ANALYSIS OF MAIN FACTORS OF ENDOGENOUS DEVELOPMENT IN HUNGARIAN COUNTRYSIDE

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Abstract: *Understanding territorial processes has come to the focus in the past few decades but it is especially important in Hungary's case in terms of the city-country relations. In my research I investigate the major factors of endogenous development and their presence in the rural areas of Hungary. The theory of endogenous development, namely the utilization of the given resources, has become the focus of many empirical analyses. After the delimitation of rural settlements, this means the framework of quantitative analysis. I investigate the accumulation of material and immaterial capital by factor analysis and cluster analysis as well. To create the factors of the capitals I use the method of PLS path analysis.*

Key words*: Hungarian countryside, endogenous development, PLS path analysis, factor analysis, cluster analysis*

INTRODUCTION

Today, endogenous development is a highly valued branch of development theory. Concerning the notion itself, Lengyel states that '*…endogenous, in economics, means the factors which are not inherited ("not born of God") but created consciously by economic activities. In regional science the bottom-up organised public actions and initiatives, which are based on consciously created local facilities are regarded as endogenous*'[21, p. 145].

The utilization of local facilities is sometimes ambiguous, which can cause significant disadvantages. The appreciation of undercover facilities mentioned above highlights the real problem with the devalued Hungarian countryside.

Capello et al. [11] believe that at least two conditions are essential. The first is local production and the appropriate utilization of knowledge. The second is territorial capital, which respects the specialities of a given region.

ENDOGENOUS DEVELOPMENT

According to Benko ([4], endogenous development appeared in the late 1980s, although the author refers only to industrial and urban regions in his study. Stimson et al. [28] claim that the past few decades have seen a shift from exogenous to endogenous facilities. Supporting this finding, Lengyel [22] states that endogenous factors have recently come to the fore in regional development.

Then, Capello's [9], [10] view is that endogenous development depends on a regions' constitution, which is a socio-economic and cultural system defining the success of local economy via the elements of entrepreneurial skills, local factors of production (labour and capital), and contact management of local actors, which increasingly contribute to the creation of knowledge.

In order to determined the importance of each form of capital, I consider a wide selection, from which we choose those that are the most appropriate (see Table 1).

Table 1

Forms of capital in models of endogenous development

	fixed capital asset	human capital	social capital	natural capital	cultural capital	relational capital	infrastructural capital	institutional capital	physical capital	creative capital	symbolical capital	structural capital	cognitive capital	settlement capital	entrepreneurial capital	built capital	political capital	activities and business firms	markets, external relations	image/perception
AEIDL [1]	x	x	x		x				x	x								x	x	x
Capello [9]	x	x				x		x		x					x					
ETC [13]	x	x	x	x	x				x											
Vermeire et al. [30]	x	x	x	x					x											
Camagni [8]	x	x	x	x	x	x	x	x												
Braithwaite [6]	x	x	x	x	x											x	x			
Affuso–Camagni [2]			x		x	x	x						x							
Milone et al. [24]	x	x	x	x	x			x			x									
Stimson et al. [28]	x	x	x	x						x										
Brasili et al. [7]	x	x	x	x		x	x						x	x						
Lengyel–Szakáné Kanó [23]	x	x	x			x	x	x	x											
Atkinson [3]	x	x	x	x	x		x	x								x				
Dinya [12]	x	x	x	x	x	x	x	x	x											
Tóth [29]	x		x	x	x	x					x	x								
Rechnitzer [25]	x	x	x		x	x		x		x			x							

Source: Kovács-Bodnár [19]; based on Tóth [29, p. 44.]

The most frequent and important forms of capital, which I attempt to include in my model, are the following: fixed capital, human capital, social capital, natural capital, cultural capital, relational capital, and infrastructural capital.

DELIMITATION

In order to define rural territories, I base the analysis on rural settlements of Hungary.

Vincze [31] considers only those settlements rural which have not been given city status or they have, but their population is below ten thousand. Thus I tried to define the countryside as settlements below the population of ten thousand simply. But I had to realize that it is very difficult or sometimes almost impossible to measure the smallest villages by quantitative methods. So I decided to exclude all the municipalities above one thousand. So finally I made my analysis among the settlements between one and ten thousand (Figure 1).

By such means, 1239 settlements have been involved in my analysis, and there are 3.230.892 people living in this kind of rural territories.

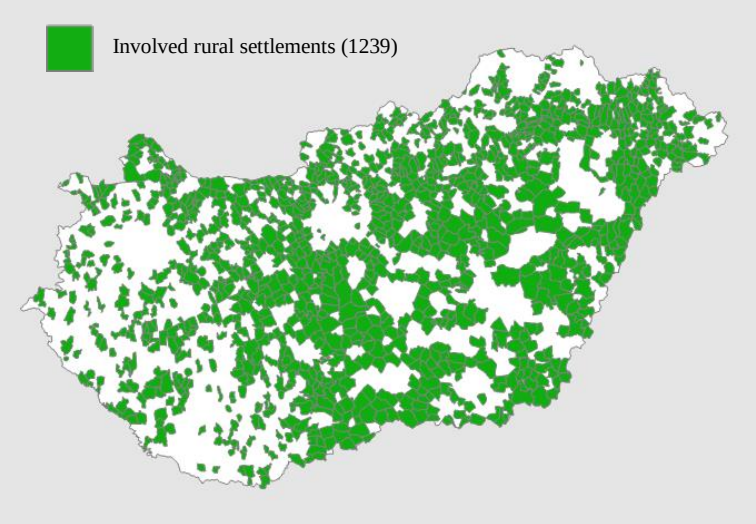

Figure 1. Rural settlements in Hungary in 2014
Source: own creation from TEIR data

MATERIALS AND METHODS

If we make a multivariate analysis, factor analysis can be useful, and this method may help to decrease the number of variables [20]. The method among territorial researches became a fundamential tool in Hungary in the seventies [27]. The method has the advantage that with it we can easily review the multivariate phenomena [16].

Next I will present the test results of factor analysis. I have had a given framework, so I have used the confirmatory factor analysis, to create each factor (Annex).

Finally, I could involve five factors into my model. And as Kovács és Bodnár [19] mention, the quantitative approach of fixed capital assets is not clear. Thus, I decided to create two separated forms: private fixed capital, which expresses individual wealth, an entrepreneurial milieu, which reflects the wealth of companies.

With the help of a PLS path analysis, we run a factor and a regression analysis simultaneously, enabling us to analyse the direct and indirect effects among the latent variables [14], [17]. In my paper I utilized PLS to make a factor analysis. To analyse the factors, I used the software SmartPLS 3.2.6.

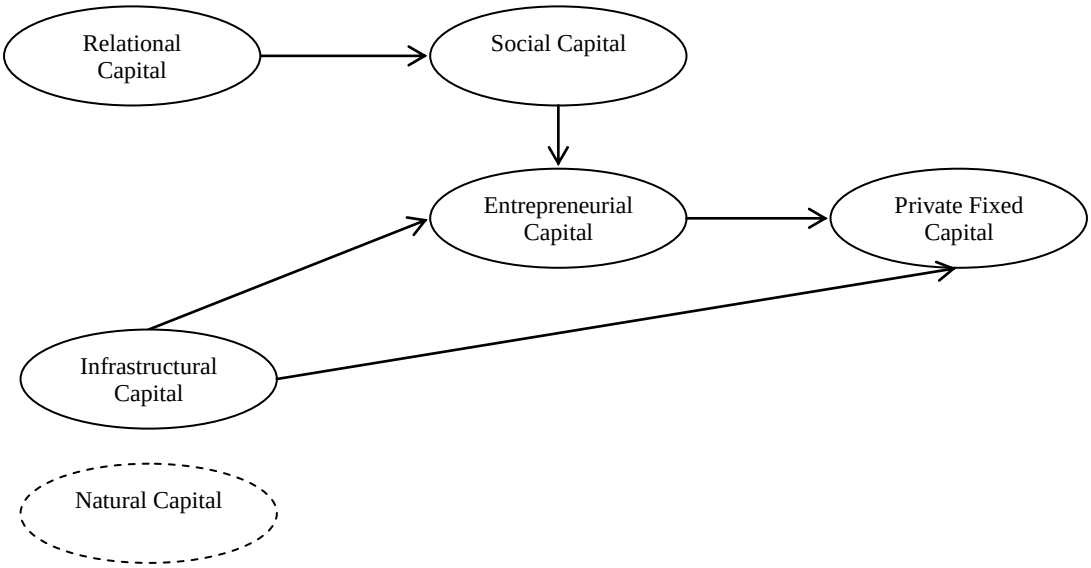

Figure 2. Dependencies of elements describing private fixed capital
Source: own creation from TEIR data

With the help of PLS path analysis (Figure 2) we can make a regression model which can describe the effects of each element on the wellbeing of Hungarian rural settlements. This kind of wellbeing is embodied by private fixed capital as a synonym, which is a simplification, but it helps to grasp the problem [5]. I do not analyse the model in this paper.

But I have to mention that the natural capital can be involved by the test results, however it just had a significant connection to entrepreneurial capital. And the effect was in the negative scope (barely), so I decided not to integrate it into the system.

I have not had appropriate data to create the human capital factor. Moreover the test results of cultural factor were not satisfactory. So finally five capitals had been involved in the model.

In this case the results of sampling adequacy belong to the method of PLS-SEM. About this method Kovács and Bodnár [18], [19] write in more detail.

As Kovács and Bodnár [18], [19] write in order to describe the latent constructions, they first examine the internal consistency, which can be measured by Cronbach's alpha. A value of 0.6 or higher can be accepted. When the PLS algorithm is applied, Cronbach's alpha often underestimates the level of internal consistency, because it assumes the equality of loadings. In order to solve this problem, the composite reliability indicator is applied, which considers the differences among the loadings. In this case a value of 0.7 or higher can be accepted [18], [19].

Table 2

Attributes of forms of capital

factor	Cronbachs Alpha	Composite Reliability	Average Variance Extracted (AVE)
Infrastructural capital	0,819	0,868	0,530
Relational capital	0,909	0,930	0,770
Private fixed capital	0,810	0,862	0,575
Social capital	0,877	0,909	0,628
Entrepreneurial capital	0,834	0,863	0,565

Source: Own creation

Kovács and Bodnár [18], [19] add that convergent and discriminant validity were used to examine the validity of the latent constructions. Convergent validity, which is a measure of the extent to which the variables in a set can be considered representatives of the same latent variable, can be measured by the average variance extracted (AVE). Here, a value of 0.5 or higher can be accepted [15]. These conditions were satisfied for six capitals in my analysis but I mentioned the special circumstances of human capital, so in Table 2 we can see those five capitals which had been involved in my analysis.

RESEARCH RESULTS

Analysing the material factors, first we can see four groups. The first one has the highest capital accumulation. The members of this group have high values in all three indicators involved. They are surrounding Budapest and many of them are concentrated next to the Balaton. But we can see some more next to Győr, and in northern Transdanubia.

The second cluster is a populous one, and it has almost five hundred members. We can find many of the lagging areas of Hungary in this group. In the north eastern part of the country this cluster dominates forcefully.

The third group is the most populous one. It has more than five hundred members. Overall we can say that they have a moderate level of capital accumulation, especially if we compare them to the first cluster. We can find this kind of settlements almost everywhere in the country. The group has several members in the Great Hungarian Plain as well (Figure 3).

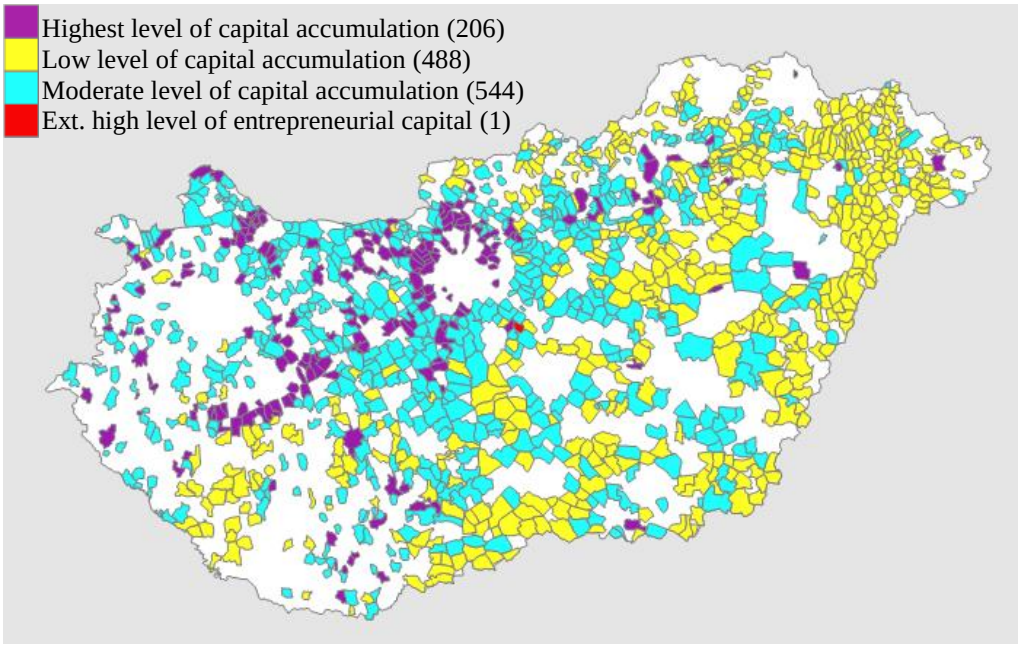

Figure 3. Aggregation of factor of material capitals

Source: own creation from TeIR data

And the fourth cluster has only one member. The municipality is located not too far from Budapest, called Újlengyel. It has an extremily high entrepreneurial capital.

If we focus on the immaterial factors first we can see three groups. As for the number of elements, there is a dominant one, a smaller one, and one with less than thirty members. The third cluster, the most populous one contains more then eight hundred settlements. The cluster includes all the villages and towns that have a moderate level of immaterial capital accumulation. Budapest is surrounded by this kind of settlements but northern Transdanubia and the Southern Great Plain have many of them as well.

Members of the first cluster, which has only twenty-eight elements, have the highest value[1] of social capital among the three clusters, but it is only a little higher than the members of the previous group have. So the real difference is in terms of relational capital. These municipalities have a really high score, that is the reason why they predominantly concentrate next to the Lake Balaton.

The cluster with the lowest level ot immaterial capital accumulation has more than three hundred elements. So it is a tighter group of lagging villages and towns that we saw earlier in the case of material capital. These municipalities have really low social capital, and they can be found in the northeastern part of the country, but we can find them in the south-west as well (Figure 4).

[1] Actually they have the lowest value, but in this case that is preferable because of the special attributes of indicators of social capital.

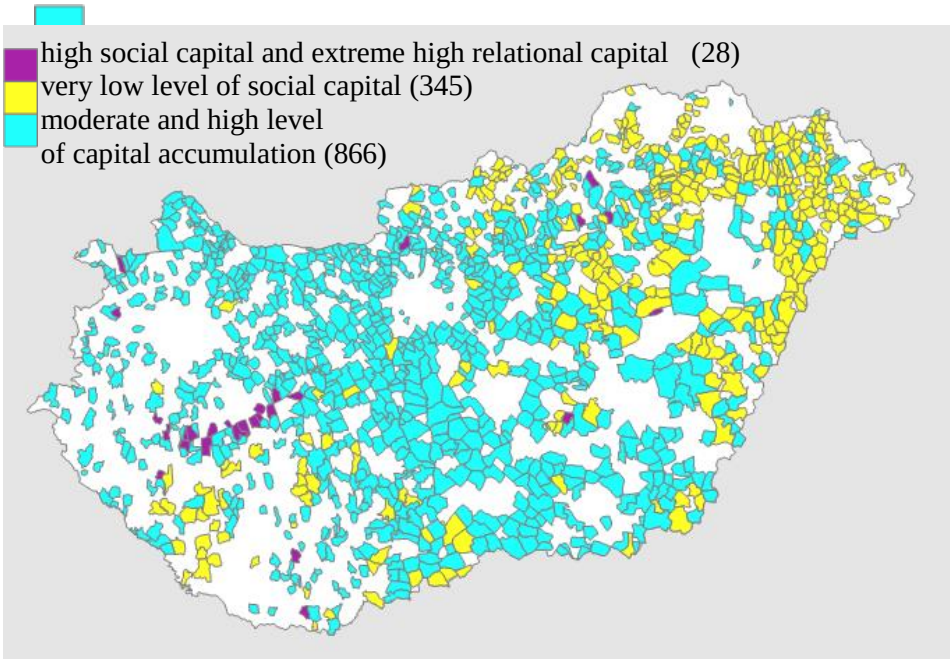

Figure 4. Aggregation of factor of material capitals

Source: own creation from TeIR data

So we can say that the accumulation of material and immaterial capitals has a similar formation or dispersion in the Hungarian countryside. At least the peripherial territories are drawn similarly.

CONCLUSIONS

In my paper I made a short review of literature of endogenous development. The approach, which means to utilize the given resources, gave the theoretical background of my paper. It helped me to collect the relevant capitals, and I could include five in the model, namely private fixed capital, entrepreneurial capital, social capital, relational capital and infrastructural capital. And I used the method of PLS path analysis to make a factor analysis.

The material capital has four groups, but it means three groups in reality. One cluster has only one member. This settlement has an exteremly high entrepreneurial capital. The three other clusters are suitable to distinguish the settlements well. We can see a group with low level of capital accumulation, one with moderate level and one with high values.

The factor of immaterial capitals has three groups. The biggest cluster includes more than eight hundred settlements, so it contains the territories with high and moderate levels of capital aggregation. Another group encompasses all the villages and towns with very low social capital, whilst the third one concentrates special municipalities with really high relational capital.

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