

## The possibility of combining static and dynamic analyses through the example of the Börzsöny-Duna-Ipoly LAG area

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### **Abstract**

*In my study I attempt to unify place-based static and dynamic analyses with the help of a methodology to be able to investigate the resources and characteristics of a local area. The abovementioned methodology would be able to support monitoring activities and the analysis of the heterogeneity/homogeneity of a region.*

*The methodology is capable of ensuring a systematic approach, the exploration of local problems, the creation of an objective situation report based on a wide-ranged database and modern methodological processing necessary for strategy-making and the establishment of efficient development activities (by designating so-called hot-spots).*

*My aim is to create a methodology by using the experience of my investigations which is supported by and complies to the findings of previous literature in this topic, and which can be a useful tool for potential users. It is also crucial that it must give answers to the failures of previous methodologies and to provide ways to improve them.*

**Keywords:** *dynamic analyses, static analyses, combination*

**JEL Classification:** *O18, O21, O41*

### **1. Introduction**

Based on Káposzta (2014) „the main driver of regional disparities is the restructuring effects of socio-economic processes, and these factors become more and more significant in the globalised world. By gaining knowledge about processes resulting regional differences and their impact on the spatial structure we can improve the situation of lagging-behind areas. In this complicated state of relationships between regions primarily the development strategies based on endogenous resources and opportunities, the improvement of internal capital can lead to success”. As Péli (2015) stated: the most significant development activities must be carried out in the centres, because only these ‘core areas’ can generate dynamic growth in their agglomeration areas, and in the ever expanding outer peripheries.

Establishing priority areas for development is even more important if considering the rural development policy of the European Union (EU) for the time period between 2014 and 2020, because it can provide a good opportunity for lagging-behind areas without strong secondary and tertiary sectors, well-developed infrastructure, basic services and jobs. However, although regional studies nowadays emphasise the importance of local development, the low development levels of some regions question the basis for such initiatives. (Ritter et.al, 2013) Káposzta and Nagy (2013) wrote the following lines: ”By today, agriculture is not the only (however, still a significant) function of the rural areas, since rural economies are much more complex systems. Considering the development policy of the EU, aiming to ensure integration, the trends of its changes, we can observe that beside structural changes, the industrial development in rural areas, the improvement of the food economy and infrastructure, improving social situation and the expansion of rural tourism, environment is gaining more and more importance.

One of the most important changes brought about by the restructuring rural areas is that there are new kinds of jobs needed and some qualifications become devaluated. Therefore, lagging-behind peripheral settlements search for solutions for their employment and services problems through Local Economic Development (LED), but this process requires strong infrastructural endowment and local communities (Ritter, 2014). Kassai and Ritter (2011) stated that these two elements correlate strongly to the social and economic development level of the certain areas, which means they can be important factors of competitiveness and the results of endogenous development.

According to Goda and Tóth (2013) „the development of rural areas is an interdisciplinary science, which is based on many approaches, thanks to its complexity. These approaches usually have system-theoretical roots; however, it is not a tool of regional development, but an approach to deal with development processes.”

Due to the complexity of regional differences it is not advisable to conduct regional analysis based on only a few economic indicators. As Nagy and Káposzta (2006) stated that GDP calculation is not applicable for analysing region analyses below a certain spatial level, similar to Cypher-Dietz (2009), who wrote that measuring income differences is also not suitable for this type of analysis, since other factors also affect this process.

It is one of the basic problems of development that Hungarian and international strategic documents are methodologically lacking sometimes; for example, in the case of the Local Rural Development Strategy within the LEADER programme (which is the predecessor of the current Local Development Strategy, LDS). Despite the fact the requirements of the EU are getting ever stricter towards these documents, their quality shows significant fluctuation. Therefore, a complex system (methodology) is needed to solve this problem. The methodology this study presents (Regional Performance Analysis) uses static and dynamic indicators for a selected time period for the changes in development of a certain region. The basis of this methodology was a theory by Lendvay and Molnár (2013), who stated that “the goal of economic development activities of local governments is to change one or two external factors for the purpose of the settlement, or to adapt to the external endowments by changing internal factors”. It means that economic development activity is a combination of natural and “artificial” development processes in a certain time period.

This system ensures a systematic approach, the investigation of local problems; also, it provides a new way to create an objective situation report based on databases and data processing for strategy generation; it enables its user to create a basis for monitoring economic activities and to designate hot spots for development.

## **2. Data and Methods**

The methodology of the Regional Performance Analysis compares the characteristics of certain regions with other ones by a pre-defined criteria-system.

According to Péli (2013), two of the reasons behind spatial differences are the development trends of regions and the competition between them. This regional process is generated by the changes in natural resources, population, production, infrastructure, and their relationship in a country and in its regions. Based on this theory the pre-defined indicator systems contain 60 basic indicators, including 40 complex indicators along four dimensions, which are the local economic, the society, the environment and the infrastructure.

Performance analysis – based on indicator groups related to the abovementioned four dimensions – measures a region in two ways. First, its natural development level – dynamic

analysis –, in which the changes of the region are investigated in a specific time period (in this case, between 2007 and 2013). The next step is the analysis of the ‘artificial’ development level – static analysis – in which the situation of the region is investigated in every year of the abovementioned time period, separately. Then, the performance of certain units of the region is compared to a larger selected spatial unit’s, and it is evaluated by a pre-defined criteria-system. After that, by taking the average value of the indicators it describes the performance of the region on indicator, dimension and index levels.

In the author’s opinion certain development hot spots can also be defined. It means that those areas will be discovered which need development, and those strengths are also identified, which the development activities can be based upon. Also, it provides opportunity to investigated indicators and dimensions in a smaller and in a larger region as well.

To test the methodology the action area of the Börzsöny - Duna - Ipoly Rural Development Organisation (BDIVE) was selected, due to the fact the author has strong ties to that area and also because of certain problems found in the LDS of the area.

The total population number of the area is 24,411, which is the same as the number of people included in the LEADER programme of the area. The area is geographically homogenous strangely because of its natural diversity. From the 17 in the selected area 10 lie close to the Slovakian border, where the river Ipoly serves as a natural border. Five other settlements are situated on the left side of the Danube. The majority of the test area belongs to the Duna-Ipoly National Park, which has a significant impact of the local land use structure.

There are many common characteristics found among the settlements of the selected area. The most significant – which is almost generally true in Hungary – is population loss, cause mainly by the aging population and out-migration (the only exception is Kismaros in the area). The administrative regional border changes in the past and the cultural diversity cause by the fact that the region is close to the border results low social coherence. On the other hand, local traditions may help developing common identity. Economic processes are also affected by unfavourable social indicators as well. The lack in population in working age causes a low rate of employed people in the majority of the settlements, and long-term unemployment is high among people above the age of 45. From the branches of agricultural – due to the natural endowments – forestry, game- and water management are the most common land use types.

### 3. Results and Discussion

On the right side of Table 1 we can see the classification of the Regional Performance Analysis, which contain 7 categories on a scale from -3 to 3 in the current study. On the left side the dimension and index level results can be observed. The action area belongs to the *lagging-behind* category on index level (TT), based on the calculation; on dimension level the society stagnates, the local economy and the infrastructure *lag behind*, the environmental dimension is *failing*. On settlement level the result of the performance analysis is the following: 1 town (Verőce) stagnates, there are 5 lagging-behind and 11 failing settlements. These results seem very low, due to the fact that they were compared to the results of Pest county, and it is well-known that the action area is the least developed in the county.

On the map based on the data of Table 1 (Figure 1) these results can be observed much easier, then in the table. From the dimension level analysis of some settlements we can see that, in spite of the area was compared to Pest county, they show developing trends (marked with the colour green in the cells of Table 1) in some dimensions. These are the hot spots, which can support settlement development; for example, in the case of Verőce, the local economy and

society pillars could provide the most positive external opportunities for the region. On the other hand, in Tésa and Szokolya the hot spots only bear negative external opportunities, which means that the opportunities must come from the weaknesses, for which external resources will be needed.

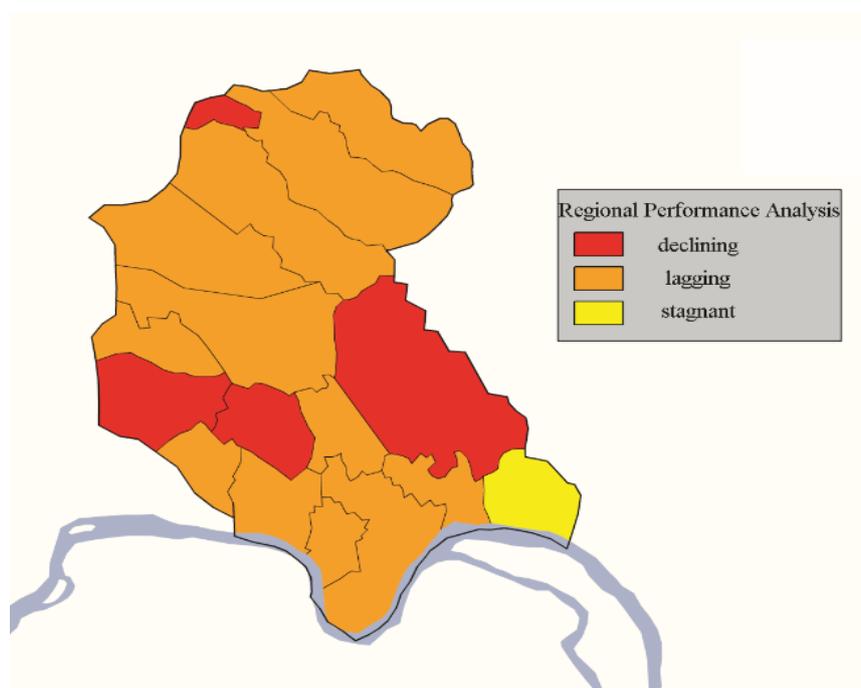
**Table 1: The result and the classification of the Regional Performance Analysis**

	Local economy - RPA	Society - RPA	Environment - RPA	Infrastructure - RPA	Regional Performance Analysis
Bemecebaráti	-0,51	-0,03	-1,02	-0,21	-0,43
Ipolydamásd	0,16	-0,47	-1,54	-0,30	-0,49
Ipolytölgyes	-0,06	-0,07	-0,64	-0,54	-0,31
Kemence	-0,15	-0,07	-1,28	-0,18	-0,39
Kismaros	-0,72	0,42	-1,04	-0,69	-0,50
Kóspallag	0,00	-0,33	-0,99	-0,57	-0,45
Letkés	-0,84	-0,19	-0,86	-0,37	-0,57
Márianosztra	-1,21	-0,13	-0,85	-0,43	-0,66
Nagybörzsöny	-0,01	-0,03	-1,51	-0,56	-0,49
Nagymaros	-0,04	0,13	-1,02	-0,28	-0,28
Peröcsény	-0,38	-0,16	-1,13	-0,14	-0,43
Szob	-0,57	0,10	-0,32	-0,06	-0,22
Szokolya	-0,76	-0,33	-0,67	-0,95	-0,68
Tésa	-0,49	-0,66	-0,83	-0,94	-0,72
Vámosmikola	-0,08	0,07	-1,36	-0,15	-0,35
Verőce	0,22	0,20	-0,74	-0,11	-0,08
Zebegény	0,15	0,02	-0,92	-0,20	-0,21
Börzsöny-Duna-Ipoly	-0,31	-0,09	-0,98	-0,39	-0,43

Classification	
Sorting	Name
1,5 <= 3	intensively developing
0,5 <= 1,5	developing
0,15 <= 0,5	began developing
-0,15 <= 0,15	stagnant
-0,5 <= -0,15	lagging
-1,5 <= -0,5	declining
-3 <= -1,5	more declining

Source: The author's own editing

**Figure 1: The results of the Regional Performance Analysis on a map**



Source: The author's own editing by using the Online Geomarket GIS application, 2016

Table 2. demonstrates how the action area performs on an indicator level (this was calculated for settlement level as well, but due to page restrictions that could not be included in this study). The table shows that in the investigated time period the catering industry, unemployment rate and other social indicators of the regions improved (light blue cells). But we can also see that natural propagation, population density and the rate of selective waste collection are weak points of the region, and they are failing compared to other regional trends (dark red cells). Further weaknesses (red cells) are the some parts of the business sector and infrastructure, and almost the all the environmental results.

**Table 2: Indicator level results (and the elements of the indicator system)**

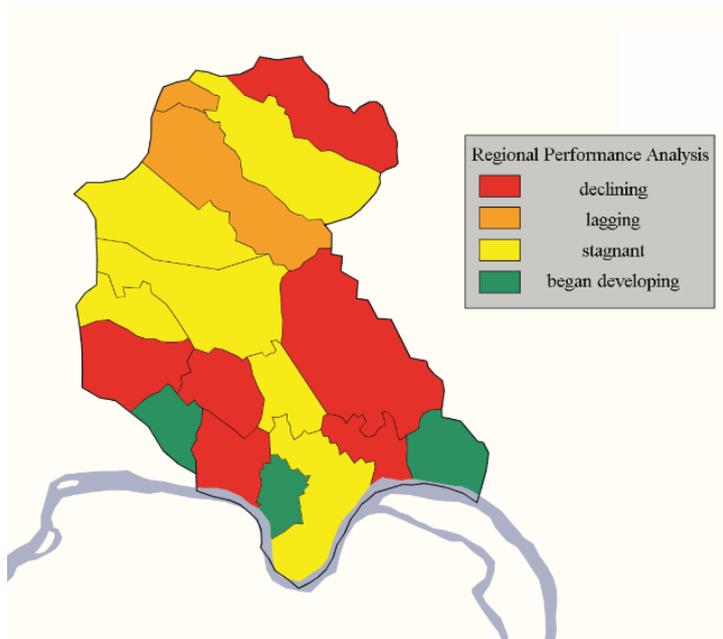
Local economy											
The proportion of businesses operating within the registered ones	Number of retail stores per capita in 1000	Gross value added per capita	Revenue from small-scale agriculture per 1000 inhabitants	The relative income per one inhabitant of working age	Number of commercial accommodations per capita in 1000	Number of catering establishments per 1000 inhabitants	The number of guest nights per guest in one of the commercial and non-commercial accommodation	Number of non-commercial accommodations per capita in 1000n	The number of subsidies paid within the frame of the 1., 3. and 4. axes of the EAFRD	The amount of local taxes per capita	
-1,46	-1,03	-0,31	-0,98	-0,69	-1,16	1,39	0,27	1,10	-0,31	-0,24	-0,31
Society											
Net migration per 1,000 persons	Natural increase per 1,000 persons	Population density	Aging index	Dependency index	Relative economic activity (%)	The relative ratio of registered unemployed	The relative indicator of the registered people unemployed for more than 180 days	Regular social assistance amount used per 1000 inhabitants	Participating in cultural events per 1000 inhabitants		
0,53	-1,75	-1,74	0,41	-0,51	0,46	0,76	0,76	-0,02	0,20	-0,09	
Environment											
The amount of municipal solid waste shipped from the inhabitants	The generated amount of hazardous waste	The proportion of homes involved in regular waste collection	The rate of households involved in selective waste collection	The proportion of recycled municipal solid waste	The primary utility gap	The amount of support payments related to environmental actions per 1000 people	Fines, penalties and other special revenue of the Local Government related to local taxes	The volume of wood per 1 hectare			
-0,79	-1,26	0,22	-2,82	-0,98	-0,89	-0,98	-0,74	-0,62	-0,98		
Infrastructure											
Average distance in time to the micro-regional centers	Secondary utility gap	The rate of domestic gas consumers	The rate of household electricity consumers	The number of passenger cars per 1,000 persons	The number of patients per one family doctor	The number of social catering recipients per 1000 inhabitants	Average student numbers in primary schools	The rate of public spaces and roads built by the Local Government	The rate of sidewalks built by the Local Government		
-1,36	-0,92	-0,32	-0,85	0,35	-0,60	0,74	-0,92	-0,06	0,00	-0,39	
									Börzsöny-Duna-Ipoly	-0,43	

Source: The author's own editing

Local economy (Figure 2) is a lagging-behind dimension of the region, but on settlement level we can see that many settlements have started a developing trend. It was observed that economy started to decrease around almost all of the settlements. This is probably because of the fact that developing settlements have a stronger attraction power, which the smaller

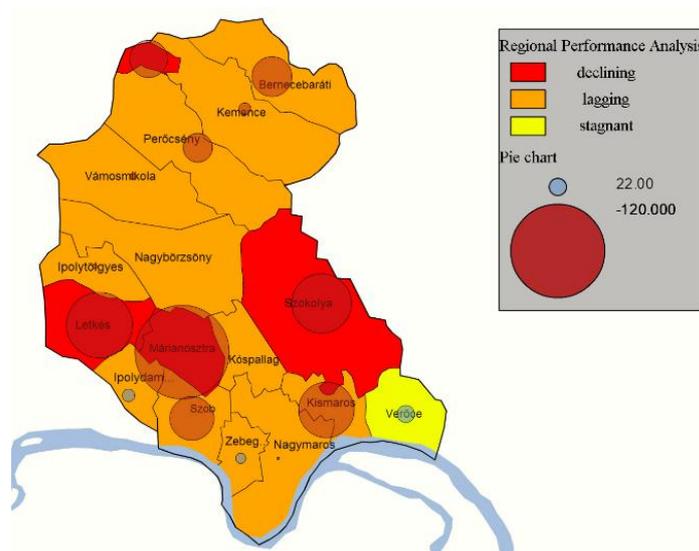
settlements could not do anything in the seven years observed; therefore, those economies started to fall back.

**Figure 2: The map of the local economy dimension of the Regional Performance Analysis**



Source: The author's own editing by using the Online Geomarket GIS application, 2016

**Figure 3: The map of the Regional Performance Analysis and the pie chart of the local economy dimension**



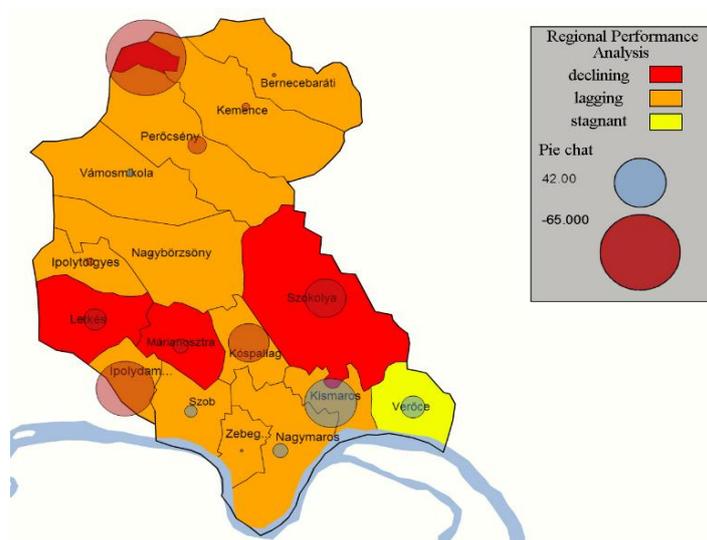
Source: The author's own editing by using the Online Geomarket GIS application, 2016

Thanks to the GeoMarket GIS programme used for the investigation it was possible to generate maps and charts based on the results of the analyses. On Figure 3 we can see that in the case of the local economy, that, despite many settlements have started to improve their situation, these results is not enough to balance out the decrease in the economy of the other settlements. Therefore, the BDIVE area will belong to the *lagging-behind* category, based on the Regional Performance Analysis.

The stagnating position of the social dimension can be understood better if we try to analyse the pie chart below (Figure 4.). It can be observed that the differences are lower between the

lowest and highest values. But it is also demonstrated that the results were generally better in the South than in the North, which is caused by the fact that the Southern areas have much better endowments supporting the development of the society.

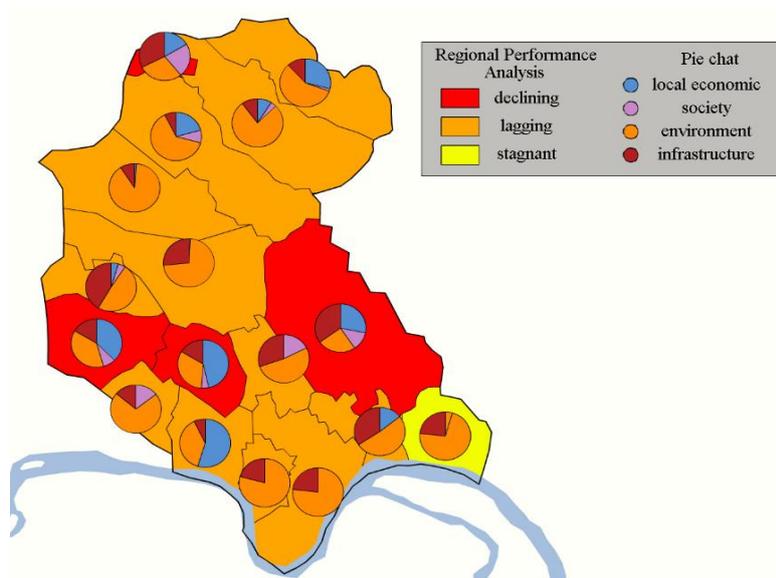
**Figure 4: The map of the Regional Performance Analysis and the pie chart for the social dimension**



Source: The author's own editing by using the Online Geomarket GIS application, 2016

Finally, on Figure 5 we can see that on settlement level the results of the Regional Performance Analysis are determined by environment, followed by the infrastructure and the local economy.

**Figure 5: The map of the Regional Performance Analysis and the pie chart showing the rate how much certain dimensions affect the results of the analysis**



Source: The author's own editing by using the Online Geomarket GIS application, 2016

#### 4. Conclusions

This study was intended to be the first step of designing a new methodology for creating a basis for development plans. The methodology still needs improvement: the finalisation of the

complex methodology and the presentation of the full array of results will be the subjects of a later study.

Since the index can be derived to all of its element, including the levels of dimensions and indicators, as well as to static and dynamic analyses, we can see that which are the specific local characteristics, strengths and weaknesses. Also, we can see that which regions perform better or weaker. By learning these we can find those development nodes/hot spots (which can be either characteristics or geographical areas) which are necessary to develop, or on which later development can be based on.

The Regional Performance Analysis has a huge potential to describe reality through static and dynamic investigation of development, which includes the comparison of the performance of certain areas and the region which contains the specific area in a time period chosen by the researcher. Thanks to that, we can investigate economic, global and social processes, as well as the impact of development funds in the areas. It means that it allows its users to analyse the negative effects of the abovementioned processes, as well as the opportunities they may provide.

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\* Online full-text paper availability: doi:<http://dx.doi.org/10.15414/isd2016.s7.01>