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# "Analyse this" – Cluster-mapping in Szeged and Csongrád County

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*As cluster-mapping – identifying potential and existing clusters in a region's economy – has found its place in foreign literature, several attempts have been made in Hungary to reveal the economic structure of the country, a specific region or county, and to find their high-points. Despite the fact that an effective regional or local development process with the rational use of the resources at hand ideally needs the outputs of a thorough study revealing the true drivers of the economy, in practice the toolkit of cluster-mapping is often ignored. The reason is the difficult and problematic adaptation of the tools introduced in the foreign literature: statistical databases have their shortcomings, primer data collection is rather costly.*

*An inquiry into Szeged and its subregion and Csongrád County has been done on the basis of this toolkit, however. Besides the awareness of deficiencies and difficulties, this study gives results based on exact data. These results may also form the starting point of further studies. The economic structure of the region is analysed from different aspects, which together lead to certain consequences and also to the identification of the potential "Human resource", Construction and various processing industry clusters of the region. The study shows some possible ways for the university to enter the regional development scene.*[*]

*Keywords: cluster-mapping, cluster policy, peripheral regions, regional concentration*

## 1. Introduction

Several countries' and regions' economies answer global challenges with the spatial concentration of economic activity. It has been proved that spatial proximity provides such advantages (positive local externalities) to the regional economic actors, which enhance their competitiveness and chance for success in international competition (Lengyel–Deák 2002).

In recent years, the Hungarian economic literature has turned towards clusters and cluster-based economic development (Buzás 2000, Deák 2002, Gecse–Nikodémus 2003, Lengyel 2001, Lengyel–Deák 2002, Lengyel–Rechnitzer 2002). This study deals with only one segment of building and implementing a cluster-policy aiming at developing clusters and therefore competitiveness. This segment is

[*] Many thanks to Alice Chapman-Hatchett (International Partnerships Officer, International Affairs Group – Strategy Division, Kent County Council, UK) for the language review of this study.

cluster-mapping. The focus of the study introduces the methodology from a practical point of view: adaptability of the mapping toolkit[1] in Hungary, experience drawn from the statistical data based empirical study of Szeged and Csongrád County.

## 2. Focus and methodology

Demonstrating the commitment of international organizations towards clusters, a series of cluster-studies has targeted the region. The 2002 studies of the LEED program, however, stated that Hungary had no real clusters (Ionescu–Möhring 2002). In 2005 a more sophisticated view was formed (OECD 2005): between 2002 and 2005 clusters emerged in several industries (automotive, logistics, construction and tourism).

### *2.1. The region in focus*

Csongrád County is part of the South-Great-Plain Region at the South-Eastern border of the EU. This region has the third biggest population amongst the Hungarian regions (after the Central Region and the North-Great-Plain Region), according to its territory it is ranked fourth[2]. The county fits well the row of the neofordist, peripheral counties in the South-Eastern crescent of Hungary (Lengyel 2003). Despite or besides the opinion cited in the previous paragraph, in 2000 several cluster(-like) initiatives existed in the region (Buzás 2000):

1. „DÉL-THERM" Union including three heat- and thermic technology firms;
2. a textile-industry reintegration program with the participation of science institutions, led by HUNGARN Fonó Ltd.;
3. the textile industry subcontractors' coordination centre at Eurotex Ltd.;
4. co-operations in IT, the agrarian sector („onion-association", organic farming) and biotechnology.

The 2-digit SIC-code (division-level) analysis of employment data of the Hungarian regions and counties (Gecse–Nikodémus 2003) shows an over-represented presence of food-processing and textile industries here. The food-

[1] For a general review of the toolkit please see Patik (2005), for the detailed methodological description of the present study please see Patik–Deák (2005).

[2] Based on www.nepszamlalas.hu/hun/egyeb/hnk2005/tablak/load1_2.html. Download: 27th February 2006 (Population data refer to 1st January 2004, territorial data to 1st January 2005.)
The South-Great-Plain Region itself (18.338 km$^2$) is a bit bigger than the Walloon Region of Belgium, and a bit smaller, than Niederösterreich in Austria. As for the population (appr. 1.3 million inhabitants), it almost equals the Champagne-Ardenne region in France, or Estonia as a whole. Csongrád county with its territory of 4.262 km$^2$ could be compared to Luxembourg or the Danish Viborg county, its population of approximately 425 thousand people suggests the Belgian Leuven or the Italian Parma regions. The county has around 73 thousand employees and registers 34 thousand enterprises.

processing concentration is probably due to the canning factory of Szeged, the grain mill industry, meat processing (in Szeged, Csongrád and Szentes) and winemaking (in Csongrád, Mórahalom). Textile-industry is present in almost every bigger town (Hódmezővásárhely, Szeged).

Significant employment concentrations of Csongrád County have been revealed in the chemical industry (plastics, pesticides, paints, varnishes and rubber products) and china-production (Hódmezővásárhely).

Spatial concentrations do exist in Hungary; clusters are being formed with the adaptation of foreign best practice. The private sector has built several clusters, which are promoted and supported by the government. The South-Great-Plain clusters with governmental subsidy (these might be present in the region in focus) (Gecse–Nikodémus 2003):

1. Textile Cluster;
2. Public Works and Road Construction Cluster;
3. Tourism Cluster;
4. Handicraft Cluster.

The present study is unique in a way, as it uses 4-digit SIC-code (class-level) analysis on subregional and county level, working with a complex system of indices and criteria. More detailed and accurate results are awaited accordingly.

### *2.2. Methodology*

All empirical studies should start with an operative definition of the phenomena to be measured. The literature documents dozens of cluster-definitions, based on different theoretical background etc. (Gordon–McCann 2000, Martin–Sunley 2003). Two basic approaches are agreed to set the theoretical background: economics and business studies (Phelps 2004).

Taking these two cornerstones into consideration, this study is guided by the second one. But choosing cluster-definition does not solely define the theoretical background and the terminology to be used: it is the definition which selects the applicable tools from the cluster-mapping methodology. A definition, which serves well the aims of the mapping process, is decisive for the measures describing the concentration of economic activity (i.e. employment, turnover, number of enterprises) and also for the spatial approach, whether geographical, social, economic, cultural etc. These are the critical milestones of the mapping procedure (DeBresson–Hu 1999). Accordingly, the alternative way of cluster-development is chosen in this study (Bergman–Feser 1999).

## 3. Defining the methodological framework

Before getting deeper into the facilities provided by the toolkit of cluster-mapping, several decisions have to be made, as seen above (Bergman–Feser 1999). Taking the cited train of thought into consideration, the following pages deal with the aim of the research, the cluster-definition used, the indices and methods used, and finally the consequences drawn.

### *3.1. Aims and cluster-definitions*

As a first step, we have to investigate the region to be developed, we have to set an aim for development, which is delivered by the programs and strategies of the region finalised in the late 90s (MTA RKK ATI 1998, DARFT 1999). These documents unitedly stress that there is a need to adjust higher education to the economic structure. As a combination of the objectives of the region and the university the baseline of the current research is the following: *to launch the knowledge-based economy of Szeged and Csongrád County, to enhance the innovativeness of the region, with the active participation of the University of Szeged.*

Quite agreeably, the university can have an influence on the economy of Szeged and its region with the knowledge produced and used inside its walls, with its research capacity and infrastructure, with the new technologies created by or with the help of the university. Enright's definition (1998) describes these initiatives the best, however, the definition of Lengyel and Deák (2002) is also remarkable for the stress on the role of the drivers of local economy. Let our cluster-definition be the following according to these: *a local/regional driver of the economy, where the enterprises operate with shared infrastructure, labour pool and knowledge-base, using division of labour.*

This definition ensures geographical proximity along with features, which implicitly assume the existence of co-operating and supporting institutions (university, technology-transfer organisations etc.). As a consequence we can expect that it will guide the mapping activity and will help in choosing the adequate tools from the methodology.

### *3.2. Methodology options*

Before going deeper into the introduction of the toolkit, it is important to emphasize that we are going to deal with the mapping of potential clusters – no matter which index or method we use. A real cluster can be identified as a result of a multi-step analytical process. Using the chosen method on the data at hand potential clusters are identified which need to undergo further analysis. Using one single method will not result in a reliable output. Based on this we are going to see how the keywords of the definition can be investigated with the different methods.

Finding the drivers of the economy leads us to the problem of measuring the concentration of economic activity. An economic activity presumeably drives the regional economy, if it has a dominant role in the economy and shows considerable growth. It should also be a traded industry. The first two aspects can be derived from added value, the share of employment and the number of enterprises. The share of export can feature the traded characteristics[3].

As mentioned before, the definition implicitly contains spatial proximity, geographic concentration. During the research this feature is assisted by the source of the data-set: all data refer to Szeged, the Szeged subregion and Csongrád County. In the following pages the keywords of the cluster-definition are "translated" into indices and analytical methods (a-g), thus forming the methodological frame of the mapping.

*a) Share of added value, growth of added value*. Added value is hard to investigate along 4-digit SIC-codes or on subregional level. The data-collection of the Hungarian Central Statistical Office (HCSO) represents the county level and the 2-digit SIC-code depth. No more detailed data are available, that is why the drive of the economy cannot be analysed well enough through added value[4].

*b) Employment data*. Employment data are expected to reveal the economic structure of the county and subregion through the employment share of the different economic activities, showing the size of the common labour-pool. The most often used index in this case is the location quotient, the LQ-index, exhibiting economic specialization. The LQ-index based on employment data is referred to as "employment-LQ" in the future, to distinguish it from other LQ-indices.

Despite the constraints of the usage of the employment-LQ (see Brenner 2004 for more details), this index was the central tool of the British cluster-mapping project (Miller et al. 2001). In Hungary a similar methodology assisted Gecse and Nikodémus (2003). These two projects had quite different value limits when setting the evaluation criteria, when deciding an economic activity's being a high-point or part of a cluster. Differences exist moreover in the depth of the dataset, the territorial level in focus – both studies serve as a guideline for this mapping, though.

Beside employment-LQ another important index is the change of employment. This latter has its own problems, too: it is easily influenced by the number of enterprises, productivity, capital adequacy, technological level of the economic activity investigated. However, the growing number of employees might mean the growth of the critical mass.

*c) Number of enterprises, change in the number of enterprises*. An attractive option for the comparison of the number of enterprises in different regions might be

[3] Certain economic activities are able to attract income into the region, although their output is not tradeable, so it won't add to the export data: tourism, higher education, R&D. These activities ought to be investigated more thoroughly.

[4] Based on consultations with the experts of the Hungarian Central Statistical Office, Summer and Autumn 2004.

the use of the general LQ-index filled with enterprise data – the "enterprise-LQ". An enterprise-LQ above 1 shows relatively more enterprises in an industry than the national average. However, the number of enterprises in different regions may vary according to the regions' economic structure. The enterprise-LQ – the relative number of enterprises as a mapping tool – could be misleading: caution is required. It is important to conclude that the enterprise-LQ will definitely not show the specialization of the region, but it gives a good hint on the size-structure of the economic organisations (more precisely: of the average relative size of the economic organisations). That is why it is going to be used as a secondary index, to elaborate the view of the economy given by other, "more reliable" tools.

More information on an economic activity is given by the number of enterprises, and the change in the number of enterprises. Here also it is not so much the size of the industry, but the structure, which counts. In Hungary these indices can be perfectly used, data are fully available from the HCSO.

*d) Export*. The RCA-index (revealed comparative advantages; used mainly in world economy) can be considered as an LQ-index, too. It has the same structure, filled with the appropriate export-data, and it shows the specialization of a region illustrated by the export activity. The "export-LQ" is not often used on a regional level, but as the output-side reflection of the employment-LQ it was worth introducing it.

Its usage in Hungary is difficult; a rather limited series of data is available on the 4-digit SIC-code level. As a consequence, the export-LQ is only used as a complementary tool.

*e) Qualitative case-studies*. Qualitative case-studies might reveal several of the keywords in our cluster-definition: shared infrastructure, knowledge-base, division of labour (appearing as transactions among regional actors, input-output relationships). They make hardly measurable characteristics less elusive.

As several foreign case-studies are available today, there is an opportunity for benchmarking, one might collect the distinguishing features of an industry's clusters. It is also possible to recognize those infrastructural and institutional ingredients which make the clusters function and flourish, or the presence of which might indicate the existence of a similar cluster in Hungary. Porter's diamond is often used when this method is chosen (Roelandt–den Hertog 1999, Lengyel 2000).

*f) Number of patents*. The birth of shared technology could be traced via the number of patents. Together with the patent citations in the USA this indicator is appropriate for following the spreading of technologies and for finding the shared technology base (Jaffe et al 1993). Hungarian adaptation is influenced and hindered by the discrepancy of the Hungarian patenting system as compared to the American. The patents of the Csongrád County organisations might reveal the innovative activities of the region, though.

*g) Transactions and relationships among the regional actors*. Analysing division of labour and the value chains equals the mapping of both spatial and

economic proximity, provided that the data investigated refer to the appropriate territorial level. This comfortably leads us to meeting the expectations recorded in the cluster-definition. Two elements of the mapping tool-kit are widely used here: input-output analysis and graph-analysis, but qualitative case-studies have the potential of revealing transactions and relationships, too. All three are part of the OECD-recommended methodological range (Roelandt–den Hertog 1999).
The input-output analysis is well known in Hungary (Lengyel–Rechnitzer 2004). Unfortunately, for the region in our focus no input-output matrix is available, and creating our own matrix would require additional resources.

Graph analysis (usually based on input-output matrices) would give a nice illustration of the region's economy (see i.e. Luukkainen 2001, p. 284.). The difficulties of its usage lie in the matrix itself, as explained earlier. That is why these methods are not easy to use in Hungary.

## 4. Adapting the methods in Hungary – data and methodological setbacks

The previous paragraphs have proved that the potential clusters of Szeged and Csongrád County can be analysed mainly from two sides: employment and the number of enterprises. These are completed by the export data to sophisticate the results. The identified potential clusters could be tested by qualitative case-studies in the future.

After the overview of the Hungarian statistical databases with regard to the territorial level and "depth" (number of SIC-code digits) of the data, the following indices can be used to map Szeged and Csongrád County on merits:

1. employment-LQ,
2. share of regional employment,
3. enterprise-LQ,
4. number of enterprises and its change,
5. export-LQ.

### *4.1. Data imperfection*

The different employment patterns of certain industries and economic activities (i.e. outsourcing) might distort the value of the employment-LQ. Thus the real size of an industry is certainly bigger than shown by the data. A similar problem is – as pointed out by Gecse and Nikodémus (2003) – that the HCSO does not collect employment data from the organisations with less than 4 people. The number of employees in organisations with 4-49 people is estimated, as a result there is a possibility of imperfection.

The use of the export-LQ is made more difficult by the fact that the HCSO collects export data exclusively from the processing industry firms with more than

50 people. Moreover the act on data protection prohibits the declaration of data in economic activities with 3 or less actors. It narrows our data set[5].

When interpreting the export-LQ it should be noted that the HCSO takes export as transporting goods outside the border of Hungary. As a result, export data are incapable of showing trade among the regions or counties, and traded industries.

Further data imperfection derives from the deficiency of the industrial classification system: not every economic activity is replaceable with one or more SIC-codes, mainly the activities of the "new economy", creative industries etc[6].

Some data are collected according to the location, others according to the premise of an enterprise; some refer to Szeged, others to the Szeged subregion.

### *4.2. Methodological shortcomings*

Methodological shortcomings derive mainly from aggregation, the decision on the value limits and the choice of the benchmark or the point of reference.

Aggregation influences mostly the LQ-indices and the share of the economic activities. The minimum size of the different activities on different territorial levels must be defined carefully. This is also true for the different levels of industrial classification aggregations.

Choosing the value limit means giving the value of an LQ-index, from which the given economic activity is considered relevant or concentrated. Theoretically, this limit is 1[7], but in practise caution is required (Brenner 2004). The limit for the employment-LQ should be above 1.

The differences in the employment patterns are not to be ignored in the empirical analysis, though, mainly when analysing parts of Hungary. The employment ratio of the Hungarian regions varies greatly, which distorts the employment-LQ, when having the whole of the economy as a benchmark. In a more developed region non-traded community-services are over-estimated, traded activities are under-estimated. In the peripheral regions the effect is quite the opposite. This effect can be eliminated if the traded industries serve as a benchmark.

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[5] Although the mere existence of publishable data in itself shows the significance of an economic activity – it means that there are at least three regional actors with traded products and export activity and with more than 50 people each.

[6] The literature often doubts the ability of the NACE (SIC-code based analysis) to answer the questions about a regions economic structure. A basic problem is that the classification systems seemingly do not follow the evolution of the economy: the activities of the new economy, creative industries and biotechnology are not classified. It is true for the NACE Rev.1.1. of the EU, ISIC REV.1.1 of the UN and the harmonised Hungarian TEÁOR'03, too (KSH 2002).
North-America (Mexico, the USA and Canada) has remedied these problems recently. NAICS (North American Industrial Classification System) has been created, renewing the traditional classification and enhancing the depth of the data (6-digit codes) (Tűű 2003).

[7] At Gecse–Nikodémus (2003) the regional and county-level value limit for the employment-LQ is 1, at Miller at al (2001) the regional limit is 1,25, the local is 5.

To sum up, in the analysis of the data it is worth having LQ-index limits above 1, and having traded industries as benchmark. But selecting traded industries is not an easy task. The literature documents several methods to do that (Stimson–Stough–Roberts 2002, Porter 2003), these cannot be used in Csongrád County or Szeged.

## 5. Mapping Szeged and Csongrád County

Cluster-mapping in practise puts several problems and setbacks into the limelight. The analysis of Szeged and Csongrád County illustrates most of them impressively – that's why this mapping project might serve as a guideline for other Hungarian mapping approaches.

To return to the train of thought cited and used earlier, the tools and indices are defined now, this should be followed by setting the system of criteria, value limits, the sequence of the tools and indices.

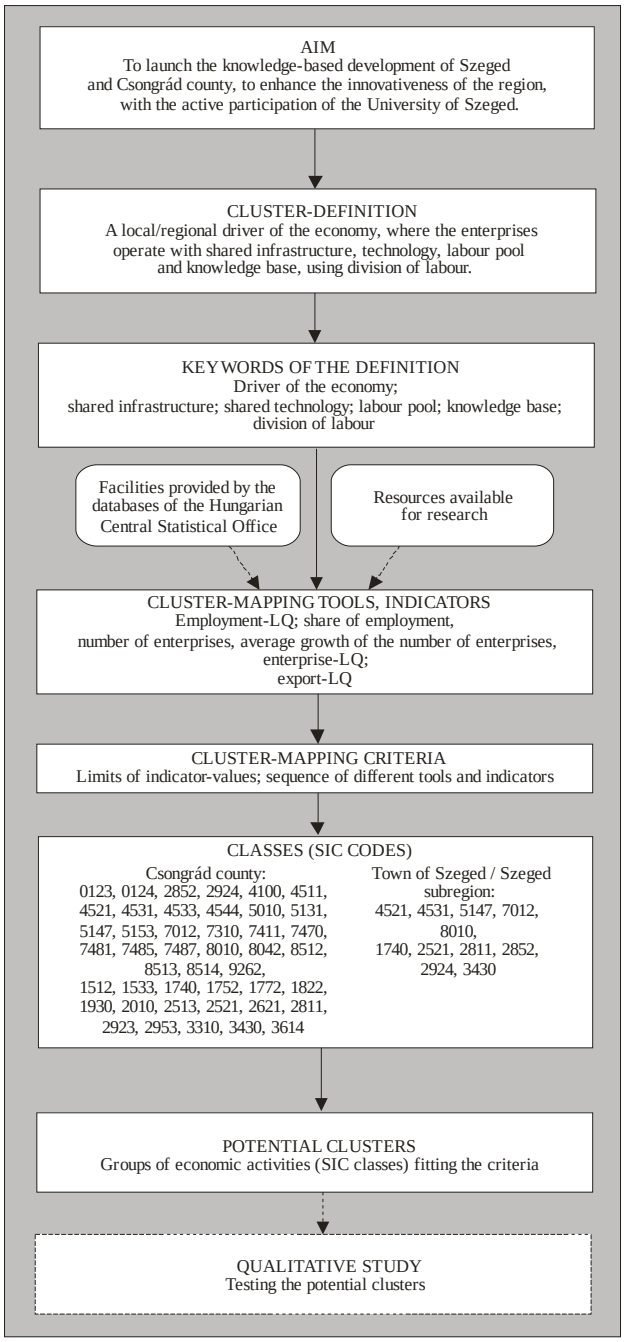
After these decisions are made, the investigation runs this way: the first step is the employment-LQ and the share of regional employment, using the economy as a whole as a benchmark (owing to the problems of dividing traded and non-traded industries). The deficiencies deriving from this benchmark are expected to be set off by the combination of several indices and tools. The mapping runs parallel for Szeged and Csongrád County.

Both employment-LQ and the share of employment are calculated with 4-digit SIC-code data for the year 2003 for Szeged and Csongrád County. In case both meet the expected value limits, the second step is analysing the number of enterprises. The data regarding the number of enterprises are for the year 2004, and these are also 4-digit SIC-code "deep". Those classes/activities which do not match the employment criteria, are removed from the research. Those having deficiency with respect to only one employment indicator are to be analysed further if they show enough enterprises. In this case two of three data prove the critical mass.

Classes with few enterprises but with good employment indicators might "suffer" from the unique features of the economic activity itself. In this case the enterprise-LQ can answer the question, whether the low number of enterprises is a general national phenomena or a regional characteristic.

Another specification for clusters was expected growth. A potential driver of the regional economy should show growing number of actors – indicated by the annual average growth of the number of enterprises regarding the 1999-2004 period.

*Figure 1.* The process of the cluster-mapping




*Source:* own construction

The limits of the indicator-values as a set of criteria have been defined according to the foreign and Hungarian mapping practise. More combinations of value limits were tested to result in an acceptable number of activities, regional "high-points". It was also expected that the set of economic activities resulted from this research should include industries with export-capacity.

The set of industries left at the end of the process should be further analysed by qualitative case-studies, so as to group them into potential clusters, to reveal connections, co-operations among them etc.

After testing different sets of limits of indicator-value, Csongrád County showed 27, Szeged (and its subregion) showed 5 SIC classes which correspond to the criteria. (More than in the case the British or the Hungarian Gecse–Nikodémus values were used.) These classes are to be supplemented by the activities with export data as a second row. Grouping into clusters has been done with the analysis of the content of the SIC-codes, lacking a qualitative case-study (Figure 1).

## 6. Results

Results and experiences appear in two fields: the usage of the methodology and the development of Szeged and Csongrád County.

Methodologically the most conspicious difficulty was the quality of the data, which slowed down the whole mapping process. The Hungarian system of SIC codes was altered in 2002, and the modification was not consequently applied to the data (comparing those from 1999 with the more recent ones for example). Another disadvantageous factor was the lack of data. In some cases no employment data were published in spite of the fact that the number of enterprises was much higher than the limit for data-protection (it is three as mentioned earlier). Altogether 192 activities were analysable on the county level, 55 on the town or subregional level – all of the different data were available only in these cases from among the 518 4-digit SIC-code activities. Of course using the indices separately was possible for more than 55 or 192 activities.

We have now come to the point where the activities fitting the system of criteria are to be investigated further (Table 1 and 2). *On the whole in Szeged and the Szeged subregion five potential clusters are identified: the Construction Cluster, The Human Resource Cluster* (including activities contributing to the development and "maintenance" of the human resource of the region), *the Metal and Machinery Cluster, the Textile and Footwear Cluster, and the Plastic Cluster.*

*Table 1.* Potential clusters of Szeged

| Name of potential cluster | Economic activities chosen through the mapping process | Percentage of employment in Szeged | Percentage of enterprises in Szeged |
|---|---|---|---|
| **Construction** | 4521 General construction of buildings and civil engineering works<br>4531 Installation of electrical wiring and fittings<br>7012 Buying and selling of own real estate | 3,99 | 4,68 |
| **Human resource** | 8010 Primary education | 3,82 | 0,30 |
| **Metal and machinery** | 2811 Manufacture of metal structures and parts of structures<br>2852 General mechanical engineering<br>2924 Manufacture of other general purpose machinery n.e.c.<br>3430 Manufacture of parts and accessories for motor vehicles and their engines | 1,31 | 1,24 |
| **Textile and footwear** | 1740 Manufacture of made-up textile articles, except apparel | 0,00 | 0,02 |
| **Plastic** | 2521 Manufacture of plastic plates, sheets, tubes and profiles | 0,00 | 0,03 |
| | 5147 Wholesale of other household goods | 0,40 | 0,32 |

*Source:* own construction

Meanwhile the county has a more wide-ranging processing industry character. The activities named at Szeged are present with much more 4-digit SIC-code classes. On the county level the clusters of Szeged are to be completed with the Meat Cluster, the Business Services Cluster, and the Fruits and Vegetables Cluster[8]. (There are some SIC classes, which couldn't have been grouped into any of the clusters, although they met all the criteria.) These clusters are obviously only hypothetical, regarding the cluster-definition at the beginning of this study. As long as an appropriate qualitative case-study confirms their existence, the living co-operations, division of labour and transactions inside a cluster, it is a mere assumption.

Critical mass (in employment and number of enterprises) is performed on county level by the Construction and the Human Resource Cluster. A critical mass in employment is perceived in Metal and Machinery, Meat, Textile and Footwear (Table 2).

[8] The region has unique features, too. For example the employment-LQ of the manufacture of cordage, rope, twine and netting is extremely high, but the number of enterprises is very low, just like the number of employees. The foreign cases take this activity as part of the textile cluster – following this practise it becomes a strong point of the region's economy, making it special among the others.

*Table 2.* Potential clusters of Csongrád County

| Name of potential cluster | Economic activities chosen through the mapping process | Percentage of employment in the county | Percentage of enterprises in the county |
|---|---|---|---|
| **Human resource** | 7310 Research and experimental development on natural sciences and engineering<br>8010 Primary education<br>8042 Adult and other education n.e.c.<br>8512 Medical practice activities<br>8513 Dental practice activities<br>8514 Other human health activities<br>9262 Other sporting activities | 12,69 | 6,48 |
| **Construction** | 2010 Sawmilling and planing of wood; impregnation of wood<br>3614 Manufacture of other furniture<br>4511 Demolition and wrecking of buildings; earth moving<br>4521 General construction of buildings and civil engineering works<br>4531 Installation of electrical wiring and fittings<br>4533 Plumbing<br>4544 Painting and glazing<br>5153 Wholesale of wood, construction materials and sanitary equipment<br>7012 Buying and selling of own real estate | 7,71 | 7,73 |
| **Textile and footwear** | 1740 Manufacture of made-up textile articles, except apparel<br>1752 Manufacture of cordage, rope, twine and netting<br>1772 Manufacture of knitted and crocheted pullovers, cardigans and similar articles<br>1822 Manufacture of other outwear<br>1930 Manufacture of footwear | 5,27 | 0,62 |
| **Meat** | 0123 Farming of swine<br>0124 Farming of poultry<br>1512 Production and preserving of poultrymeat | 4,36 | 0,54 |
| **Metal and machinery** | 2811 Manufacture of metal structures and parts of structures<br>2852 General mechanical engineering<br>2923 Manufacture of non-domestic cooling and ventilation equipment<br>2924 Manufacture of other general purpose machinery n.e.c.<br>2953 Manufacture of machinery for food, beverage and tobacco processing<br>3430 Manufacture of parts and accessories for motor vehicles and their engines<br>5010 Sale of motor vehicles | 4,27 | 2,19 |

| | | | |
|---|---|---|---|
| **Business services** | 7411 Legal activities<br>7470 Industrial cleaning<br>7485 Secretarial and translation activities<br>7487 Other business activities n.e.c. | 2,41 | 6,34 |
| **Plastic** | 2513 Manufacture of other rubbed products<br>2521 Manufacture of plastic plates, sheets, tubes and profiles | 1,30 | 0,06 |
| **Fruits and vegetables** | 1533 Processing and preserving of fruit and vegetables n.e.c.<br>5131 Wholesale of fruit and vegetables | 0,73 | 0,61 |
| | 4100 Collection, purification and distribution of water | 1,11 | 0,06 |
| | 2621 Manufacture of ceramic household and ornamental articles | 0,92 | 0,05 |
| | 5147 Wholesale of other household goods | 0,44 | 0,26 |
| | 3310 Manufacture of medical and surgical equipment and orthopaedic appliances | 0,31 | 0,30 |
| | 7481 Photographic activities | 0,04 | 0,21 |

*Source:* own construction

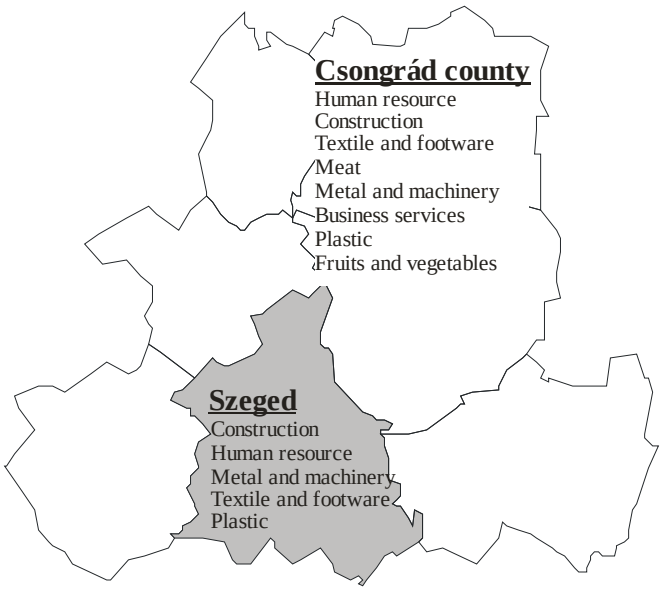
Szeged has much less of a critical mass in any of its potential clusters. Most considerable concentrations are the Construction and the Human Resource Clusters (Table 1). Assumably, on a subregional or municipal level it is not really worth searching for clusters, it is at least the county level, where clusters with a critical mass are identifiable.

An interesting feature appears in connection with Szeged: the centre of the county shows concentration only in those activities, in which the county does so, too. Szeged might be outstanding in activities hardly measureable with the traditional SIC-code based data.

Although the aim of the mapping included the promotion of innovation, too, real innovative clusters have not been recognised. It is true however, that the methodology itself was not favourable enough for innovative clusters. Traditional industries were identified, dominantly in the processing industry (Figure 2). On one hand, it gives the university a clear view about the structure and nature of the region's economy and educational needs, on the other hand the university might find innovative partners and demand in the innovative segments of the clusters identified.

With knowledge of the economic structure and development of the South-Great-Plain Region and Csongrád County, it is supposed to be a region with (potential or latent) traditional, processing industry clusters and drivers of the economy. The university cannot ignore the innovative factor, but realistically one should not expect to find extensive innovative relationships embedded in the region. Although Szeged considers biotechnology and different high-tech activities as a breakout, these are not statistically measureable and are not dominant segments of the economy at present.

*Figure 2.* Potential clusters of Szeged and Csongrád County




*Source:* own construction

Education and research are important parts of the regional employment. Consequently, the university promotes the county and the town with its input-effects, as a passive regional role-player. With a future active university strategy the institute will be able to promote the other potential clusters, too.

## 7. Summary

All regions desire clusters. These economic structures are ideally created spontaneously, however, their development is sought to be supported in direct and indirect ways from various levels. This is a sort of pressure on the regions, any form of clusters or high-tech activities is a value-added feature in the competition for relocating big companies and development resources[9]. Cluster-mapping is a methodology, a tool-kit and process to support presenting a realistic image on the regions. Via the adaptable part of this tool-kit, a detailed but not too surprising picture has been received of the region. It is worth mentioning that the processing industries are dominant as usually in the neofordist or (half-)peripheral regions (Enyedi 1999, Lengyel 2003), but we have to list the activities supporting the

[9] Referring to the motion picture "Analyse this" mentioned in the title of this study, one might as well think that "the Robert de Niro of regions" gets a nervous breakdown because of the pressure and necessity of becoming a high-tech region, regardless of its talents and desires.

development and maintenance of the human resource alongside with the construction industry.

To summarize, the selected industries show a certain concentration / specialization (LQ-indices and the number of enterprises were used to show it), and also growth (through the number of enterprises). It means that the features ascribed to the drivers of the economy, moreover the critical mass behind the shared labour pool and infrastructure is proven in case of the potential clusters. Export contributes to the driver image, and is an atribute when identifying the traded activities, therefore to the range of activities derived from the other indices has been completed by the exporting industries.

This method did not indicate on the 4-digit SIC-code level the following activities appearing in earlier researches and initiatives: heating and thermo-technical activities, the plant breeding part of the agricultural sector (except processing and distribution), a large number of segments of the food processing industry, some areas of the chemical industry, and handicraft (the latter cannot be measured statistically anyway).

Regarding the clusters of the region it is worth considering that the local involvement and embeddedness of the enterprises located in the South-Great-Plain is extremely low (Buzás 2000). Based on this we have to be aware that the dominance in the economic structure of the region does not necessarily mean that a given activity will be the core of a cluster built on spontaneous co-operation and deeply embedded in the local and regional economy. Nevertheless, this should be the way of progress, even through the economy developing activity of the university.

## *References*

Bergman, E. M. – Feser, E. J. 1999: Industry Clusters: A Methodology and Framework for Regional Development Policy in the United States. In OECD (ed.) *Boosting Innovation. The Cluster Approach.* OECD, Paris, pp. 243-268.

BMVA 2002: *Klaszterek kialakulása Békés megyében.* (Összefoglaló) Békés Megyéért Vállalkozásfejlesztési Közalapítvány, Békéscsaba. www.bmva.hu/klaszter/klaszter 2002.htm Downloaded: 2003.03.26.

Brenner, T. 2004: *Local Industrial Clusters. Existence, emergence and evolution*. Routledge, London.

Buzás, N. 2000: Klaszterek a régiók versengésében. In Farkas B.–Lengyel I. (eds) *Versenyképesség – regionális versenyképesség*. SZTE Gazdaságtudományi Kar Közleményei. JATEPress, Szeged, pp. 58-66.

DARFT 1999: *A Dél-Alföldi Régió stratégiai programja*. DARFT, Szeged. www.del-alfold.hu/strategia/strategia_kifejtve.htm Downloaded: 2000.10.10.

Deák, Sz. 2002: A klaszter-alapú gazdaságfejlesztés. In Hetesi E. (ed.) *A közszolgáltatások marketingje és menedzsmentje.* SZTE Gazdaságtudományi Kar Közleményei. JATEPress, Szeged, pp. 102-121.

DeBresson, C. – Hu, X. 1999: Identifying Clusters of Innovative Activity: A New Approach and a Toolbox. In OECD (ed.) *Boosting Innovation. The Cluster Approach.* OECD, Paris, pp. 27-59.

Enright, M. J. 1998: Regional Clusters and Firm Strategy. In Chandler, A.D.–Hagström, P.–Sölvell, Ö. (eds) *The Dynamic Firm: The Role of Technology, Strategy, Organisation, and Regions.* Oxford University Press, New York, pp. 315-342.

Enyedi, Gy. 1999: Egy lehetséges fejlődési pálya a félperiférián. In Baukó, T. (ed.) *Az Alföld a XXI. század küszöbén*. Nagyalföld Alapítvány, Békéscsaba, pp. 11-16.

Gecse, G. – Nikodémus, A. 2003: A hazai klaszterek lehatárolásának problémái – lokációs hányados. *Területi Statisztika*, 6, pp. 507-522.

Gordon, I. R. – McCann, P. 2000: Industrial Clusters: complexes, agglomeration and/or social networks? *Urban Studies*, 37, 3, pp. 513-532.

Ionescu, D. – Möhring, J. 2002: *Clusters in transition economies.* Progress report. DT/LEED/DC(2002)8. OECD, Paris.

Jaffe, A. – Trajtenberg, M. – Henderson, R. 1993: Geographic localization of knowledge spillovers as evidenced by patent citations. *Quarterly Journal of Economics*, August, pp. 577-598.

KSH 2002: *Statisztikai Évkönyv*. KSH, Budapest.

Lengyel, I. 2000: Porter-rombusz: a regionális gazdaságfejlesztési stratégiák alapmodellje. *Tér és Társadalom*, 4, pp. 39-86.

Lengyel, I. 2001: Iparági és regionális klaszterek. Tipizálásuk, térbeliségük és fejlesztésük főbb kérdései. *Vezetéstudomány*, 32, 10, pp. 19-43.

Lengyel, I. 2003: *Verseny és területi fejlődés: térségek versenyképessége Magyarországon.* JATEPress, Szeged.

Lengyel, I. – Deák, Sz. 2002: Regionális/lokális klaszter: sikeres válasz a globális kihívásra. *Marketing & Menedzsment*, 36, 4, pp. 17-26.

Lengyel, I. – Rechnitzer, J. (eds) 2002: *A hazai építőipar versenyképességének javítása: klaszterek szerepe a gazdaságfejlesztésben.* Régió Art Kiadó, Győr.

Lengyel, I. – Rechnitzer, J. 2004: *Regionális gazdaságtan.* Dialóg Campus Kiadó, Budapest–Pécs.

Luukkainen, S. 2001: Industrial Clusters in the Finnish Economy. In OECD (ed.) *Innovative Clusters: Drivers of National Innovation.* OECD, Paris, pp. 273-288.

Martin, R. – Sunley, P. 2003: Deconstructing clusters: chaotic concept or policy panacea? *Journal of Economic Geography*, 3, 1, pp. 5-35.

Miller, P. – Botham R. – Gibson, H. – Martin, R. – Moore, B. 2001: *Business Clusters in the UK – A First Assessment*. DTI, London. www.dti.gov.uk/clusters/map Downloaded: 2002.02.25.

MTA RKK ATI 1998: *Csongrád megye területfejlesztési koncepciója*. Csongrád megyei Területfejlesztési Tanács, Békéscsaba–Szeged.

OECD 2005: *Business Clusters: Promoting Enterprise in Central and Eastern Europe.* Executive Summary. OECD, Paris.

Patik, R. 2005: A regionális klaszterek feltérképezéséről. *Területi Statisztika*, 8, 6, pp. 519-541.

Patik, R. – Deák, Sz. 2005: Regionális klaszterek feltérképezése a gyakorlatban. *Tér és Társadalom*, 19, 3-4, pp. 139-158.

Phelps, N. A. 2004: Clusters, dispersion and the spaces in between: for an economic geography of the banal. *Urban Studies*, 41, 5-6, pp. 971-989.

Porter, M. E. 2003: The economic performance of regions. *Regional Studies*, 37, 6-7, pp. 549-578.

Roelandt, T. J. A. – den Hertog, P. 1999: Cluster Analysis and Cluster-based Policy Making in OECD Countries: An Introduction to the Theme. In OECD (ed.) *Boosting Innovation: The Cluster Approach*. OECD, Paris, pp. 9-26.

Stimson, R. J. – Stough, R. R. – Roberts, B. H. 2002: *Regional Economic Development. Analysis and Planning Strategy*. Springer Verlag, Berlin–Heidelberg –New York.

Tűű, L. 2003: Az új észak-amerikai ágazati osztályozás alkalmazása. *Statisztikai Szemle*, 7, pp. 603-605.