Evaluation of Competitiveness in Latvian Multisectoral Model

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• Competitiveness of the high-tech industries in the EU perspective
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THE NATIONAL RESEARCH PROGRAM
NATIONAL RESEARCH PROGRAMME:
„ECONOMIC TRANSFORMATION, SMART GROWTH, GOVERNANCE AND LEGAL FRAMEWORK FOR THE STATE AND SOCIETY FOR SUSTAINABLE DEVELOPMENT – A NEW APPROACH TO THE CREATION OF A SUSTAINABLE LEARNING COMMUNITY – EKOSOC-LV”

THE PROGRAMME IS ESTABLISHED TO CREATE KNOWLEDGE BASE ON SUSTAINABLE DEVELOPMENT PROCESSES OF THE STATE AND SOCIETY, AND TO ELABORATE A THEORETICAL JUSTIFICATION FOR SUSTAINABLE DEVELOPMENT STRATEGIES AND ACTION POLICIES THROUGH DIVERSE SCIENTIFIC RESEARCH
Project: EXPLORE THE COMPETITIVENESS OF LATVIAN ENTERPRISES IN FOREIGN MARKETS AND MAKE PROPOSALS FOR ITS STRENGTHENING

**Partners:**
- Riga Technical University (*coordinator – professor, Dr.habil.oec. Remigijs Počs*)
- University of Latvia (*coordinator – professor, Dr.oec. Biruta Sloka*)
- Riga Stradiņš University (*coordinator – professor, Dr.med. Anīta Villeruša*)
Target of the project:
To elaborate the theoretical justification and practical solutions to strengthen and enhance the competitiveness of the Latvian enterprises in the foreign markets.
Tasks of the project:

• To evaluate the current level of competitiveness of the Latvian enterprises, identification and evaluation of development problems, resources, factors, which influence competitiveness.

• To explore the development and export possibilities of the Latvian enterprises/industries (including production and service industries – healthcare, education, transit etc.).

• To evaluate macro- and micro-economic conditions of competitiveness.

• To analyse the current macroeconomic development of Latvia and the development potential of industries from the perspective of sustainable economic development and competitiveness.

• To model dynamics of industries and develop forecasts of development of Latvian economy and industries in context of competitiveness of Latvian enterprises in foreign markets.

• To elaborate recommendations and proposals to strengthen and enhance the competitiveness of Latvian enterprises/industries and to ensure the sustainable development of economy.
COMPETITIVENESS OF THE HIGH-TECH INDUSTRIES IN THE EU PERSPECTIVE
Industries of High Value Added

• Are clearly defined in NACE red.2:
  – C21: Manufacture of basic pharmaceutical products
  – C26: Manufacture of computer, electronic and optical products

• High-tech industries are considered to be more competitive both in domestic and foreign markets
Analysis

- Eurostat database
- Value added per unit of output (the shares of value added in output \( v \) of industry \( j \) in a country \( c \) at time period \( t \) are computed as ratios of value added of industry \( j \) in a country \( c \) at time period \( t \) to output of industry \( j \) in a country \( c \) at time period \( t \))
- C country's share in total value added of the analysed industry at time period \( t \)

\[
v_{j,c,y} = \frac{VA_{j,c,y}}{OUT_{j,c,y}}
\]

\[
sh_{j,c,y} = \frac{VA_{j,c,y}}{\sum VA_{j,c,y}}
\]
Manufacture of basic pharmaceutical products (C21) in the EU in 2010

Source: Authors’ calculations

Countries with the highest shares in the VA of the EU

Countries with the highest VA in the output
Manufacture of computer, electronic and optical products (C26) in 2010

Countries with the highest VA in the output
- Germany
- Italy
- UK
- Greece
- Rumania

Countries with the highest shares in the VA of the EU

Source: Authors’ calculations
### Value Added per Unit of Output: 3 Top Values and the EU Average

<table>
<thead>
<tr>
<th>Industry</th>
<th>Country</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacture of basic pharmaceutical products (C21)</td>
<td>Lithuania</td>
<td>0.82</td>
</tr>
<tr>
<td></td>
<td>Finland</td>
<td>0.64</td>
</tr>
<tr>
<td></td>
<td>Greece</td>
<td>0.59</td>
</tr>
<tr>
<td></td>
<td><strong>The EU Average</strong></td>
<td><strong>0.39</strong></td>
</tr>
<tr>
<td>Manufacture of computer, electronic and optical products (C26)</td>
<td>Romania</td>
<td>0.69</td>
</tr>
<tr>
<td></td>
<td>Greece</td>
<td>0.59</td>
</tr>
<tr>
<td></td>
<td>UK</td>
<td>0.44</td>
</tr>
<tr>
<td></td>
<td><strong>The EU Average</strong></td>
<td><strong>0.30</strong></td>
</tr>
</tbody>
</table>

Source: Authors’ calculations
Results

- High-tech industries can be associated with the higher value added per unit of output only in separate countries.
  - Are the high-tech industries (C21 and C26) really the high-tech industries?
- The EU data do not show the clear relation between the value added per unit of output and VA shares
ANALYSIS OF THE COMPETITIVENESS INDICATORS
Competitiveness in the Modelling Perspective

• Topical in different levels
• Present and future perspective
• Inter-industry linkages
• Transformation to the higher value added goods and services
Data

• Mainly CSB 2008-2014 + Eurostat 2008-2010 (supply) and WIOD 2008-2011
• «valuable industries»
  – High-tech (21, 26)
  – Medium-high-tech (20, 27-30)
  – Medium-low-tech (19, 22-25, 33)
  – Knowledge-intensive services (KIS) (50, 51, 58-66, 69-75, 78, 80, 84-93)
Competitiveness Indicators

• Specialization

\[ \text{exp\_spec}_{i,t} = \frac{\exp_{i,t}}{\sum \exp_{i,t}} \cdot 100\% , \]

• Export-orientation

\[ \text{exp\_}\%_{i,t} = \frac{\exp_{i,t}}{\text{va}_{i,t}} \cdot 100\% , \]

• Export dependency

\[ \text{exp\_dep}_{i,t} = \frac{\exp_{i,t}}{\text{out}_{i,t}} \cdot 100\% , \]

• Value added per unit of output

\[ v_{i,t} = \frac{\text{va}_{i,t}}{\text{out}_{i,t}} , \]
Competitiveness Indicators

• Real labour productivity
  \[ r_{p_{i,t}} = \frac{r_{out_{i,t}}}{empl_{i,t}}, \]

• Value added per employee
  \[ pvu_{i,t} = \frac{va_{i,t}}{empl_{i,t}}, \]

• Value added per unit spent on labour
  \[ pvu_{lc_{i,t}} = \frac{va_{i,t}}{lc_{i,t}}, \]

• Unit labour costs
  \[ ulc_{i,t} = \frac{lc_{i,t}}{empl_{i,t}}, \]
Real Growth Rate of Exports, %

Source: Authors’ calculations
Specialization Indicators, %

[Bar chart showing specialization indicators for different categories: High-tech industries, Medium-high-tech industries, Medium-low-tech industries, Knowledge-intensive services.]

* Preliminary data

Source: Authors’ calculations

* Preliminary data
Total Exports of Latvia, % of the GDP

Source: Authors' calculations
Ratio of the Exports to the Value Added, %

Source: Authors’ calculations
## Export Dependency in Selected Industries, %

<table>
<thead>
<tr>
<th>Industry</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total economy</strong></td>
<td>13.6</td>
<td>17.9</td>
<td>21.5</td>
<td>23.7</td>
<td>23.3</td>
<td>23.3</td>
</tr>
<tr>
<td>(A) Agriculture, Forestry and Fishing</td>
<td>6.8</td>
<td>8.9</td>
<td>9.8</td>
<td>9.3</td>
<td>9.8</td>
<td>9.1</td>
</tr>
<tr>
<td>(B) Mining and Quarrying</td>
<td>44.9</td>
<td>42.7</td>
<td>43.4</td>
<td>44.5</td>
<td>49.2</td>
<td>:</td>
</tr>
<tr>
<td>(C) Manufacturing</td>
<td>37.8</td>
<td>43.5</td>
<td>48.0</td>
<td>51.6</td>
<td>51.1</td>
<td>48.7</td>
</tr>
<tr>
<td>(E) Water Supply</td>
<td>7.2</td>
<td>13.9</td>
<td>16.3</td>
<td>12.6</td>
<td>10.3</td>
<td>:</td>
</tr>
<tr>
<td>(F) Construction</td>
<td>1.0</td>
<td>1.3</td>
<td>1.5</td>
<td>1.5</td>
<td>1.7</td>
<td>6.1</td>
</tr>
<tr>
<td>(G) Trade</td>
<td>43.4</td>
<td>57.0</td>
<td>80.2</td>
<td>86.0</td>
<td>85.2</td>
<td>80.1</td>
</tr>
<tr>
<td>(H) Transportation and Storage</td>
<td>2.2</td>
<td>4.1</td>
<td>6.4</td>
<td>7.6</td>
<td>6.8</td>
<td>5.9</td>
</tr>
<tr>
<td>(J) Information and Communication</td>
<td>0.4</td>
<td>0.7</td>
<td>0.8</td>
<td>0.7</td>
<td>0.4</td>
<td>1.1</td>
</tr>
<tr>
<td>(K) Financial and Insurance Activities</td>
<td>3.5</td>
<td>4.2</td>
<td>2.1</td>
<td>1.0</td>
<td>1.4</td>
<td>1.1</td>
</tr>
<tr>
<td>(N) Administrative and Support Service</td>
<td>4.7</td>
<td>3.6</td>
<td>3.5</td>
<td>1.9</td>
<td>1.6</td>
<td>:</td>
</tr>
<tr>
<td>Activities</td>
<td>3.4</td>
<td>1.0</td>
<td>0.9</td>
<td>0.7</td>
<td>0.9</td>
<td>0.8</td>
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</tbody>
</table>

Source: Authors’ calculations
<table>
<thead>
<tr>
<th>Industry</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
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</thead>
<tbody>
<tr>
<td>Total economy</td>
<td>0.45</td>
<td>0.45</td>
<td>0.42</td>
<td>0.42</td>
<td>0.42</td>
<td>0.43</td>
<td>0.43</td>
</tr>
<tr>
<td>(B) Mining and Quarrying</td>
<td>0.42</td>
<td>0.49</td>
<td>0.44</td>
<td>0.44</td>
<td>0.45</td>
<td>0.45</td>
<td></td>
</tr>
<tr>
<td>(C) Manufacturing</td>
<td>0.31</td>
<td>0.32</td>
<td>0.32</td>
<td>0.30</td>
<td>0.29</td>
<td>0.29</td>
<td>0.29</td>
</tr>
<tr>
<td>(G) Trade</td>
<td>0.55</td>
<td>0.56</td>
<td>0.53</td>
<td>0.57</td>
<td>0.53</td>
<td>0.53</td>
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<tr>
<td>(J) Information and Communication</td>
<td>0.50</td>
<td>0.48</td>
<td>0.48</td>
<td>0.49</td>
<td>0.50</td>
<td>0.51</td>
<td>0.51</td>
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<tr>
<td>(K) Financial and Insurance Activities</td>
<td>0.66</td>
<td>0.50</td>
<td>0.50</td>
<td>0.55</td>
<td>0.58</td>
<td>0.58</td>
<td>0.58</td>
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<tr>
<td>(L) Real Estate Activities</td>
<td>0.69</td>
<td>0.66</td>
<td>0.63</td>
<td>0.66</td>
<td>0.70</td>
<td>0.69</td>
<td>0.70</td>
</tr>
<tr>
<td>(M) Professional, Scientific and Technical Activities</td>
<td>0.51</td>
<td>0.50</td>
<td>0.46</td>
<td>0.51</td>
<td>0.52</td>
<td>0.52</td>
<td></td>
</tr>
<tr>
<td>(O) Public administration</td>
<td>0.70</td>
<td>0.70</td>
<td>0.69</td>
<td>0.68</td>
<td>0.69</td>
<td>0.69</td>
<td>0.71</td>
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<tr>
<td>(P) Education</td>
<td>0.80</td>
<td>0.82</td>
<td>0.78</td>
<td>0.77</td>
<td>0.76</td>
<td>0.76</td>
<td>0.76</td>
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<tr>
<td>(Q) Health and Social Work Activities</td>
<td>0.67</td>
<td>0.64</td>
<td>0.63</td>
<td>0.59</td>
<td>0.62</td>
<td>0.62</td>
<td>0.63</td>
</tr>
<tr>
<td>(R) Arts, Entertainment and Recreation</td>
<td>0.54</td>
<td>0.58</td>
<td>0.57</td>
<td>0.63</td>
<td>0.62</td>
<td>0.62</td>
<td>0.63</td>
</tr>
</tbody>
</table>

Source: Authors’ calculations
Real Labour Productivity in Selected industries, EUR

• Number of Employees vs Full-Time Equivalent

Source: Authors’ calculations
Value Added per Employee (FTE), EUR

Source: Authors’ calculations
Value Added per Unit Spent on Labour

Source: Authors' calculations
Unit Labour costs, thsd.EUR

Source: Authors’ calculations
Conclusions

• High-tech industries are industries, which produce higher value added goods in Latvia, however, labour costs are higher in these industries
• Medium-low-tech industries seem more developed than medium-high-tech ones in Latvia
• Labour productivity analysis based on the number of employees can be misleading in several industries.
Possibilities of Further Analysis

• Optimum structure by industries to ensure production of higher value added goods and services
• Reasons for weaker performance of the medium-high-tech industries
• More detailed analysis of service sectors
THANK YOU FOR ATTENTION
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