FACTORS AFFECTING THE FORMATION OF REGIONAL CLUSTERS IN LATVIA

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Abstract. Regional business clusters are a tool for enterprises to raise their productivity, efficiency, innovation capacity, and competitiveness which ensures the overall growth and development of a region; thereby, they play a significant role in the region’s economy. The aim of the research is to analyse the factors affecting the formation of regional clusters in Latvia. First, clusters emerge in the regions where overall economic activity is sufficiently high, so that enterprises have possibilities to interact. The second important factor is the availability of support institutions in the region to secure the availability of both funds and consultancy services, and a faster transfer of innovations and technologies. Third, an essential factor is the availability of population and qualified labour in the region. An important factor is also the attraction of industries to regions, as regional clusters emerge in the industries that develop fast in the region. An analysis of these factors suggests that the situation in Latvia’s regions is diversified. A concentration of economically active population, which forms the necessary critical mass for cluster development, is explicitly observed in Riga region. Entrepreneurial activity is also higher in Riga region; yet, it tends to increase in all the regions, and entrepreneurship support institutions are also established in all the regions. An analysis of industries points to region-specific industries whose growth is stronger; thus, the potential for cluster development is higher in service sectors in Riga, Pļeriga, Vidzeme and Kurzeme, and manufacturing in Zemgale and Latgale regions.

Key words: regional clusters, cluster development, regional development.

JEL codes: R11, J11, R12, O18

Introduction

Under the present globalisation, the location of an enterprise plays an important role, as it can provide competitive advantages to the enterprise. The economic literature, beginning with Alfred Marshall’s (2009) research on industrial districts in the 1920s, analyses companies’ gains from their close location to each other and their interaction. Nowadays, regional clusters regained their importance along with M.E.Porter’s research (1990, 1998a, 1998b, 1998c, 2000, 2003). According to the authors (Garanti Z., 2013; Garanti Z., Zvirbule-Berzina A., 2013a), a regional cluster can be defined as a combination of five dimensions – single sector enterprises that cooperate and compete; supportive enterprises from a wide range of sectors; public and government institutions, interested in economic development of the sector and region; other institutions such as research, educational, financial, and other ones, and fifth is the regional dimension which combines all the four above-mentioned dimensions into one region. In their previous research, the authors have explored the benefits of regional cluster initiatives at the micro (enterprise) and macro (region) level (Garanti Z., Zvirbule-Berzina A., 2013b). The authors’ research...

The important role of regional clusters in a regional economy has promoted the research on the factors influencing regional cluster development in Latvia. Therefore, the research hypothesis is that the formation of regional clusters is affected by several factors. The aim of the research is to analyse the factors affecting the formation of regional clusters in Latvia. The following research tasks are set up to reach the aim:

1) to analyse entrepreneurial activity and the availability of support in the regions;
2) to analyse the availability of human resources in the regions;
3) to identify the region-specific industries.

The research materials and methods include data of the Central Statistical Bureau (CSB), the database of innovation support institutions, and both national and foreign research papers. The authors employed the monographic method, analysis and synthesis, and time series analysis to process data on entrepreneurial activity in the regions. The authors used structural analysis to analyse the availability of support institutions and time series analysis to examine the availability of human resources, while shift-share analysis was employed to determine how industries are associated with the regions.

Research results and discussion

Factor 1: entrepreneurial activity in a region

In the development of regional clusters, both the present entrepreneurial activity and the historical business evolution are important. According to an extensive research on clusters in Hungary (Szanyi M.,
2012; Szanyi M., et al., 2010), the historical location of industries in the regions in the East and Central European countries presently significantly affects the pace of development of clusters. Regardless of a transitional period of more than 20 years and the accession to the EU, a lot of clusters are located in the historical places of industries and enterprises, thus, regional clusters continue developing their present regional advantages and stimulate regional growth. For instance, the industry of food and alcoholic and non-alcoholic beverages has historically developed in Riga, and such large enterprises as the JSC “Laima”, the JSC “Aldaris”, the JSC “Latvijas balzams”, and many others successfully operate nowadays as well. Historically located in Zemgale, the industry of mechanical engineering and metalworking, after a long break, is now growing. The industry of fish processing is located in the municipalities of Liepaja and Ventspils where it is now developing as well. The industries that have historically developed in the regions have a high potential to form regional clusters, as these industries are deeply rooted in their regions. Yet, in order that regional clusters are able to emerge, the “critical mass” of economic activity has to be reached. The present entrepreneurial activity in the regions is characterised by changes in the number of enterprises per 1000 capita in Latvia’s statistical regions.

### Changes in the number of enterprises per 1000 capita in the statistical regions in Latvia for the period of 2008–2011

<table>
<thead>
<tr>
<th>Region</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Riga</td>
<td>69</td>
<td>71</td>
<td>75</td>
<td>85</td>
</tr>
<tr>
<td>Increase from the base year, %</td>
<td>-</td>
<td>2.9</td>
<td>8.7</td>
<td>23.2</td>
</tr>
<tr>
<td>Pieriga</td>
<td>49</td>
<td>48</td>
<td>53</td>
<td>60</td>
</tr>
<tr>
<td>Increase from the base year, %</td>
<td>-</td>
<td>-2.0</td>
<td>8.2</td>
<td>22.4</td>
</tr>
<tr>
<td>Vidzeme</td>
<td>59</td>
<td>59</td>
<td>63</td>
<td>71</td>
</tr>
<tr>
<td>Increase from the base year, %</td>
<td>-</td>
<td>0.0</td>
<td>6.8</td>
<td>20.3</td>
</tr>
<tr>
<td>Kurzeme</td>
<td>53</td>
<td>54</td>
<td>57</td>
<td>64</td>
</tr>
<tr>
<td>Increase from the base year, %</td>
<td>-</td>
<td>1.9</td>
<td>7.5</td>
<td>20.8</td>
</tr>
<tr>
<td>Zemgale</td>
<td>47</td>
<td>45</td>
<td>50</td>
<td>57</td>
</tr>
<tr>
<td>Increase from the base year, %</td>
<td>-</td>
<td>-4.3</td>
<td>6.4</td>
<td>21.3</td>
</tr>
<tr>
<td>Latgale</td>
<td>48</td>
<td>48</td>
<td>51</td>
<td>59</td>
</tr>
<tr>
<td>Increase from the base year, %</td>
<td>-</td>
<td>0.0</td>
<td>6.3</td>
<td>22.9</td>
</tr>
</tbody>
</table>

**Source:** authors’ calculations based on the CSB data, 2013

The highest entrepreneurial activity (Table 1) is observed in Riga region where the number of enterprises per 1000 capita is 36% higher than in the other regions on average. A positive trend in entrepreneurship is the fast and steady increase in the number of enterprises in all the regions – in 2011 their number rose by 22% on average in all the regions compared with 2008. Of the established enterprises in Latvia, on average, 77% were limited liability companies (Ltd), 8% - partnerships, 7% - individual merchants (IM), and 2% were farms in 2012. Riga region is characterised by the highest proportion of Ltd, i.e. 90% of all the registered enterprises, and the lowest proportion of farms, only 0.04%. In Latgale, the lowest proportion is observed for Ltd – 65%, while the highest proportion is registered for farms – 8%. The proportions of partnerships and IM in the total number of enterprises are similar across all the regions. In 2013, the equity capital of all enterprises registered in Latvia totalled LVL 13.4 billion, with the average equity capital per enterprise of LVL 66 thousand. The highest proportion of total equity capital of
enterprises is observed in Riga planning region - 88%, followed by Kurzeme with 5%, and Vidzeme, Zemgale, and Latgale with 2% each.

In Latvia, on average, 93% are micro-enterprises (with the number of employees less than nine persons), 6% are small enterprises (with the number of employees less than 49), 1.2% are medium ones (with the number of employees less than 249), and 0.2% are large enterprises (their number of employees is more than 250). Of the large enterprises, 66% are located in Riga region.

Factor 2: the availability of entrepreneurship support institutions

The availability of related and complementary institutions as well as educational, scientific and research institutions is a significant factor in the development of regional clusters, so that the business sector can successfully interact with them, thereby, creating new products and innovations. The world’s experiences evidence that part of innovations emerges if clusters cooperate with higher education institutions; thus, it is important that entrepreneurs in their region have access to higher education institutions. According to data of the Ministry of Education and Science of the Republic of Latvia (Zinatne Latvija, 2010; Zinatnes un tehnologiju..., 2011), 32 higher education institutions operated in Latvia in 2013, of which 18% were state universities, 41% – state higher education institutions, and 41% were non-university type higher schools founded by legal entities, of which 78% were located in Riga; however, entrepreneurs in the regions had access to regional higher schools in Ventspils, Liepaja, Valmiera, Rezekne, Daugavpils, and Jelgava and their affiliates in municipalities. In addition, 83 scientific institutes function in Latvia.

### Entrepreneurship support institutions in the planning regions in Latvia in 2013

<table>
<thead>
<tr>
<th>Support institutions</th>
<th>Riga</th>
<th>Proportion, %</th>
<th>Vidzeme</th>
<th>Proportion, %</th>
<th>Kurzeme</th>
<th>Proportion, %</th>
<th>Zemgale</th>
<th>Proportion, %</th>
<th>Latgale</th>
<th>Proportion, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business and technological parks and centres</td>
<td>7</td>
<td>54</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>8</td>
<td>4</td>
<td>31</td>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td>Competence centres</td>
<td>6</td>
<td>100</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Business incubators</td>
<td>3</td>
<td>13</td>
<td>4</td>
<td>17</td>
<td>5</td>
<td>22</td>
<td>8</td>
<td>35</td>
<td>3</td>
<td>13</td>
</tr>
<tr>
<td>Associations and NGOs</td>
<td>11</td>
<td>26</td>
<td>10</td>
<td>23</td>
<td>7</td>
<td>16</td>
<td>9</td>
<td>21</td>
<td>6</td>
<td>14</td>
</tr>
<tr>
<td>Municipal development departments</td>
<td>9</td>
<td>32</td>
<td>0</td>
<td>0</td>
<td>14</td>
<td>50</td>
<td>0</td>
<td>0</td>
<td>5</td>
<td>18</td>
</tr>
<tr>
<td>Information centres</td>
<td>2</td>
<td>12</td>
<td>2</td>
<td>12</td>
<td>6</td>
<td>35</td>
<td>5</td>
<td>29</td>
<td>2</td>
<td>12</td>
</tr>
<tr>
<td>Innovation and technology transfer centres</td>
<td>5</td>
<td>56</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>11</td>
<td>2</td>
<td>22</td>
<td>1</td>
<td>11</td>
</tr>
<tr>
<td>Development agencies</td>
<td>6</td>
<td>60</td>
<td>1</td>
<td>10</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>20</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>Institutes</td>
<td>13</td>
<td>62</td>
<td>3</td>
<td>14</td>
<td>0</td>
<td>0</td>
<td>5</td>
<td>24</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Source: authors’ calculations based on the databases of innovation support institutions, 2013 and competence centres, 2013

Various institutions that focus on cooperation between the private and public sectors, creation of innovations, transfer of technologies, consultancy services, and other aspects important to the cluster
have been established in Latvia outside the higher education institutions and scientific institutes. The majority of these institutions of support for innovative activity operate in all the regions, thus, providing access to services not only in Riga but in all the regions. The entrepreneurship support institutions and their regional distribution are shown in Table 2.

Most of the support institutions operate in all the regions (Table 2) which ensures entrepreneurs access to important services close to their business site. For instance, business incubators are evenly located across all the regions, offering infrastructural and consultancy services (Biznesa inkubatori, 2013). In total, 36% of all the support institutions are located in Riga, 20% in Kurzeme and Zemgale, 12% in Vidzeme, and 11% in Latgale. Only the competence centres that were established to foster cooperation between innovation-oriented enterprises of a certain industry and scientific institutions in order to jointly work on industrial research projects and projects of development of new products and technologies, thereby, contributing to raising the competitiveness of enterprises (Kompetences centri, 2013), are located only in Riga. As competence centres focus on consolidating certain prospective enterprises of an industry, competence centres for the chemical and pharmaceutical industry, forestry, the environment, biotechnology and bioenergy, electronics, IT and mechanical engineering were established, and, according to the information provided by the Investment and Development Agency of Latvia, the objective of these institutions is to work towards a certain industry rather than the region.

### Factor 3: the availability of human resources in a region

The concentration of population and labour is an important precondition for the development of regional clusters. The main socio-economic factors describing availability of human resources in the regions of Latvia are summarised in Table 3.

#### Table 3

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Regions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population (thousand)</td>
<td>Riga</td>
</tr>
<tr>
<td>Population density (people per m²)</td>
<td>2139.7</td>
</tr>
<tr>
<td>Population under working age (%)</td>
<td>13.3</td>
</tr>
<tr>
<td>Population at working age (%)</td>
<td>64</td>
</tr>
<tr>
<td>Population over working age (%)</td>
<td>22.7</td>
</tr>
<tr>
<td>Proportion of the employed population in the total population (%)</td>
<td>60.3</td>
</tr>
<tr>
<td>Proportion of job-seekers in the total number of economically active population (%)</td>
<td>13.8</td>
</tr>
</tbody>
</table>

*Source: authors’ calculations based on the CSB data, 2013*

Almost half of Latvia’s population lives in the regions of Riga and Pieriga; thus, the concentration and density of population in the other regions are 95 times lower than in Riga which can hinder even development of regional clusters in all the regions of Latvia. In 2012, the population decreased in all the regions on average by 7% compared with 2008; however, the decrease in the number of residents in the
regions of Riga and Pieriga was smaller (6.9% and 0.9% respectively) than in Vidzeme (8.5%), Kurzeme (8.5%), Zemgale (7.5%), and Latgale (10.1%).

The proportion of working-age population is the highest in Riga region, whereas the lowest in Kurzeme region. In all the regions, especially in Latgale, the proportion of over working-age population is high. The age distribution of population in the regions points to the relative advantages of Riga region in developing regional clusters, as the greatest number of working-age population concentrates in this region.

In the regions of Riga and Pieriga, 60% of the population were employed, while in Latgale it was 50%. In the period of 2008-2012, the highest average rate of job-seekers was registered in Zemgale and Latgale, reaching 17%. The rate of job-seekers may be viewed as a potential for developing regional clusters; yet, municipal self-assessment data (Regionu attistība Latvija, 2011) evidence that there is a lack of both qualified and low-skill employees in municipalities irrespective of the high rate of job-seekers. An especially large deficit of labour is observed in Kurzeme (30%) and Latgale (24%). There is a substantial lack of qualified employees in Vidzeme and Kurzeme, while there is a lack for low-skill employees in Kurzeme and Latgale.

In the regions where the average gross wages are higher, the proportion of employees with higher education is also higher. In Riga region, 45% of the employees have higher education (in the other regions, it is 27% on average), and the average gross wage is 33% higher than in the other regions, indicating a concentration of high-qualified labour in this region.

**Factor 4: attraction of industries to a region**

Regional clusters emerge in strong industries of a region. Regionally strong industries are those industries that have experienced the fastest growth over the period of analysis. To identify the industries, the growth of which is faster or slower than in the country or in a region on average, thus pointing to competitive industries in the region, economic research employs shift-share analysis (Aya-ay R.M., Prantilla E.B., 2007; Altena P., Heijman W., 2007; Heijman W., van der Heide C.M., 1998; Acs Z.J., Ndikumwami A., 1998; Zaccomer G.P., Mason G., 2011). The founders of this analysis are L.D.Ashby (1964) and V.R.Fuchs (1962). Based on the number of employees, a shift-share analysis divides employment growth in regions into 3 components:

- national share (NS) – it is the growth that is expected in a region if employment in the industry grows at the same rate as in the entire country;
- structural component/industry mix (IM) – it is the growth that is expected in the region, taking into account the differences in employment growth between the industry and the entire country;
- regional shift (RS) – it is the growth that is specific to the particular region and indicates the industries that are competitive in the particular region.

Using statistical data on the average number of occupied jobs in the regions by economic activity in 2005 and 2012, the NS is calculated according to Formula 1, the IS– according to Formula 2, and the RS– according to Formula 3, which were developed based on L.D. Ashby’s methodology.

\[
NS_{jk} = \frac{NOD_{jk, t}}{NOD_{v, t}} \times \left( \frac{NOD_{v, t}}{NOD_{v, t-1}} - 1 \right)
\]  

(1)
$$IS_{j,k} = NOD_{j,k,t} \times \left[ \left( \frac{NOD_{v,k,t}}{NOD_{v,k,t-1}} - 1 \right) - \left( \frac{NOD_{v,t}}{NOD_{v,t-1}} - 1 \right) \right]$$ \hfill (2)

$$RS_{j,k} = NOD_{j,k,t} \times \left[ \left( \frac{NOD_{v,k,j}}{NOD_{v,k,j-1}} - 1 \right) - \left( \frac{NOD_{v,t}}{NOD_{v,t-1}} - 1 \right) \right]$$ \hfill (3)

where:
- NOD- number of employees;
- v – country;
- j – region;
- k – industry;
- t – reporting year (the year 2012);
- t-1 – base year (the year 2005).

The most important indicator is the regional shift RS within the context of regional economy. The industries in the regions that present the highest positive regional shift are shown in Table 4.

### Table 4

Industries with the highest regional shift in the statistical regions of Latvia in the period of 2005-2012

<table>
<thead>
<tr>
<th>Riga region</th>
<th>Pieriga region</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Industry</strong></td>
<td><strong>RS</strong></td>
</tr>
<tr>
<td>Warehousing and support activities for transportation</td>
<td>7717</td>
</tr>
<tr>
<td>Computer programming, consultancy and related activities</td>
<td>4536</td>
</tr>
<tr>
<td>Human health activities</td>
<td>3364</td>
</tr>
<tr>
<td><strong>Vidzeme region</strong></td>
<td><strong>RS</strong></td>
</tr>
<tr>
<td>Electricity, gas, steam and air conditioning supply</td>
<td>726</td>
</tr>
<tr>
<td>Forestry and logging</td>
<td>442</td>
</tr>
<tr>
<td>Libraries, archives, museums and other cultural activities</td>
<td>386</td>
</tr>
<tr>
<td><strong>Zemgale region</strong></td>
<td><strong>RS</strong></td>
</tr>
<tr>
<td>Manufacture of fabricated metal products, except machinery and equipment</td>
<td>615</td>
</tr>
<tr>
<td>Social work activities with accommodation</td>
<td>595</td>
</tr>
<tr>
<td><strong>Latgale region</strong></td>
<td><strong>RS</strong></td>
</tr>
<tr>
<td>Real estate activities</td>
<td>445</td>
</tr>
</tbody>
</table>

Source: authors’ calculations

On the whole, the number of occupied jobs in Latvia has decreased by more than 80 thousand or by 9% in the period of 2005-2012. Regionally, the greatest decrease was observed in Latgale region where the number of occupied jobs fell by 16%. Regardless of the decrease in the total number of jobs, industries in which the number of jobs rose particularly as a result of regional competitive advantages were identified in the regions; thus, the potential of emergence of clusters is high in these industries. In Riga region, warehousing and support activities for transportation show the highest RS. In the result of overall economic growth in the country (NS), the number of jobs in this industry in Riga region decreased.
by 849. Owing to the growth of this particular industry (IS), the number of employees employed in the industry in Riga region rose by 771. However, owing to the regional shift (RS) in Riga region, the industry of warehousing and support activities for transportation employs by 7717 more individuals. In Pieriga region, postal and courier activities is the industry showing the highest regional shift, in Vidzeme region it is electricity, gas, steam and air conditioning supply, in Kurzeme – legal and accounting services, and in the regions of Zemgale and Latgale - manufacture of fabricated metal products, except machinery and equipment.

Conclusions, proposals, recommendations

1. The analysis of business indicators outlines the potential of regional clusters in all the regions. The economic activity in the regions, which is one of the most important preconditions for the development of regional clusters and which can be measured as the number of enterprises per 1000 capita, rose in all the regions at an average rate of 22% from the base year.

2. The entrepreneurship support institutions – technological parks, innovation and technology transfer centres, business incubators etc. – are located in all the regions; thereby, ensuring access to consultancy and other services which is important for the development of clusters and economic growth in the regions.

3. The analysis of socio-economic indicators shows significant socio-economic differences among the regions. Riga region is characterised by an explicit concentration of population, including the working-age and economically active population. Besides, a higher proportion of employees with higher education is observed in this region, which results in higher gross wages. Yet, a positive trend is the annual increase in gross wages in the regions at 4% on average from 2011.

4. The analysis of industries in the regions of Riga, Pieriga, and Kurzeme indicates the dominance of the services sector in the regions; in Vidzeme region - electricity, gas, and thermal energy supply is an industry with the highest growth, while the manufacture of fabricated metal products is a fast growing industry in the regions of Zemgale and Latgale.

Bibliography


