LITHUANIAN MARITIME SECTOR'S ECONOMIC IMPACT EVALUATION: METHODS AND COMPARATIVE ANALYSIS

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Abstract

This article analyses the Maritime Sector economic growth impact on Lithuania's economy from two different maritime sectors structuring methods perspective: European and National. There is presented comparative analysis of the main economic data, counting by following different periods of Maritime sector development in absolute and comparative means. The article presents empirical study of the most important economic evaluation results of Lithuanian Maritime Sector statistical entity indicators: number of business units (companies), number of employees, turnover, gross operating profit, value added at factor costs and investments in tangible fixed assets.

Although many of the research concerning Maritime sectors were conducted by the European Council organizations and consultant agencies, especially including Scandinavian ones, Lithuanian Maritime sector economic impact on the parameters which are presented here, statistically were not followed by the different time periods. The permanent analysis of the Lithuanian Maritime sector economic evaluation is important for the country's Maritime sector's enterprises strategic linkages forwards to the agglomerated and geographically concentrated sectorial alliances, called as clusters.

It can be assumed that the Maritime sector's economic data comparison ensures a more sustainable sector development, the new quality of the activities, combining the ability to compete on lower prices or innovation.

The type of the article: *Empirical study.*
Keywords: *Economic impact, Maritime Sector, Clustering, Lithuania, Comparative analysis.*
JEL Classification: *O18, O32, P25, R11.*

1. Introduction

The notion of maritime sectors has increasingly been integrated into the European economic and political thinking, and today it functions as a cornerstone in innovation and industrial planning policies (Vivero, 2007). Much has been done by maritime organizations to evaluate, further develop and exploit the potential of maritime sectors as catalysts of competiveness, often with the support of public authorities.

The Maritime sector comprises a set of companies, whose activity is directly related to the sea. All companies, whose activity is fishing, constitute a part of the Maritime sector, and the same goes for companies that build or repair ships or form part of the associated auxiliary industry (Meersman & Voorde, 1997). However, there are also companies in the services sector that are included in this sector due to their close links with the Maritime area. Thus, companies that provide Maritime transport services and port services also form part of the Maritime sector, as of course do the companies that distribute Maritime products (Voorde, 2005). Finally, other service companies, which provide education, financial services and support services for maritime companies also belong to this sector (Cluster Maritimo Espanol, 2006).

Many researchers (Porter, 1990, 1998, 1999; Doloreux *et al.*, 2009; Vanaale, 2012; Wihlborg, 2006; Wijnolst *et al.*, 2008; Report by the Danish Shipowner's Association, 2010) have consistently emphasized the economic significance of maritime sectors, concluding, that the direct and indirect economic impacts in terms of employment and contribution to GDP make maritime sectors of vital

importance to a society (Hansen & Clasen, 2010). The economic impact can be evaluated as factors, affecting both positive and negative influence on the level of the country's economic activity. Assessment of a particular sector in the overall national economy is measured by the expenditure arising from the sector of economic activity and assesses the cumulative impact of these costs.

Although much of the research concerning Maritime sectors and clusters was conducted by the European Council organizations and consultant agencies, especially including Scandinavian ones, Lithuanian Maritime sector clustering economic impact on the parameters which are presented here, statistically were not followed by the different time periods. The permanent analysis of the Lithuanian Maritime sector economic evaluation is important for the country's Maritime sector positioning firstly. The sector internal processes and changes following the new requirements to the market, now is supported by the main Maritime policy strategies, which are more likely to be adopted in Lithuanian industries strategic decisions and especially needed to be analysed in Maritime sector. Lithuania is presented as a sea-nation, but still Maritime sector is not defined as a formal one and has many of the boundaries to be officially presented in many of the statistical reports.

The main research purpose of this paper is to evaluate and compare Lithuanian Maritime sector economic impact on the whole Lithuanian economy by following two methods, describing Lithuanian maritime sector structure.

The research object – comparison of Lithuanian Maritime Sector's economic impact on the whole Lithuanian Economy.

Research methodology: science literature analysis, synthesis, statistical data research, qualitative, non-experimental research.

2. Method

This work is based on the goal to have more accurate and exact result interpretation while analysing economic impact of Lithuanian maritime sector as separate entity of companies, allocated differently on the basis of National and European level.

Economic analysis of Europe seas has become important part of decision making and strategies shaping on both European and national level. The reliable economic analysis is based on clear definitions and comparable data. Maritime sector's definition is not clearly stated and unified on Europe level. The purpose of this article is to evaluate and compare maritime sector under the different definitions impact on economic metrics of maritime sector analysis in Lithuania. Two differently defined maritime sectors and economic data are being compared in this paper. The data bases are formed of these economic metrics: turnover, value added, gross operating profit, number of employees, number of business units and investments in tangible fixed assets.

ESPON has performed European Seas and territorial development, opportunities and risks research on the basis of EUROSTAT maritime sector structuring recommendations. Definition of Maritime sector from mentioned research was applied as basic for one of data bases. According ESPON research the maritime sector comprises traditional maritime sectors, tourism and fisheries. Research performed by ESPON also had statistical definition of maritime sector. By following this definition, Lithuanian Maritime sector comprises of 13 sections, 28 chapters, 49 groups and 71 economic classes, officially accounted by Lithuanian Statistical department. Used abbreviation in data analysis description – *EU database's method*.

The second maritime sector definition is based on Lithuania Government announcement „*The approval of Integrated Science, Studies and Business center Program (valley) for Lithuanian maritime sector development*" (2008). Lithuania maritime sector is combined system of various maritime business (sea transport, ports and infrastructure, industry exploiting coastal resources, recreation and other), fundamental and applied scientific sea researches, corresponding business and science specialist education system. Lithuanian strategic and policy documents describe the Lithuanian Maritime sector as entity covering those economic classes: Shipping and Ports, Shipbuilding and Repair, Fishing and Aquaculture, Energy, Marine Recreation and Tourism. By

following this definition, Lithuanian Maritime sector comprises of 10 sections, 20 chapters, 29 groups and 41 economic classes, officially accounted by Lithuanian Statistical department. Used abbreviation in data analysis description – *LT database's method*.

It is important to note, that one of the major limitations to sector analysis is the non-existence of a Maritime sector as a statistical entity. Without a uniformly defined sector, it requires considerable judgment on the part of the researcher to draw the sector's boundaries, which in turn influences the outcome from the input/output analysis of the national statistics (Hansen & Clasen, 2010).

But as this is a sector that covers a very wide range of activities, the National Statistics department in Lithuania does not provide statistical information about it in systematic approach. Although it is possible to work with the statistical information provided officially – match those enterprises statistics, which belong to Maritime subsectors. Therefore, one of the most important tasks being carried out by this sector involves studying – by conducting surveys and preparing statistics based on the statistical public information and other sources – these important values for the Maritime Sector economic impact evaluation.

Department of Statistics in Lithuania distribute the data according to the classification of economic activities, so this article presents an analysis of sub-sectors as the economic activities of the group consisting of 4-digit level classes (according to EVRK, 2 edition), which may belong to Maritime Sector generally.

Assessing the marine sector of Lithuania on Lithuania's economy, the total economic impact (direct and indirect) was calculated using the following indicators: number of business units (companies), number of employees, turnover, gross operating profit, value added at factor costs and investment's in tangible fixed assets.

The period for the evaluation of the statistical givens trends is chosen – 5 years, according to officially available 2007 – 2012 period statistical givens.

3. Results

Assessing the marine sector organizations economic significance Lithuanian economy, the study population consists of: public and private companies, state and municipal enterprises, branches of foreign companies, agricultural cooperatives and companies, public agencies, private companies and individuals engaged in business (economic) activities. Only those public institutions are involved which has more than half of the operating costs by income.

EU database's methodic results: According to the latest data, in 2012 Lithuanian maritime sector had 11.07 percent of the country's businesses. Given the Lithuanian maritime sector dynamics in the number 2007 - 2012 period from 2008 recorded in marine sector of relative decline, respectively, from 15.31 percent to 11,07 percent in 2012 (an average of 1.06 percent annually), compared with other sectors but the absolute number is increasing since 2010 (in 2010 recorded 15271 operating companies, 2011 - 17173 units, 2012 - 18508 units). So it can be concluded that although the number of companies in the maritime sector is growing, but in comparison to other sectors of the maritime sector companies establishing lower than in other sectors. Marine sector is composed of those companies which, according to Eurostat methodology depend on certain economic activities of the classes (4-digit level of NACE Rev. 2.)

LT database's methodic results: Enterprises which belong to Lithuanian Maritime Sector, number share is presented in Figure 1 and Figure 2. It shows permanent increasing tendencies: from 3.54 % in 2007 comparing to the whole Lithuanian companies number, which was in the sheer size of 5666 units, and in 2012 it was counted as 4.41 %, which in numbers is 7373 units.

Business units, which belong to Lithuanian maritime sector, are presented in Figure 1 and Figure 2.

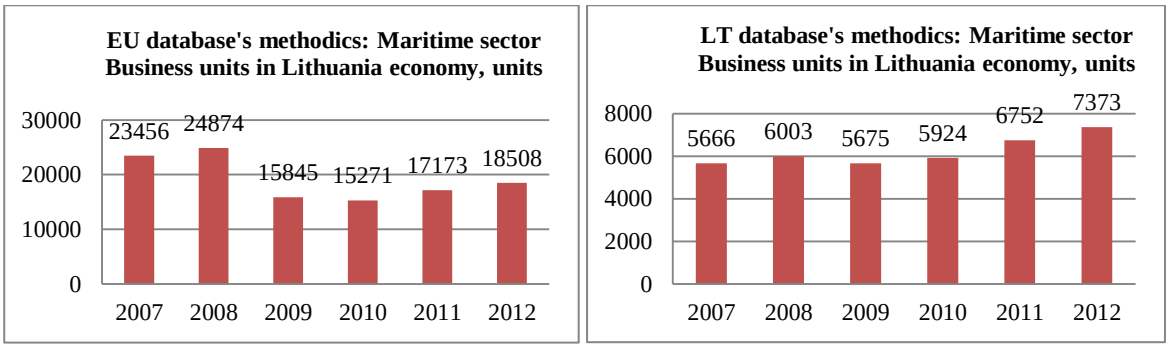

Figure 1. Maritime sector Business units in whole Lithuanian economy, units

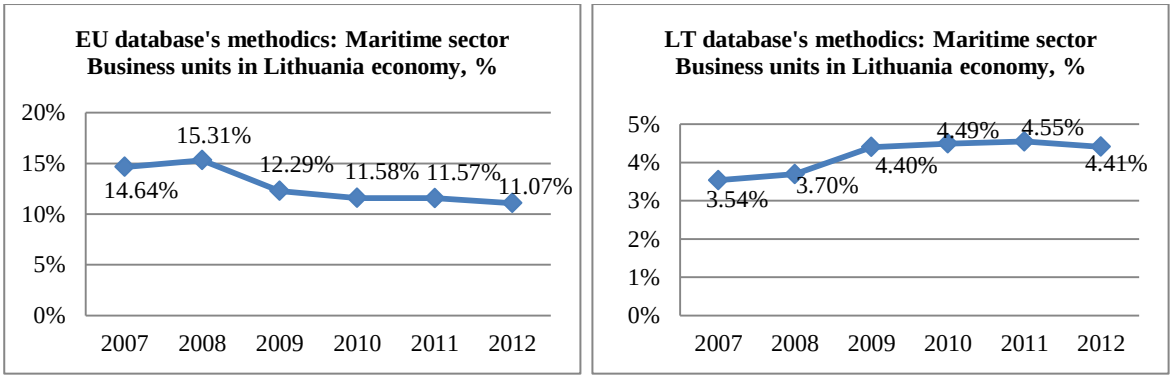

Figure 2. Share of Maritime sector Business units in whole Lithuanian economy, %

EU database's methodic results: The analysis of the employees, working in the Lithuanian Maritime sector, shows the numbers of 2007 - 2012 period, and it is noted that in 2008 the sector was comprised by largest number of employees - even 11,94 percent of the country's employees, however, this ratio began to fall in 2010 and was 11,37 percent. Anyway, the percentage remains stable and it can be said that more than 11 percent of the country's workers are employed in the Maritime sector. Comparing the absolute number of employees data marked decline in the number of workers observed in 2009 (compared with 2008 data) - by 9 thousand employees. Comparing the relative and absolute levels of employees, the indicator trends of numerical values are similar. According to the latest data of Lithuanian maritime sector in 2012 had 11.70 percent of the country's employees (104.8 thousand employees).

LT database's methodic results: Total (for the Lithuanian Maritime Sector) jobs created in 2012 was nearly 51.2 thousand, which accounted for 5.71 percent all jobs created in Lithuania. This sector have directly created almost 30 thousand jobs, buying raw materials, products and services due to an additional 11 thousand job creation / maintenance supplier companies. It has also been created (preserved), over 8 thousand jobs in other sectors of the direct and indirect sector employees and revenues resulting from the administration. Trends of Employees in Maritime sector are shown in Figures 3 and 4.

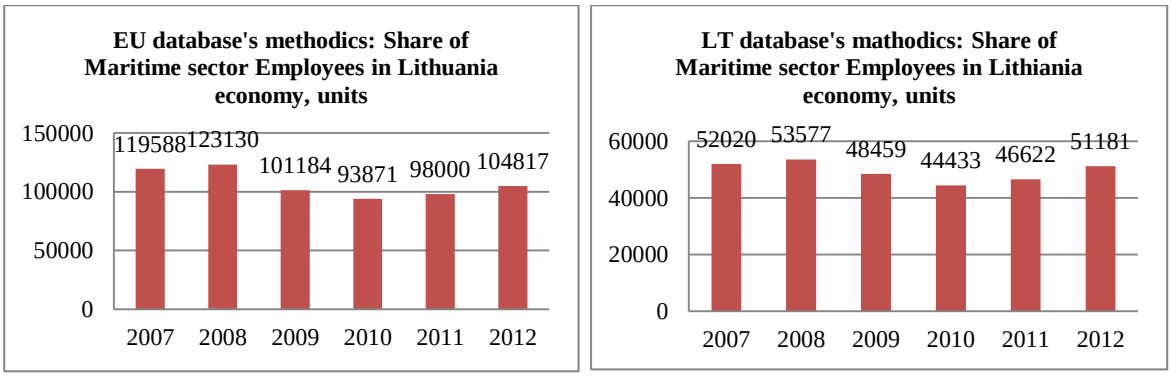

Figure 3. Share of Maritime sector Employees in whole Lithuanian economy, units

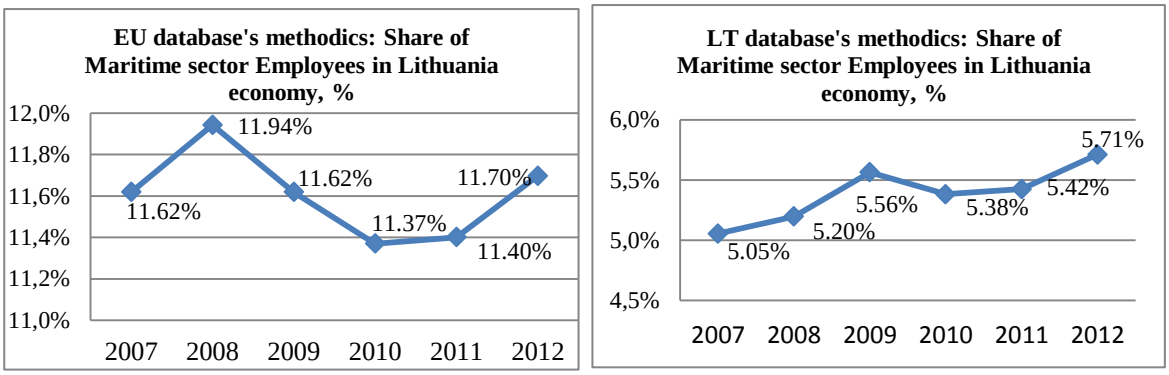

Figure 4. Share of Maritime sector Employees in whole Lithuanian economy, %

Maritime sector turnover (excluding VAT) is the entity's income received in a given period from the sale of goods and/or rendering services. Turnover index's purpose is to assess the retail trade turnover in the extent of the country, county and municipal level.

EU database's methodic results: According to systematic Lithuanian maritime sector turnover dynamics 2007 - 2012 period, the data from 2009 recorded sharp increase in turnover in the sector (annual average of 3.4 billion. LTL), respectively from 19.352 billion LTL (2009 year) to 29.811 billion LTL in 2012. A striking decline in turnover was recorded in 2009 - dropped by 6.35 billion LTL. In comparison with the data of 2008, and reached 19.35 billion. LTL Figure 6 visualizes the Lithuanian maritime sector relative share of turnover, compared to all the other sectors within the country of turnover. Systematized data show that the Maritime sector generated turnover of 2007 - 2012 period maintained a relatively stable level and the 2007 - 2012 period averaged 11.69 percent of the total turnover generated in the country. In 2012 the turnover ratio reached a maximum value (since 2007) and accounted for 12.44 percent the total turnover of the national economy.

LT database's methodic results: Maritime Sector enterprises in 2012 generated about 4.561 billion EUR Turnover, which accounted for 6.57 percent of all Lithuanian Economy Turnover. Though the resent years, the Maritime sector's enterprises Turnover proportion was permanently increased in the context of the whole Lithuanian economic Turnover.

The Maritime sector Turnover proportion trend is shown in Figure 5 and Figure 6.

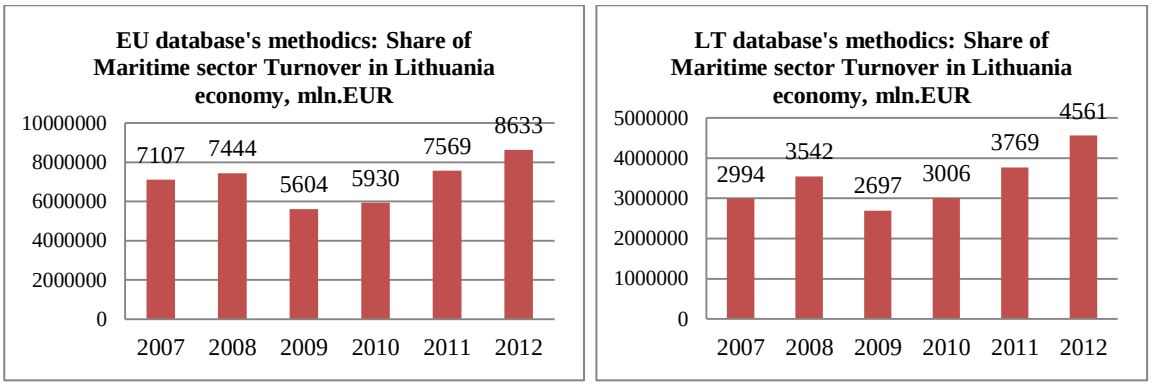

Figure 5. Share of Maritime sector Turnover in whole Lithuanian economy, mln. EUR

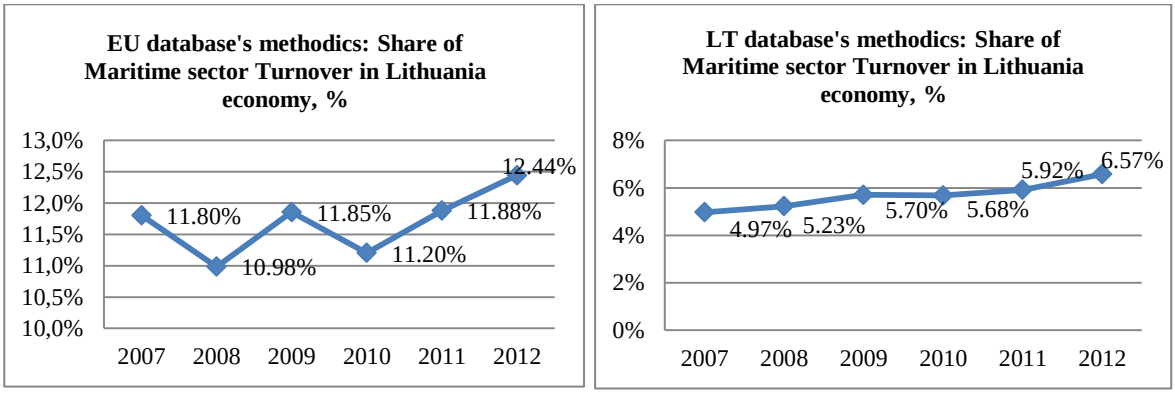

Figure 6. Share of Maritime sector Turnover in whole Lithuanian economy, %

Gross operating profit is the difference between the trade turnover and the purchase for resale purposes, according to the stock volume changes.

According to EU database's methodic, Gross operating profit generated Lithuanian maritime sector companies operating in 2007 - 2012 period, ranged, respectively: in 2007, is the highest recorded value of the index – 4.13 billion LTL, while in 2009 decline to 2.17 billion LTL. Since 2009 this indicator has been growing an average of 571 million LTL every year, and 2012 amounted to 3.886 billion LTL. Lithuanian maritime sector companies generated gross operating profit nationwide ratio was the highest in 2009, compared to recent data of the whole country's economy generated gross operating profit, and accounted for 20.7 percent of the country's gross domestic profit. The relative share of sharp annual increase in 3.3 percentage points compared to 2008 - 2010. Lithuanian economy has affected by 2008 - 2010 the global economic crisis, when all sectors of Lithuania noted particularly marked decline in gross operating profit (over 42 percentage points in 2009 compared to 2008), and it is influenced by the maritime sector gross operating profits dynamic changes in the relative size of 2009, a relatively smaller decline of Lithuania marine sector companies operating in the general operating profits (over 30.5 percentage points compared to 2008). In 2012 – 19.01 percent was recorded of Lithuanian companies operating in the maritime sector generated gross operating profit compared with rest Lithuanian economy.

LT database's methodic results: In 2008 it was accounted for 7.97 %, which in numbers was 414 million EUR. Within the next period of years (2009 – 2012) it became stable – approx. 7 %, which in numbers is: 2009 – 245 million EUR; 2010 – 287 million EUR, 2011 – 386 million EUR., 2012 – 471 million EUR.

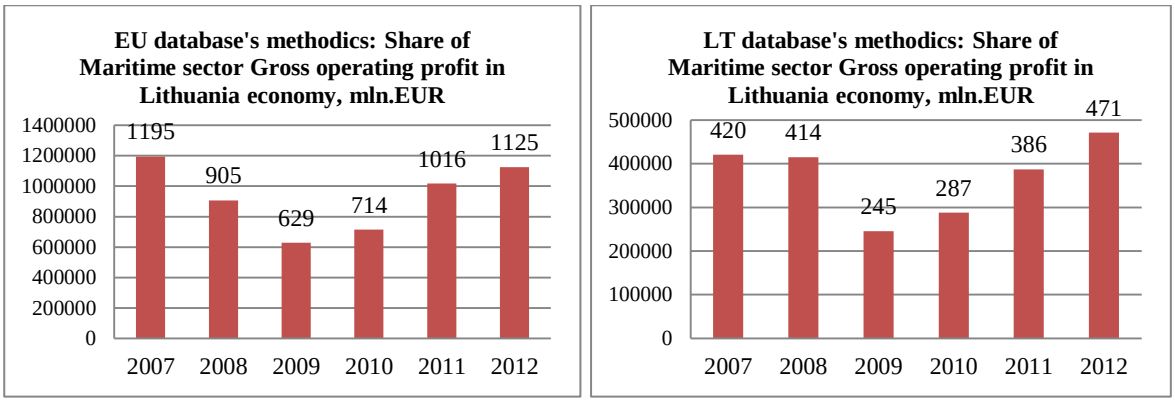

Figure 7. Share of Maritime sector Gross operating profit in whole Lithuanian economy, mln. EUR

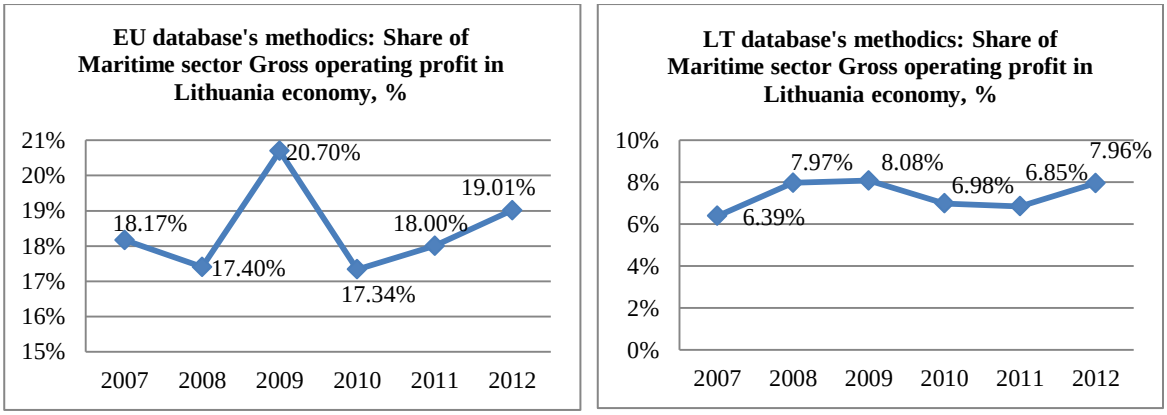

Figure 8. Share of Maritime sector Gross operating profit in whole Lithuanian economy, %

Value added at factor costs is the value of output (goods and services produced over the period) less the value of intermediate consumption (raw materials, materials, and services used for the production of those goods and services).

EU database's methodic results: The analysis of Lithuanian maritime sector Value added (at factor cost) dynamics 2007 - 2012 year shows that during the 2007 - 2010 period, the added value of the absolute rate dropped, especially evident in the decline recorded in 2009: comparison with data from 2008, 2009 Lithuanian maritime sector generated value added production prices fell by 1.615 billion LTL. Since 2010, the volume of corporate value added (at factor cost) grew up on the latest data - 2012 amounted to 6.73 billion LTL. This accounted for 15.5 percent of the country holding the value added (at factor cost). Relative Lithuanian maritime sector in the value added at factor cost index 2007 - 2012 period was relatively stable, averaging 15.03 per cent in the total value added of calculated Value added (at factor costs).

LT database's methodic results: The total Value added (at factor costs) developed for the Maritime Sector, by direct, indirect and induced operating in the Lithuanian economy in 2012 was 982 mln. EUR or 7.81 percent Lithuanian companies' value added at factor cost. Value added trend at the end of 2010-2011 if compare to 2009 was insignificantly decreased (0.26 %) concerning the economic crisis influence to the whole Maritime area sectors.

The Maritime sector companies Value added at factor costs trend of the period 2007 – 2012 is shown in Figure 9 and Figure 10.

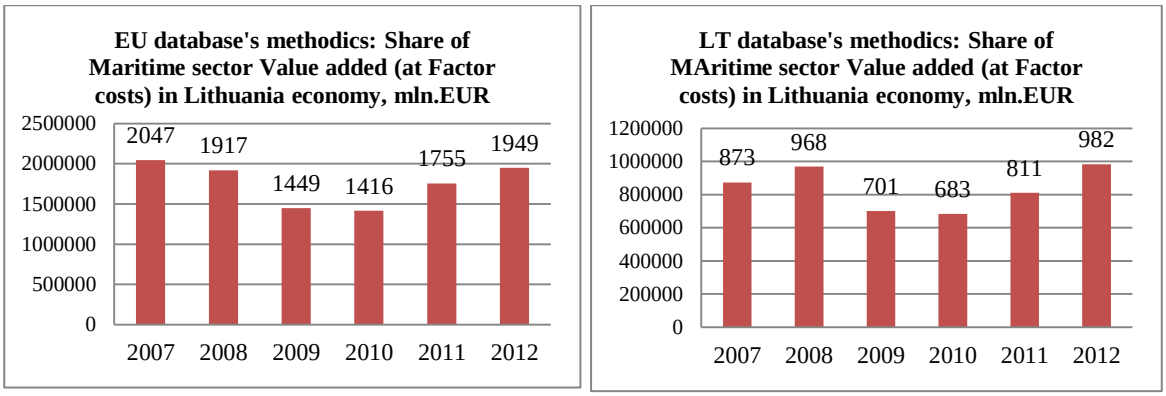

Figure 9. Share of Maritime sector Value added (at Factor costs) in whole Lithuanian economy, mln. EUR

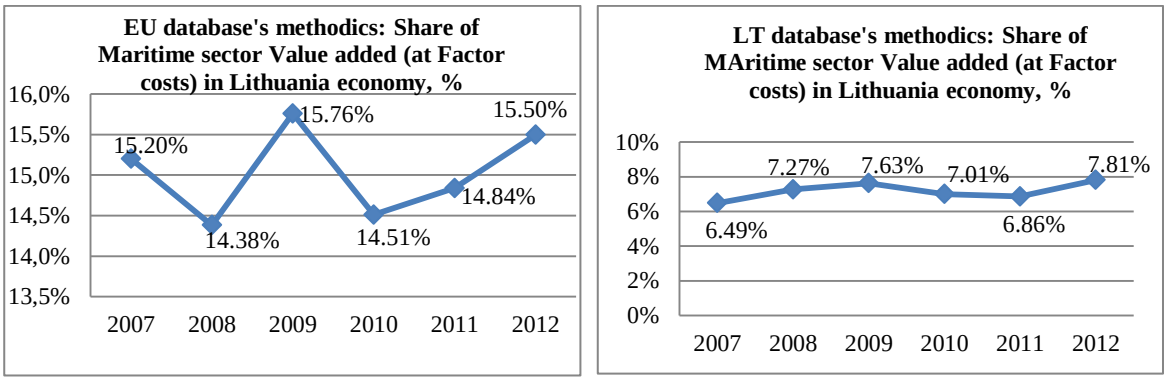

Figure 10. Share of Maritime sector Value added (at Factor costs) in whole Lithuanian economy, %

EU database's methodic results: Maritime sector gross investment in tangible assets dynamics 2007 - 2012 year show that 2007 - 2011, investment in tangible assets has been steadily declining, and only in 2012 recorded a positive change. The lowest gross investment in tangible assets recorded in 2011 – 2.47 billion LTL, while in 2012 this investment has increased by one-third and accounted for 3.43 billion LTL. The analysis of Lithuanian maritime sector relative gross investment in tangible assets dynamics, compared with other sectors of the country, Lithuanian maritime sector is relatively the most invested in 2009 - captured 29.07 percent of the total gross investment in tangible goods across Lithuania. The minimum rate was recorded in 2011 – 21.47 percent of the country's gross investment in tangible assets were invested in the Lithuanian maritime sector. In 2012 this ratio had risen and reached 27.04 percent of the total national investment in tangible fixed assets.

LT database's methodic results: The presented Investments in tangible fixed assets comparative givens distribution per year remains relatively stable and growing. In 2007 this share was 5.20 % (355 million EUR) comparing to the whole Lithuanian Gross investment; in 2009 – 6.29 % (179 million EUR) and in 2012 – 8.62 % (316 million EUR).

Trends of Lithuanian maritime sector Gross investments in tangible assets are shown in Figure 11 and Figure 12.

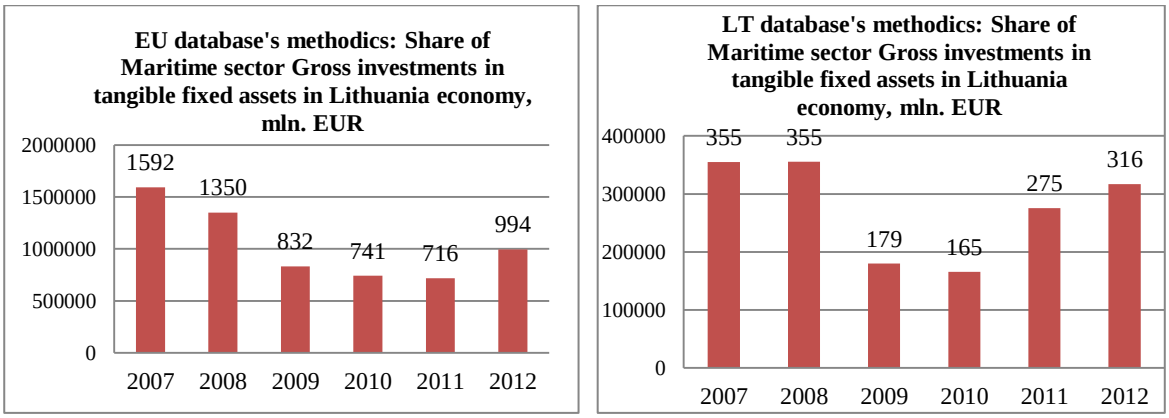

Figure 11. Share of Maritime sector Investments (in tangible fixed assets) in whole Lithuanian economy, mln. EUR

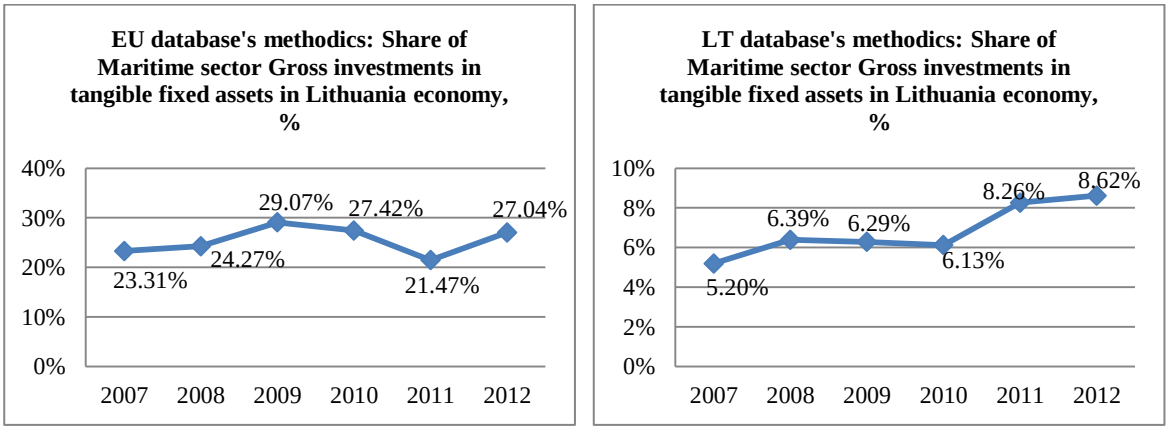

Figure 12. Share of Maritime sector Gross investments (in tangible fixed assets) in whole Lithuanian economy, %

4. Discussion and Conclusions

It is important to describe and analyse the significant differences between the means while analysing Lithuanian maritime sector significant impact to whole Lithuanian economy in absolute and comparative means on the basis of two different methods, met in practice.

EUROSTAT method (EU database's method) shows up to 5 times more significant Lithuanian maritime sector economic givens and must be used while presenting and comparing Lithuanian maritime sector economic givens to other countries Maritime sectors / clusters. This method is presented as formal one, based on European Commission recommendations for Maritime sector as structural entity description.

National method (LT database's method) is presented in formal strategic Maritime valley documents, which shows simplified structure of maritime sector, although involves research and study institutions also national and regional government organizations too.

The method for defining Maritime sector in Lithuanian mean - according to national strategic document – Program (2008), which does not explain the elimination of those significant Maritime sectors, which generally are included in European Commission strategic documents, so it may lead to not enough efficient and significant presentation of Lithuanian Maritime Sector (in numbers and impact parameters) as it is described in other international strategic studies and programs, officially used in comparative countries maritime sectors analysis.

With the prosperous willingness to show Maritime sector economic impact to whole Lithuanian economy, EUROSTAT method remains originally adopted and valuable tool for the economic givens counting in absolute and comparative means.

It must be noted, that Maritime sector economic significance, counted on the basis of EUROSTAT, must involve also research and governmental institutions, which in this case were not

measured because of lack of givens, officially presented by Lithuanian Statistical department on the level of 4-digits information precision.

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