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CLUSTERS- SOURCES OF ECONOMIC GROWTH IN EUROPE

Theoretical article

Keywords
Clusters
Development
Growth
Competitiveness

JEL Classification
F10; 010; 040

Abstract

Global competition has evolved from the competition between companies to the competition between regions. In this context, clusters play an important role as competences' concentration poles. The cluster initiatives represent concentrated efforts to increase the wealth and competitiveness in a certain region including companies, local administration, research and training institutions. This paper proposes the analysis of the European clusters' role in ensuring the regional development. Resulted conclusions emphasize both the positive results of clusters' existence, as well as the fields where improvements can be made in order to increase the clusters' impact on the economic development.

Introduction

Globalization, somehow unexpectedly, has strengthened the role of clusters and promoted their development. Companies face more and more choices when locating their activities in places that provide the best business environment for their specific needs. The more the markets become more global, the more probable that the resources are to be oriented towards more attractive regions, thus strengthening the clusters' role and supporting the regional specialization. In this process, clusters tend to become more and more specialized and more and more related to other clusters that provide complementary activities. Silicon Valley in the USA is a well-known example of a region that supports strong clusters in many high-tech fields. Due to clusters, many European regions have developed competitive advantages in specialized activities, such as financial services (London), oil chemistry (Antwerp), flowers (the Netherlands), and biopharma (the Danish-Swedish border line region). Successful clusters have significantly developed their global influence – attracting individuals, technology and investments, serving the global markets and connecting them to other regional clusters that provide complementary activities in the worldwide value chains. The economic activity within a cluster tends to focus in several locations. Regional clusters and specialization are empirically associated to high levels of innovation and prosperity. The European Observatory for Clusters and other cartographical efforts of clusters have provided systemic proofs on these correlations. Between 30% and 40% of the total employment level is found in industries that focus at a regional level (see Figure 1). Regions with a higher degree of the workforce occupation in the industries that belong to the strong clusters are more prosperous per total. If the occupation is made in more industries that belong to these clusters, then the prosperity continues to grow. The positions in the cluster groups that are related through common industries or in clusters that are present in neighboring regions provide additional benefits. While many other clusters excepting the clustering can influence the prosperity, data provide certain proffs that clusters are significantly related to prosperity and it is necessary to consider clusters as a core part of each economic strategy.

1. Overview of the cluster sector

Nowadays, there are numerous proves that suggest that innovation and economic growth are strongly geographically concentrated. Clusters ensure a favorable environment for innovation and knowledge creation. Regions with clusters portfolios are innovative leaders, while regions with no clusters or with isolated research facilities remain behind. Globalization has increased the advantages of strong clusters and increased the costs of the regions which do not develop an accurate specialization profile. Strong clusters appear on open markets, where strong competition and cooperation between and within clusters coexist. Clusters emerge where competition between regions determines the companies, entrepreneurs and financial actors to choose the location of their activities based on the regions' attractiveness, not as an answer to the artificial barriers in front of trade and investments. Globalization has emphasized the need of combining the strong internal dynamics within the cluster with strong relations among other clusters and markets elsewhere positioned.

Regional specialization also brings risks, which makes regions more vulnerable to the specific demand shocks or to the fundamental technological changes. Though, proof suggests that a regional economy based on clusters generates better results. First of all, economic costs of lower productivity due to the lack of specialization have drastically increased at the global level. Second, dynamic clusters that are opened to outside trends can face the external shocks easier, for example by transferring the existing abilities towards new market fields. And, third, the most successful regions tend to have a cluster portfolio linked through relations and overlaps that ease the compromises between specialization and diversification.

Industries empirically differ from the perspective of the distribution of the work places on regions. Some industries are present all over because they mainly serve the local markets. This part of the economy can be called local sector. Other industries are present in some regions and not in others, because they concentrate. Only this part of the economy can be called a cluster sector. Within the cluster sector, specific industrial groups tend to locate in the same places; these are the so called clusters categories. The regional cluster term is adopted when the workforce occupation in a certain region meets the requirements regarding the work places level in the cluster sector, the regional work places level and the specialization.

2. Identification of the Europe's clusters

The European Cluster Observatory identifies the regional clusters in EU-27, Iceland, Israel, Norway, Switzerland and Turkey.

Cluster categories significantly differ from the perspective of the employment centralization in the European regions (see Figure 2). The workforce employment on cluster categories with a relatively low number of employees, such as footwear and aerospace industry, is concentrated in several clusters which represent more than 50% of the European workforce occupation in this category.

On another side, the work force occupation in constructions or education is far more dispersed within Europe. Averagely, a fifth of the total recruitment in a cluster category is positioned in the regions that are twice more specialized in this group than the European average.

In Europe, the work force occupation percentage in strong clusters tends to be lower than in the USA. This fact is extremely visible in the medium-sized regions. In the USA, such regions tend to be very specialized, with a strong presence of the work force occupation in a low number of clusters. In Europe, similar size regions tend to have work places in a wider range of clusters, with lower specialization levels within any of them. The European Cluster Observatory provides for the first time a quantitative analysis of the European clusters grounded on a totally comparable methodology. Based on this analysis it can be assumed that approximately 38% of the total European employees work in companies that are part of the cluster sector. In some regions, this percentage overpasses 50%, while in others it lowers down to 25%. Approximately a fifth (21%) of them are employed in regions that are twice as more specialized in a certain category of the cluster compared to the average region.

To map regional clusters, the European Clusters Observatory carries out an analysis at the level of the NUTS 2 regions (258 regions), and the cluster sector is divided in 38 cluster categories, thus resulting 10000 areas in which a cluster can develop (see Figure 3). Until now, the European Cluster Observatory has identified more than 2000 regional clusters, giving a star for each of the following criteria:

- the size of the work force occupation in a certain industrial cluster in a region;
- the specialization degree within the region;
- the attention given by the cluster to the work force occupation in a region.

The relation between clusters and innovation certainly is a complex one. A comparison between the regions with most stars and the most innovative regions in Europe, evaluated based on the Regional Innovation Score (2006) shows that seven out of the 16 regions with a strong cluster portfolio (the highest total number of stars, namely 25 or more) are amongst the top three most innovative regions. The RIS compares the 208 European regions based on seven indicators, inclusively the human resources from the field of science and technology, the patenting requests and the work force occupation from the manufacturing industry, the high-tech and technology. This result shows that a positive correlation can exist between the power of the regional clusters portfolios and the innovative regional performance. These correlations should be still analyzed based on the analytical and empirical data.

Frequently complementary, the explanation of regional success due to innovation consists of the urbanization degree, when big cities provide various creative environments, as well as the proximity to academic institutions (see Figure 4). Our research on the European data shows that both urbanization and the regional specialization, namely clustering, bring economic prosperity to the region, but in different ways. Urbanization has a direct effect on the regional performance, while the clusters are based on the process of being more innovative environments, which, in turn. Lead to economic prosperity.

The regions with no cluster in Europe (where the work force occupation is uniformly spread in all sectors) have low performance (the dots in the left part of Figure 4). On another side, all regions in Europe with many clusters are developed (the dots in the right side of Figure 4). In the group of the cluster regions, some of them have better performances and others have lower performances. Again, this emphasizes the fact that the economic performance of a region is not only explained by the specialization degree, but it also implies other aspects of the wider microeconomic business environment, such as the quality of the work force, research and education, as well as the access to the risk capital and advanced infrastructure.

According to the evaluation based on number of stars (see Figure 5) it can be analyzed the geographical models of the industrial concentrations and identify the interest points. It can seen that most of the regional interest points are concentrated on the strip between Amsterdam and Munich, the center of the traditional European pentagon, which the economic geographers have identified as being the center of the European economic activity.

Many of these industries are based on recombining the existing production technology for which Germany is famous. Moreover, the list of top regions and big cities, especially in the northern Europe. These fact reflects the presence of the industries based on innovative and creative activities which dominate the big cities.

The interest points of the industrial activity within Europe are divided in three main categories:

- the traditional center of the European economic activity, located in the Southern Germany-Benelux-Southern England;
- the innovative European leaders in the central and western part of the Baltic Sea, from Denmark, the western part of Sweden and Stockholm up till southern Finland and Helsinki;
- some European urban centers, where the benefits of the urban density overpass a lower economic context.

Using the 15 stars number as the starting point in the identification of the strong regions, the geographical concentrations sum up to 30.2% of

the work force occupation in these 44 regions compared to the 26,4% percentage that is characteristic to the whole Europe. Results are similar when the comparison is made based on the salary (see Table 1). The 44 regions represent 28% of the continental employment and 37% of the European GDP. The average salaries were calculated depending on the number of employees/region. Data (Table 1) reveal significant differences between the cluster categories, even if agriculture is excluded, which covers a high percentage of the employment with a family. This emphasizes the high work force occupation degree, and also a high productivity within the clusters from the main positions.

Clusters are more and more recognized as an important factor within the European economies' competitiveness. Europe won't be able to reach the ambitious high objectives set in the Lisbon Agenda if it won't release the potential of the existing and emerging clusters. Proof shows that, until now, Europe has had a solid cluster basis, but that it still has more things to do.

Conclusions

The relatively low innovation performance of Europe has represented the subject of numerous analyses and recent reports. It is a major concern for Europe, as innovation tends to become the key factor of prosperity and growth as countries reach higher income levels. While poorer countries can develop through investments in the production capacity and by adopting developed technology from abroad, richer countries must move the productivity limit and introduce new products, services or means of satisfying the clients' needs in order to support its prosperity. To this extent, clusters can be essential.

References

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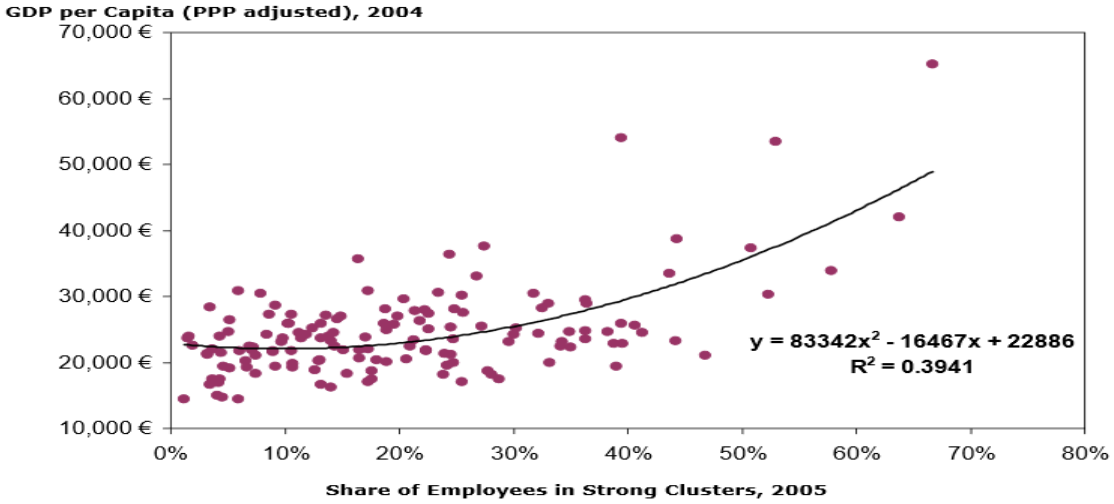
Appendices

Table 1. The size of the annual average salaries in different industries

Field	Salary (euro)	Field	Salary (euro)
Aerospace industry	44718	Paper articles	24995
Financial services	43930	Sports and kids articles	23498
Biotech	42384	Building blocks	22827
Pharma	40735	Stone mines	21183
Analysis instruments	39519	Processed aliments	20993
Chemicals	38381	Constructions	20894
IT&C	37360	Construction materials	20063
Oil and gases	36073	Clothing	17902
Telecommunication equipment	35960	Jewels and valuable metals	16303
Production technology	32371	Furniture	16131
Automotive	29399	Leather products	15594
Plastics	29066	Marine industry	14274
Medical devices	28928	Tourism and hospitality	13961
Energy development and transmission	28927	Agricultural products	13852
Electrical and lighting equipment	28767	Tobacco	13567
Transport and logistics	27462	Education	13132
Heavy equipment	26393	Clothing	11885
Metal products	26269	Footwear	11238
Business services	25964	Entertainment	11034
Distribution	25888	Family agriculture	3859
Media and advertising	25556		

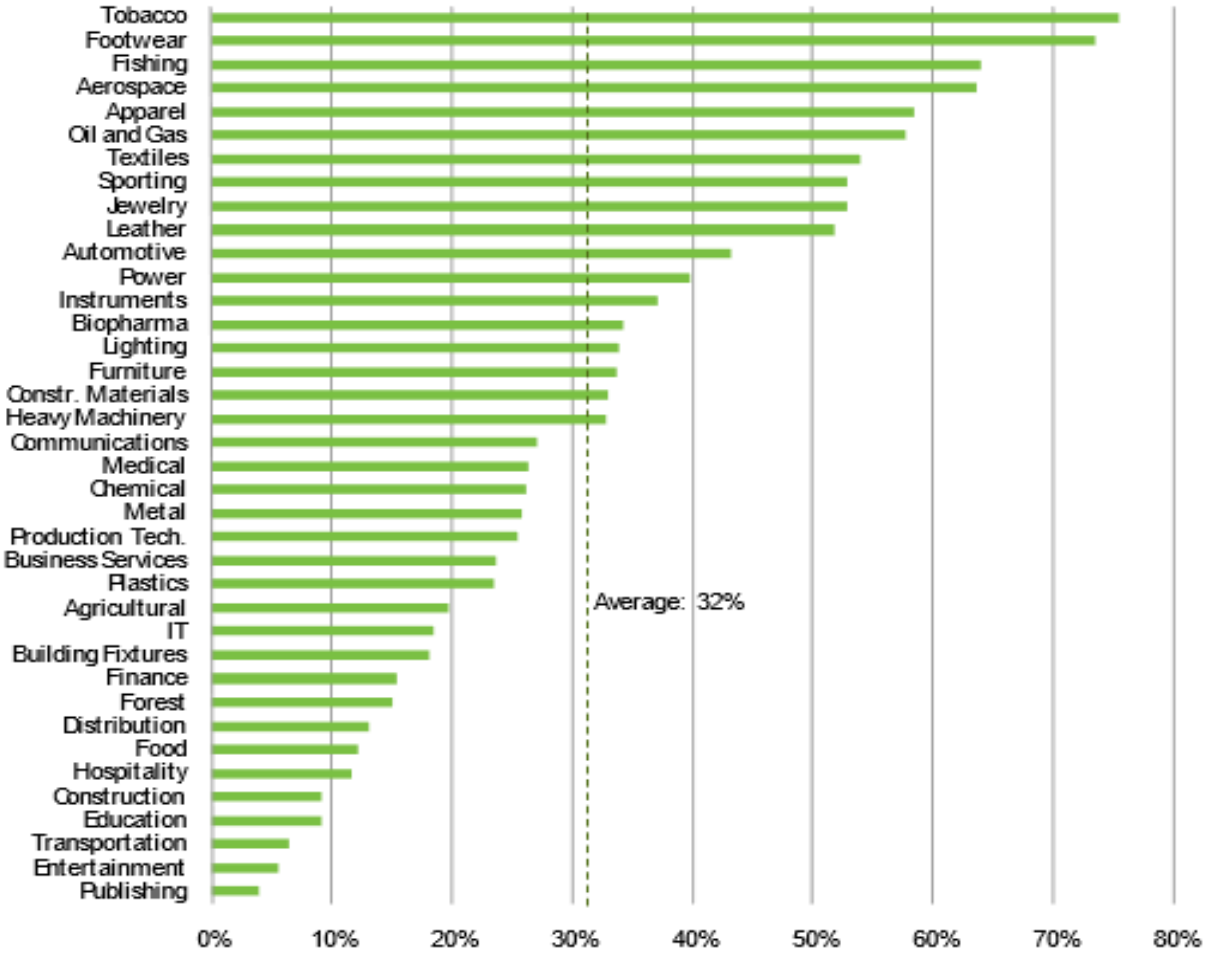
Source: Ketels, C., Protsiv, S. (2013). Clusters and the New Growth Path for Europe, European Commission, http://www.foreurope.eu/fileadmin/documents/pdf/Workingpapers/WWWforEurope_WPS_no014_MS47.pdf, p.19

Figure 1. The relation between the work force occupation and the GDP/capita at the level of European clusters



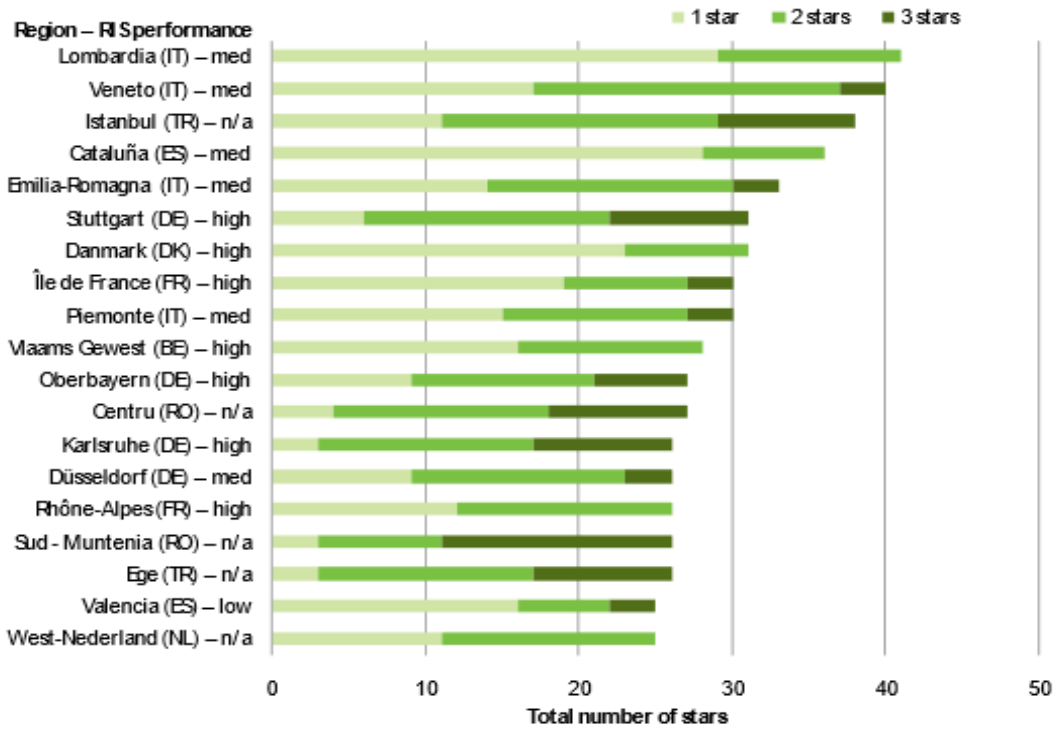
Source: Ketels, C., Protsiv, S. (2013). Clusters and the New Growth Path for Europe, European Commission, http://www.foreurope.eu/fileadmin/documents/pdf/Workingpapers/WWWforEurope_WPS_no014_MS47.pdf, p.16

Figure 2. The percentage of the work force employment at the level of the European clusters



Source: *Ketels, C., Protsiv, S. (2014). European Cluster Panorama 2014, European Cluster Observatory, p.14*

Figure 3. European clusters and their performance

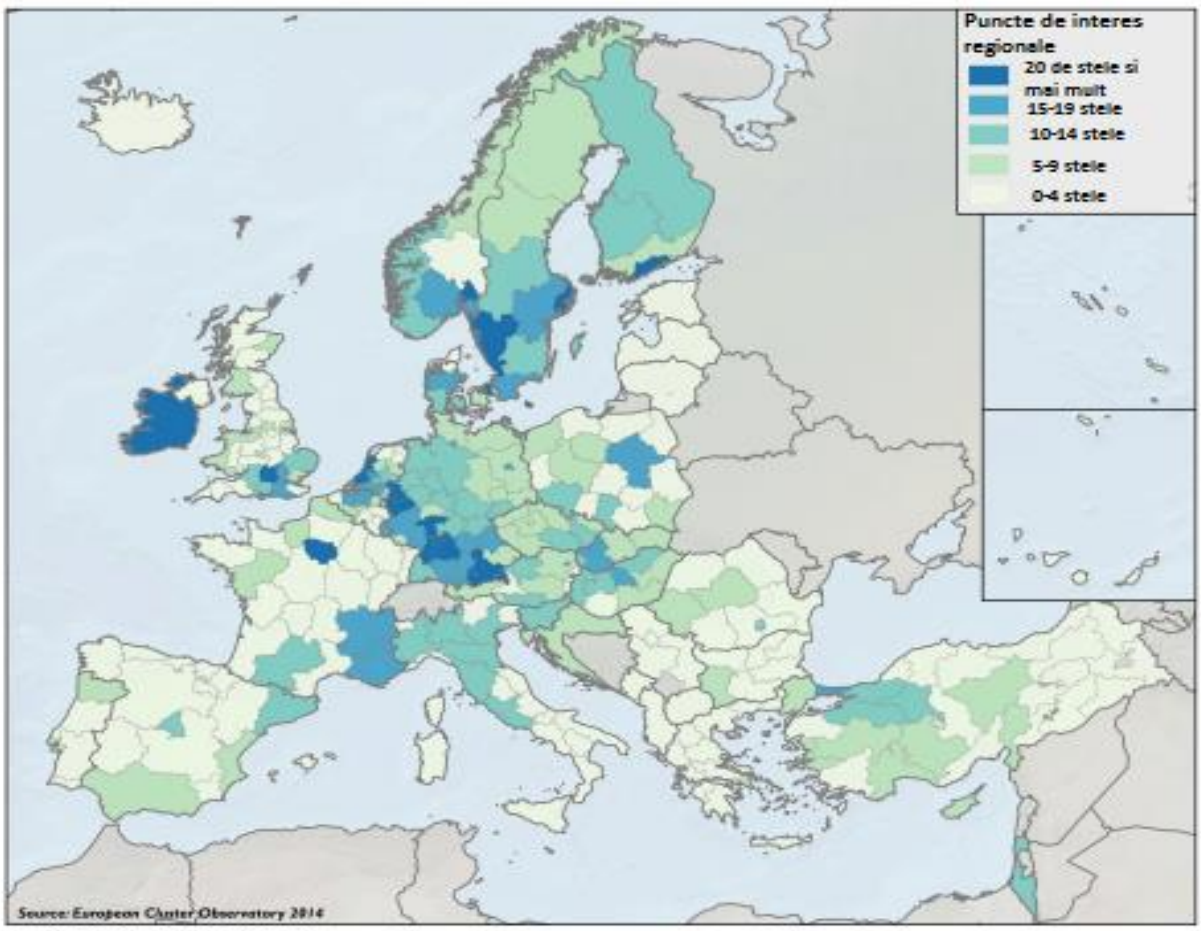


Source: Ketels, C., Protsiv, S. (2014). European Cluster Panorama 2014, European Cluster Observatory, p.17

Figure 4. The power of the European clusters depending on their innovation capacity

Source: European Commission, (2013). Innovation clusters in Europe: a statistical analysis and overview of current policy support, p.5

Figure 5. The distribution of clusters on their performance



Source: Ketels, C., Protsiv, S. (2013). Clusters and the New Growth Path for Europe, European Commission, http://www.foreurope.eu/fileadmin/documents/pdf/Workingpapers/WWWforEurope_WPS_no014_MS47.pdf,p.25