Doctoral School of Economics

Abstract
of
the PhD Thesis of

Bálint Koós

titled

Economic Suburbanisation from the Perspective of Corporation Demographics through an Example from Hungary

Supervisor:

Dr. Tamás Mészáros
University professor

Budapest, 2008

Centre for Small Enterprise Development

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Contents

I. Aims and previous findings

The spatial shift and decentralisation of economic activities in Hungary came into limelight in the last few years because of several reasons. The process resulted in the relative devaluation of traditional centres of economic activities and the flourishing of their closer or wider surroundings. The increased attention is understandable as the changes influence major social-economic groups. Obviously, economic operators are the most closely affected as changes in the economic environment, the appearance of new suppliers and new competitors entering the market influence the operation of companies. Employees, local governments (employment, local taxes), public utility companies (need for the expansion of infrastructure, special training, organisation of public transport) are also affected, so a wide cross-section of the society and its institutions are influenced by the intensive spatial restructuring.

Several terms are used to describe this spatial restructuring in Hungary: it is often called overflow, deconcentration, or decentralisation. We will, however, use the term "economic suburbanisation" to describe economic decentralisation in an agglomeration. The greatest advantage of using this term – although it is rarely accepted by economists – is that it refers to a term that is already established and widely used in other disciplines (urbanism, settlement geography, sociology) for describing the process of comprehensive social decentralisation.

It is traditionally location theories that are concerned about the problem of space, trying to find the answer to the question: which is the most suitable or optimal point in the geographical space for a company to be established. Traditionally three major schools exist in location theory (Hayter 1997). The *classic–neoclassic*, *behavioural* and *institutional* location theories which were complemented by two additional research directions: the *new economic geography* approach of Krugman and the *demography of corporations* approach (Carroll-Hannan, 2000). Although all three classic location theories are suitable for modelling the spatial decentralisation of the economy, they are only with restrictions, if at all, appropriate to model a comprehensive process because of their micro level approach centered on companies. This is the reason why we try to build up a general model in the framework of a population-centered approach – corporation demographics – which is able to grasp the driving forces and constraints of economic suburbanisation.

II. Description and justification of methods employed

The theoretical framework for building up the model is based on the corporation demographics approach, so we examine how the number of companies changed and what factors influenced the change. We put great emphasis on spatial and neighbourhood influences. Because of using the corporation demographics approach the analysis has to be narrowed to only one population – i.e. organisations that are considered to be homogenous. After considering several aspects we chose companies belonging to the wholesale and retail trade supersector (section G). There are two different databases available about them (Tstar by the Central Bureau of Statistics /CBS/ – and the Official Journal of Companies), which increased the reliability of the results. Considering that a special attention is paid to spatial aspects we use exploratory spatial data analysis (ESDA) as well as spatial econometrics – mostly spatial autoregressive – models which have rarely been presented or used in Hungary. We used GeoDa ver. 0.96 to carry out calculations and tests and create graphs and maps, which can be used free of charge for educational and research purposes.

III. Main findings and results

When building up the model we put forward seven hypotheses which form a logical chain building on the test results of previous hypotheses.

H1/. Spatial clusters with a high density of enterprises which incorporate the city and its surrounding suburban zone can also be identified by ESDA methods.

When drawing up the first hypothesis (H1) we wanted to know if regions with a high density of enterprises can be identified in Hungary incorporating major towns and their immediate and more distant surroundings by the joint adoption of the chosen method (ESDA) and the corporation demographics approach. Based on data from *Tstar* from 2004 and the Official Journal of Companies, we calculated the number of operating companies per 1000 capita that belong to the wholesale and retail trade supersector (section G) and then examined how similar they are to figures of the neighbouring regions using local Moran's I statistic (Anselin, 1995). This way we could classify settlements into clusters. After creating clusters with a level of significance of 5 per cent from both databases we identified (but not in all cases) developing economic agglomerations having a significantly high number of companies per 1000 capita belonging to the wholesale and retail trade supersector (section G) around major towns in Hungary. Hence it follows that suburban zones can indeed be identified based on the density of enterprises.

H2/ The extent of the suburban zone is not constant. Since the change of regime in 1989 the number of settlements that belong to a cluster characterised by such high activity has increased.

While testing the H1 hypothesis we came to the result that economic agglomerations with high commercial density (typically major towns and their surroundings) can be identified in 2004 by using the chosen methods and data. It is our assumption that intensive suburbanisation has taken place since the change of regime in 1989 and, as a result, the number of settlements that belong to an agglomeration characterised by high commercial density has increased. The validity of our assumption was checked by an ESDA method – Bivariate Moran spatial autocorrelation statistic.

Both databases (Tstar and the Official Journal of Companies) confirmed that economic agglomerations in Hungary expanded between 1992 and 2004. To put it another way it means that economic suburbanisation took place in Hungary after the change of regime which expanded the core economic areas and agglomerations of the country.

H/3 Not only new settlements (H2) are involved in the process through economic agglomeration (H1), but also the agglomeration becomes more homogenous regarding the density of companies.

We refine statement H2 by another method: by building up a model testing ß-convergence (Barro–Sala-I-Martin, 1991) we want to find

out if homogenisation can be identified in agglomerations officially defined by the Central Bureau of Statistics. Hence we want to know if the number of commercial enterprises per 1000 capita grew faster in areas where company density was lower than in areas where it was already high at the beginning of the period examined. Based on our model testing ß-convergence it can be stated that a move towards homogenisation can be identified in these territories as well: the rate of growth in settlements where company density was lower at the beginning of the period examined was higher than in settlements where commercial density was higher at the beginning of the period. After conducting parameter estimation on both databases (Tstar, Official Journal of Companies) ß proved to be significant and negative so we accepted the hypothesis.

As a methodological innovation we used the temporal values of Moran I statistic to examine spatial homogenisation. The increase of the values of spatial autocorrelation depending on the time signals that interlinked settlements (in this case secondary neighbours) becomes more and more similar to each other. i.e. company density is likely to become higher in settlements whose neighbours also have high commercial density, and reversely, areas with low commercial density become more homogenous. The application of this method was justified in case of the Central-Hungarian Region and Somogy County. Conclusions were consonant with results obtained from the cluster building in hypothesis H2. Thus we propose that the above method be used in other cases.

H4/ The spatial process of suburbanisation considered to be decentralisation is influenced by the intensity of the linkage to the centre rather than the physical-geographical distance.

When we formulated the hypothesis we presumed that the spatial process of economic suburbanisation is influenced by the relationships of persons to the core settlement – i.e. commuting – rather than physical proximity. While carrying out statistical (ESDA) verification we defined temporal values of Moran's I global statistic for the commercial company density of Hungarian settlements using five different (the 3 closest; within 15 and 25 kilometres; secondary neighbourhood; and commuting) weight matrix. Based on the results we recognized that the closest similarities regarding company density can be identified among settlements that are linked by commuting. In other words, in settlements where commuting to another one with high commercial density (presumably an economic centre) is present, commercial company density will be most probably high.

H5/ The increase in company density is not universal from the spatial point of view, i.e. it is not a global ß-convergence. It is rather a local phenomenon which results in decentralisation i.e. economic suburbanisation.

On examining hypothesis H5 we used another method – spatial econometrics (Anselin, 1988) – to find the reason for differences in the growth rate of company density. We differentiated between the global (ß) and local (δ) factors of growth (Baumont– Ertur– Le

Gallo, 2001). The analysis revealed that both factors (ß, δ) played a significant role in the growth of company density, but local (neighbourhood) factors played an even more important role. This indicates that company density will be higher in settlements whose neighbourhoods have a high rate of commercial density growth, i.e. if a settlement is part of an economic agglomeration or linked with it.

H6/ Density of commercial enterprises is not affected only by factors like income but also by the intensity of commuter relationships with the urban centres of the agglomeration, type of settlement and the state of the economy of the centre.

In the next step statement H5 was refined presuming that settlement development is influenced only by the main economic centre of the region rather than all neighbours. On building up the model to test this hypothesis we assumed that the density of companies in the wholesale and retail trade supersector (Section G) in 2004 was influenced by the population of the settlement, average income of the residents, the effects of the central town, legacy (company density in 1992), type of settlement and the fact that whether it belongs to a popular tourist resort (e.g. Lake Balaton). On the basis of our results it was revealed that company density is not influenced only by internal factors (income, type of settlement, location along Lake Balaton) but also the relationships with the centre of economic activities are positive and significant. In other words it means that in the same circumstances the number of commercial companies in settlements which can connect to an economic centre is higher than in the ones which cannot. So we found a factor (intensive

relationship with the economic centre) that is closely related to economic decentralisation.

Therefore the number of companies that belong to the wholesale and retail trade supersector (Section G) (H6) is higher in settlements connected to the centre which results in a decentralisation process around strong economic centres which may be called economic suburbanisation. As an outcome of the process the economy of the suburban zone around the urban centre also develops. New jobs are created through the appearance of new enterprises, which can contribute to an increase in commuting to the settlements of the suburban zone from more distant settlements. This makes it possible that the process mentioned in hypothesis H6 starts. Without any limiting conditions this process would increase the number of enterprises in all settlements and the existing significant variability of company density would decrease.

Hypothesis H7 is exactly about the existence of these limiting conditions:

H7/ Companies that reside in the economic centre are less likely to go out of business than the ones in the periphery. Companies operating in areas with higher commercial density may benefit from external economy of scale and exposure to constantly intensive competition.

It is our assumption that companies residing in the economic centres are more competitive, so they are less likely to go out of business than companies in other regions of the country. Thus, although new companies are established outside of the economic agglomerations,

their higher rate of failure consolidates the dominance of economic agglomerations. According to the theory of corporation demographics the advantage of competitiveness originates from the fact that companies residing in economic centres got used to intensive competition due to the high density of enterprises so they are more likely to persevere than enterprises that face fierce competition due to high company density despite the increased competition from new firms. Increased competitiveness of enterprises operating in areas of higher company density can also be explained by the economy of scale of the relatively high number of companies concentrated into a defined area of the geographical space.

We built up a simple model to test the hypothesis: the number of companies that went out of business between 2001 and 2003 is determined by the number of companies at the beginning of the period, the number of new companies established during the period and the balance of migration (i.e. the difference between the number of companies moving in and out of the area). Based on the database compiled from *CBS Cég-Kód-Tár* we were able to estimate the parameters of the model. The variables of the model turned out to be significant, but what is more important for our examination the model estimated systematically the number of companies that went out of business in the central regions of the economy. Based on the above we can conclude that the failure rate of commercial enterprises residing in urban agglomerations is systematically lower than that of the other settlements. This result is in harmony with the competitiveness advantage linked to higher company density presumed by the approach of corporation demographics (Barnett–

Hansen, 1996), as well as with external economy of scale (agglomerative advantages).

Information gained during testing the hypotheses enables us to formulate a theory which describes the suburbanisation of business organisations and also makes it easier to understand the process of agglomeration. We are able to do it because when we built up and tested our hypotheses we presumed and demonstrated general, i.e. non-industry specific, effects and factors by examining a concrete industry.

Let us assume that an economic centre exists at the beginning of the period where the seeds of new economic activity appear be it silk-weaving or e-commerce. Then the majority of or perhaps all the companies involved in new activities are concentrated in the centre. At the beginning, there is a deep social distrust of those involved in new activities just as it happened in Hungary at the end of the 1980s or in a historical perspective at the birth of the capitalist economy. As people become more and more familiar with the new activities, they win wider acceptance. Thus it becomes easier to set up and operate new companies as social opposition weakens or people might even become supportive, which makes it easier to gain workforce, competence and capital needed for the company. More and more companies are set up, sometimes already outside the boundaries of the central settlement. The human factor plays a particularly important role in this spatial decentralisation. According to entrepreneurial literature, when entrepreneurs start a new business, they come under the influence of numerous factors that all have an impact on the spatiality of activities and encourage the spatial

agglomeration of activities (Sorenson–Audia, 2000). New enterprises are usually brought to life based on the former work experience of the entrepreneur (Cooper, 1973) on a site near his place of residence (Katona–Morgan 1952). It is explained by the social integration and social relationships of the entrepreneur (Stinchcombe 1965) and the spatial limitations of his/her personal relationships that make mobile capital and information etc. available (Granovetter, 1985).

So development similar to that of the centre occurs also in settlements which are in an intensive relationship with the centre (commuting). Resistance to the appearance of new companies is however not as strong. The success of enterprises in the centre or at least their acceptance legitimize new companies which makes it easier for them to start operation. (Enterprises outside the centre are often started with the help of capital and professionals coming from the centre itself. They are also encouraged by the lower costs outside the city.) As a result of this process new economic activities which were characteristic of the centre earlier become typical in a larger area, i.e. in the settlements of the developing economic agglomeration.

As the number of companies in operation in a given area is increasing, effects that inhibit the rate of growth become more evident. As the density of companies becomes higher, competition for resources (raw materials, workforce, etc.) becomes increasingly frequent, which in turn decreases the drive to set up new companies and contributes to the growth of the failure rate. The chances of survival of companies are not equal though. In regions where the number of companies operating is high enough (i.e. company density

is high) external advantages of economy of scale prevail which means a competitive advantage over other companies (e.g. availability of workforce with special skills, already established contacts with R+D institutions or the provision of special infrastructure). It may also contribute to the competitive advantage that enterprises operating in regions with high company density are "more prepared" as a result of more intense competition. They have the organisational procedures, routines, abilities and reserves necessary to be able to fight off fierce competition. Depending on the branch of industry this competitive advantage, whichever source it has, can be so great that competitors are not able to balance it and the dominance of the previously established economic pole – or rather that of its companies – is maintained. (Classic examples are the concentration of computer firms in the Silicon Valley, the dominance of Hollywood in film-making in the USA or lately the agglomeration of biotechnology companies.)

If no such advantage of competitiveness exists in a given branch of industry in connection with high company density or at such a low level that it can be balanced by other factors (lower wages, different tax burden etc.), spatial decentralisation of the given economic activity begins. It is not confined only to the immediate vicinity of the economic pole (agglomeration), it also appears further out. It is also important to point out that the significance of the economic core is reduced due to decentralisation, partly to the benefit of its own agglomeration (suburbanisation), and partly because other economic agglomerations gain ground; full equilibrium is, however, rare.

IV. Remarks regarding the utilisation of the results

The principal aim of the thesis was to build up a general model, which can describe the spatial decentralisation of business organisations, thus to contribute to extend the corporation demography approach to spatial economic processes. By using the economic suburbanisation model outlined above, it is easier to understand the mechanisms and spatial aspects of suburbanisation, this rather complex social-economic process. A likely field where the results can be used is development policy. According to the results, it is not regional centres or underdeveloped regions that are need a concentration of resources but economic agglomerations in order to create the external advantages of the economy of scale which improve the competitiveness of companies in those areas. Settlements that are outside the economic agglomerations must be encouraged to create close links with nearby central regions through commuting.

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