

# Method of agricultural agglomeration index<sup>1</sup>

HORVÁTH ESZTER<sup>2</sup>

## Introduction

Agricultural activity is obviously lost ground in Hungary. Well known, that the positions of all branches of agriculture in the production weakened as well. Hungarian agriculture is continuously changing. Changes are partly induced by external effects (regulations, environment protection, producers' and consumers' attitudes etc.) and partly because of internal urge, i.e. accommodation.

Effacement and looking for new trends are far more typical for agricultural enterprises in the suburban areas and agglomerations.

Analysing the topic, I first evaluated the agriculture in the settlements of Szigetköz. My analyses revealed that there are less agricultural entrepreneurs and licensed traditional small producers than in settlements outlying the agglomeration. In the region of Győr, agricultural services come to the front besides the dominating arable plant growing, but settlements outlying the agglomeration practice richer farming activities.

Therefore, I defined this phenomenon as agglomeration agriculture; i.e. the numbers of agricultural enterprises decrease and their activities specialize adapting to the geographical aptitudes, to the consumers' needs and the actual trends in farming in settlements belonging to the agglomeration. Typically, farms are not fewer in numbers there, than in settlements not belonging to the agglomeration. It is due to farm markets in towns, where people consciously look for farm products (especially for value-added products).

We must talk about a complex phrase and phenomenon, and need a complex indicator to measure them more precisely. I felt it necessary to create a specific indicator, an Agricultural Agglomeration Index (AAI). The present study reports the necessity and methodological background of creating this indicator.

## Method

It is a matter of complex and multifactorial occurrence therefore, I found it necessary to develop and apply a complex indicator. I selected the method of indicator calculation, which incorporates numerical data collected from different fields. Using it, we can define a state, compare different regions, or times, and demonstrate changes, too. They are useful for the present analyses, because:

- Indicators are transmitters between *statistical observations and economic and social phenomena*.
- Their main function is to reduce the quantity of information that are to be taken into account.
- Complex (composite) indicators reflect the different areas of economy, society and environment, as well as their relation and interaction [Havasi, 2007].

An indicator is a measurement or value that shows, reports or describes the state or situation of a relating phenomenon, environment or territory. The main function of indicators involves the function of comparison and comparability in time or that of different economic or social aggregates or groups. Furthermore, indicators are summative assessment measurements that if

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<sup>2</sup> Assistant professor, Széchenyi István University, Kautz Gyula Faculty of Economics. Email: [horvath.eszter@sze.hu](mailto:horvath.eszter@sze.hu)

connecting to key points of the phenomena in question are able to describe their positive or negative changes [Bukodi, 2001].

Indicators help us to orientate in the world (in the world of numbers). They are capable to describe the situation, but are incapable to inform about the reasons.

Types of indicators based on their complexity can be:

1. simple indicators and
2. complex indicators including – aggregate (or summative) indicators, – composite or integrated indicators.

Compared to simple indicators composite ones include information from more fields into a single index. Poverty rate is e.g. a simple indicator, but GDP belongs to the group of composite and aggregate indicators. Complex (composite) indicators reflect the different areas of economy, society and environment as well as their relationship and interference. Working with integrated indicators, we should pay close attention to the role of the individual components. HDI- (Human Development Index) is a good example in this respect [Havasi, 2007].

To create an own indicator I used as a basis, the District Development Index calculated to determine developing and lagging districts by *MKIK- Institute for Economic and Enterprise Research*.

Indicators, like the number of individual farmers (pcs), number of economic organisations practising agricultural activities (pcs), the size of arable land in the ownership of economic organisations practising agricultural activities (m<sup>2</sup>) etc./ I collected them as per settlement from the *KSH (Hungarian Central Statistical Office)* territorial data base. I was able to collect data from the years 2000 and 2010 only.

Based on the indicators listed above, I arranged the Szigetköz settlements into quantiles to calculate the complex indicator, and then I marked with whole numbers from 1 to 5. The value of the complex indicator was expressed by the arithmetic average of *i* numbered grade for a given settlement, i.e. it expressed then the Agglomeration Agricultural Index (AAI).

#### **Features of AAI:**

- The indicator can be calculated by aggregating several economic, (e.g.: profile of enterprises, incomes from farming, contribution to the economy of the region etc.), social (e.g.: employment rate, permanent population, vital events, housing stock etc.) and individual indices of agriculture,
- Based on the indicators listed above, I arranged the Szigetköz settlements into quantiles to calculate the complex indicator, and then marked them with whole numbers from 1 to 5,
- As for the given settlement the received arithmetic average produce the value of the referring complex indicator,
- The number of the individual indices can be extended,
- Settlements can be compared with each other,
- The indicator makes comparison in time possible,
- Evaluation of individual farms and agricultural enterprises should be separated,
- The lower the AAI of the agricultural enterprise is, the more typical the agglomeration agriculture will be,
- As for individual farms, high AAI values can refer to agglomeration agriculture. Right decision requires fair knowledge of the territorial features.

Formula:

$$AAI = \frac{\sum_{k=1}^i E_{tk}}{i}$$

t = the given settlement, k = the given basic indicator, E = grade upon the quantiles, i= number of indicators

## Summary

With the help of this indicator, we can map the rate of appearance of the so-called agglomeration agriculture in the individual agglomerations, agglomerating regions and urban areas. Furthermore, we can determine the size of difference from the agriculture in settlements outlying the agglomeration. In addition, applying the indicator we can as well show a change/tendency in time.

## References

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## Internet Resources:

<http://statinfo.ksh.hu/Statinfo/haDetails.jsp?query=kshquery&lang=hu>