



THE ROLE OF INSTITUTIONS FOR CLUSTER DEVELOPMENT BASED ON THE REGIONAL LABOUR FORCE CONCENTRATION

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Abstract

The objective of this paper is to examine the role of institutions and policy support for cluster development and competitive advantages of regions based on the regional labour force concentration. The tool of the cluster identification in regional economy - Localisation Quotient (LQ) - has been applied to measure the concentration of the labour force in main economic sectors in Latvia and Finland. This comparative analysis has shown that Finland has much stronger regional labour force concentration in certain sectors of the economy, which is not typical for Latvia, revealing that the regional economy of Latvia has much lower potential for cluster development and competitiveness in global markets as Finland. Results of this research confirm that governments should support cluster development based on naturally growth poles exploiting potential of regional comparative advantages, such as specific concentration of skills and knowledge (labour force), concentration of industries, natural resources, etc. to achieve sustainable long term development by applying cluster approach, but not concentrate on short term priorities in cluster development.

KEYWORDS: clusters, labour force concentration.

Introduction

The discussion on business clusters has become very active during the last two decades, especially taking into account globalisation processes and their impact on economic development. The knowledge and technologically intensive economy is increasingly becoming an engine for economic growth in many countries, promoting discussions amongst economic policy makers and researchers that focus on competitiveness and sustainable development, including the development of business clusters. Presently, the promotion of the development of business clusters or networks of companies, learning institutions and other related organizations are internationally recognized forms for improving competitiveness and innovation of companies.

The objective of this paper is to examine the role of institutions and policy support for cluster development and competitive advantages of regions based on the regional labour force concentration. In order to show the impact of clusters on regional economies, –the Localization Quotient (LQ) will be applied, as the instrument of cluster identification. The authors have performed an analysis of regional economically active labour force concentration in Latvia and Finland. This analysis provides the possibility to compare regional labour force concentration features in different sectors of both the Latvian and Finnish economies, which are especially important for the cluster research. Conclusions suggest that regional economies can achieve practical use and benefits by employing the concept of clusters, as well as recommendations for further improvement of clusters' performance.

The paper is structured as follows: an overview summarizes the cluster related literature and presents the discussion on the benefits of localisation and

specialisation of industrial activities. In the methodology section research methods are outlined. Furthermore, this paper presents an analysis of the role of institutions and relevant policies for supporting cluster development. The findings of the data analysis and survey are presented in the third section. Finally, the paper concludes with the main findings of research, as well as the observed impacts of cluster framework conditions on company performance.

Overview on the development of cluster's concept

The benefits of localisation of industries or geographic proximity have been widely discussed among researchers and practitioners. Many researchers, such as O'Brien (1992), Cairncross (1997) and Gray (1998), tried to justify that concentration of economic activity in certain areas as a result of globalisation is becoming less important as a result of rapid technological development. Others, such as Krugman (1990, 1991), Ohmae (1995), Porter (1998b), Coyle (2001), Scott (2001), and Solvell (2008), prove exactly the opposite instead emphasizing that globalisation increases the importance of localisation or concentration of economic activities within regions. It is becoming more important than national level economic development for international trade and added value creation. With the development of the knowledge economy in the beginning of the 21st century, the discussion on achieving long term economic competitiveness has become increasingly active. In this respect, the discussion on specialised regional clusters as a tool for promoting economic development and improving competitiveness has increasingly become the focus of the economic policy debate and academic research.

The concept of clusters is a polysemantic one and it characterizes the form of a phenomenon (group, aggregate) rather than its contents. Thus, the general scientific interpretation of a *cluster* is as follows: an aggregate of several homogeneous elements, which can be perceived as an independent unit with particular specific features. In this meaning, “cluster” is similar to the concept “region”, which also has common physical form, but different contents according to the subject of each science (Boronenko 2009).

The concept of clusters in the business management and practice was actualised by Prof. Michael Porter of the Harvard Business School (HBS) in his book *The Competitive Advantage of Nations* (Porter, 1990). He concluded that when only one or several highly competitive economic subjects appear in the economy of the region, they foster the growth of competitiveness of the suppliers and the consumers operating on the territory of this region. M. Porter argued that on the modern global market, competition is implemented not by means of separate economic subjects, but with the help of groups of economic subjects (clusters). The initially established concept of cluster by M. Porter describes an industrial cluster as the unification of several industries based on buyer-supplier relations, similar technologies, distribution channels or similar qualifications of employees. In his book, Porter offers two cluster definitions on vertical and horizontal clusters, but does not take into account the importance of geographic location. After further development of the clusters concept in his numerous following publications, including Porter 1998a, 1998b, 1998c, 2000, 2001 and 2003, clusters are described as groups of interconnected firms, suppliers, related industries and institutions that arise in certain locations. These clusters are the geographical concentration of interconnected companies, specialised suppliers, service providers and associated institutions in particular field. Specialised regional clusters have been arising in locations with enough resources and competence where companies can fully explore competitive advantages over other places.

Academic discussions of the benefits of economic specialisation and localisation started long before Prof. Porter developed his concept. At the end of the nineteenth century, Alfred Marshall's work *The Principles of Economics* (Marshall, 1880), outlined observations on the concentration of specialised industries. The book further reflects the results of research of industrial districts in Great Britain, and although there are no modern specific terms in the work, it actually reviews a cluster, in which participants divide the work. More than 100 years ago, A. Marshall focused his attention on the synergic effect, which appears when small economic subjects unite and broaden their specialization. Regional economic subjects sign most of their contracts with the same suppliers and consumers and this naturally leads to the formation of a particular group of interrelated partners, which work in local networks. Later studies by Brusco (1982), Piore et al (1984), Czamanski et al (1979) and others on industrial districts and research on industrial and regional economics describe clusters as

groups of industries related by flows of goods and services.

M. Porter's cluster theory was reviewed by another American scientist M. Enright, who substantiated the essence of regional cluster and defined it in the following way: “A regional cluster is an industrial cluster, in which the enterprises - participants of the cluster - are geographically proximate to each other. A regional cluster is a geographical conglomeration of enterprises and organisations, which function in one or several close branches of economy” (Enright, 1992). During the 1990s, Porter's first cluster concept was used as a basis by other researchers, such as Redman (1991), Rosenfeld (1995, 1997), and Jacobs et al (1996), as well as others in discussing and further elaborating the concept of cluster. There has also been a criticism of Porter's cluster concept by Rosenfeld (1995, 1997), Hernesniemi et al (1996), Martin et al (2003), and others emphasizing lack of precise formulation of most important concepts used in the cluster definition, such as *regional proximity* or *collaborative and competitive linkages*, as well as expressing different concerns – for example that cluster industries might become overspecialised.

Thus, the concept of cluster in economics appeared in the 1970s from the initiative of American economists and, first of all, the initiative of M. Porter, the founder of the cluster theory. The phenomenon of the appearance of clusters and their development is historically determined. It has to be taken into account that the events took place at the beginning of the economic globalisation process, which was encouraged by fast development of new information technologies, especially the Internet. Thus, this stage is based on the development of information society.

During the last 20 years, the principle of economic cooperation has become a symbol of radical changes in the administration of competitive economic subjects. Its main idea is to substitute a hierarchy consisting of many levels with clusters or specialised business units.

Thus, in the new conditions of economic globalisation and increased flows of information, the necessity to have various integrated forms of economic cooperation transforms into the search for more rational, effective, profitable ways of business administration. Clusters are one of such forms which appeared in the economic theory as a result of the formation of the regional economy. While analysing the history of clusters, Porter makes reference to W. Isard, the founder of regional economy theory, who encouraged the formation and institutionalization of regional economy in 1960s. The notion “cluster” embraces the territorial aspect, which has become topical during the development of regional economy.

By the point of view of authors, the main features of a cluster, which are determined on the basis of Porter's classical definition, are as follows:

- a cluster is an economic subject rather than a juridical person (participants of a cluster are juridical persons themselves);
- although participants of a cluster have legal independence, they are economically interrelated;

- participants of a cluster differ in the type of activity and economic status;
- participants of a cluster are geographically proximate and work in the same region;
- all of the above-mentioned features have to be present simultaneously in the cluster.

Although the conceptual essence of a cluster is shown in M. Porter's classical definition, a large number of definitions of a cluster together with an insufficient understanding of its economic character prove that Porter failed to present his theory clearly. It contains a great number of unclear and vague phrases, such as: "clusters are a significant form with complex multi-centred organization having peculiar features typical of market economy" (Porter, 1998b). In order to single out the main differences, conceptualisation of the "cluster" requires consideration of other forms of economic interaction mentioned in scientific literature, such as strategic alliances, industrial regions, concerns, cartels, holding companies, corporations, networks, hierarchies, technological parks, logistic centres, etc.

The main thing that should be realised while defining and studying clusters is that a cluster is one form of economic interaction. First of all, it is not clear what distinguishes a cluster from other forms of economic interaction; moreover, economic interconnection essence of cluster participants is not determined. In order to eliminate these shortcomings, it is necessary to compare the forms of economic interaction mentioned in economic literature. One of these forms is the clustering algorithm offered by David Stark, professor at Columbian University (USA), and can be used as the economic connection of cluster participants; this algorithm makes economic identification of real business groups possible. These groups are formed on the basis of mutual ownership relations among economic actors (Старк, 2000). Therefore, clusters represent economic interactions between companies where participants are judicially independent, interconnected through economic interests, diverse in their statuses and types of activity. Also, cluster participants should be geographically concentrated within one region, possibly having relationships outside this region.

As the comparative analysis of clusters and other forms of interaction of economic subjects, such as corporations, financial industry groups, trust, syndicates, cartels, holdings, concern, networks, strategic alliance, economic associations, logistic centres, technological parks, business incubators, etc. show that (Boronenko, 2007), it is rather difficult to spot the precise border among the afore-mentioned forms, since specific combinations of various forms are possible. The most evident distinctive feature of clusters is the variety of participants and diversity of their statuses, which show that it is impossible to develop economic activity beyond the production sphere or to become economically effective without partner relations with "non-production" structures. Another distinctive feature of a cluster is its attachment to a particular region, which means that the appearance of a cluster in economic science and practice is closely connected with the necessities of separate regions to develop their competitive advantages in the modern globalisation conditions. Consequently, the answer to the question about economic usefulness or advantages of clusters in comparison with other forms of economic interaction is as follows: clusters are important because if local production is organized in clusters, regional economic subjects can be competitive on the global market, i.e. manufacture goods and offer services for export. Export is both an aim and empirical index of the work of a cluster whose efficiency can be quantitatively evaluated.

For conceptualisation of the notion "cluster", it is also possible to use the definition offered within the frameworks of the Swedish project *Cluster Policies Whitebook*. The project researchers, having admitted objective idiosyncronization of the concept, suggest not to give a definition, but to point out basic characteristics by means of which it would be possible to identify the concept "cluster". Contrary to M. Porter, they offer a broad list of basic characteristics. The synthesis of the elaborations of M. Porter and the Swedish researchers, as well as the comparative analysis of different forms of economic interaction mentioned above, allow authors to carry out the schematic model, the concept "cluster".

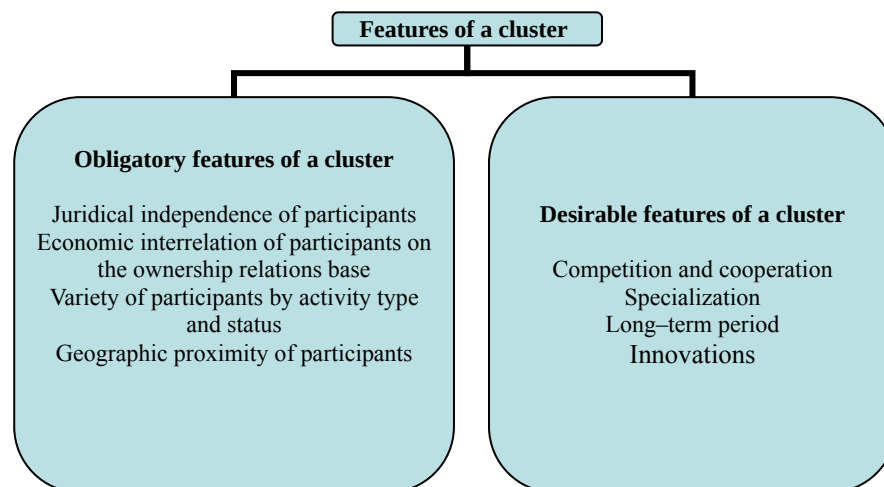


Figure 1. The conceptual model of the notion "cluster" in economics¹.

¹ Source: the scheme is elaborated by the authors by means of the analysis of economic research work.

Apart from compulsory basic characteristics, there can be the following features as well:

- specialisation – basic activity, which stipulates formation of a cluster;
- competition and cooperation: this combination characterizes the link among participants of a cluster;
- cluster “life-cycle”: clusters and cluster initiatives are not short-time phenomena, they are created with long-term prospects;
- innovations: participants forming a cluster are involved in the processes of technological, commercial and knowledge exchange.

Although, the presence of all elements is not compulsory, presence of some of them is desirable. For instance, innovations are very important, because they give certain advantages to the cluster.

As a conclusion of this overview on the development of the clusters concept, the authors can suggest their own definition of a cluster: a cluster is a form of economic interaction of judicially independent economic actors with different statuses concentrated in an economic region, which is formed in order to make its participants competitive on the global market. This definition specifies the main differences of a cluster in comparison with other forms of economic interaction.

Methodology of cluster development based on the regional labour force concentration

The research on the regional concentration of the labour force in Latvia has been conducted by the authors of this article following the research work on industrial clusters (Boronenko, 2007, 2009; Zeibote, 2009, 2010a, 2010b). Research findings have facilitated their further interest in analysing relationships between concentration of labour force and economic activity in certain geographic areas. Findings of this research work, as well as practical experience in implementing different state supported programs promoting the development of clusters in Latvia, stress the necessity to work out methodology for identifying clusters as regional growth poles and structures, which require support and attention in the economic development processes of Latvia.

Findings of international scientific literature on the identification of clusters (Lindqvist, 2003; Karlsson, 2008; Solvell ..., 2009) help to find scientific reasoning based on the phenomenon of territorial concentration of such economic indicators as enterprises, labour force or added value, which can be measured by sectors, segments, branches or industries (depending on the availability of statistical data) using the framework of territorial division - regions, states, landers, etc. (Kaminska, Mularczyk, 2006; Andersen ..., 2006; Maggioni, Riggi, 2008).

This paper addresses the phenomenon of regional concentration as a basis for the process of identification of clusters in Latvia using the labour market statistics data during 2008 and 2009, provided by the Central Statistical Bureau (CSB) of Latvia. This data allows the investigation of the labour force concentration specifics

of the Latvian economy based on ten sectors, grouped according to NACE2. For a deeper understanding of the labour force's regional concentration specifics in the Latvian economy, the authors have performed a comparative analysis with the regional labour force concentration in Finland, which has a highly clustered economy (Hernesniemi, Lammi, Yla-Anttila, 1996).

According to the identified methodology, the degree of regional labour force concentration divided by the sectors of the economy can be measured by the geographical re-aggregation of the national statistical data on labour force targeted to estimate the space distribution of X^{ir} , where X – a number of employed in the sector i in the region r (Maggioni, Riggi 2008).

By analysing the geographically re-aggregated data of the national labour force it is possible to observe if there is an increased concentration of the labour force of any given sector in any specific region. This requires a comparison of the number of employees working in a specific sector of the economy of the targeted region, with the average number of employees of the same sector of economy of all regions of a country:

$X^{ir} = (X^{iR} / N)$, where N – a number of regions in a country R , and $X^{iR} = \sum_{r=1}^N X^{ir}$. In other words

X^{ir} is an interregional amount of employees of a given sector of economy of a country to be compared with a number of employees of a given sector of economy of the targeted region for making conclusions about the degree of labour force concentration in specified sectors of economy in the targeted region.

The degree of the labour force regional concentration by sectors of the targeted regions can be also measured as % according to the formula

$AX^{ir} = \frac{X^{ir}}{X^{iR}}$, which shows the concentration of

labour force in indicators of unit weight employed by sectors of economy in each region.

An important and principal shortage of this approach is that indicators showing the degree of labour force concentration obtained by the above described method do not take into account that a number of people living in every region can be different and correspondingly the absolute amount of the labour force can also differ. For instance, in the situation of Latvia, where around one third of the total populations lives and works in Riga, the estimated indicators of the labour force will be greater practically in all sectors of economy, except for the agriculture sector only. To avoid such a principal deformation, this is necessary to operate by relative measures, taking into account amount of the labour force in targeted region in comparison with other regions of a country. The simplest and the most popular way for solving this problem – is to weight regional employment in the specific sector i according to the total number of the labour force in the region X^{ir} . In this case the degree of labour force concentration in more populated

regions will not be overestimated. $PX_{ir} = \frac{X_{ir}}{P_r}$ -

formula X_{ir} , weighted in terms of total population or a number of employed of the specific region.

By applying such simplified methods of normalization it is important to take into account that space distribution of the population or employment are not independent variables and industrially developed regions usually have greater density of population than a country on average. Also, it is true that in smaller space units and/or in bordering territories such methodology will not include daily flows of labour force from one region to another in cases if, for example, employees live in one region, but work elsewhere, because this could also provide incorrect results.

In turn, more complete methodology offers application of the Localisation Quotient LQ_{irR} , which allows to measure specialisation of the targeted region in relation to the whole country (Maggioni, Riggi 2008). In other words, *if we want to measure the degree of attributable specialisation of the region r in the sector of economy i in relation to more bigger territory R (usually this is a country) and in the whole economy I (i.e. all sectors of economy of a country) by indicator X (amount of enterprises, number of employed, added value), then respective Localization Coefficient can be found according to the equation:*

$$LQ_{irR} = \frac{\frac{X_{ir}}{X_{Ir}}}{\frac{X_{iR}}{X_{IR}}}, \text{ where}$$

X_{ir} - regional employment in sector (segment, sector, industry);

X_{Ir} - total regional employment;

X_{iR} - total employment in sector (segment, sector, industry);

X_{IR} - total employment in country.

Of course, absolute values of the space concentration of economic indicators – the number of enterprises, number of employed persons, added value, etc. – also have high importance for economic research showing the degree of absolute concentration of resources by territories. In addition, the concept of comparative territorial advantages of the classical economic theory by D.Rikkardo appeared to be more progressive in comparison with the previous concept of absolute advantages by A.Smith providing that relative

indicators of the concentration of economic resources LQ are more appropriate for searching the regional growth pole. Especially, this is true in a case of such country as Latvia, where practically all resources of a country in absolute terms will appear to be concentrated in Riga. This result will be true, but functionally it is not applicable for the development of regions, because it does not allow to find and to evaluate potential for the development of regions.

Modern research practice already has the classification for value LQ according to which:

- $LQ < 1$ – points out sectors of economy of a region with some potential for the business development;
- $LQ > 1$ – a region has proportionally higher unit weight of people employed in a targeted sector of economy in comparison with the whole country;
- $LQ \geq 1,25$ – this sector of economy has a potential for cluster development and competitiveness on the global market (Location Quotient Technique, 2010).

The role of institutions and policies on cluster development

The cluster approach provides a possibility for policy makers to influence processes of economic development and increasing competitiveness, including innovation, in more target oriented way. In this manner they can build much closer dialogue with enterprises, as well as academic and scientific research institutions, focusing on needs of specific industries in order to reduce those barriers and obstacles which hinder economic development. Therefore, cluster support policy is significant instrument for creating strong innovation systems which, in turn, are critical preconditions for creation of growth and new jobs.

The data of the European Innovation Scoreboard (ProInno Europe, 2009) confirm that there is a strong link between national innovation systems and innovation indicators. This provides evidence that state support is important for cluster development and promotion of innovation using the cluster approach. Cluster support instruments differ in various European countries and regions taking into account such factors as differences in economic development levels and co-operation traditions between state and private sector. Cluster support policy could be one of indicators of state or regional competitiveness which reflects the ability of state to mobilize and invite main players of economy to cooperate for promoting growth and developing innovation.

Table 1. Policy trends supporting clusters and regional innovation systems

Policy stream	Old approach	New approach	Cluster program focus
Regional policy	Redistribution from leading to lagging regions.	Building competitive regions by bringing local actors and assets together.	Target or often include lagging regions. Focus on smaller firms as opposed to larger firms, if not explicitly then de facto. Broad approach to sector and innovation targets. Emphasis on engagement of actors.
Science and technology policy	Financing of individual, single-sector projects in basic research.	Financing of collaborative research involving networks with industry and links with commercialization.	Both take advantage of and reinforce the spatial impacts of R&D investment. Promote collaborative R&D instruments to support commercialization. Include both large and small firms (often spin-off and start-up firms). Usually high-technology focus.
Industrial and enterprise policy	Subsidies to firms; national champions.	Supporting common needs of firm groups and technology absorption (especially SMEs).	Programs often adopt one of the following approaches: • Target the drivers of national growth. • Support industries undergoing transition and thus shedding jobs. • Help small firms overcome obstacles to technology absorption and growth. • Create competitive advantages to attract inward investment and brand for exports.

Source: OECD, 2007, *Competitive Regional Clusters: National Policy Approaches, Policy Brief, May 2007, OECD: Paris*, p. 3.

According to the European Cluster Observatory survey conducted in 31 countries (Europe Innova, 2008), half of respondents started to use cluster policies only since 2000. For this reason, cluster support policies in many European countries are still in early stages. Approximately half of national cluster support programs can be classified as related to industrial or entrepreneurship policies, but the other half is related to development of science and technology. Almost every cluster support program focuses on entrepreneurs as their main target group followed by science and research institutions.

The fact that cluster initiatives are relatively new in most European regions is also recognized by Landbaso and Rosenfeld in their paper "Public policies for industrial districts and clusters" (Landbaso, Rosenfeld, 2009). In addition, they conclude that these new cluster initiatives have influenced the creation of new support policy instruments which are based on private and public partnerships, as well as business co-operation or networking. According to the authors it is important to encourage regions to exchange information on success and failure of the application of cluster support instruments to make them even more efficient.

Considering that cluster support programs have appeared comparatively recently, it is too early to evaluate their economic impact. At least 10 to 15 years should pass before results of such programs will show their impact.

Despite the fact that many clusters have been created without any special external support, most entrepreneurs consider that the state sector plays a significant role in promoting cluster creation and their development. The Innobarometer (European

Commission, 2006) in its research in 2006 concluded that approximately 68% managers of enterprises, which operate in cluster's environment, consider that state institutions have important or even fundamental role in cluster development. Results of this research indicate that support of state sector is mostly expected by entrepreneurs of Southern European countries – Portugal, Spain and Italy, but to smaller extent in so called new EU member states which joined the EU in 2004 and later. These tendencies could be related to low level of understanding in new EU member states of clusters and their role in increasing growth and competitiveness since the Innobarometer research indicates that only 41% of respondents from new EU member states were informed about the cluster's concept.

Initially, cluster development in Latvia was supported by the EU PHARE programme² during the period from 1999 to 2002 (Vanags A. Et al, 2002). According to the research findings, the following sectors of the Latvian economy were recognized as sectors having cluster development potential: IT, forest sector, machine building and new materials. In these sectors cluster initiatives were established, but only two of those initiatives started in 2001 succeeded and are still operating as cluster initiatives today.

The EU PHARE support for cluster development activities had several significant results, such as an increased understanding about the importance of clusters and their development; facilitated mutual co-operation between players of different sectors and

² PHARE – Poland, Hungary assistance restructuring economies.

initiated possibilities to develop long term activities and objectives of mutual co-operation. Analysing cluster development processes in Latvia and the role of clusters in the Latvian economic development it has to be recognized that the role of clusters has not been yet fully recognized and understood.

The Government of Latvia has expressed its support for the European Cluster Memorandum (www.proinno-europe.eu) which emphasises that regions having necessary skills, excellent research capacity, access to the risk capital and strong clusters are having greater possibilities to become centres of innovation than those with isolated research work and without clusters. Clusters can become the main factors which attract capital, labour force and knowledge. The Memorandum stresses that accents of discussions in Europe must be changed from facilitating state support offering to promotion of wider innovation ecology, including the support for cluster creation and development. Several European countries, especially, Great Britain, Czech Republic, several regions of Austria, France, Germany and others have actively started to create cluster initiatives.

Unfortunately, Latvia has the lowest initiators in the European Union regarding the development of enterprises clusters, cluster branding, organizing different cluster support activities and providing direct financial support for different cluster related activities. The authors of this paper are confident that applying cluster approach for the development of different sectors of economy could be successfully used for increasing competitiveness of Latvian enterprises, because clusters encourage concentration of resources and their effective utilization.

The cluster model which is based on competitive advantages has been recognized as one of the most effective ways for strengthening international competitiveness, innovation and development of enterprises in many countries. The importance of cluster development is mentioned in the Latvian National Development Plan 2007-2013 (Ministry for Regional Development and Local Government Affairs of the Republic of Latvia, 2006), the Latvian Industrial Development Guidelines (Ministry of Economics of the Republic of Latvia, 2004) and the National Innovation Programme 2003-2006 (Ministry of Economics of the Republic of Latvia, 2003). In addition, the Latvian National Lisbon Programme 2008-2010 defines the importance of clusters' development with the objective of stimulating the competitiveness and increase in productivity of enterprises by stimulating their mutual co-operation and collaboration with education, science and research and other related institutions (2005-2008). According to this programme, this has been planned to evaluate the cluster development potential in Latvia and to support the development of three most perspective clusters (Ministry of Economics of the Republic of Latvia, 2005). The Ministry of Economy of Latvia is responsible for the cluster support policy in Latvia, which conducts cluster support policy and ensures its implementation in co-operation with the Latvian Investment and Development Agency.

On June 28, 2007, the Cabinet of Ministers of Latvia, with the Decree No.406 adopted the Programme for Promoting Commercial Innovation and Competitiveness 2007-2013 worked out by the Ministry of Economy of Latvia stating that despite favourable industrial environment for cluster development in Latvia at this moment, more active co-ordination of state and business policies to promote the creation of clusters which is lagging behind.

Until 2009 when the Government of Latvia started to provide financial support for cluster development, this was possible to discuss only the Latvian IT cluster and the Latvian Forest Industries cluster initiatives. Clearly, establishment of new clusters would help to create environment which could facilitate innovation, knowledge transfer from local or foreign research institutions to production sector, increased demand of industries for new technologies, as well as it would concentrate economic policy measures in specific industries or segments (Ministry of Economics of the Republic of Latvia, 2007).

According to the Programme for Promoting Commercial Innovation and Competitiveness 2007-2013 a special support programme for clusters was adopted by the Ministry of Economy within the 'Entrepreneurship and Innovation' programme. The Cluster programme is implemented with co-financing of the EU Structural Funds and Cohesion Funds and its objective is to promote co-operation of enterprises and related education, research and state institutions, to support implementation of joint projects to facilitate faster increase of competitiveness of industries and enterprises, to promote exports, innovation and production of new products. The most important requirements for clusters wishing to receive state support under the cluster programme are the following:

- Correspondence of the cluster with priority sectors defined by the Government documents;
- Clarity and measurability of the project objectives, planned activities, indicators and planned results;
- Introduction of the value added chain into cluster and expected results;
- International co-operation;
- Cluster orientation on exports;
- Competence of the cluster co-ordinator;
- Cluster guarantees the involvement of an expert with experience in implementing international projects.

The Cluster Programme supported 9 cluster initiatives in 2009, 9 cluster initiatives in 2010 and 7 cluster initiatives in 2011. The supported cluster initiatives are the following: IT cluster (2009, 2010, 2011), Metalworking and related industries cluster (2009, 2010, 2011), Electronics and electro-technical cluster (2009, 2010, 2011), Pharmacy and chemistry and related industries cluster (2009, 2010, 2011), Furniture and related industries cluster (2009, 2010, 2011), Cosmos technologies cluster (2009, 2010, 2011), Certain manufacturing products for export cluster (2009), Supply chain cluster (2010, 2011), Textile and related industries cluster (2009, 2010,

2011) and Food industry cluster (2009, 2010). The Cluster Programme implemented by the Ministry of Economy (MoE) will also continue in 2012-13, because, as experience shows, creation of new cluster initiatives in Latvia without specially targeted state support for this purpose has not been possible.

Latvia, similarly as many other countries, apply the cluster concept for the establishment of cluster organizations or initiatives. The fact, appearance of many new cluster initiatives in Latvia over the last few years indicate that enterprises have acknowledged their importance and co-operation opportunities they provide. In 2010, the following clusters' initiatives on different stages of their development have been registered in Latvia:

Table 2. Cluster initiatives in Latvia³ (2010)

Cluster initiative (CI)	Sector, industry or full name, remarks
Association "Latvian Furniture"	Woodworking, design, „Furniture production and related industries cluster development programme”. Supported by the MoE Cluster Programme.
Audio visual CI	Creative industries
Biofuel CI	Energy (lack of human resources and capacity)
Biotechnologies CI	Biotechnologies
Electronics& electro- technical CI	Electronics, „Electronics and electro-technical cluster development project, Supported by the MoE Cluster Programme.
E-text-textiles CI	Creative industries (working on the project basis)
E-transport CI	Transport, metalworking, design
Pharmacy and related industries CI	Pharmacy and related industries, „Promotion of co-operation between participants of Pharmacy and related cluster for creating new export products, introducing new technologies in production and attracting investors”, Supported by the MoE Cluster Programme.
Inspiration Riga	Tourism
IT cluster initiative	IT, „Promotion of international recognition of the Latvian IT cluster”, self-financed cluster, Supported by the MoE Cluster Programme.
Latvian Acoustic society CI	Electro-technics and construction
Latvian Chamber of Crafts CI	Crafts and arts (micro enterprises)
Latvian	Production of construction

³ These cluster initiatives are on very different stages of development - some of them are actively working, but some are just started or initiated.

Construction materials' association CI	materials
Latvian Polygraph enterprises association CI	Polygraph
Latvian Underwear manufacturers association CI	Textile sector
Linen and canopies CI	Textile sector (Gradual development of business Project on full cycle linen and canopies production), CI established in 2010.
Metalworking CI	Metalworking and design „Development of Metalworking and related industries cluster”, Supported by the MoE Cluster.
Forest industries CI	Woodworking (Operates as the Federation, not planning to establish a separate CI or foundation).
Food production CI	“Food sector cluster for export promotion”, Supported by the MoE Cluster Programme
Creative industries CI	Creative industries (basically operate as an incubator)
Ventspils High Technology Park, satellite technologies	„Co-operation measure for establishing the Cosmos Technology cluster”, Supported by the MoE Cluster Programme.
Latvian Supply chain CI	„Establishment of CI for certain manufacturing products' export”, Supported by the MoE Cluster Programme.
Latvian Light industry enterprises association CI	„Development of the business plan of the Textile and related industries cluster for innovative textile materials production development conception implementation for enterprises working in the filch sector, Supported by the MoE Cluster Programme.
Car parts production	Machine building, production of car parts.

Source: Authors' compilation using information provided by the Ministry of Economy and the Latvian Investment and Development Agency.

According to the European Cluster Observatory (ECO) researches (ECO, ISC/CSC cluster codes 1.0, dataset 20070510) evaluating cluster potential in European countries taking into account employment indicators Latvia has a good potential for cluster development in such sectors as construction tools, equipment and services, chemical industry, construction, education, entertainment, furniture production, heavy industry, maritime (ports) sector, transport and logistics. Since 2010, the ECO has performed separate evaluation for such sectors as creative industries, knowledge intensive sectors and life sciences emphasising their considerable potential for economic development. In this respect, Latvia has a

good potential for the development of clusters in creative industries and according to the ECO estimations these are the following: advertising, museums and monuments of history, radio and TV, distribution and retail (Please, see table 1 in page 12). According to the ECO methodology cluster potential is marked by 1, 2 or 3 stars according to the concentration of enterprises and labour.

Table 3. Statistical clusters in Latvia identified by the European Cluster Observatory (2009)

No	Traditional sectors	Number of employed	Number of enterprises	Marking (stars)
1.	Construction tool, equipment,	15352	756	2

	services			
2.	Chemical industry	2266	96	1
3.	Construction	50605	2711	1
4.	Education	29572	436	3
5.	Entertainment	11505	747	2
6.	Furniture production	10713	474	2
7.	Heavy industry	2839	44	1
8.	Maritime sector	8585	348	2
9.	Transport and logistics	42080	1201	2

Source: <http://www.clusterobservatory.eu> (1.11.2010 at 15.00), data compiled by the author

Nr.	Creative sectors	Number of employed	Number of enterprises	Marking (stars)
1.	Advertisement	5157	1147	1.2
2.	Museums and monuments of history	6609	9	3
3.	Radio and TV	2931	226	2
4.	Retail and distribution	3280	291	1

Source: <http://www.clusterobservatory.eu> (01.11.2010 1.11 at 15.00), data compiled by the authors.

Latvia also has other very important sectors with significant share of employment, such as financial services and food processing sectors, but they are not identified as potential clusters according to the methodology of ECO and applied criteria. However, these sectors are very important for Latvia and there is no doubt that they have a potential for cluster development. The economic policy makers in Latvia have not foreseen cluster support measures in the policy documents related to SMEs and entrepreneurship support, the promotion of innovation, investment policy, etc. Therefore, cluster support policy has not been target oriented and implemented so far.

For enterprises of territorially small countries, such as Latvia, to be successful in international competition for competitiveness and markets, it is impossible to sustain the full production cycle in the long run. Therefore, they need to specialize in offering specific products and services. Prof. C. Ketels from the Harvard Business School, who has visited Latvia several times, has emphasised that clusters should be created in the context of the Baltic Sea Region, because regional specialization has been required here. For example, if we see perspectives for the development of design industry, we need to think how we will co-operate with partners in Scandinavia, Lithuania, Estonia, Poland, etc. to become more competitive in certain area all together.

Comparative analysis of the regional labour force concentration in Latvia and Finland as the platform for potential cluster development

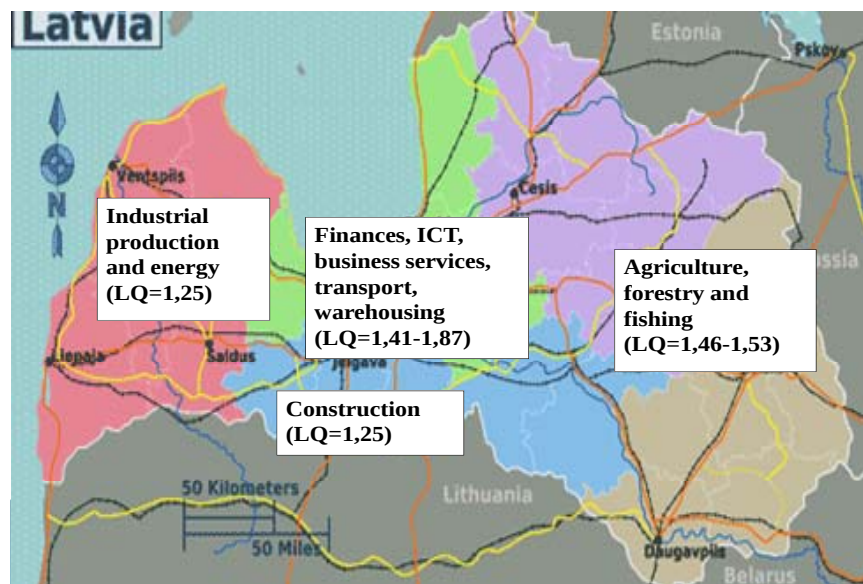
Before starting the comparative analysis of the regional concentration of the labour force by economic sectors in Latvia and Finland, it is important to note that statistics for Finland provide incomparably more publicly accessible data for researchers, such as annual data on the labour force distribution by 28 sectors in 21 regions of a country. The Latvian statistics provide some selected data (17995 people in 2008 and 16677 people in 2009) on the economically active labour force for 10 sectors of economy only (Labour Force Survey ..., 2008, 2009). These drawbacks have seriously influenced research results. Therefore, to make the Finnish statistical data compatible with the Latvian data this was required to combine the Finnish statistical data (Statistics of Finland, 2006, 2007) in 10 sectors of economy to make them compatible with the structure of the Latvian statistical system.

Because of the above mentioned factors, firstly, the regional Localisation Quotient (LQ) of the labour force in 10 sectors of the Latvia economy in 2008 and 2009 was measured. Secondly, the amplitude of concentration was evaluated showing the degree of regional concentration in the specific sectors of Latvia.

Table 3. Concentration of the economically active labour force by sectors of economy in the regions of Latvia⁴, Localization Quotient (LQ), 2008 (17991 people) and 2009 (16673 people)

Sector of economy	Riga		Pieriga (Riga Region)		Vidzeme (Central Latvia)		Kurzeme (Western Latvia)		Zemgale (Lower Latvia)		Latgale (Eastern Latvia)		Amplitude of concentration	
	2008	2009	2008	2009	2008	2009	2008	2009	2008	2009	2008	2009	2008	2009
Agriculture, forestry, fisheries (A)	0,03	0,03	0,69	0,71	1,53	1,46	1,20	1,12	1,03	1,17	1,50	1,47	1,50	1,44
Finances, insurance, science and management, real estate business (K-N)	1,87	1,86	1,10	1,14	0,93	0,76	0,75	0,88	0,92	0,74	0,60	0,70	1,27	1,16
Transportation, warehousing, information and communication (H,J)	1,43	1,41	0,92	0,82	0,75	0,77	1,11	1,09	0,81	0,88	0,99	1,05	0,68	0,64
Other (R-U)	1,04	1,22	1,26	1,19	0,79	0,72	0,98	0,86	1,09	1,21	0,78	0,76	0,48	0,50
Trade, hotels and restaurants (G,I)	1,22	1,27	1,21	1,13	1,05	1,04	0,75	0,85	1,02	0,95	0,78	0,82	0,47	0,45
Industrial production and energy (B-E)	0,99	0,83	0,94	1,09	0,87	0,95	1,21	1,25	0,99	0,92	0,99	0,92	0,34	0,42
Construction (F)	1,02	1,07	1,08	1,06	0,89	0,80	0,89	0,95	1,25	1,20	0,85	0,89	0,40	0,40
Health and social works (Q)	0,92	1,02	0,97	0,96	1,02	1,12	0,89	0,76	0,92	0,99	1,23	1,16	0,34	0,40
Education (P)	0,75	0,84	0,93	0,93	1,17	1,15	1,07	0,96	0,89	1,08	1,18	1,05	0,43	0,31
State administration and defence, social insurance (O)	0,89	0,90	0,93	0,99	0,89	0,91	1,04	1,00	1,01	0,99	1,17	1,15	0,28	0,25

Source: calculations of authors using the data of the Labour Force Surveys of the CSB of Latvia 2008, 2009.

**Figure 2.** Sectors of economy in the regions of Latvia with a real potential for creation of clusters, $LQ > 1,25$ (according to the labour concentration data), 2008-2009⁴ Arranged according to the amplitude of concentration in 2009.

The analysis of the Localization Quotient by 10 sectors of economy in the Latvian regions has shown that the strongest degree of regional concentration of the labour force is observed in such sectors of the Latvian economy as agriculture, forestry and fishing (the amplitude of concentration is 1,50 in 2008 and 1,44 in 2009), as well as finances, insurance, science, management and real estate business (the amplitude of concentration is 1,27 in 2008 and 1,16 in 2009). First of the above mentioned sectors, which mainly concentrates in Vidzeme (Central Latvia) and Latgale (Eastern Latvia) regions is the only sector of economy having a real potential for cluster development in these regions, as well as a capacity to compete on international market. Finances, insurance, science, management and real estate business mainly concentrate in the capital city of Riga supporting the hypothesis that Latvia is divided into two economic regions – Riga and all the rest Latvia. This hypothesis is being previously tested by one of the authors of this research (Boronenko 2005, 2007, 2009; Boronenko 2006). This is important to note that there is also a development potential for clusters in the Kurzeme (Western Latvia) region in industrial production and energy sectors (LQ=1,25 in 2009) and for construction sector in Zemgale (Lower Latvia) region (LQ=1,25 in 2008). In total, as reflected by the amplitude of labour force concentration, most of the sectors of economy of Latvia are distributed by regions of a country quite equally, which does not permit to create strong and natural basis for the sectoral cluster development in these regions, and to turn these clusters into competitive regional growth poles. Probably, the creation of clusters takes place on industry level (more detailed classification of the economic activity), but statistical shortages in Latvia limit possibilities for performing further investigations.

The analysis of amplitude dynamics of the economically active labour force concentration by sectors of economy in the regions of Latvia during the period of time from 2008 to 2009 (see Figure 3) has shown that the amplitude of concentration of the economically active labour force in such sectors of the Latvian economy as agriculture, forestry and fisheries, as well as finances, insurance and real estate business has a tendency to decrease (from 1,50 in 2008 to 1,44 in 2009 for the first sector and from 1,27 in 2008 to 1,16 in 2009 for the second sector). At the same time, the amplitude of concentration of such less regionally concentrated economic sectors of Latvia, as industry and energy, health and social works, is increasing (from 0,34 in 2008 to 0,42 in 2009 for the first sector and from 0,34 in 2008 to 0,40 in 2009 for the second sector).

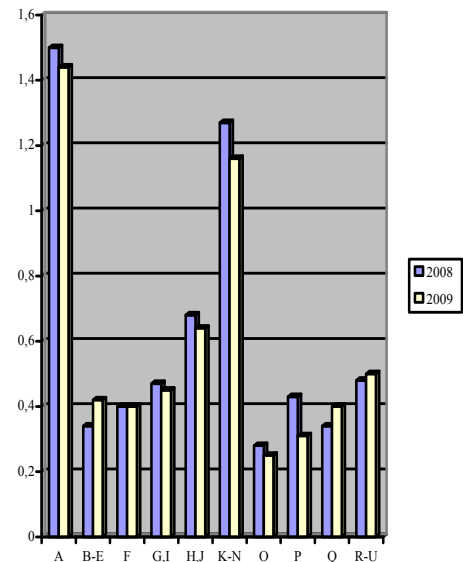


Figure 3. Dynamics and amplitude of the economically active labour force concentration by sectors of economy⁵ in the regions of Latvia, 2008-2009

In total, the amplitude of labour force concentration shows that there is not a strong and natural basis for cluster development by evaluated sectors in these regions, and to turn these clusters into competitive regional growth poles. Also, it means that clusters can be identified on the base of more detailed – industry, sub-industry and sub-sub-industry concentration of economic actors (for instance, enterprises). The observed changing trends in amplitude of the labour force concentration in the economic sectors of Latvia provide evidence that spatial localisation of the economic activity in Latvia is not a constant value, but a dynamically developing indicator, which is a subject of change and can be influenced by different other factors, but these factors are beyond the focus on the Latvian cluster research framework at this stage.

Furthermore, to achieve an objective for more a systemic understanding of the regional labour force concentration in the Latvian economy, the authors of this paper performed a trial to compare the labour force concentration by combined economic sectors of the regions of Finland (The necessity to combine the economic sectors of Finland to be able to compare them with the available statistical data of Latvia was explained above).

Analysis of the Finnish data has indicated that in a sharp difference from Latvia, practically every region of Finland has a potential for cluster development and competitiveness on the global market at least in some sectors of economy. In addition, the concentration of the labour force in these sectors in specific regions is 2, 3 and sometimes even 4 times greater than the average concentration in whole Finland. For instance, the Helsinki region shows relatively high concentration of the economically active labour force in the sector of financial intermediation, real estate business and other business services (1.56 in 2006 and 1.55 in 2007).

⁵ Please, see the classification of sectors of the economy of Latvia in Table 2.

Another two sectors of the Helsinki region are on the baseline of the Localization Quotient, which is equal to 1.25 — this is wholesale and retail business, hotels and restaurants, as well as other public, social and individual services. This is interesting to note that the specialization of the capital region of Finland is not as striking as in a case of Latvia, and that different sectors of economy of the regions of Finland are internationally competitive while developing regional

specialization. For instance, the region of South Ostrobothnia (Etelä-Pohjanmaa) has developed some degree of the labour force concentration in agriculture, forestry and fisheries up to 2.78 in 2006 and 2.77 in 2007, but the Aland Islands have the labour force concentration in transportation, warehousing and communications equal to 4.52 in 2006 and 4.04 in 2007.



Figure 4. Sectors of the regions of Finland with real potential for creation of clusters, $LQ > 1,25$ (according to the indicator of the economically active labour force concentration) 2006-2007

Analysis of the dynamics of amplitude of the economically active labour force concentration by sectors of the economy in the regions of Finland in the period of time from 2006 to 2007 (see figure 4) has shown that in this, case the value of the degree of concentration is much more stable than in the regions of Latvia, except for the sector of transport and communications (the amplitude of concentration in 2006 was 4,46 and in 2007 – 3,98), which has much higher degree of regional concentration according to the economically active labour force data. This is possible to assume that this sector of economy of Finland has reached such a high level of regional

concentration that it has entered a stage of the natural cyclical process of de-concentration. However, the authors of this research do not have stronger empirical arguments for proving this assumption.

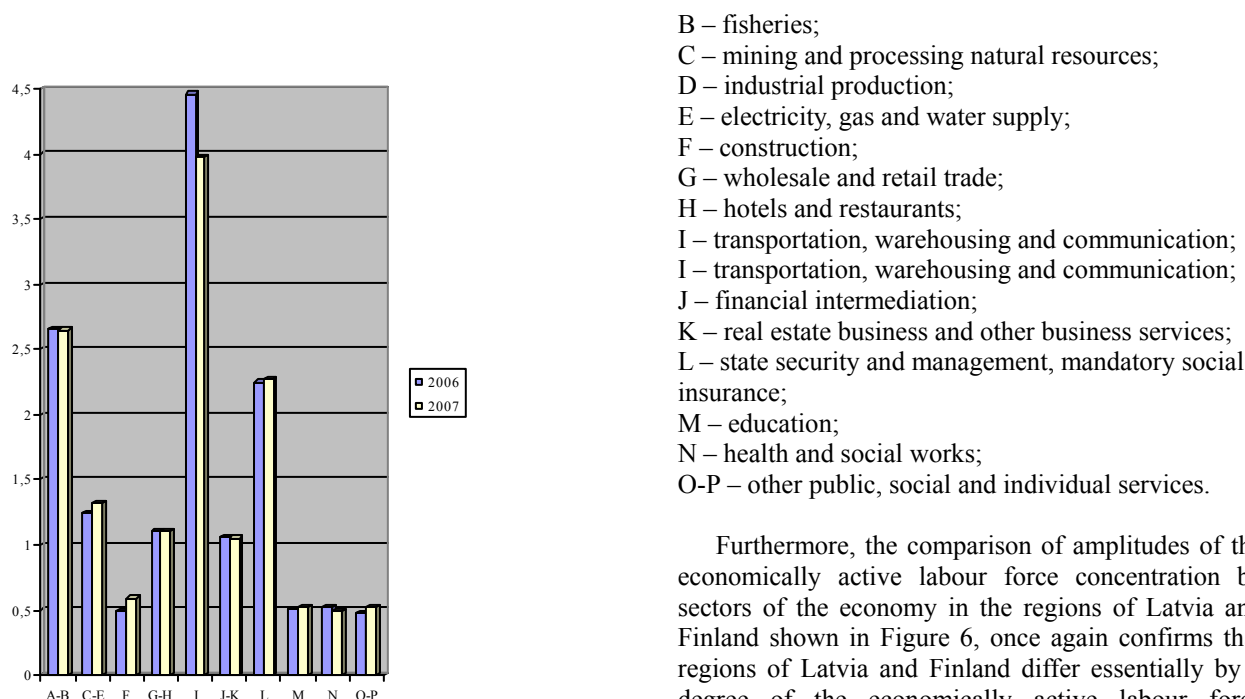


Figure 5. Dynamics of the amplitude of the economically active labour force concentration by sectors of economy in the regions of Finland, 2006 - 2007

Sectors of the Finnish economy are classified in the following way:
 A – agriculture and forestry;

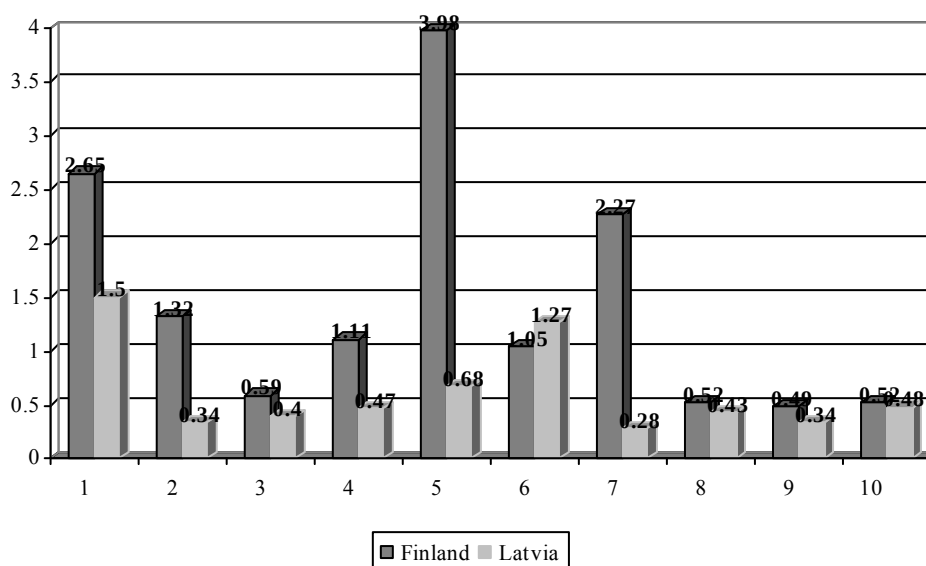


Figure 6. Comparison of the amplitudes of concentration of the economically active labour force by sectors of economy in the regions of Finland (2007) and Latvia (2008)

For the purpose of comparison the sectors of economy of Finland and Latvia are classified in the following way:

- 1 – agriculture, forestry and fisheries;
- 2 – industrial production and energy;
- 3 – construction;
- 4 – trade, hotels and restaurants;
- 5 – transport, warehousing and communications;
- 6 – financial intermediation, real estate business and other business services;
- 7 – state security and management, mandatory social insurance;
- 8 – education;
- 9 – health and social works;
- 10 – other public, social and individual services.

The results of this research have shown that, firstly, regional concentration of the economically active labour force can be measured with the Localization Quotient (LQ) which indicates the level of regional labour force concentration in different sectors of economy. Secondly, in comparison with Finland, which has quite strong regional labour force concentration in certain sectors of economy, regional concentration of the labour force is not typical for Latvia meaning that regional economy of Latvia has much lower potential for cluster development and competitive advantages in global markets as Finland.

Thus, this is important to promote the development of clusters in regional economies using available support instruments. For encouraging the creation of new clusters or co-operation networks governments must define and implement the optimal policy for stimulating and supporting economic clustering.

Summary and conclusions

The European Commission (EC) in “The Europe 2020” strategy on the regional policy in Europe (Regional Policy, 2010), as one of the most important tasks for more effective and faster use of the European Union Structural Funds for supporting innovation, named the following: to work out the «strategy for competitive specialization» of the region (Landabaso, 2010). This initiative related to the development of each and every region is called to assist regions to identify the most realistic factors of their competitiveness based on the concentration of a “critical mass” of specific resources helping to create a natural environment for innovation development. “The strategies of competitive specialization” of regions will also allow the concentration of financial resources of the EU funds on one or two priorities, which will help creating the regional growth poles in a natural way.

Working out “the strategy of competitive specialization” of each region, the European Commission among other things offers to emphasize the following momentum: regional clusters are providing increasingly ecological basis for the development of innovation (Landabaso, 2010). According to the view point of the authors, this means that results of research

and comparison of the regional labour force concentration in the economy of Latvia has provided an input for more clear understanding of qualitative and quantitative potential of the regions of Latvia from the cluster development perspective, using it as an instrument for creating more favourable, natural and ecologic environment for innovation development.

Results of this research also show that the government should support cluster development based on naturally growth poles exploiting potential of regional comparative advantages, such as specific concentration of skills and knowledge (labour force), concentration of industries, natural resources, geographic position, etc. to achieve sustainable long term development by applying cluster approach. Current cluster support policies, which support specific priority actions undertaken by clusters, such as export promotion or product development, are beneficial in short term and may not have a long term impact on companies’ and clusters’ performance.

Furthermore, the authors of this research are putting out the assignment for themselves to research the regional specialization of Latvia also according to the concentration of enterprises, added value, etc, which, according to The Europe 2020 strategy will help regions of Latvia by having a clear development perspective to focus on the regional distribution of a «critical mass» of different resources which have been naturally developing in the regional growth poles of the economy of Latvia and forming the base of its comparative advantages. Results of such research could be useful and applicable also in a case of other countries.

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THE ROLE OF INSTITUTIONS FOR CLUSTER DEVELOPMENT BASED ON THE REGIONAL LABOUR FORCE CONCENTRATION

Summary

The discussion on business clusters has become very active during the last two decades, especially taking into account globalisation processes and their impact on economic development. The knowledge and technologically intensive economy is increasingly becoming an engine for economic growth in many countries, promoting discussions amongst economic policy makers and researchers that focus on competitiveness and sustainable development, including the development of business clusters.

Presently, the promotion of the development of business clusters or networks of companies, learning institutions and other related organizations are internationally recognized forms for improving competitiveness and innovation of companies, especially for those searching for entry into international markets.

This paper examines the role of institutions and policy support for cluster development and competitive advantages of regions based on the regional labour force concentration. In order to show the impact of clusters on regional economies, the Localization Quotient (LQ) has been applied, as the instrument of cluster identification. The authors have performed an analysis of regional economically active labour force concentration in Latvia and Finland. This analysis provides the possibility to compare regional labour force concentration features in different sectors of both the Latvian and Finnish economies, which are especially important for the cluster research.

According to the view point of the authors results of research and comparison of the regional labour force concentration in the economy of Latvia has provided an input for more clear understanding of qualitative and quantitative potential of the regions of Latvia from the cluster development perspective, using it as an instrument for creating more favourable, natural and ecologic environment for innovation development.

Results of this research indicate that the government should support cluster development based on naturally growth poles exploiting potential of regional comparative advantages, such as specific concentration of skills and knowledge (labour force), concentration of industries, natural resources, geographic position, etc. to achieve sustainable long term development by applying cluster approach. Current cluster support policies, which support specific priority actions undertaken by clusters, such as export promotion or product development, are beneficial in short term and may not have a long term impact on companies' and clusters' performance.

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