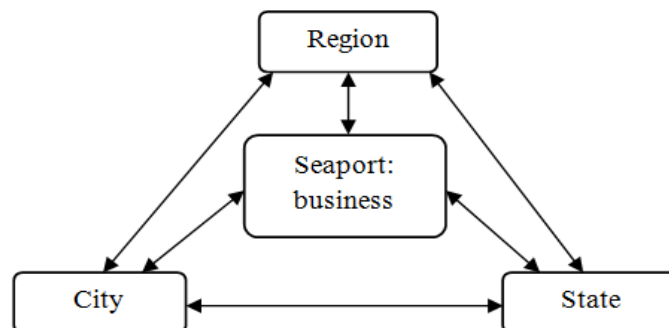
logistics system and may be deemed as an opportunity to create added value (Rodrigue, Comtois, Slack, 2009).

The global nature of both the seaport and the maritime sector, also the state-governed seaport performance management and the impact of the seaport's performance to the country's and international economy preconditions the assessment of seaport performance in terms of micro-economics taking into consideration the economic cycle change. This method of assessment is based on the Keynesian market economy theory. The global financial crisis during 2008-2010 led to need of decision making based on the micro-economics theory of J. M. Keynes. The Keynes' model of the economy, also the related neo-Keynesian, neo-classical synthesis and post-Keynesian economic theories, out of all the modern market economy theories affecting port economics, proved to be the most significant of all in the crisis and post-crisis period (Rakauskienė, 2006). The proponents of the neo-Keynesian theory stress the need of supranational economic regulation, particularly in times when integrated blocks such as the United Nations, the International Monetary Fund, the World Trade Organization, the International Maritime Organization, *etc.* are formed.

### Distribution of Seaport Performance Impact to the Country's Economy Indicators

Seaport performance is assessed with regard to the relations and interaction of the seaport, business, city (port city), country and region (Fig. 1).

**Figure 1.** The seaport, port city, country and region interaction model



**Source:** Author's elaboration

It is observed, that maritime business, shipping industry and port-related business entities operate in the seaport (Fig. 1). The conception of the seaport performance determines the economic activities taking place in the port, i.e. the conception shapes the seaport business and its relation to the businesses beyond the seaport. Seaports are commonly equated with seaport activities and

business. Nevertheless, the development of business enables the port to develop new activities, change the direction and (or) the nature of the concept of the port.

With regard to the city's economy, the port city is closely related to the performance of the seaport with complex ties, the most important of which are the social, economic, environmental and urban, *i.e.* territorial (Wang, Olivier, Notteboom, Slack, 2007; Ducruet, 2011). The seaport performance usually takes place in the city's administered territory thus the potential development and success of such performance relies on the actions of the city's municipality (territory planning, investment decisions, *etc.*).

Global cargo containerization at the end of the 20<sup>th</sup> century led to changes of the seaport's location and territory. The seaports were relocated from the center urban territories of the city and moved uptown, also new artificial ports were made, *e.g.* the proposed Klaipeda deepwater port project, the currently operating Maasvlakte seaport in the Netherlands. In each case the key priority is to define and balance the interface between the city and seaport performance, therefore the interface between the city and the seaport is a compelling reason to assess the effectiveness of the seaport and seaport businesses.

The interface of the seaport and the country is implemented by political or direct impact directly or via the interface between the country and city. The geopolitical environment of the port and the national policy shape the ties between the seaport and other countries, regions.

Different interaction connections of the port, city, region and the international market occur at different levels (Table 2).

**Table 2:** Interaction levels between the seaport, city, region and international market

No.	Level	Features
1.	The local, city or port, level	<ul style="list-style-type: none"> <li>● Appointing urban areas of the city to the seaport</li> <li>● The city's specialization (diversification) and infrastructure</li> <li>● The status, specialization, architecture of the seaport</li> </ul>
2.	City or regional level	<ul style="list-style-type: none"> <li>● Integrated growth strategy</li> <li>● The connection city- seaport in the seaport management process</li> <li>● Integration of the seaport subjects and seaport performance</li> <li>● Territorial and economic "pressure"</li> </ul>
3.	National or international level	<ul style="list-style-type: none"> <li>● Transport policy</li> <li>● Competition policy</li> <li>● Integration of transport systems</li> <li>● Fostering economic activity</li> <li>● Unpredictable factors</li> </ul>

**Source:** Ducruet (2011)

According to the paradigms of classic economics the factors of seaport (seaport business entity) performance are divided into strategic (the market, changes, development) and functional

(production, marketing, financial, *etc.*) (Stopford, 2009; Rodrigue, Comtois, Slack, 2009; Cariou, Ferrari, Parola, 2015).

The system of the aforementioned factors is provided in Table 3.

**Table 3:** Factors of the sectoral assessment of the seaport performance level

	Micro-level	Macro-level	Mega-level
Level	Mezzo-level: The sectoral assessment of the seaport performance level		
	Business performance level	Country level	International market level
Factor	<ul style="list-style-type: none"> <li>• Seaport specialization</li> <li>• Production potential</li> <li>• Management system</li> <li>• Innovation system</li> </ul>	<ul style="list-style-type: none"> <li>• The country's economic and legal climate</li> <li>• The import/export policy</li> <li>• Status of the seaport</li> </ul>	<ul style="list-style-type: none"> <li>• International economic activity</li> <li>• Distribution of production resources</li> <li>• Geography of international trade</li> </ul>

**Source:** Author's elaboration

The most commonly analyzed production factors are the following: the capacity of the seaport, port throughput, the turnover and structure of cargo, the turnover, capacity and utilization of ships, *etc.* The marketing factor group consists of the characteristics and price of the services, promotion, consumers, sales network, image, *etc.* The key financial factors are the following: income and expenses, profit, profitability, turnover, level of costs, operational stability, *etc.* The factors of each level may be measured in specific indicators (Table 4).

**Table 4:** The indicators of the assessment of seaport performance

	Micro-level	Macro-level	Mega-level
Level	Mezzo-level: The sectoral assessment of the seaport performance level		
	Seaport, business performance level	Seaport performance impact to the city, country level	Seaport performance impact to the region, international market level
Indicator	<ul style="list-style-type: none"> <li>• Cargo flows, their structure and changes</li> <li>• Competitiveness and market expansion changes</li> </ul>	<ul style="list-style-type: none"> <li>• The country's GDP changes due to seaport multiplication</li> <li>• Employment level</li> <li>• Attracting investment</li> </ul>	<ul style="list-style-type: none"> <li>• Integration into the international network</li> <li>• Global GDP and its changes</li> <li>• Integrated region GDP</li> </ul>

**Source:** Author's elaboration

The assessment of the impact of seaport performance indicators (Table 3, 4) is based on analytical conceptions, which are characterized by different indicator systems and methodology (Demirel, Cullinane, Haralambides, 2012; Notteboom, Wei Yim Yap, 2012). The main conceptions applied are the following: Profit conception; Capital preservation and storage conception, the Conception of cost of capital; Business risk and income conception; Cash flows (monetary) conception; Economic growth factor analysis conception. The latter is the most commonly applied conception for assessing the business entity's competitive position in the



market, preparing alternative performance and funding strategies, preserving the pace of business growth, controlling business effectiveness in different levels.

The following methods of the assessment for seaport performance impact to the economy are highlighted: benchmarking (Talley, 2012); data envelopment analysis, DEA (Williams, Peypoch, Barros, 2011), created and added value (Demirel, Cullinane, Haralambides, 2012); balanced scorecard (Mackevičius, 2008); models of equilibrium, the Leontief model, regional impact (Schaffer, 2000).

The benchmarking method is applied in the macro- and mega-levels, also in assessing the seaport performance in the region and performance indicators in a comparative analysis view and determining the connection. It is relatively difficult to compare the indicators of the performance of seaports and seaport terminals of different specializations due to different types of cargo, the duration of cargo handling, technologies, tariffs, the financial state of the country's, *etc.* The DEA method is more accurate comparing to the benchmarking method applied in the assessment of internal and external factors, while measuring the interface between effectiveness and upper level results, it also allows to foresee the possibilities of improving the performance of terminals and seaports by assessing the results in the following stages: productivity, profitability, merchantability (port charges) and overall efficiency. The productivity of seaport performance is assessed at the mega-level by applying the Luenderger index. The DEA method's application in the maritime sector is regarded ambiguously – despite the possibility to evaluate the scale effect, the probable application of the regarded method is criticized (Panayides, Maxoulis, Wang, Ng, 2009; Langenus, Dooms, 2015). The method of created added value in the seaport and the added value generated by the port bandwidth region as an alternative indicator also applied in the assessment of seaport efficiency. Modeling by implementing the models of general, partial and balanced equilibrium, also the Leontief model, regional impact model is applied to evaluate the seaport performance's impact to the economy of the country and region and it is assessed at the macro- and mega-level, seeking to maximize the impact to the country and region.

The concept of operational efficiency is important for analyzing the efficiency of the performance of the seaport and determining the possible means of increasing its efficiency. The need to analyze the efficiency of seaport performance is based on the operational integrity and integrity paradigm. At the macro-economic level seaport performance efficiency is assessed as a critical factor, determining the country's competitiveness and ensuring business prospects (Demirel, Cullinane, Haralambides, 2012), also a new provision is drawn, stating that a more effective port has a greater impact to the country's economy. From a theoretical point of view efficiency can be understood differently: as technological efficiency or productivity (the productivity of the utilized types of resources), as allocative efficiency, or distribution (the rational coordination of resources) or as an integrated efficiency. The latter is understood as both the consumption of different kinds of resources, as well as the rationality of their coordination with each other, *i.e.* the rational arrangement of the company's investments in accordance with different particular resource groups (Ansoff, McDonnell, 1998). Hence, the conception of seaport performance efficiency is associated with the successful use of resources.

The currently most frequently applied method of corporate financial position and operating results analysis methodology which is applied to assess the absolute financial and relative financial indicators is not sufficient. The synergy strategy is also significant for assessing the seaport performance impact to the economy of the city, country and region. The synergy strategy is usually characteristic to large economic entities and can be applied in cases of vertical and horizontal integration and (or) diversification of business processes. It is rational to apply the integrated methodology of business performance results and its financial state analysis. The long-term performance evaluation, through an integrated methodology approach, characterizes the interface the indicators of quantitative and qualitative performance and describes the degree of their impact with regard to integrated indicators (1).

$$E_n = \int (k_i \cdot (e_1; e_2; e_3; e_4)) \quad (1)$$

In the formula:  $e_1$  – marketing indicators: market share, business volume growth, quantitative and qualitative indicators of goods and services, level of marketing expenses, reputation, etc.;  $e_2$  – financial effectiveness indicators;  $e_3$  – internal business process performance indicators: resources, ratio of sales proceeds and resources, etc.;  $e_4$  – development indicators: investments, research costs, etc.;  $k_i$  – coefficient (rate) of the indicator group, the degree of influence, depending on the indicator group.

The short-term performance efficiency evaluation formula may be applied in analyzing a particular indicator group. For example, for the assessment of the financial indicators in the  $e_3$  Formula(1) the specified indicators provided in Formula (2) may be applied.

$$e_3 = \int (k_j \cdot (\square_1; \square_2; \square_3; \square_4)) \quad (2)$$

In the formula:  $\square_1$  – profitability indicators;  $\square_2$  – turnaround indicators;  $\square_3$  – solvency indicators;  $\square_4$  – cost level indicators;  $k_j$  – coefficient (rate) of the financial indicator group, the degree of influence, depending on the nature and singularity of the particular company's activities.

In assessing the seaport performance financial indicators the following facts must be taken into consideration: the misalignment of the economic cycles of the maritime sector, seaport and the regarded country; and the extent of port activities and the impact on the macroeconomic indicators. Therefore, if standard methods of financial indicator analysis prevail in the company's ordinary analytical work, in cases of seaport performance evaluation it is necessary to apply the balanced and integrated financial indicator assessment system in order to reflect the state of the port as accurately as possible (Mackevičius, Valkauskas, 2010).

Thus, in order to assess the impact of port performance to the city's economy  $E_m$ , and taking into consideration the complexity of this impact, the seaport performance impact assessment model may be applied (3).

$$E_m = \int (k_k \cdot (u_{m1}; u_{m2})) \quad (3)$$

In the formula:  $u_{m1}$  – indicators of seaport economic entities and companies which have a direct effect on the city's economy;  $u_{m2}$  – indicators of seaport economic entities and companies which have an indirect effect on the city's economy;  $k_k$  – seaport economic entity performance's impact to the city's economy significance coefficient (rate).

The seaport performance impact assessment model may be applied to assess the seaport performance impact to the country's and region's economy (4).

$$E_r = \int(k_r \cdot (E_n; E_m; u_{r1}; u_{r2})) \quad (4)$$

In the formula:  $E_n$  – port company's performance indicators;  $E_m$  – port performance efficiency on the city's economy indicators;  $u_{r1}$  – indicators of seaport economic entities and companies which have a direct effect on the country's, region's economy;  $u_{r2}$  – indicators of seaport economic entities and companies which have an indirect effect on the country's, region's economy;  $k_r$  – seaport performance to the country's, region's economy significance coefficient (rate).

The abovementioned seaport performance impact assessment model responds to the seaport economic research trends formed by the international port economics research community, where seaport performance efficiency and impact topics prevail in these trends – this is the research on seaport terminal performance, seaport management, seaport territory planning and development, seaport policy and regulation research in the national, regional and intergovernmental level, also research on seaport competition and competitiveness.

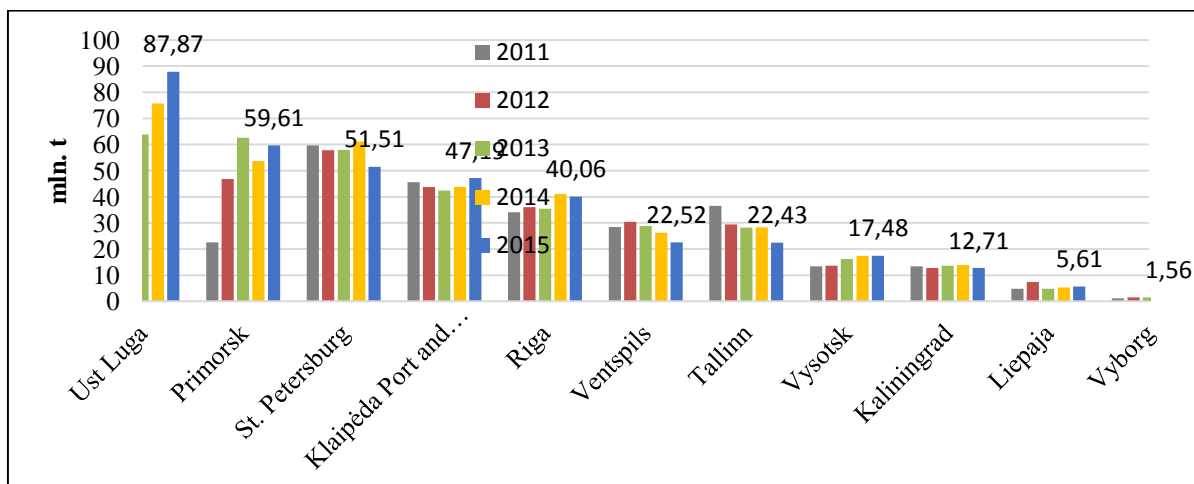
### **Seaport Conceptions and Quality of Life vs. Liberal Monetary Models of Economy**

The main seaport performance conception classifications applied in the practice of economic activity are the following port characteristics: the size of the port and the role of the port in the national or regional economy; the nature and form of the management and ownership of the port. The modern Eastern Baltic Sea region seaport conception is based on the management of the property of the seaport. On the one hand, this conception is mostly applied in describing and classifying seaport, but on the other hand – this is one of the most discussed conceptions for assessing the seaport's efficiency and productivity. The aforementioned indicators are determined by the size (capacity) of incoming ships, the structures of international shipping companies, differences of management, performance and commercial practice, the increase of seaport versatility and the associated increase of competition (Alderton, 2008, Talley, 2012). *These factors are the main reason why the country or local municipality seeks to have the greatest possible influence in seaport strategy planning.*

The assessment of the economic impact of seaport performance is considered to be one of the most significant means recognized in the global seaport practice not only to assess the economic benefits of the seaport, but also to distinguish the areas to which the seaport performance has the most effect on.

Lithuanian ports of Klaipėda and Būtingės Terminal have the highest cargo handling turnover among the Baltic States and only the turnover of Russian ports is higher in the Eastern Coast of the Baltic Sea region. The total cargo turnover in the region in 2015 decreased by 0.1% compared with 2014. The cargo flows were redistributed in the region, *i.e.* from ports of Baltic states the cargo flows were likely transferred to Russian ports. The largest increase by 16% was at the port of Ust-Luga. In the Baltic states the maritime freight increased only by 6% in the port of Klaipėda and by 18% in Būtingės Terminal (Fig. 2).

**Fig. 2.** Eastern Coast Baltic Seaports Cargo Turnover 2011-2015



**Source:** Annual Klaipeda State Seaport Authority Cargo Handling Reports 2011-2015

Negative correlation of cargo turnover is between Ust-Luga and Ventspils ports, Tallinn and St. Petersburg, Primorsk, Vysotsk, Būtingės Terminal (correlation coefficient  $k=-0,5$ ). The Russian embargo on the EU production, EU sanctions against Russia raised concern about the containerized cargo flows. The general container flow in the region has a tendency to decrease, as in 2015 it decreased by 16% compared to 2014. The regional leader in container handling is the port of St. Petersburg, although in this port container handling decreased by 17%. The largest decline by 29% occurred in Kaliningrad and 22% in Klaipėda. The biggest ro-ro cargo flow was recorded in Klaipeda port, it increased by 8% in 2015 compared with 2014.

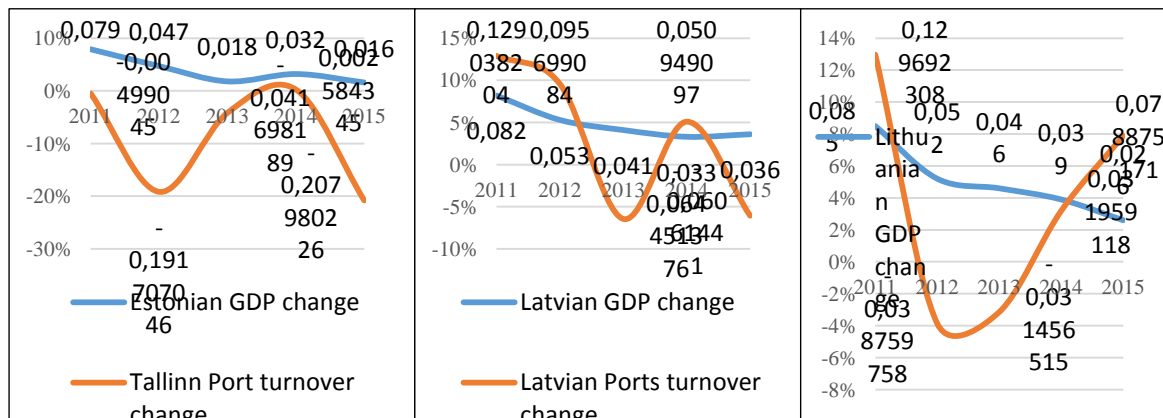
The Klaipeda State Seaport Authority ordered to carry out a scientific study called “The Klaipeda State Seaport influence to the city and state” (the period of 2007-2013 was analyzed). During this research the classic Leontief input-output model was applied. The research led to the conclusion that comparing to similar structures the seaport is one of the largest employers in both the region of Klaipeda and whole Lithuania, as 4,5% of the total Lithuanian working population works in the port. Comparing the facts that (1) the income per worker in companies that are directly related to the port is 2 times higher than the total income per employee in Lithuanian companies, and (2) the wages of port employees’ are on average 2-2.5 times higher than employees of other sectors, it can be concluded that the wages in the port sector are allocated in proportion to the contribution.

On the other hand, it is stated that currently the amount of employees of the seaport managing authority is 30% less than in similar ports of Riga and Tallinn, however the wages of employees have not reached the wages of the pre-crisis period as all state-run and private-run business entities reduced salaries in order to save costs. Such a situation has a negative impact on the state of human resources as it leads to the loss of highly skilled employees, more investments are necessary to train the less qualified employees, *etc.*

Having in mind the economic significance of seaports, which act as strategic objects of the country, performance to the country’s economy, the significance of seaport performance

economic impact is assessed ambiguously while analyzing the connection between the Baltic Sea east coast region seaports (Lithuania, Latvia, Estonia) and the country's GDP (Fig. 3).

**Figure 3.** Estonian, Latvian and Lithuanian GDP and ports turnover change fluctuation



**Source:** Eurostat, 2016; Annual Klaipeda State Seaport Authority Cargo Handling Reports 2011-2015

The economic growth of the Estonian economy in 2015 is the worst since the crisis in 2008-2009 and the slowest growth among the Baltic States, whereas the most rapid economic growth was reached in Latvia (Fig. 3). This may be influenced by the decrease of the seaport's productivity and sea freight flow, and the logistics system. The changes of the GDP of Latvia and seaport freight handling have a linear dependence (the correlation coefficient  $k=0,7$ ). The changes in seaport freight handling of Estonia and Latvia have a minor influence to the GDP change ( $k=0,3$  and  $k=0,4$ ). The fall of the Estonian economy and the economies of other Baltic states is linked to the negative impact of adverse external environment (due to the Russian food embargo). The Lithuanian transport section managed to regain the lost export flows by redirecting them to Asia, Scandinavia and Western Europe. Unfortunately, Estonian companies did not manage to effectively transform the cargo flows, and in 2015 total export in Estonia shrank, whereas the total export rates of Lithuania grew.

The analysis of modern functions of seaport and performance suggests that the seaport is a center of international trading, a communication partner and a transport system connection, it also is the place of high commercial infrastructure and industry concentration. This implies the assumption that the seaport is the local (port) and remote (consignor and recipient) location economic growth multiplier.

Contrary to the classical economic theories, which promote economic growth, the monetarism economics theory, even though aiming for economic growth, declares financial and economic stability and equilibrium. On one hand, macro-economic goals are considered as the priority, thus the monetary and fiscal policy are the most significant political levers. On the other hand, the

actions of monetary policy also strengthened social inequality and the impact to reduce social inequality is insignificant and short-term (Rakauskienė, 2006; Stiglitz, 2013; Bernanke, 2015). Targeted macro-economic stability is an erroneous goal that does not reflect the actual situation. The assessment of macro-economic and employment indicators set by J. M. Keynes is not sufficient to describe the actual economic condition (Drewnowski, 1980). J. Drewnowski (1980) refer to this situation as the second crisis of economics theory – the existing economic theories cannot answer the question of what in fact is the economic impact on people's lives.

The new approach of the socio-economic progress assessment paradigm is shaped by J. Stiglitz. According to the latter, the actual economic state is characterized by applying an integrated analysis of various aspects of life welfare indicators: material living standards (income, expenses and assets); health; education; personal activities, including employment; citizenship; social connections and relationships; environment (present and future conditions); the physical and social security, ecology. It is recognized, that the statistical quality of life indicators are important for foreseeing the future policies of countries, aimed and assessing the progress of the society and the functioning of economic markets. The assessment approach is altered from production to welfare, sustainable environment while assessing the state of the economy (Drewnowski, 1980; Stiglitz, Sen, Fitoussi, 2010; Rakauskienė, Servetkienė, 2011).

The issues of globalization of economic processes and evident tendency of activity humanization become relevant to the performance of seaports – the port authorities become open to the public, they actively participate in the social life of the city. Moreover, the significance of private business' and port companies' activities is increasing, and the seaport activities become subject to more strict environmental standards. These may be considered the rudiments of the European welfare market economy. It subsequently promotes research on the connection between culture and economics, which justifies the assumption that the decline of cultural, moral values slows economic growth.

Thus, in order to accurately reflect the actual economic state it is crucial to follow the concept of systemic life quality, which defines the quality of life of the population as an integrated concept fully describing the health of ecological, economic, material and moral spiritual condition of the society, that may be measured at the macro-level (national and international level), micro-level (individual human point of view) and mezzo-level (maritime sector level).

## Conclusions

The analysis of the results of the research on seaport performance suggests that fundamental, paradigm-level studies are not characteristic to seaport performance research. Fragmented, decentralized, local research carried out by small groups of scientists prevail, also there is an insufficient level of interdisciplinarity studies, a lack of tackling common problems and hypotheses. The research on port performance is related to very specific and narrow issues, whereas seaport management bodies, usually the state as the Eastern Baltic Sea coastal region is dominated by state-owned and municipal ports, are interested in a holistic assessment of the performance of the seaport, for example, linking the economic, social and geopolitical factors.

The assessment of the impact of the seaport's performance to the country's economy is associated with the ever-growing rate of competition of the seaports in the Eastern Baltic Sea coastal region, the changes in the region's and global shipping market. The economic cyclical fluctuation, geopolitical factors, the country's transport policy, the selected port conception and the port companies' strategies have a significant influence on the operational efficiency of seaports.

The productivity and activity of the seaport's performance has an impact on the country's transport sector's efficiency and partially defines the country's economic state. Seaport performance is associated with the growth and cyclicity of the national economy, also with the regional and global economic processes and the quality of life of the society. Thus in order to achieve a harmonious development of the Eastern Baltic Sea coastal region, the seaport performance impact on the economy must be assessed in an integrated manner, taking into consideration the macro-economic, micro-economic and quality of life indicators. Only in this case, more realistic results that reflect the actual economic state are likely, and it will subsequently create preconditions to form the port and the country's economic development trend.

In summary it may be stated that the impact of the seaport performance to the country's economy must be assessed in an integrated manner by applying the classic input-output model together with the quality of life indicators in the international (global) and national level. Such an assessment approach preconditions the promotion of investment to the public sector, as it also stimulates achieving economic efficiency, strengthening the balance between the public and private sectors, and creating conditions for economic progress and development.

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