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COMPETITIVENESS AND ECONOMIC DEVELOPMENT SCENARIOS OF LATVIA

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Abstract. The paper deals with the analysis of exports and competitiveness in Latvia in comparison with Estonia and Lithuania. The objective of the study is to elaborate the possible sectoral development scenarios based on the competitiveness analysis results. The main focus is on exports of goods and revealed comparative advantage (RCA) of exported products as compared to the EU exports. Scenarios are elaborated to model economic development by industries using Latvian Model of Development (LMD), which is a macro-econometric model. Results argue that the economic development is higher if the competitiveness ensures both higher export growth and import substitution. RCA is an appropriate method to apply in competitiveness studies and the research findings can be used in economic policy and analysis.

Keywords: competitiveness, revealed competitive advantage, economic development, industries, scenario analysis, scenarios of Latvia.

JEL Classification: F10, F14, F47.

Introduction

In small open EU economies like Latvia, export is an important determinant of economic growth. Moreover, if a larger share of the population in regions is involved in export-oriented activities, also GDP increases faster (González-Pernía & Peña-Legazkue, 2015) and regions develop more coherently. Strong export growth cannot be achieved, if export competitiveness is weak (Vukšić, 2015). Therefore export development has to be analyzed together with the competitiveness. Moreover, for the sustainable export development, it is important to ensure that high value-added products gradually become more competitive and replace others (Saboniene, 2009), even, if the current competitive positions of the traditional lower value-added products are strong and stable.

Export performance and competitiveness depends on many factors, beginning with those, which are related to the enterprises like the performance of particular enterprises (Navarro-García, Arenas-Gaitán, Javier Rondán-Cataluña, & Rey-Moreno, 2016),

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internationalization processes in enterprises (Papadopoulos & Martín Martín, 2010), internet marketing activities (Bianchi & Mathews, 2016), even personal skills of employees (Solovjovs, Kotlars, Skribans, & Liptak, 2017) and ending with such macro level factors as the EU membership (Buturac, Lovrinčević, & Mikulić, 2017), foreign direct investment (Nidhiprabha, 2017), labour productivity and innovations (Olczyk & Kordalska, 2017), which ensure better trade conditions, increased quality of goods, lower prices and other aspects. In the context of the EU, researchers argue that globalization processes, trade liberalization and EU integration (Fojtíková & Staníčková, 2017) are important factors. Other authors argue that non-price competitiveness has to be enhanced to ensure the ability to compete in the foreign markets in the long run (Bierut & Kuziemska-Pawlak, 2017).

In order to understand, how exports and competitiveness can facilitate economic growth of the country, different macroeconomic models can be applied. In case of sectoral analysis, models, which incorporate input-output relationships, are useful. Such models can be extended, for example, to incorporate developments of demography and labour market (Batey, 2018), also other important economic variables can be included in such models. But up-to-date input-output data are not always available. For example, the latest official input-output table for Latvia is available for 2010. Also, other model types have their strengths and weaknesses (Blanchard, 2018), therefore it is up to researchers to decide, which is more appropriate in a particular case and which theories should be used (Hendry, 2018). Moreover, the use of more complex models does not always give the expected results and their development is very time consuming (Skribans & Balodis, 2016). Therefore it is necessary to build such a model that is not too complicated but allows understanding the main issues and developments related to the particular research. The objective of the study is to determine the possible economic development scenarios based on competitiveness analysis results. The research includes a description of the data and methodology, competitiveness analysis of Latvia as compared to Estonia and Lithuania, also the definition of scenarios as well as the results and conclusions.

1. Data and methodology

The main data sources of this research are Eurostat (Eurostat, 2018b) and Central Statistical Bureau of Latvia (CSB) database (CSB, 2018), which form the basis of the modelling database. Eurostat Comext (Eurostat, 2018a) data of exports of goods by CPA categories in 2010–2017 for the Baltic States (Estonia, Latvia and Lithuania) and the EU (28 countries) are used for Revealed Comparative Advantage (RCA) index analysis. CPA classification is chosen because its products are grouped similarly as activities in NACE classification, but data on exports are not available in NACE classification for all the EU countries. For classification of goods in high-, medium-high-, medium-low- and low-technology goods Eurostat methodology for aggregations of manufacturing industries based on NACE Rev. 2 (Eurostat, 2015) is used.

Equation (1) is used to compute the RCA index. RCA index is widely used in the export analysis (Brakman & Van Marrewijk, 2017; French, 2017), but it mainly compares export performance of products of a particular country to the global exports of particular products. In

this research export structure of Estonia, Latvia and Lithuania are compared with that of the EU. This choice is determined by the fact that the Baltic States are a part of the EU and can use the benefits of this economic union also in exports. On the other hand, the EU member states compete with each other as in most cases they have similar conditions of trade:

$$RCA = \left(\frac{X_{i,j}}{X_j} \right) \Big/ \left(\frac{X_i}{X} \right), \quad (1)$$

where: $X_{i,j}$ – exports of the product group i in the country j; X_j – total exports in the country j; X_i – EU exports of the product group i; X – total EU exports.

RCA values are only positive. If the RCA value is larger than 1, the product group has a revealed comparative advantage.

For scenario analysis, a macro-econometric Latvian Model of Development (LMD) is adjusted and applied. The main structure of the model is similar as in (Ozolina & Pocs, 2013). The model includes the main macroeconomic variables and covers the whole economy that is subdivided into 10 industries: agriculture, industry, manufacture, construction, trade and hospitality, transport, public administration, education, healthcare and other services. It is estimated using data on economic indicators in euros for 1995–2016. Scenario analysis is performed for 2017–2021.

2. Competitiveness analysis

In the research, RCA indexes are first analysed by groups of products, which correspond to the industries included in the model. Further analysis is made in more detail in order to make assumptions about competitiveness developments and their influence on the future sectoral development. As data on exports of goods are used in the research, the analysis includes the major three groups of products.

Figure 1 shows that Latvia has revealed comparative advantages in products of agriculture, forestry and fishery, as well as in other industrial products (RCA>1).

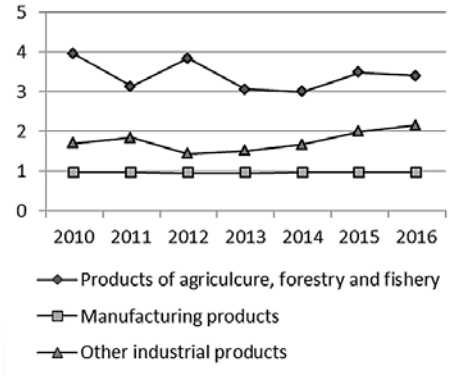

Figure 1. RCA index of selected product groups in Latvia
(source: calculated by the authors,
using data from Eurostat, 2018a)

The computed value of RCA for manufacturing products is slightly less than 1, which means that, if some of the products become more competitive, also the whole manufacturing industry will have revealed comparative advantages.

If compared to the data of the other Baltic States, results indicate that Estonia has revealed comparative advantages in all three product groups despite the fact that the data on several products are not available and zero exports assumption is used for these products. In case of Lithuania, only products of agriculture, forestry and fishery have revealed comparative advantage. It is interesting to note that when analysing extra- and intra-EU trade, Estonia has revealed comparative advantages only in other industrial products in intra-EU trade, which means that it is more oriented on the extra-EU trade, while in Latvia and Lithuania the results are alike both in intra-EU, extra-EU and in total exports.

The three Baltic States have close economic relations and their exports include a considerable part of the produced value added of other two countries as well (Ozoliņa, 2016). Therefore revealed comparative advantages in one country partly show the potential to improve the export competitiveness also for the other countries of the Baltic States.

To determine which products have a potential to be more competitive, it is necessary to analyse the data in more detail. In the group of products of agriculture, forestry and fishery Latvia in general has the same position as Lithuania and Estonia is somewhat lagging behind (see Table 1). Latvia is the only country in the Baltic States, which has revealed comparative advantages in exporting fish and related products. If compared with Lithuania, Latvia in 2016 and most of the previous years did not have these advantages only for perennial crops (a sub-category in products of agriculture, hunting and related services).

In this group of products, Latvia has a potential to increase the export competitiveness of products of agriculture, hunting and related services, namely the perennial crops. However, as it is more important to facilitate higher value-added exports rather than the exports of primary products, this potential is not considered in scenario analysis.

Results presented in Table 2 clearly show that it is necessary to analyse revealed comparative advantage in greater disaggregation, as it is possible to be more competitive with par-

Table 1. Revealed Comparative Advantage of products of agriculture, forestry and fishery in the Baltic States according to the CPA classification in 2016 (source: calculated by the authors, using data from Eurostat, 2018a)

CPA code	Product (number of sub-categories)	Country code	RCA value	Number of sub-categories with RCA>1
01	Products of agriculture, hunting and related services (4)	EE LV LT	1.4 3.0 2.7	2 3 4
02	Products of forestry, logging and related services (1)	EE LV LT	12.3 19.2 6.4	1 1 1
03	Fish and other fishing products; aquaculture products; support services to fishing (1)	EE LV LT	0.3 1.3 0.3	0 1 0

ticular products and not the whole product group (motor vehicles, trailers and semi-trailers are some of the examples here).

Regarding high-technology products (CPA product groups 21 and 26), Latvia is the only country, which had revealed comparative advantage in 2000 in pharmaceutical preparations, afterwards, none on the Baltic States has these advantages in major sub-groups of basic pharmaceutical products and pharmaceutical preparations. The situation is more appealing in computer, electronic and optical products, where Estonia and Latvia have stronger positions as the value of RCA is larger than 1, however, Lithuania has the same number of competitive product sub-categories as Latvia.

In this product group Latvia has a potential to increase exports of optical instruments and photographic equipment (Latvia had revealed comparative advantages for these products in 2015 and Lithuania has these advantages also in 2016) and in measuring, testing and navigating equipment; watches and clocks (Estonia has revealed a comparative advantage for these products).

In the group of medium-high-technology products (CPA product groups 20, 27–30) Estonia has more revealed comparative advantages. It is especially evident for electrical equipment and machinery and equipment n.e.c., where Latvia does not have any products with revealed comparative advantages and Lithuania has one. Moreover, overall RCA value of Estonia in these two product groups is larger than 1.

Table 2. Revealed Comparative Advantage of high- and medium-high-technology manufacturing products in the Baltic States according to the CPA classification in 2016 (source: calculated by the authors, using data from Eurostat, 2018a)

CPA code	Product (number of sub-categories)	Country code	RCA value	Number of sub-categories with RCA>1
20	Chemicals and chemical products (5)	EE LV LT	0.9 0.5 1.2	1 1 1
21	Basic pharmaceutical products and pharmaceutical preparations (2)	EE LV LT	0.0 0.6 0.5	0 0 0
26	Computer, electronic and optical products (7)	EE LV LT	1.7 1.3 0.6	2 3 3
27	Electrical equipment (6)	EE LV LT	1.6 0.6 0.7	3 0 1
28	Machinery and equipment n.e.c.	EE LV LT	1.0 0.5 0.6	3 0 0
29	Motor vehicles, trailers and semi-trailers (3)	EE LV LT	0.2 0.4 0.3	1 1 1
30	Other transport equipment (4)	EE LV LT	0.3 0.2 0.1	1 1 0

Taking into consideration export trends and revealed comparative advantages in Estonia and Lithuania, Latvia could increase the competitiveness of basic chemicals, fertilisers and nitrogen compounds, plastics and synthetic rubber in primary forms and domestic appliances, possibly also of wiring and wiring devices, electric lighting equipment and other general-purpose machinery.

Results presented in Table 3 show that regarding agricultural products (both unprocessed and processed) competitiveness trends go in line with the (Bojnec & Fertő, 2014) conclusion that export competitiveness of the higher processed food increases the export competitiveness of the whole chain of particular products. For example, in Latvia, the products related to crops have revealed comparative advantages, while in Lithuania both products of agriculture and food products are most competitive.

All the Baltic States are highly competitive in wood and products of wood and cork, which can be explained by the relatively high share of woods in these countries thus ensuring the availability of the necessary resources.

Latvia and Lithuania hold comparatively good positions in other non-metallic mineral products, where more than a half of sub-categories of products have revealed comparative advantages. Latvia and Lithuania have better positions in exporting textiles, while Estonia has a better position in exporting paper and paper products, where all the Baltic States have one sub-group of products with revealed comparative advantage, but only in case of Estonia, the value of the RCA is larger than 1.

Analysis of the calculated RCA indexes and export trends shows that it might be possible to increase the competitiveness of textile yarn and thread and pulp, paper and paperboard during the next five years.

Table 3. Revealed Comparative Advantage of selected medium-low and low-technology manufacturing products in the Baltic States according to the CPA classification in 2016 (source: calculated by the authors, using data from Eurostat, 2018a)

CPA code	Product (number of sub-categories)	Country code	RCA value	Number of sub-categories with RCA>1
10	Food products (9)	EE LV LT	0.6 1.3 1.7	1 5 7
11	Beverages (1)	EE LV LT	1.7 3.8 1.1	1 1 1
12	Tobacco products (1)	EE LV LT	0.0 1.2 6.0	0 1 1
13	Textiles (3)	EE LV LT	1.5 1.4 2.0	1 2 3
14	Wearing apparel (3)	EE LV LT	0.9 0.9 1.4	1 0 2

End of Table 3

CPA code	Product (number of sub-categories)	Country code	RCA value	Number of sub-categories with RCA>1
16	Wood and of products of wood and cork, except furniture; articles of straw and plaiting materials (2)	EE LV LT	14.0 15.6 4.5	2 2 2
17	Paper and paper products (2)	EE LV LT	1.1 0.7 0.8	1 1 1
23	Other non-metallic mineral products (7)	EE LV LT	0.6 1.9 1.0	1 4 4
25	Fabricated metal products, except machinery and equipment (6)	EE LV LT	0.9 1.2 1.0	3 3 2
32	Other manufactured goods (5)	EE LV LT	0.9 0.7 0.7	1 2 1

In the group of other industrial products, the positions of all the Baltic States are similar (see Table 4). Estonia and Latvia have a better position in other mining and quarrying products, Lithuania – in electricity, gas, steam and air conditioning (data of Estonia are not available for this category).

Table 4. Revealed Comparative Advantage of selected other industrial products in the Baltic States according to the CPA classification in 2016 (source: calculated by the authors, using data from Eurostat, 2018a)

CPA code	Product (number of sub-categories)	Country code	RCA value	Number of sub-categories with RCA>1
08	Other mining and quarrying products (1)	EE LV LT	1.8 3.7 0.8	1 1 0
35	Electricity, gas, steam and air conditioning (1)	EE LV LT	… 0.1 1.1	… 0 1
38	Waste collection, treatment and disposal services; materials recovery services (1)	EE LV LT	4.6 4.4 2.0	1 1 1

Notes: … – no data available.

In this group of products Latvia has a potential to increase competitiveness only of electricity, gas, steam and air conditioning products, however, it cannot be achieved in the next five years, therefore, higher export potential is not considered for the industry in scenario analysis.

It can be concluded that in the case of exports of goods, possibilities to increase competitiveness in a comparatively short time period are limited and mostly related to the high- and medium-high-technology products.

3. Model overview and scenarios

The core of the Latvian Model of Development (LMD) forms the final demand elements, which determine the values of output and imports with the assumed import and output ratios for each industry. Productivity assumptions and output determine the number of employees by industries and unemployment is calculated taking into consideration the demographic aspects. Then the ratios of the value added to output are used to calculate the value added by industries. All the previous elements determine the revenues and expenditures of government, which afterwards influence disposable income and final demand components.

The main assumptions in the model are related to the real exports by industries, import shares or ratios of real imports to output by industries, productivity by industries (real output per employee) and the ratio of the value added to output by industries. As revealed comparative advantage analysis showed that there is more potential to increase the competitiveness and thus exports of manufacturing goods, further analysis mainly focuses on manufacturing.

In order to examine if the main assumptions are related to each other, correlation analysis was carried out for indicators of manufacturing. It showed that there is a weak correlation between the productivity and other exogenous variables.

A strong correlation was found between the real exports and import share (see Figure 2). This relationship was affected by the global economic crisis of 2008–2009 when the slope of it changed to a more horizontal one. Thus if the real exports increase, import share should be constant or increase as well, according to the previous trends. The decrease in import share is also possible, but not likely unless some major activities towards the import substitution are implemented.

Import share can be constant in case of moderate export growth, which is achieved due to the productivity changes. In case of higher export growth in a comparatively short time (e.g., five years) import share should grow as well. This is due to the fact that it usually takes some time to attract investment and to use increased production capacity needed for that extra exports (Alamá-Sabater, Heid, Jiménez-Fernández, & Márquez-Ramos, 2017) thus the higher export demand is satisfied partly with the help of imports. Moreover, if the export increase is achieved by the higher productivity, the export increase should not influence

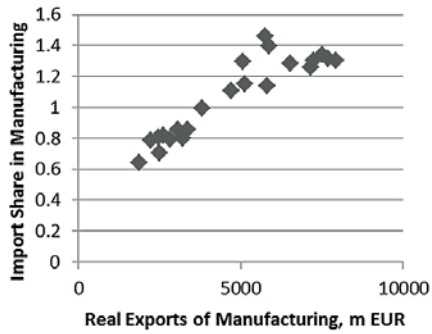

Figure 2. The relationship between real exports and import share in manufacturing in Latvia in 1995–2016 (source: calculated by the authors, using data from Eurostat (2018a) and CSB (2018))

output negatively. That is, more imports are used to deal with additional exports and not to substitute domestic output.

Also, the relationship between the real exports and the ratio of value added to output is strong (see Figure 3) and is affected by the crisis. Also here, if real exports increase, the values of the ratio of the value added to output should be constant or slightly increase. In this case increase in the ratio of value added to output can be associated with the export structure – if the structure changes towards the higher value-added goods, the value of this ratio should increase. And the faster the process, the higher the increase in the ratio of the value added to the output.

The base scenario assumes that the real exports by industries are developing further according to the trends in 2014–2016. Import shares are assumed to be the same as in 2016, implying that productivity changes can ensure the increased exports according to the current ratio of imports to output. Assumptions regarding productivity differ taking into consideration the previous trends – for agriculture the average growth rate of 2014–2016 is used, for manufacturing, trade and hospitality and education the average growth rate of 2011–2016 is used, for industry and construction zero productivity growth is assumed and for other industries the average growth rate of 2015–2016 is used for assumptions. For the ratio of the value added to the output, the values of 2016 are used as the export structure is not assumed to change significantly. Table 5 summarizes the main assumptions related to the manufacturing.

The second scenario is higher exports scenario due to the increase in competitiveness. As productivity is an important aspect of the competitiveness increase, its values are assumed to be higher as compared to the base scenario, ensuring higher export growth with less need for additional employees (see Table 6).

The import share is assumed to be slightly larger than in case of the base scenario to ensure the necessary amount of goods for export and at the same time ensuring that the influence on output is not negative. Higher values of the ratio of value added to output are achieved due to increased exports of high- and medium-high-technology products, which can be considered as higher value-added products. Exports of manufacturing are assumed to grow by 5% annually.

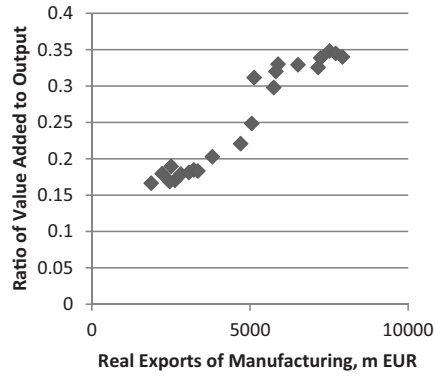

Figure 3. Relationship between real exports and import share in manufacturing in Latvia in 1995–2016 (source: calculated by the authors, using data from Eurostat (2018a) and CSB (2018))

The third analysed scenario is the import substitution scenario. As import substitution demands even higher competitiveness, which can be achieved only with additional investment, it is assumed that such investment can be implemented only in 2019–2021. This implies that in 2019–2021 both the values of exports, the ratio of the value added to output and productivity will be higher in this period, but import share will slightly decrease. The assumptions of this scenario are summarized in Table 7.

Table 5. Base scenario assumptions of the main exogenous variables for manufacturing in Latvia for 2017–2021 (source: calculated by the authors, using data from Eurostat (2018a) and CSB (2018), authors' assumptions)

Year	Real exports, m EUR	Import share	Ratio of value added to output	Productivity, thsd EUR
2016*	7923	1.30	0.34	65.7
2017	8167	1.30	0.34	66.8
2018	8419	1.30	0.34	67.8
2019	8679	1.30	0.34	68.9
2020	8947	1.30	0.34	70.0
2021	9223	1.30	0.34	71.1

Notes: * – actual data.

Table 6. Higher exports scenario assumptions of the main exogenous variables for manufacturing in Latvia for 2017–2021 (source: calculated by the authors, using data of Eurostat (2018a) and CSB (2018), in 2017–2021 authors' assumptions)

Year	Real exports, m EUR	Import share	Ratio of value added to output	Productivity, thsd EUR
2016*	7923	1.30	0.34	65.7
2017	8319	1.31	0.35	67.4
2018	8735	1.32	0.35	69.2
2019	9171	1.33	0.35	71.0
2020	9630	1.34	0.36	72.8
2021	10112	1.35	0.36	74.7

Notes: * – actual data.

Table 7. Import substitution scenario assumptions of the main exogenous variables for manufacturing in Latvia for 2017–2021 (source: calculated by the authors, using data of Eurostat (2018a) and CSB (2018), authors' assumptions)

Year	Real exports, m EUR	Import share	Ratio of value added to output	Productivity, thsd EUR
2016*	7923	1.30	0.34	65.7
2017	8319	1.31	0.35	67.4
2018	8735	1.32	0.35	69.2
2019	9346	1.31	0.36	71.2
2020	10000	1.30	0.36	73.4
2021	10700	1.29	0.37	75.6

Notes: * – actual data.

Further, the model is solved for alternative scenarios and the main results are analysed.

4. Modelling results

According to the modelling results, higher increase in manufacturing exports determine higher output values both in manufacturing and in related industries as well, which afterwards through employment indicators and personal disposable income influence domestic demand and output.

Results on modelled GDP growth rates are summarized in Table 8.

Table 8. Real GDP growth rate forecasts in Latvia for 2017–2021 (source: calculated by the authors; in 2016 data of CSB, 2018)

Year	Base scenario	Higher exports scenario	Import substitution scenario
2016*	2.0	2.0	2.0
2017	4.5	4.9	4.9
2018	3.0	3.3	3.3
2019	2.7	3.1	4.1
2020	3.0	3.3	4.4
2021	3.0	3.4	4.4

Notes: * – actual data.

Results of the base scenario show that the real GDP will grow on average by 3% annually if current trends continue. However, export growth ensures even higher GDP growth, especially in case of import substitution, because of not only foreign demand increases but a domestic one as well (that is, it shifts from imported to locally produced goods).

According to the productivity assumptions, in case of the base scenario, the number of employees is forecasted to grow approximately to 960 thousand in 2021, in case of higher exports – to 970 thousand and in case of import substitution – to 990 thousand in 2021 (see Figure 4). It should be noted that the highest number of employees in Latvia was in 2007 and it was almost 1.06 million, however, the number of the population has decreased by about 240 thousand in 2007–2016, therefore the possibility to reach the same number of employees without dramatic changes in demographic trends is quite small.

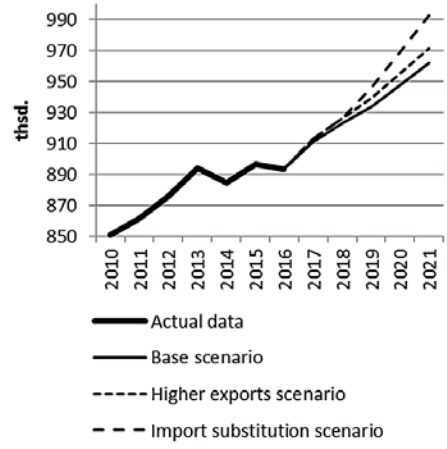

Figure 4. Forecasts of the number of employees in Latvia in 2017–2021 and actual data in 2010–2016 (source: calculated by the authors, in 2010–2016 data of CSB, 2018)

Also, the modelled values of the unemployment rate show that the results of the import substitution scenario cannot be implemented without re-emigration or the use of foreign labour. The unemployment rate in 2021 is low also in case of the base scenario and the higher exports scenario (see Table 9). 4–5% unemployment rate can be considered as natural only in case the labour force has the necessary skills, which is not always the case in Latvia. Also, social problems often hinder unemployed persons from education and re-entering the workforce (Stalidzane & Dislere, 2012). Other researchers stress that it is necessary to work on a policy of workforce attraction from abroad (Freidenfelde, 2011) to attract those with higher qualification.

Table 9. Unemployment rate forecasts in Latvia for 2017–2021 (source: calculated by the authors; in 2016 data of CSB, 2018)

Year	Base scenario	Higher exports scenario	Import substitution scenario
2016*	9.6	9.6	9.6
2017	7.4	7.2	7.2
2018	6.7	6.3	6.3
2019	6.0	5.4	4.8
2020	5.0	4.2	2.8
2021	5.4	4.5	2.4

Notes: * – actual data.

Positive developments towards the export increase and import substitution already have taken place in Latvia in 2011–2015 (see Figure 5).

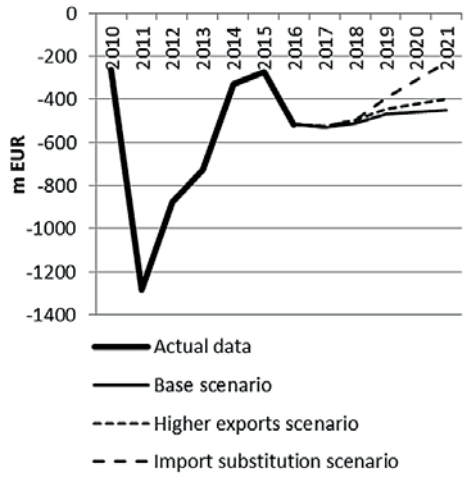

Figure 5. Forecasts of real export-import balance in Latvia in 2017–2021 and actual data in 2010–2016 (source: calculated by the authors, in 2010–2016 data of CSB, 2018)

Also in the next five years, the negative external trade balance maintains and gradually changes, the deficit is becoming smaller comparatively faster in case of import substitution. The more Latvian producers will be able to invest in increased competitiveness, the more chances they will have to increase exports and to strengthen their positions also in the domestic market thus ensuring faster economic growth.

Conclusions

RCA is an appropriate method to apply in competitiveness studies as it shows, which products are exported with more success. As the Baltic States have strong economic relations, including participation in common value chains, it is advisable to analyse RCA indicators in all three Baltic States together. Results of RCA analysis show that, in case of goods, Latvia has a potential to increase exports of manufacturing products, mainly high- and medium-high-technology products. Facilitation of such exports is promoted also by Latvian government institutions.

Results argue that economic development is higher if increased competitiveness ensures both higher export growth and import substitution. However, the insufficient number of the qualified workforce can serve as a hindering factor unless heavy investment in productivity increase is made or labour is imported from abroad.

The research findings can be used in economic policy and analysis, for example, in the elaboration of export facilitation policy.

The paper highlights new dimensions of RCA analysis and adds to the understanding of the competitiveness issues of Latvia and the other Baltic States, as well as scenario elaboration process.

Further research will be targeted at improving the elaborated model, for example, by adding export equations, which implies the use of the feedback elements as competitiveness influences many aspects of economic development and it depends on the competitor's activities.

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