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METAECONOMICS

TAMÁS DUSEK[1]

On the misuse of probability theory in economics

The aim of this paper is to give an outline of the sources, arguments and consequences of probabilistic approach to all types of economic data and phenomena. Probability theory is an efficient and useful tool of inductive research in those areas where the conditions of its applications prevail but it leads to illusory results where these conditions are invalid. The first part of the paper deals with the general objective conditions of the applicability of probability theory. Probability theory can be applied to analyse disorganized, non-learning systems with very large numbers of particles if there are no aims and goals of elements and the behaviour of the elements is stochastic and unchanging in time or the change in time is negligible or stochastic, that is, the behaviour of elements of the system can be described by objective probabilistic terms. The second application of probability theory is the sampling theory. There is an important difference between the two applications. In the first case the examined process is itself random. In the second case randomness and independence is not a necessary characteristic of the population from which the sample is derived. Randomness and independence can be introduced by the sampling procedure, therefore in these cases statistics and probability theory can be used for descriptive historical reasons and not as a tool of inductive theoretical research.

The second part of the paper deals with the history of that convention in economics (and first of all in econometrics), which treats population data as a result of a stochastic process or as one actualisation of a repeatable random sample. The very justification of econometrics from Haavelmo's influential paper is the dichotomy between deterministic and stochastic phenomena. However, this dichotomy is invalid in social sciences because there is a third type of phenomenon, the uncertain phenomena, which is typical in economics. The uncertainty stems from the inherent characteristics of the research subject and it is not a deficiency that could be overcome by the development of scientific methods. In this case objective numerical probability of the events cannot be

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counted or observed. The last part of the paper gives theoretical and practical examples of the negative consequences of the misuse of probability theory in economics.

INTRODUCTION

The problems of statistics and probability theory do not mainly concern the mathematical structure of the method; they are generally about the adequate application of mathematical theory to an observed real world phenomenon. The inadequate adoption of the probability theory in the field of non-repeatable, unique phenomena is a highly corrupt practice in the field of economics and many other social and behavioural sciences. The aim of the paper is to give an outline of the sources, arguments and consequences of probabilistic approach to all types of economic data and phenomenon. Probability theory is an efficient and useful tool of inductive research in those areas where the conditions of its applications prevail but it leads to illusory results where these conditions are invalid.

The first part of the paper deals with the general objective conditions of the applicability of probability theory. The second part deals with the history of that convention in economics (and first of all in econometrics) that treats population data as a result of a stochastic process or as one actualisation of a repeatable random sample.

1. THE USE OF STATISTICS AND PROBABILITY THEORY

1.1. THE DIFFERENT INTERPRETATIONS OF STATISTICS AND PROBABILITY

Both terms statistics and probability have many different shades of meaning. The polysomic character of these words is only disturbing in those situations when the different meanings are mixed in the same text. In the older, original sense of the word, statistics was used for any descriptive information about the state of society, and today it is also used for descriptive data, which have a quantitative nature and a numerical form. In this sense statistics is a method of historical research; it is a description in numerical terms of historical events that happened in a definite period of time with definite groups of people in a definite geographical area.

Of course this meaning has nothing in common with its modern natural science meaning. Accordingly, statistics deals with mass phenomena and it enables us to analyse systems with very large numbers of particles. In the field of natural sciences, statistics is a method of inductive research. To take an example: quantum mechanics deals with the fact that we do not know how a particle will behave in an individual instance. Yet we know what pattern of behaviour can possibly occur and the proportion in which these patterns really occur.

The term probability has also many different incompatible meanings. As regards the mathematical theory of probability, its adequate and objective application can be found in the realm of random mass phenomena or random repetitive events. In the first case a great number of uniform elements are involved at the same time, in the second case the same event repeats itself again and again under identical circumstances[2]. The objective, numerical, frequency probability means that we know everything about the behaviour or attribute of a whole class or collective of events, but about the actual singular events we know nothing but that they are elements of this class or collective[3]. In objective sense the word „probability" is a synonym of „relative frequency".

The subjective concept of probability theory applies to single trials and single cases which do not belong to a class of identical cases; therefore there is no sense to talk about objective, verifiable probability of those trials. If someone gives a numerical expression of his subjective belief for something occurring, in spite of the numerical expression of his belief, it remains his personal and subjective feeling. However, there is not a sharp distinction between objective/frequentist and subjective/personalist/epistemic interpretations of probability: beside the clear objective and clear subjective cases an interim zone also exists, where there is a mass phenomenon with random or uncontrollable behaviour but without the condition of perfectly identical circumstances of the single event. Experiences teach us that in some of these cases (see some later examples) the probability theory can also be applied.

1.2. THE CONDITIONS OF USE OF PROBABILITY THEORY

Inductive statistics and probability theory deal with the problem of large numbers by deliberately treating the individual elements of a collective as if they were not systematically connected. In other words, it proceeds on the assumption that information on the numerical frequencies of the different elements of a collective is enough to explain the phenomena and that no information is required on the manner in which the individual elements are related. It deliberately disregards the fact that the relative position of the individual elements in a structure may matter[4]. If relative position does not matter, then statistics is usable. If the relative position of individuals in a system does matter, then statistics is not an adequate method of analysing scientific problems.

[2] Mises, R. von (1980): *Probability, Statistics and Truth.* Dower Publications, New York.
[3] Mises, L. von (1998): *Human Action. A Treatise on Economics.* Ludwig von Mises Institute, Auburn. 107.
[4] Hayek, F. A. (1943): *Scientism and the Study of Society.* Economica. 10. 34–63. 48.

The different conditions of probability theory as a method of explanation or prediction of the functioning of a system can be summarized as follows:

- There are a large number of elements or events,
- The system is disorganized, non-learning,
- There are no aims and goals of elements, there is not conscious choice between the various courses of action
- The behaviour of the elements is stochastic and unchanging in time or the change in time is negligible or stochastic, that is, the behaviour of elements of the system can be described by objective probabilistic terms; by observing the pattern and relative frequency of the past behaviour of element the prediction of the future behaviour is possible

Usability of probability theory can be decided first of all by experts of the scientific area under discussion and not by the statisticians. Experience teaches us where these can be used and where these cannot be used, because there is not always a sharp distinction between the absence and realization of conditions. However, in the case of social systems the last three conditions are clearly not fulfilled. Therefore, in the case of society probability, theory cannot be used as a method of inductive research but an applied part of probability theory, namely sampling theory can be used for descriptive/historical purposes. However, there is an interesting and important difference between the two applications of probability theory. In the first case (probability as a tool of inductive research) the examined process is itself random; therefore, we could say, the application of probability theory to stochastic processes is unrestricted. In the second case, that is, random samples, randomness and independence is not a characteristic of the population of which the sample is derived. Randomness and independence are introduced by the sampling procedure; therefore statistics and probability theory can be used for descriptive historical reasons. Of course, non-random samples are also justified for descriptive purposes, where introduction of randomness is impossible or unpractical (for example collecting price data for measuring the temporal difference of price level).

1.3. SOME EXAMPLES FOR THE VARIOUS USES OF STATISTICS AND PROBABILITY THEORY

Examples of the successful use of statistics and probability theory can be found in those areas where the above mentioned conditions prevail: quantum mechanics and many other fields of physics, insurance, population statistics (e. g. birth rates and death rates), medical statistics, genetics and other biological phenomena, quality control, resource management and so on. Of course, inadequate use of probability theory may occur in these areas also, but dealing with this question would be impossible in a short paper. As regards physical, technical and biological phenomena the behaviour is time invariant, while in the case of social phenomena the change of behaviour in time is negligible. For example,

the relative stability of vital statistics enables life insurance; if vital statistics were as volatile as price changes, then life insurance would be not possible, at least in an objective sense.

The data can stem from repeatable experience, repeatable observation and random sample. The difference between experiences and observations is that in the first case we engender actively the observed phenomena and in the second case we register only passively the outcomes of repeatable phenomena. In the case of random samples the repeatability is not a condition, because, as I mentioned earlier, the aim of the sample is a description of some characteristics of society in a definite area and a definite point of time, or in a definite interval of time.

There are many examples of areas where statistics are usable only in the descriptive sense. In linguistics the statistics of words tell us nothing about the structure of a language. The same is true of other systematically connected wholes, which is the subject of ethology, ecology, the investigation of price system and in general the economic system as a whole. The statistics in this field of knowledge can be used in a very limited way: Statistics can provide information about separate parts of the system and thus can give us some „raw material" which helps us to reproduce the structure of the system. And secondly, statistics can help to examine system characteristics if we have information about properties of many languages, many price systems and so on[5]. We have to face two restrictions when using statistics in this way: the number of available instances can be very limited and far from being a mass phenomenon, and secondly, the properties of the systems can only be formed in an indirect way from their parts. Sampling theory is typically not a useful research tool in the investigation of systematically connected wholes, because the elements of the system are heterogeneous, qualitatively different, and they have different weights or importance.

The danger of the axiom systems that are detached from empirics can be illustrated also by the axiomatisation of probability by Kolmogorov: the inadequate adoption of the theory in the field of non-repeatable, unique phenomena. This will later be the basic problem in the case of economic data.

2. THE MISUSE OF PROBABILITY THEORY

2.1. THE FALSE DICHOTOMY BETWEEN DETERMINISTIC AND STOCHASTIC PHENOMENA

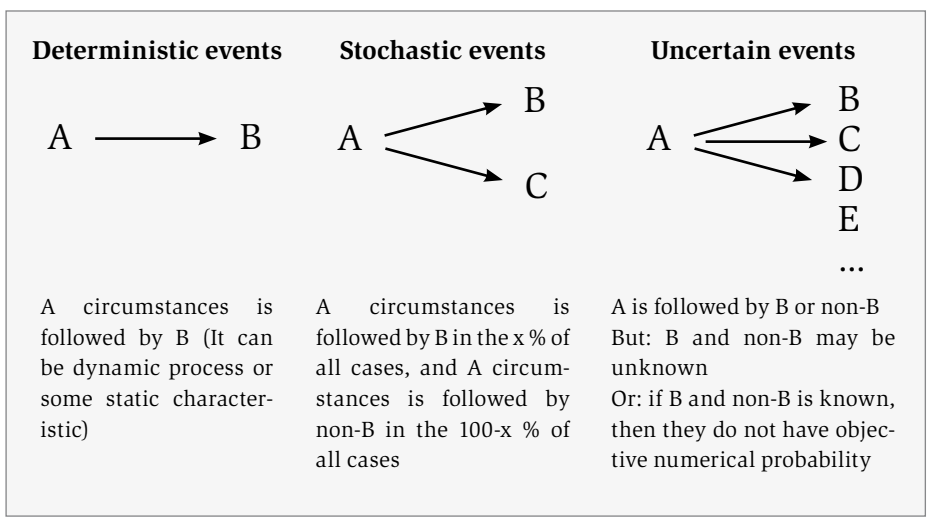
A popular but mistaken belief is that every phenomenon can be divided into deterministic and stochastic phenomena. As regards deterministic phenomena, the determinant elements of a process or events can be known and by knowing

[5] Hayek (1943) 49.

these determinant elements the process can be predicted. In the case of stochastic phenomena the initial circumstances do not determine the result, rather the various results can be predicted by numerical probability only. These two types of phenomena are typical to natural phenomena and it is not necessary to discuss that chaotic phenomena belongs to a third group or it is a subgroup of stochastic phenomena.

In the field of biological sciences and social sciences the deterministic-stochastic dichotomy only seldom prevails, in the case of very simple subsystems with recurrent, standard behaviour of elements. However, in biological and social systems, most phenomena are uncertain, that is, we are able to give neither deterministically nor stochastically predictions about the phenomena (Figure 1). Their uncertainty is epistemologically different from that type of uncertainty that is manageable by the help of probability theory. We are only able to give a subjective probability about the possible course of events; indeed we cannot make a complete list about the possible outcomes of events. This uncertainty stems from the inherent characteristics of the research subject and it is not a deficiency that could be overcome by the development of scientific methods.

Figure 1: **Deterministic, stochastic and uncertain events**



The difference between the deterministic and stochastic phenomena is epistemologically by far not as important as the fundamental differences between stochastic and uncertain phenomena. Stochastic and uncertain phenomena have nothing in common apart from the incompleteness of our knowledge.

Let us look at two examples for uncertain phenomena: The result of a sport competition is clearly not deterministic. If it were deterministic, the results would be known in advance. If someone thought objective numerical probability could

be given to the various possible results, then she or he could consider the sport competition as a stochastic phenomenon. But I think this would be a metaphysical, mystical and unjustifiable treatment of the point, because the alleged numerical probabilities are not verifiable. Every sport competition is a unique phenomenon; the circumstances are different in each competition. We can also express our subjective opinion about the outcome of events in numerical terms only.

The second example is a more complex one. It can be predicted qualitatively that an increase in money supply leads to an increase in price levels in the unspecified future. Yet it is impossible to predict both the timing of the process in exact numerical terms and the exact effect of the increasing money supply to the structure of the price system, the income distribution, the rate of interest, the change of production structure and so on. If someone still gave a prediction in quantitative form about the process – and this is a common practice of economic policy research institutions ¬– this prediction cannot be treated as a precise and exact numerical result neither deterministic nor stochastic sense, but as an indicator of direction and magnitude of the examined process.

2.2. THE HISTORY OF PROBABILISTIC APPROACH IN ECONOMICS

The most influential paper about the use of probabilistic models in economics is Haavelmo's paper on Econometrica[6]. Mathematical economists and scholars of econometrics before Haavelmo made deterministic mathematical models. Haavelmoo's main argument for probabilistic approach is the following: it is well known that there isn't an exact functional relationship between observable economic variables. Actual observations will deviate more or less from any exact functional relationship. And, according to Haavelmo, if some relationship is not exact, then it is stochastic. This strange opinion became widely and rapidly accepted by the majority of the new generation of economists. The main problem with this statement is that it is not true that if some relationship is not exact or deterministic then it has to be stochastic or probabilistic. It can be also uncertain without any numerical probability. And we can recognize the uncertain character of a relationship not by examining the numbers themselves but by examining the qualitative information about the data generator process.

The law of demand can be used to illustrate the differences between various forms of expressions. According to verbal form, the law of demand states that for a higher price of goods, all other factors being equal, there corresponds a lower (or at any rate not a higher) demand. The mathematical/deterministic form of the law:

[6] Haavelmo, T. (1944): *The Probability Approach in Econometrics.* Econometrica. 12. 1–115.

If p denotes the price of, and q the demand for, goods, then
q=*f(p)* and d*q*/d*p*=*f'(p)*≤*0*.
where *f(p)* an unspecified deterministic function
The econometrical/stochastic form of the law:
q=*f(p)*+*e* and d*q*/d*p*=*f'(p)*≤*0*.
where *f(p)* the deterministic/systematic/theoretical part, e the stochastic part (disturbance or error term) of the function. The deterministic part has to be specified with the help of empirical observations.

For mathematical form it is necessary to introduce a notation system. However, it is interesting that many mathematical economists believe that mathematical forms express more than simple words and, furthermore that they describe the situation more precisely. Far from saying more, in reality mathematical form actually says less than verbal form since it is limited to functions that are differentiable and its graphs, therefore, have tangents. This additional hypothesis is clearly not anchored in economical facts. Therefore the verbal form is more general, but no less precise; it has the same mathematical precision as mathematical expression[7].

We can observe a crucial difference between the mathematical expression of physical and economical laws. In physics not only the theory of mechanics, optics and electrical attraction can be added but there also exist tools for measuring variables used in the mathematical formulation of theories. In economics a law of demand and other theories can also be presented in mathematical form but no instrument exists for an accurate and unambiguous measuring of the variables used in those theories.

In economics the sources of uncertainty are manifold; for example lack of perfect information, lack of perfect foresight, lack of perfect quantitative function between various variables, organized complexity, learning, choosing and so on. A genuinely immeasurable phenomenon was assumed to have a numerical probability either normally distributed or could be analyzed „as if" they were normally distributed or rarely – because it is easy to demonstrate that the assumption of normal distribution do not fit the real data – they have some other distribution. This is a fundamental methodological misconception with various detrimental consequences.

2.3. THE CHANGE OF THE MEANING OF SAMPLE

Not only has the treatment of uncertainty been drastically transformed, but also the meaning of sample. The change of meaning originates at least in Fisher's work for the statistical methods of agricultural experiments. Fisher writes in

[7] Menger, K. (1973): *Austrian Marginalism and Mathematical Economics.* In: Carl Menger and the Austrian School of Economics, Ed. Hicks, J. – Weber, W. Oxford, Clarendon Press.

1925: „Any body of numerical observations, or qualitative data thrown into numerical form as frequencies, may be interpreted as a random sample of some hypothetical population of possible values"[8].

This concept was broadened rapidly to every type of data, not only for experimental data. According to this approach not only the sample is a subset of a population, but that the population is a subset of a hypothetical „super population" or „universe" and the population is also a sample to be drawn from a super population. Population is something that happened and super population is all things that could have happened. According to this approach all data can be interpreted as a sample; moreover, as a random sample. Therefore the probabilistic approach is „justified" with all kinds of data.

Not only has the meaning of sample changed but the meaning of „experiments" in probability theoretical literature. In theoretical literature the word experiment is used for every situation where the probability theory is applied and not only in those cases where test are actively conducted to find out what happens to someone or something in particular conditions. Thus random samples, true experiments and passive observations are deliberately mixed up in a disturbing way.

The conceptual problem of this view is the following: use of inferential statistics, which are designed to make inferences about an unknown population of subjects from a known random sample, on data which is not a sample at all but include the entire population. This strange practice became quite common in many fields of empirical science, not only in economics.

To justify the stochastic approach, we can find both the stochastic process and random sample arguments. Perhaps random sample argument is more common. The following question arises: Can economic data be treated as:

1. Random sample?
2. Repeatable experience under the same conditions?
3. Repeatable observation of a stochastic process?

I think, in regards to macroeconomic data, neither approach can be applied. Otherwise, in some microeconomic problems, stochastic approach can be legitimate. For the sake of simplicity hereafter I will deal with the data of macroeconomics. The events of macroeconomics have unique characteristics. They are not homogeneous members of an identifiable class with known parameters in the distribution of values. They are uncertain, but not random, in the sense of probability theory, that is, they do not have numerical probability.

[8] Fisher, R. A. (1925): *Theory of Statistical Estimation*. Proceedings of the Cambridge Philosophical Society. V. 22. 701.

2.4. ARGUMENT FOR TREATING MACROECONOMIC DATE AS A RANDOM SAMPLE

Beside the original stochastic process argument today the sample argument is perhaps more common in the literature of econometrics. I will examine further arguments for treating macroeconomic data as a random sample (see Table 1), partly based on Summerfield paper[9] and one of my former papers[10]. Neither stems from the strict mathematical theory of probability.

Table 1: **Arguments for treating macroeconomic data as a random sample**

1.	Stochastic process argument
2.	Temporal sample argument
3.	Spatial sample argument
4.	Measurement error argument
5.	Method of measurement argument
6.	Inferential statistics superior to descriptive statistics argument
7.	Sources of data is a sample argument
8.	Significance argument
9.	Randomization argument
10.	It is the usual practice argument

The stochastic process argument stems from the invalid distinction between deterministic and stochastic processes. This argument was discussed in previous sections, with economic data not stochastic but uncertain. According to the temporal sample argument the population can be regarded as sample in time, and the conclusions drawn from the measured population may be inferred to apply to past and future states of that population. However, we know nothing about the length of time over which the initial observations remain valid.

The spatial sample argument is similar: findings from one population can be inferred to apply to other areas for which no observation is available. It is clear that legitimization of such extrapolation cannot arise from the theory of statistics.

According to the measurement error argument population data contains random and independent measurement errors. This argument stems from

[9] Summerfield, M. A. (1983): *Populations, Samples and Statistical Inference in Geography.* Professional Geographers. 35. 143–149.
[10] Dusek Tamás (2006): *Területi statisztika, valószínűségszámítás és statisztikai következtetéselmélet.* Területi Statisztika. 46. 223–239.

measurement of physical sciences, where measurement of something is possible under essentially identical conditions. Measurement error in economy is a totally different and more complex concept than the measurement error in physical measures and in economics and sociology random measurement error is just a minor part of the total measurement error. For example, we know that population censuses have at least a measurement error of 1-2 percent in most developed countries. However, the unrecorded and double-recorded individuals are hardly likely to be a random part of the population.

The fifth argument states that population data represents only one out of the several related but different measures of the examined phenomenon. For example, we know exactly that the notion of unemployment can be operationalized in many different ways. However, methods of particular measurement of unemployment (and other phenomena) are not selected randomly but are determined by research problems and many other practical points of view.

As regards the inferential statistics superior to descriptive statistics argument, it is based only on a preconception concerning the value of scientific research methods. In reality there is not a hierarchy of scientific research methods that is independent from the investigated subject.

Sources of data are a sample argument meaning that in many cases the population data itself stems from a sample of the elementary events. For example, the main source of unemployment data is the labour surveys, which is a quasi-random sample of only about 60 thousand people in each quarter year. According to the argument, due to the sampling, the final results can be treated also as a sample. I think the fact that the source of data is a sample has to be taken into account, but in a different way, namely, the researcher has to be more cautious when interpreting data, because data consist not only non-sampling errors, but sampling errors too.

The significance argument means that testing statistical significance can help to determine the importance of a connection. It is true that testing significance can be treated as one of the many diagnostic methods for detecting inadequacies and unusual characteristics in data analyses. However, there are some problems with this diagnostic method. The most important is that its result is dependent from the number of observations.

According to the randomization argument, randomization does not need random sample. With the help of randomization we can give the results in a standardized scale, therefore we can compare the results of populations better with various variations. This argument, similar to the previous one, can be accepted in some cases. However, this is not an inferential but descriptive statistical way of use.

The most common argument is perhaps that it is the usual practice; everybody does it, every textbook does it; therefore surely it is a very well grounded way of analyzing data. This is, of course, a false argument based on authority, the force of habit and institutional pressure. There are cases, where probability

theory can be used very successfully. However, it is not a reason for it to be used uncritically in situations where the conditions of use do not prevail.

2.5. OUTLOOK ON OTHER SOCIAL SCIENCES

Parallel with the expansion of probabilistic approach in various disciplines an intensive critical literature has also emerged on the misuse of the probabilistic method and particularly on the misuse of statistical significance testing. The main counterarguments are the following:

1. Treating populations as a random sample.
2. Concentrating only on statistical significance and not on substantive/ subject matter significance.
3. Reporting only p values and disregarding the magnitude of effect.
4. Misinterpreting the meaning of p value.
5. Disregarding the loss function.
6. Disregarding the mathematical statistical conditions of the tests.
7. Disregarding the role of the sample size.
8. Disregarding the non-sampling errors.
9. Mixing up Fisherian significance testing and Neyman-Person hypothesis testing.
10. Interpreting the failure to reject the null hypothesis as a sign of unsuccessful research.
11. The result can be trivial and well known before the test.
12. Lack of meta-analysis.
13. Publication bias.

Without going into detail, I restrict the discussion to presenting some concluding remarks from the critical literature. The first discipline is geography or spatial research. Gould's article is a scintillating exposition of the main problems of treating populations as a random sample. „Very often whole populations can be investigated, yet the results of inferential tests of significance are still conscientiously reported. But having investigated a whole population, to what are we now inferring our results? It is here that we wriggle and turn, trying to justify the use of such tests on a whole populations by noting that we have taken a „sample at one slice in time", or „the sample represents a larger population existing at other places besides the region with which we have dealt." But these arguments sound very weak in the context of the rigorous assumptions of random sampling"[11]. Meyer summarizes his view that "the mistake of applying inferential statistical procedures to population data is not uncommon in geography, as any perusal of journals will reveal. Geographic data frequently comprise

[11] Gould, D. (1970): *Is statistix inferens the Geographical Name for a Wild Goose?* Economic Geography. 46. 439–448, 442.

the entire population of subject rather than a sample of subjects"[12]. „A continuing failure by geographers to appropriately employ inferential procedures only serves to weaken the development of theory"[13]. Summerfield writes similarly: „I suggest that statistical inference in geographical research should be confined to those contexts which are known to satisfy the requirements of statistical theory, and that the ritualized application of such procedures to population data should be abandoned. This situation may focus more attention on descriptive statistics and the explanation of data rather than its artificial and often uninformative statistical categorization into „significant" and „non-significant"[14].

In the field of sociology and educational research an enormous amount of critical literature exists, first of all about the misuse of statistical significance testing. Just one example: „Statistical significance testing has involved more fantasy than fact. The emphasis on statistical significance over scientific significance in educational research represents a corrupt form of the scientific method. Educational research would be better off it stopped testing its results for statistical significance"[15]. „I do not mean to suggest that educational research is more deserving of criticism than other areas of research. This critique applies equally to all fields that use statistical significance testing in conducting research, for example, psychology, sociology, physiology, and biochemistry"[16].

In psychology, epidemiology and medical research the misuse of statistical significance test has also a vast array of literature: „Despite the stranglehold that hypothesis testing has on experimental psychology, I find it difficult to imagine a less insightful means of transmitting from data to conclusions"[17]. „Hypothesis testing is overrated, overused, and practically useless as a means of illuminating what the data in some experiment are trying to tell us"[18]. „Hypothesis testing provides the illusion of scientific objectivity by sanctifying an arbitrary probability (p=.05) of incorrectly rejecting some null hypothesis that almost inevitably is known a priori to be false"[19]. „And we, as teachers, consultants, authors, and otherwise penetrators of quantitative methods, are responsible for the ritualization of null hypothesis significance testing to the point of meaningless and beyond. I argue herein that null hypothesis significance testing has not only

[12] Meyer, D. R. (1972): *Geographical Population Data: Statistical Description Not Statistical Inference.* Professional Geographer. 24. 26–28, 26.
[13] Ibidem 28.
[14] Summerfield (1983): 148.
[15] Carver, R. P. (1978): *The Case Against Statistical Significance Testing.* Harvard Educational Review. 48. 378–399, 378.
[16] Ibidem 379.
[17] Loftus, G. R. (1991): *On the tyranny of hypothesis testing in the social sciences.* Contemporary Psychology. 36. 102–105, 104.
[18] Loftus, G. R. (1993): *A Picture Is Worth a Thousand p Values: On the Irrelevance of Hypothesis Testing in the Microcomputer Age.* Behavior Research Methods, Instruments, & Computers. 25. 250–256, 250.
[19] Ibidem 250.

failed to support the advance of psychology as a science but also has seriously impeded it"[20]. „I believe that the almost universal reliance on merely refuting the null hypothesis as the standard method for corroborating substantive theories in the soft areas is a terrible mistake, basically unsound, poor scientific strategy, and one of the worst things that ever happened in the history of psychology"[21]. „Future historians of psychology will be puzzled by an odd ritual, camouflaged as the sine qua non of scientific method that first appeared in the 1950s and was practiced in the field for the rest of the twentieth century. In psychology and education textbooks of this period they will find this ritual variously referred to as „statistical significance", null hypothesis testing, significance testing"[22]. „I briefly summarize prior research showing that tests of statistical significance are improperly used even in leading scholarly journals. Attempts to educate researchers to avoid pitfalls have had little success. Even when done properly, however, statistical significance tests are of no value. I was unable to find empirical evidence to support the use of significance tests under any conditions"[23].

2.6. THE FORMS OF MISUSE OF PROBABILITY THEORY IN ECONOMICS

There are two main forms of misuse of probability theory in economics. The first form is a general troublemaking during the data analysis; the second form has real costs because of the application of theories based on probability theory in practical economic decisions. Firstly, in a general way, the manipulation with probability distributions and significance tests[24] is an unjustifiable and disturbing part of the results of applied econometrics, while the descriptive part of an econometric analysis can contribute to the grasp of concrete ex post relationships between economic indicators and therefore can be used to illustrate economic laws. It became a common but absurd practice to name the groups of aggregate and historically interesting geographical units (countries, counties, regions and so on) as „sample".

[20] Cohen, J. (1994): *The Earth Is Round (p< .05).* American Psychologist. 49. 997–1003, 997.
[21] Meehl, P.E. (1978): *Theoretical Risks and Tabular Asterisks: Sir Karl, Sir Ronald, and the Slow Progress of Soft Psychology.* Journal of Consuling and Clinical Psychology. 46. 806–834, 817.
[22] Gigerenzer,G. (1998): *We Need Statistical Thinking, Not Statistical Rituals.* Behavioral and Brain Sciences. 21. 199–200, 199.
[23] Armstrong, J. S. (2007): S*ignificance Tests Harm Progress in Forecasting.* International Journal of Forecasting. 23. 321–327, 321.
[24] About the misuse of test of statistical significance in economics see Ziliak, S. T. – McCloskey, D. N. (2008): *The Cult of Statistical Significance.* The University of Michigan Press, Ann Arbor. McCloskey and Ziliak examined the papers published in American Economic Review from the point of view of proper use of test of statistical significance. Their methodology was replicated by Parcell et al. (2000) and Mbatha – Gustafsson (2013) to papers published in agricultural economics. (Parcel, J. L. – Kastens, T. L. – Dhuyvetter, K. C. – Schroeder, T. C. [2000]: *Agricultural economists' effectiveness in reporting and conveying research procedures and results.* Agricultural and Resource Economics Review. 29. 173–182.; Mbatha, C. N. – Gustafsson, M. A. [2013] *The standard error of regressions: a note on new evidence of significance misuse.* Agrekon. 52. 28–39.)

A new part of applied statistics and computer programs came into existence; a huge amount of various methods were developed for treating the lack of standard assumptions of inferences from regression analysis, like homoscedasticity, normal distribution of error term and independence of the observations, which mainly do not prevail in the case of economic data. The emphasis has shifted from metrics of economics to testing of economics, from econometrics to econotesting. The important non-sampling measurement problems fell into the background. This mentality has lead to a concentration on quantitatively measurable surface phenomena and therefore important quantitatively immeasurable phenomena and qualitative information have been disregarded in the explanation of various economic problems. Moreover, it represents an attitude towards data which is positivistic, empiricist, but at the same time anti-positivistic, anti-empiricist and anti-theoretical: during the explanation of real world data there is no possible reference to genuine theory, only ad hoc explanations.

The real cost of misuse of probability theory can be found first of all in application of the modern theory of finance, where the price changes are treated as some form of stochastic process. In a less elementary way the theory of price changes is based on these assumptions: price changes are independent, stationary and normally distributed. These assumptions are clearly contradicted by the real world.[25] The more complicated distributions and assumptions have the same weakness: treating an epistemic uncertainty as a probabilistic process.

CONCLUSIONS

Far from being the most developed type of science, probabilistic approach in economics is only a manifestation of a metaphysical mode of thinking. It is an epistemologically false approach, because the deterministic-stochastic dichotomy typically does not prevail in economics, and, moreover, the analyzed data is mostly not a random sample derived from a well-defined population. Probability theory can be used very successfully in many research areas; however, this success cannot legitimate inadequate use.

[25] See the history of this approach in Mandelbrot, B. – Hudson, R. L. (2004): *The (Mis)Behavior of Markets.* Basic Books, New York.

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HUNGARIAN SUMMARY

A tanulmány a gazdasági jelenségek valószínűségi jellegű megközelítésének kérdéseivel foglalkozik, feltárva ennek a gondolkodásmódnak az eredetét, indokait és következményét. A valószínűségszámítás hatékony és hasznos eszköze az induktív kutatásnak azokon a területeken, ahol alkalmazásának feltételei rendelkezésre állnak. A tanulmány első fele ezekkel az általános és objektív feltételekkel foglalkozik. Az alkalmazás egyik lehetőségét a sztochasztikus folyamatok jelentik, a másikat pedig a véletlen mintavétellel nyert adatok. Az első esetben a véletlenség magának a vizsgált folyamatnak a sajátossága, a második esetben a véletlenség a mintavételi folyamat révén valósul meg. A tanulmány második része azokat a kérdéseket tárgyalja, amikor ezek az objektív feltételek nem adottak, mert bár a jelenség nem determinisztikus, de mégsem véletlen, hanem események nagyobb osztályába nem besorolható egyedi, bizonytalan történések közé tartozik. Ekkor a valószínűségszámítás alkalmazása (például makroökonómiai adatok elemzése során), formálisan bármennyire is tudományosnak és kifinomultnak tűnhet, valójában egy módszer helytelen alkalmazásaként csak illuzórikus és megtévesztő eredményekhez vezethet.

Tibor Rieger: Gergely Czuczor (linguist, poet) and Ányos Jedlik (physicist)

SPACE

KATALIN BÁNDY[1]

The Hungarian migration potential with a special emphasis on the migration motivation of the current highly skilled young generation

Since Hungary's political and economic transition, its joining of the EU and the subsequent employment agreements among European countries the westwards, migration has speeded up. The high unemployment rate in the reform countries and the marketable professions and knowledge of languages has enabled qualified individuals to emigrate in the search for better jobs, salaries or prestige to the western European countries. On researching the Hungarian migrant potential it is verifiable; Hungarian employers do not put pressure on the labour market of the EU. However, in fields of some special professions there are crisis phenomena. This study examines the causes; in its particular focus are the migrant motivations of the highly skilled post crisis young generation.

WHICH IS MORE DANGEROUS: THE BRAIN DRAIN OR THE BRAIN WASTE?

Migration to work has the advantage of allowing the individual to gain international experience. Periodic migration might help to increase R+D potential and will have a positive effect on the individual and local (domestic) potential of HR. In my opinion, and this is my statement, scheduled periodically mobility to work is a cumulative fact. This cumulative fact has a reason for the future and also an aim of migration in order to get a long-term job. It is not a problem but considers the fact that those Hungarians finding work opportunities abroad are not in the position as befits their graduation. Their motivation is more material-, i.e. money and salary, driven than professional. Their motivation is to achieve and make the highest possible income. The years of study and knowledge gained in Hungary are virtually lost, as employees that migrate do not look for a job that reflects their ability and knowledge, or if they do so, it is more often than not without success. Despite this lack of success they do not return home but continue working in positions for which they are over qualified. The brain waste tendency can

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be better demonstrated than the brain drain in the case of Hungarian employees obtaining a job abroad.

Every skilled immigrant is a gift for the host country. Brain drain has been a known term since the 1950s; it was first formulated by the British Royal Academy when its scientists were attracted by the American and Canadian labour market. We talk about the phenomenon when the useful knowledge (brain) leaves the country in a channelled way (drain) on a large scale and to a certain country. The host country benefits in any case, since it receives a by now 'ready' specialist for the training of whom it doesn't have to effect expenditures, thus the country is the beneficiary of brain gain. The process is absolutely a threefold loss if the given specialist on leaving his or her own labour market doesn't get a position corresponding to his or her qualification in the target country and is therefore forced to settle for a lower position: brain waste. According to my research conducted recently, more and more Hungarian higher education qualifications are increasingly difficult to enforce specifically in the Hungarian labour market, but migrants with these qualifications can be integrated with a lack of success to positions corresponding to their qualifications in host countries. Having defined the problem a further serious question is formulated: whether certain segments of the Hungarian state-funded college and university education produce an overqualified workforce to the Western European 'servant industry' (e.g. a Hungarian economist as a household employee; a Hungarian teacher as a waiter).

Nowadays it is rather brain drain and the flow of talents and not brain waste, which ignites, heated debates. The international mobility of the skilled workforce generates global advantages by helping the flow of knowledge satisfying the demand for skills. The skilled foreign workforce contributes to the economic growth of the host country and to the achievement of aims, especially in the fields of research and development, innovation and enterprises. Although the countries form programs in the attempt to lure back talent, the sad reality is that they have little success. The number of those valuable specialists who agree to return and accept the domestic offer is insignificant. In most cases not only financial recognition motivates outstanding talent but also those material work benefits of a higher standard that they receive in host countries than in their home country.

Yet governments can do much to prevent brain drain. Policies for the scientific and technological fields are of key importance. The centres established for the frames of scientific researches, the innovation institutions, the launch of world-class projects and the operation of high-tech enterprises can be so attractive that they not only lure the migrated home talent back but can also attract highly skilled specialists from other countries as well. Of course this is no easy task but rather a time- and investment-consuming attempt. Education also has a big role but in my opinion the ensuring of the highest level of education opportunities is not enough if there is no sufficient number of opportunities mainly of good quality in the specialised fields of research and scientific employment.

The risk of brain drain is a real phenomenon. However, innovation, research and entrepreneurial spirit and the appropriate capital at home can also give stimulus to comeback. Relations established with international innovation networks, the combination of appropriate policies and the long-term international cooperation among more countries can create such processes by which the brain drain is convertible: the conversion is more advantageous for everybody; the new 'institution' is – the brain bank. Thus the environment supporting migration raises the level of global innovation and withal is an opportunity for the poorer countries to reach the technologies and products of innovation productivity in a cheaper way. A research group led by Endre Sik did the measuring of the Hungarian migration potential after the political transformation between 1993 and 2001 in a series of research. The then surveys showed two important findings: "On the one hand the migration potential of the population over 15 was approximately constant and low in the 1990s; on the other hand by 2001 the migration potential had more than doubled."[2]

CAN WE TALK ABOUT HUNGARY'S NEW EXODUS?

On analysing the research and surveys examining the Hungarian migration processes in the past ten years in relation to the questionnaire findings of sociological models it can be said that despite the expectations of the EU accession the Hungarian migration potential remained low compared to neighbouring countries as well; it has showed a sharp upward trend since the years after the crisis of 2008; a major recovery is observed in the field of health care. When analysing the social base of migration potential it can be remarked that in the case of Hungarians (as well) education doesn't significantly affect the propensity to work abroad. The migration ability of Hungarians doesn't explicitly depend on so called repulsive factors like e.g. dissatisfaction with living standards but rather the grasping of opportunities, the better living standards, the professional fulfilment and the desire for a career all force the employee to work abroad. Among the specific elements of migration language knowledge is the most powerful factor. The migration potential of those having language knowledge is 2 or 3 times higher than that of those not speaking foreign languages. With regard to age characteristics it can be said that people under 30 are the most active; their migration propensity is 9-10%, which is twice the average. As regards the labour market situation the most pronounced migration propensity can be observed among the unemployed; their propensity is three times the average. In most cases they can be classified as endangered with regard to that their hopelessness often prompts them to make quick decisions, laying themselves open to unscru-

[2] Sik Endre – Simonovits Borbála (2002): *Migrációs potenciál Magyarországon,* 1993–2001. In: Társadalmi riport. Kolosi Tamás, Tóth István György, Vukovich György (szerk.). Budapest: TÁRKI. 207.

pulous job promoters and involving themselves in illegal processes exploiting people. Active workers have a migration propensity slightly higher than the average, whereas inactive ones have one lower than the average. The propensity to work abroad doesn't increase linearly with the level of education, but it can be remarked that the migration potential of those having completed only eight primary school years of education or even less is 2,2% and 0,5%.[3]

Examining the composition of Hungary's population of working age it can be said that the migration potential is lower than the propensity measured in other Central and Eastern European (CEE) countries. Among Central and Eastern European Union citizens there are over a million Poles in other EU member states, especially in the United Kingdom, together with approximately one million Romanian citizens recorded in the immigration statistics of other EU countries.[4] Although there are such groups, like the health care workers who have a very high migration propensity in Hungarian respects. 1111[5] doctors, among who 550[6] were experienced specialists, left the country in 2010 alone, which means a serious human resources crisis. If we add in the total number, 1777[7] health care workers went to work abroad in 2010. Unfortunately the tendency doesn't look set to improve or at least stagnate, since the data of 2011/2012 shows further migration.

The European Commission has already proved in numerous studies that in the past 5-6 years 200 000 workers from the new member states left yearly for a country of the "EU15". The weaker-than-expected initial Hungarian interest surprised the specialists according to whom the restrictions of old member states ab ovo reduced the Hungarians' low propensity to work. The lack of language knowledge is a deterrent factor for many as it is an obstacle right in the first steps when dealing with the official issues regarding foreign work. The weak migration network also impedes the Hungarians' migration propensity: Hungarians who left the country earlier don't maintain a broad system of relations either with each other or with newcomers. With the comparison of the multi-year surveys of TÁRKI it can be said that since the Hungarian joining of the EU (2004) more and more people decide to and prefer to work abroad; however fewer people would be willing to leave the country forever. According to the most common life cycle model, the aim of the person taking on a job abroad is to strengthen the domestic existence by the income obtained abroad and planned to be set aside. Among higher education students the propensity to work abroad is extremely high; every second student would take on a job abroad, if it were for a relatively short period and their return home was guaranteed.

[3] Source: own collection based on the databases of www.tarki.hu and www.ksh.hu
[4] Source: Statisztikai Tükör 2010/63. 3.
[5] Source: www.rezidens.hu, downloaded: 26. 03. 2012.
[6] Source: www.eekh.hu, downloaded: 14. 12. 2011.
[7] Source: www.rezidens.hu, downloaded: 26. 03. 2012.

The most popular target countries are Germany, Austria and the United Kingdom, but there is no reliable data regarding the size of the workforce leaving Hungary. Hungarian government agencies don't deal in an organised way with preparation for foreign employment and foreign legal protection and the number of surveys regarding the effects on the domestic economy is still insufficient. Although there isn't an extremely high migration, it would be rewarding to examine the migration's effect on the Hungarian labour market with regard to more and more segments. It is important since, although the overall migration doesn't indicate a significant labour market crisis, by now the disorder caused in some sectors, like in the above mentioned health care, has been experienced. The phenomenon of mass emigration cannot be observed in areas with labour surplus; the main reason for which is perhaps the above-mentioned low Hungarian propensity towards mobility. The equilibrium of the job market isn't endangered by the number of migrants, but rather their composition. The phenomenon of migration can cause disorder in various professional fields as well as training courses with low numbers of participants. The foreign employment of skilled workers is encouraged by the substantially better income opportunities and the lack of language knowledge is not always a deterrent factor either. It is characteristic of Hungarian workers that they prefer to take a job in Germany and in Austria despite the strict restrictions and the bureaucratic difficulties. In the past 3-4 years the number of those taking a job in the United Kingdom rose; however this number is hard to estimate since the condition of employment is not subject to registration. They only have to indicate their employment by paying a one-time processing fee that is registered by the competent authority of the British Home Office. This notification requirement expires after 12 months of legal labour relations. Taking into consideration the unreliability of the Hungarian data and the estimation of the Hungarian Central Statistical Office, the total number of Hungarian employees in 2013, can be determined as far over 335 000 people.[8]

The inflow of an east European workforce had positive rather than negative connotations in the host countries until the occasional protests manifested with the occurrence of the crisis, which were directed against migrant workers. New EU workers mostly play a niche role in various occupational fields and overwork is not in the least alien to them, being it performance- or working hours-based. The highest demand and host willingness for the Hungarian workforce is, for example, currently in the United Kingdom. Labour market segments contesting specialist shortages are fully liberalised; in most cases recruitment agencies complicating the organisation of employment help the employee. Another opportunity for job seekers is the cross-border EURES network that helps the employment of those employees in the EU whose profession doesn't belong to

[8] Source: www.ksh.hu (Hungarian Central Statistical Office), downloaded: 13. 07. 2013.

professions in short supply in Hungary. They are reluctant to contribute, for example, to the migration of doctors and other health care workers, due to the domestic shortage, but the organisation provides counselling and information in these cases as well. It is typical that a graduate with language and Internet skills can obtain foreign jobs without the help of any kind of state or employment service. In most cases it is also typical that employees leave jobs considered high standard in Hungary, such as positions in the fields of education or the banking sector, and they do all this for a less prestigious but financially more attractive job abroad. This tendency seems to far exhaust the category of brain waste.

It is significant that Hungarian job seekers with good language knowledge but with a lack of experience can reach their expectations by taking on jobs in less qualified positions. Taking into consideration the requirement that may arise in Hungarian employment, affecting the applicants, and cannot be fulfilled, that is to have professional experience, the opportunity to work abroad can be attractive as it does away for the need for this. The openness of the EU-15 is proved by the fact that the doors of companies very quickly open in front of such a qualified workforce, such as employees, with a degree in engineering, information technology and health care. It is typical on the one hand that Hungarians are looked for positions requiring no or fewer qualifications and experience, and on the other hand, opportunities are offered to decidedly skilled people with a degree and practice. The reason for this is the prominently high standard of some fields of Hungarian vocational training. In most cases companies are more than satisfied with Hungarian workers, thus during their further recruitment, they define nationality expectations, besides professional competencies, to recruitment agencies. The matter is of course not one-sided, as international big companies, banks and reputable companies and institutions are attractive for talented foreigners. In more cases a short-term period of employment can also be very important to maintain and develop professional competence and to maintain a competitive labour market.

To illustrate migration potential it is worth having a look at the prognosis of Klára Fóti (2006), which elaborates the emigration data of eight Central and Eastern European countries. Based on the data, in the first five years, approximately 160 000 Hungarians looked for a job in the countries of the EU and according to the prognosis their number will have reached 360 000 by 2018. If we include the aging population and the declining birth rates, then together with emigration the population of Hungary will have decreased to 9.1 million by the end of the analysed period. (The population of Hungary in January 2013: 9,906/thousand people[9])

[9] www.ksh.hu, downloaded: 17. 11. 2013.

Figure 1: **Emigration to EU15. Author's collection and compilation based on the prognosis of Klára Fóti (2009)**

Years	Poland	Hungary	Slovakia	Czech Republic
∑ **2006-2010**	827 852	**160 309**	103 893	148 519
∑ **2011- 2018**	1 153 772	**199 486**	139 490	177 090
∑ **2006- 2018**	1 981 624	**359 794**	243 383	325 609

TÁRKI's 2012 survey called Omnibusz[10] confronts us with more troublesome data. „The country was shocked in the fields of social policy, economy and culture. If the domestic labour market does not improve, a dramatic situation may take place... the so called migration potential reached its twenty year peak: during the last two years the number of those planning to emigrate has risen to its sesquialter, which is undeniably the sign of bad social condition."[11]

Surveys show that every fifth Hungarian and every second among the youth plans to work abroad. Since 2005 the number of registered Hungarians living abroad has doubled (in 2012 200 000 people). According to the data[12] of the German Statistical Office (DESTATIS) 10.7 million migrants live in Germany from 194 countries based on their origins. Hungary takes the forth place in this list thus Germany is one of the most attractive migration target countries. According to the data of DESTATIS 82 760 Hungarians lived in the country in 2011, with an average age of 38.8 years, and an average of 9.7 years have elapsed since they arrived there. These data's sign referring to the intensification of migration can be clarified by the fact that the number of emigrants has tendentially raised: in 2009 3 000 people, in 2010 8 000 people, in 2011 17 000 people, while in 2012 more than 19 000 Hungarians announced its domiciliation wish to the authorities.

The attractiveness of Austria is still strong among Hungarian labourers. In the examined period, according to the data[13] of the Austrian Statistical Office (STATISTIK AUSTRIA) more than 49 000 Hungarians work in the country. This means that from 2011 to 2012 the Austrian migration rose by 30%. This number does not contain those commuting from the north-western-Transdanubian region and whose number can be 8000 each day from Sopron alone, according to estimations.

[10] Source: TÁRKI Omnibusz Felmérés 2012. március http://www.tarki.hu/hu/news/2012/kitekint/20120523_migracio.html, downloaded: 11. 11. 2012.
[11] Hárs Ágnes: TÁRKI Omnibusz Felmérés 2012. március http://www.tarki.hu/hu/news/2012/kitekint/20120523_migracio.html, downloaded: 11. 11. 2012.
[12] Source: DESTATIS https://www.destatis.de/DE/Publikationen/Thematisch/Bevoelkerung/MigrationIntegration/BevoelkerungMigrationsstatus.html, downloaded: 09. 01. 2013.
[13] Source: STATISTIK AUSTRIA http://www.statistik.at/web_de/statistiken/arbeitsmarkt/index.html, downloaded: 09. 01. 2013.

The third most popular area for Hungarians is England, but in connection with this we only have estimations. The available data from 2011 report 39 000[14] Hungarians. However, according to estimations, the number of Hungarians living in England could be as many as 120 000 together with their family members since the abolishment of the compulsory registration in 2011.

Taking into consideration that a significant proportion of migrants derive from younger generations, whose domestic bonds are looser as they were easier to 'tear', it can be said that the chances of a returning migration declines. They are the ones who are 'only' bound to Hungary by their parents and siblings; neither a child nor an existence forces them to stay. In some cases the loss of their friends does not have a negative effect either since friends often decide to leave together, sharing both the initial financial and spiritual strains of integration. Having spent their most active years in the target country and having created their own existence and private lives, these youngsters are very unlikely to move back to Hungary. Both in Hungary and in the receptive countries the measurement of migration has statistical obstacles, which results in that neither the data nor the mirror statistics provide reliable data. We can only conclude that the number of those who live and work abroad for longer or shorter periods is far higher than what is shown by the domestic statistical data and by the often incomplete mirror statistics. Shifts cannot be judged either, as their time periods cannot be tied. How long are these migrations or possibly are they determinate? In which cases is returning migration actually a returning and in which cases is it a stopover destination before a newer migration? It is not absurd that the migrant appears in other target countries as well. Guidelines are uncertain, thus *migration is among the most difficult social phenomena to 'predict'.*

Between 2007 and 2010 Gallup[15] conducted a representative survey in 148 countries about the potential net migration index (PNMI), and the international survey also shows that Hungary's population would fall by 1.5 million people if the respondents put their plans into action. According to the survey Hungary is among the countries of concern due to its -15 value in a scale between -100 and +100. This value means that the number of those who would leave Hungary is 15% higher than that of those who would choose Hungary as a target country. The main migration target countries of the Hungarians like the United Kingdom, Austria and Germany have the indexes of +62, +33 and +14 in their order of mentioning. Furthermore, the surveys strengthen that people under 30, especially with higher education qualifications, are the most open to migration. If we compare this to the fact that in 2011 Hungary's HDI (Human Development

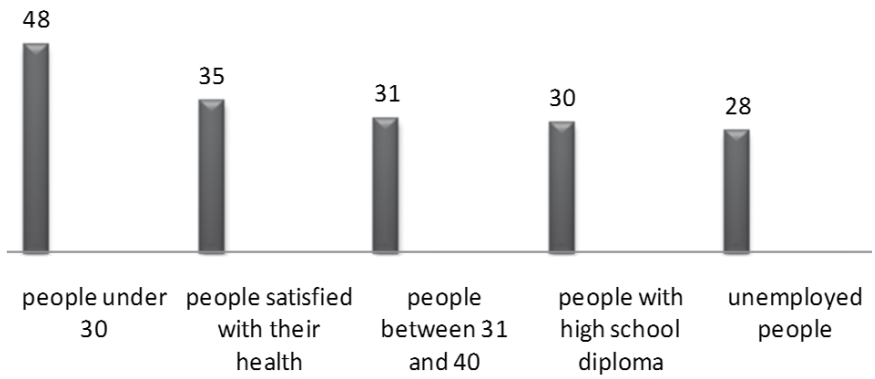
[14] Source: HVG hivatkozása Guardian 2011. májusban közölt adatai alapján. HVG 2012. december. 51-52.szám. 9.
[15] http://www.gallup.com/poll/142364/Migration-Triple-Populations-Wealthy-Nations.aspx#1 downloaded: 11. 12. 2012.

Index) indicator was 0,816 - where HDI1 is very high[16], but according to other sources[17] it is HDI2, which means a high category - we can say that researchers are forced to ask diverse questions. (HDI is an index that examines the three basic human dimensions of long-term development: expectancy for a long and healthy life, the availability of knowledge and education, and a fair standard of living.) If according to HDI indicators Hungary is among the best countries, what is behind the prominent migrant data? 'Migration is not a kind of aptness or destiny'[18], it is rather the result of determining economic factors (also in case of Hungarians). Before the change in political regime, human resources were less honoured; the upgrading of human resources took place later due to market economy. Knowledge can be obtained without limitations and individual ambitions can be widely consummated by the free flow of individuals.

According to TÁRKI's representative survey[19] in 2012 16% of Hungarians planned a permanent and 7% of them a determinate stay and employment abroad. (The cumulative ration of migration plans is 19%). This is the highest ratio ever, according to which every fifth Hungarian plans to move permanently abroad. Since 2010 the number of those planning to move permanently abroad has been one and a half times more and the range of social groups showing a higher than average migration willingness can be determined as well. From these social groups, the group of people under 30 is the most willing to migrate since every second person from this group plans to migrate.

[16] Human Development report 2011. Hungary: HDI values and rank changes in the 2011 Human Development report. 2. „Hungary's HDI value for 2011 is 0.816—in the very high human development category—positioning the country at 38 out of 187 countries and territories."
[17] Esipova-Ray-Srinivasan (2011): *The World's Potential Migrants.* Gallup. 23. „HDI2: High Human Development (HDI Scores Between .80 and .89)" http://www.imi.ox.ac.uk/pdfs/the-worlds-potential-migrants, downloaded: 11. 12. 2012.
[18] The phrasing of Ágnes Hárs, TÁRKI's leading researcher.
[19] TÁRKI (2012): Csúcson a migrációt tervezők aránya. Results of the survey: 2012. március. http://www.tarki.hu/hu/news/2012/kitekint/20120523_migracio.html, downloaded: 09. 11. 2012.

Figure 2: **Groups with a higher than average migrant potential (%)**



Source: author's compilation based on the data of Tárki, Omnibusz survey March 2012.

According to the survey of the Graduate Career Tracking System[20] in 2011 those young graduates who received their degree between 2008 and 2010 earned an average of net 148.000 HUF per month. Among the fields with the highest salaries we can find the field of economic science. Economic qualifications provide a general knowledge that enables the graduate to work in more specialities, widening in this way the opportunities of the job applicants. In order to achieve a better standard of living, changing career is also not a problem; several professionals accept jobs with a lower status for a better income.

If we take into consideration that according to estimations in 2011 100.000[21] Hungarians left the country and that the most open social group to migration is the young and qualified age group, and if we compare these to the salaries available in Western-Europe, we can accept the hypothesis that our young graduates leave even if they have to change career.

Elaborating the above data I still state that it would be early to speak about a general social crisis; there is no new Hungarian exodus. Nevertheless, these growing tendencies have to be treated with care and challenges have to be treated with strategies in a prepared way.

[20] http://www.felvi.hu/diploman_tul/tervezz_karriert/hirek/jo_helyzetben_a_muszaki_gazdasagi_informatikus_diplomasok, downloaded: 11. 12. 2012.

[21] Of course the estimations are very difficult to confirm by official and precise data since in Hungary there is no announcement obligation for those who emigrate and work abroad. Foreign employment data are incomplete. The bases for the esmitations are the often incomplete mirror statistics.

The troublesome signs of the transmigration of qualified workers and the the brain waste.

„The balance of emigration and immigration was positive in the most part of the decade in Hungary: at the beginning of the period – mostly from the neighbouring countries – more people immigrated than emigrated. As a result of the opening of the labour market of the European Union and the economic crisis of 2008 emigration became more intensive, but at the same time the immigration of people with mostly Hungarian nationality began to moderate."

„According to the data of census on 1st October 2011 143.000 Hungarian citizens had lived for more than one year abroad. People permanently living abroad – according to the population definition of census – are counted in the population of that country where they settled down, that's why they should not have been counted in the Hungarian census. In spite of this – for the expansion of international migration data – during the census households were asked how many people live permanently abroad from those living at the given address. The result, the 143.000 people can be considered as the minimum number of Hungarians living abroad in 1st October 2011, because the census could not always get information about those cases when the whole household had lived abroad and their Hungarian flat was empty or lived in by tenants."[22]

I found important data for this topic in a Gallup research[23] published in 2012; in this research among EU-15 the characteristics of under-employment were examined. These data are of special importance for me, because they verify my hypothesis according to which qualified Hungarian migrants are strongly affected by the problem of brain waste. The representativeness of the Gallup research with 25.000 respondents can confirm my assumption respecting the under-employment of young qualified migrants, or in other words respecting the status of brain waste.

Figure 3: **Differences between unemployment and under-employment among domestic and migrant adult population (15 years of age or older) in EU15 2009-2010 (%)**

	locals %	**migrants arrived more than 5 years ago %**	**newly-arrived migrants %**
Unemployment	8	**13**	20
Under-employment	19	**28**	42

Source: author's collection and compilation based on the data of Gallup research

[22] 2011. évi népszámlálás. 3. Országos adatok. Központi Statisztikai Hivatal. Budapest 2013. 9–10.
[23] Source: http://www.gallup.com/poll/154721/Europe-Migrants-Rate-Lives-Worse-Native-Born.aspx?ref=more, downloaded: 08. 02. 2013.

The problem of under-employment also seems to be verified in the light of other data. The OECD Factbook 2007[24] made a report on the school qualification of those born in the given country and that of the migrants. From the point of view of my research, I found important data, which are summarised in the following table.

Figure 4: **The distribution of domestic and migrant population based on school qualification (over 15 years of age) in the most popular immigration target countries of Hungarians (%, 2007)**

Country	Domestic population			Migrant population		
	Primary school or lower	Secondary school	**Higher education**	Primary school or lower	Secondary school	**Higher education**
Austria	33	56	**11**	49	39	**11**
United Kingdom	51	29	**20**	45	25	**35**
Germany	24	57	**19**	44	41	**15**

Source: author's collection and compilation based on OECD Factbook 2007. Economic- Environmental and Social Statistics

It stands out that the size of the domestic graduate labour force is either almost the same or far smaller than the number of emigrants in the three most popular target countries admitting Hungarian graduates. Taking into consideration that in legal employment a Hungarian worker are not overmatched by a domestic one as regards either waging or working hours, it can be assumed that the domestic labour force occupies qualification-specific graduate jobs. Prominent data can be seen in the United Kingdom, where 20% of domestic workers are graduates; conversely the number of graduate immigrants exceeds this by a long way. Comparing all of these with the general migrant under-employment data, my hypothesis, according to which a significant part of the Hungarian graduates are under-employed abroad, is strengthened.

[24] Source: OECD Factbook 2007. Economic- Environmental and Social Statistics. http://www.oecd-ilibrary.org/economics/oecd-factbook, downloaded: 18. 02. 2013.

SUMMARY

As the under-employment of migrant workers can be confirmed by international research, I found my statements about brain drain tendencies valid. In my own research I state the strong exposedness of my respondents in under-employed categories, since they cannot utilize their higher education degrees in the positions occupied abroad. That is why development and consummation of the basic qualifications does not take place. The respondents do not meet innovation at a professional level and their professional improvement stagnates; they do not take their knowledge away and use it in other national economies but they lose it intermittently or totally. The unutilized knowledge becomes stale and decays, and a possible return to the specialised fields left behind is made very difficult. I view the brain waste tendency to be more dangerous than the often-mentioned brain drain because the latter does not go to waste; it is just utilized in another country. In this case at least the chance remains that the individual might return with a real professional improvement. If returning is qualification-specific, it also means labour market integration since the obtained knowledge is utilized at a level of national economy. Brain waste is unequivocally dangerous; no one uses the obtained knowledge as it is wasted.

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HUNGARIAN SUMMARY

A magyarországi rendszerváltással, majd az uniós csatlakozással, továbbá az országok közötti különböző foglalkoztatási szerződések létrejöttével a kelet-nyugati irányú vándorlás megélénkült. A reform országok magas munkanélküliségi rátája, valamint a konvertálható szakmák és nyelvtudás mentén a jobb fizetés és magasabb presztízs ígéretével a jól képzett szakemberek elvándorlása figyelhető meg. A magyar migrációs hajlandóság vizsgálatakor megállapítható, hogy Magyarország nem gyakorol kifejezett nyomást az Unió munkaerőpiacára, azonban bizonyos szakmák tekintetében hazai strukturális válságjelenségek tapasztalhatóak. Jelen tanulmány ennek a jelenségnek ok-okozati összefüggéseit kívánja vizsgálni, fókuszba állítva a magasan képzett fiatal generációk migrációs hajlandóságát a válság utáni években.

Ferenc Lebó: Blessed Bishop Vilmos Apor

MÁRTA KONCZOSNÉ SZOMBATHELYI[1]

Reciprocal effects between regions and organizations

A study of European regional cultures and corporate embeddedness

This paper presents some main results of a comparative analysis of reciprocal effects between regions and companies. The research was based on expert interviews carried out in 2007-2009 in seven European regions and by their 30-30 companies.
In the frame of theoretical background, the article gives firstly a brief outline of the regional and corporate culture, secondly the open system theory and furthermore the institutional perspective. The following fields of investigation were defined to enable the analysis of engagement: Innovation, Human resources, Sustainability and Quality of life.
Three hypotheses were proven about the interaction between regional and corporate cultures, such as the reasons for or lack of embeddedness, and about the role of enrooted managers.

INTRODUCTION

The external factors on companies (knowledge networks, innovation) and social responsibility (good citizenship) have extensive literature. However, the analysis of commitment and embeddedness of regional companies is missing. How the vital cultural diversity in European regions can enhance corporate competitiveness was the core question of the international three-year research project.

„Within the confines of the project, named „Corporate Culture and Regional Embeddedness[2]" (CURE), seven regions from six European countries represented by universities and research institutes of the regions co-operated in 2007-2009. The research for the CURE project was conducted in Southeast Netherlands, the Basel area (Switzerland), East Westphalia Lippe (Germany), Brandenburg Southwest (Germany), the Győr region (Hungary), Styria (Austria)

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and Wales. As a member of the cross-border research team, I was involved in this multidisciplinary study spanning seven European regions.

Within the confines of research we intended to get a picture about the interaction between corporate culture and regional culture. The further aim of our research was to identify the indicators of corporate embeddedness, the managerial roles beyond the regional embeddedness of their corporation, as well as the reasons for engagement or lack of engagement.

The main purpose of the research was to explore the reciprocal effects between regions and organisations, as well as the change processes resulting from this interaction, such as corporate embeddedness. We intended to investigate on the one hand how regional development is influenced by company cultures and, on the other hand, how companies are influenced by regional cultures.
It became clear that the role of culture is important for the regional quality of life, regional economic location and therewith for regional competitiveness.

THEORETICAL BACKGROUND

Within the confines of theoretical background some core theories are discussed, such as cultural aspects, system theory and the institutional perspective of companies.

Cultural aspects of reciprocal effects between a region and an organization.

There are several concepts regarding culture. One of the most well known of them is as follows: „Culture is the collective programming of the mind distinguishing the members of one group or category of people from others3[3]". This concept is applicable to both the national and the regional culture, as well as to the organisational culture.

Strong regional cultures can help to create conditions under which innovation and prosperity can flourish. Globalization, however, can weaken the links between companies and their surrounding regions. The „footloose" or „homeless" nature of multinational firms means that they have no loyalty to any particular region or country. On the other hand, regional development can also be positively influenced by global corporate cultures, especially in an era of „open innovation"[4]

[3] http://geert-hofstede.com/national-culture.html.
[4] Prud'homme van Reine, P. – Dankbaar, B. (2009): *Comparative empirical report.* Cure project deliverable 31.; Prud'homme van Reine, P. – Dankbaar, B. (2009): *WP4 Deliverable D28, Regional Report, Southeast Netherlands.* Radboud Universiteit: School of Management. Nijmegen.

For centuries management theory can be seen as a „culture free" theoretical approach. In the second half of the last century culture was slowly addressed as an important aspect and the 1980s can be labelled as the "cultural decade".[5] In the past years considerable interest has been shown by academic scholars in the role of culture for the economic vitality and innovation dynamics of regional economies.[6] Cultural, institutional and social factors as crucial assets for regional economic development have been emphasised particularly in the literature on industrial districts[7] and on innovative milieus.[8]

The impact of regional culture on the creation of regional systems of innovation is a well-established research area.[9] The regional cultures are determined from a permanent interchange between the companies and the region. Pekruhl, Minnig and Dörhöfer (2007) used in their paper the wording „staff as vehicle", which means that the staff functions as an interface between companies and regions. The fact that companies are not solely committed to their shareholders, but must also include the interests of many stakeholders, is of further interest.

The effect of system theory

The term originates from von Bertalanffy's general system theory (GST) (1968). Although von Bertalanffy first presented his idea of a 'General System Theory' in a philosophy seminar at the University of Chicago in 1937, it was only after World War II that his first publications appeared on this subject. The GST is used in later efforts in other fields. Neo-functionalists such as Luhmann (1984) have incorporated system theory to describe society and its components (social systems theory).

An open system continuously interacts with its environment. The interaction can take the form of information, energy, or material transfers into or out of the system. Open systems theory refers simply to the concept that organiza-

[5] Cameron, K. – Quinn, R. E. (2006): *Diagnosing and Changing Organisational Culture.* Based on the Competing Values Framework. Jossey-Bass, San Francisco.

[6] Gertler, M. (2004): *Manufacturing Culture*. The Institutional Geography of Industrial Practice. Oxford University Press, Oxford.; Tura, T. – Harmaakorpi, V. (2005): *Social Capital in Building Regional Innovative Capability.* Regional Studies. 39. 1111–1125.; Ablonczyné Mihályka L. – Nádai J. (2010): Cooperation strategies of multicultural management in Hungary. In: Springer, R. – Chadraba, P. (eds.): *Marketing and Business Strategies for Central & Eastern Europe*. Vienna Institute for International Economic Studies. Vienna. 3–15.; Szőke, J. – Ablonczyné Mihályka, L. (2011): *Culture's Strategic Role in SMEs' Cross-Border Relations.* Strategic Management: International Journal of Strategic Management and Decision Support System in Strategic Management 16. 4. 23–28.

[7] Asheim, B. (2000): Industrial districts: The contributions of Marshall and beyond. In: Clark, G. – Feldman M. – Gertler M. (eds.): *The Oxford Handbook of Economic Geography.* Oxford University Press. Oxford. 413–431.

[8] Kebir, L. – Crevoisier, O. (2007): R*esources development and actors coordination: what role for innovative milieus?* International Journal of Entrepreneurship and Innovation Management. 7. 204–222.

[9] Konczosné Szombathelyi, M. – Losoncz, M. – Józsa, L. (2010): Managerial rules beyond the regional embeddedness: A study of European companies. In: Ogunmokun, G. – Gabbay, R. – Janelle, R. (eds.): *4th Biennal Conference of Academy of World Business, Marketing and Management Development.* Perth, Western Australia. AWBMAMD GPO, 850–866.

tions are strongly influenced by their environment. The environment consists of other organizations that exert various forces of an economic, political, or social nature. The environment also provides key resources that sustain the organization and lead to change and survival.

The institutional perspective

„Postulating that the core research agenda of strategic communication is the analysis and explanation of the intentional and purposeful communicative relationship between organizations and publics, the introduction of institutional theory to strategic communication management offers a detour from a rational-choice or managerial perspective and stresses the influence of institutional frameworks on organizations".[10] According to the institutional theories, the „organizations as open-systems should have developed a fine-tuned sensory to pick-up vibrations in their environment. The better the organization is tuned to its environment (using boundary-spanners as bridgeheads), the more legitimate its practises... Nowadays constituents expect organizations not only to communicate the mere legal requirements but also to testify their concern for the environment, human rights and non-discriminating business practices... organizations act upon institutional pressures to implement new roles, procedures and programmes, such as corporate social responsibility... organizations are embedded in and influenced by their environment".[11]

Since both culture studies and communications studies consider the good relations between an organization and its public as a crucial element of embeddedness and engagement, we could consider the managers working for the companies as a tool between an organization and its environment. It is explained by the need to align organizations with the demands of the environment[12] or with the evolutionary dynamics of society.[13]

RESEARCH METHOD

Methodology: To gather information about the reciprocal cultural effect between companies and regions, the research team essentially applied qualitative methods, especially interviews with CEOs. We conducted 30 interviews in all seven regions

[10]Sandhu (2009): i. m. 75.: *Strategic Communication: An Institutional Perspective.* International Journal of Strategic Communication. 3. 2. 72–92., 72–73.
[11] Sandhu (2009) 75.
[12] Grunig, J. E. – Grunig, L. A. (2008): Excellence theory in public relations. Past, present and future. In: Zerfass, A. – Van Ruhler, B. – Sriramesh, K. (eds.): *Public Relations Research.* VS Verlag für Sozialwissenshaften. Wiesbaden. 327–347.
[13] Holmström, S. (2005): *Reframing public relations: The evaluation of a reflective paradigm for organizational legitimization.* Public Relations Review. 20. 4. 497–504.

(altogether 210 interviews) with companies between April 2008 and October 2008. Companies were questioned about their relationship to the region. The following fields of investigation were defined to enable the analysis of the relationship between corporate and regional culture: Innovation, Human resources, and Sustainability in ecological terms, Quality of life. In order to ensure comparability of the regional studies, the CURE team used the same interview guideline in each case.

The interviews were held in an open and narrative way at the beginning but included follow-up questions on certain key issues. The interviews were supported by participation of at least three interviewers. This is justified by the fact that afterwards, the national teams analysed them – applying text analysis and estimation – and wrote regional reports. The current paper was written on the basis of these regional reports. Three hypotheses were formulated:

H1: The following fields of investigation are enabling the analysis of engagement: Innovation, Human resources, Sustainability and Quality of life. Their high degree could be considered as the measure instrument of strong relations between region and companies.

H2: The local roots of the management working for the investigated companies play determinative roles in the regional embeddedness and regional engagement.

H3: Based on the rate of reciprocal effects between regions and organizations we can create variety of categories for companies.

Sample: Research into the interrelationship between corporate and regional culture was focused on seven regions of Europe from six countries: Southeast Netherlands, the Basel area (Switzerland), East Westphalia Lippe (Germany), Brandenburg Southwest (Germany), the Győr region (Hungary), Styria (Austria) and Wales (UK). More than two-thirds of the companies are family-owned companies, one-third of them are publicly listed and only 22 companies are government involvement Nearly one-third of the companies surveyed is over 20 years old and have been located in the region for a long time. Younger companies are also represented in the sample, with a roughly equal share. High international orientation, in terms of market orientation, shows the effect of globalisation and the effort of opening towards foreign markets. A high number of the companies are characterized as highly knowledge intensive. In sum, our research was carried out among young, regional, knowledge-intensive family businesses, which are international-market oriented. We formulated two categories for describing the size of the companies: 101 small-medium (less than 250 employees) and 83 large (250-500 employees) and very large (more than 500 employees).

RESULTS

As far as the perception of the importance of the region is concerned (Table 1), the region is most important for innovation, human resources and quality of life to the companies.

Companies settled in the region create a demand for a skilled and motivated labour force. The outstanding importance of innovation is related to the presence of companies with high knowledge intensity. The quality of life is strongly related to the presence of top-management and their families. Both local and foreign residents highly appreciate the natural and cultural environment of the regions, which adds much to their quality of life.

Table 1: **Importance of the region to the company (based on estimation)**

	Highly important	Important	Hardly important	Unimportant
Innovation	29	**42**	37	37
Human resources	**59**	48	37	16
Sustainability	28	32	46	
Quality of life	25	**52**	44	20
Region in sum	32	**62**	44	4

Source: Cure regional reports. N=210, but there are missing answers, so the N=not always 210

Despite the fact that environmental legal rulings have tended to become increasingly stringent recently and that some external regulatory pressure may have played an important part in the upgrading of sustainability, surprisingly, for the majority of companies surveyed, sustainability is hardly important, or is unimportant.

Looking at the individual fields of investigation we can see that the firms interviewed engaged most strongly in innovation, human resources and quality of life. However, almost half of the firms claim to be hardly or not at all involved in these fields. „Corporate responsibility is now seen in many organizations as all aspects of governance and sustainability: influencing and impacting on all strategic and operational practices".[14] Furthermore, these activities influence corporate reputation and are believed to be evidence of good citizenship as well.

Contrary to this fact, a look at the activities focused on promoting sustainability and environmental responsibility in the regions shows that only few firms actively engage in these issues (Table 2). In this regard we have to stress that we explicitly did not count promoting sustainability in the regions: it was estimated on the basis of interviews and any other sources. However, a strong neglect of sustainable activity is clearly visible.

[14] Ridley, J. - D'Silva, K. - Konczos, M. (2011): *Sustainability assurance and internal auditing in emerging markets*. Corporate Governance. 11. 4. 475–488.

Table 2: **Estimate of regional engagement**

	Highly engaged: initiator and framer	**Engaged:** sponsor and promoter	**Hardly involved:** dues-paying member	**Not engaged**
Innovation	**45**	**50**	48	31
Human resources	40	**65**	46	29
Sustainability	20	55	53	**53!**
Quality of life	38	**72**	38	33
Region in sum	35	**89**	43	13

Source: Cure regional reports. N=210, but there are missing answers, so the N=not always 210

As is depicted in the table 1 and 2, there is a strong relationship between regional importance and regional engagement. The more important the region is for the companies in the four fields of investigation, the more engaged they are for the region.

A typology of companies was created using the following heuristic categories (Table 3). The first category is the TAKER. This type of company is not interested in the region where they are located. The CUSTOMER companies differ from the TAKERs. The self-estimation of this type of companies is that they pay a great amount of tax and therefore they expect some kind of return directly or indirectly. The VISITOR type of companies remains in the region for a certain time and behaves in a similar way as CUSTOMER ones. The difference between them is that VISITORS are more interested in the region and its development than CUSTOMERS.

Table 3: **Categorisation of companies**

TAKER	**CUSTOMER**	**VISITOR**	**CITIZEN**
38	35	38	**69**

Source: Cure regional reports. N=210, but there are missing answers, so the N=not always 210

The majority of the undertakings of our sample belong to the CITIZEN category (69). CITIZEN companies feel themselves to be part of the region and take part in regional decision-making. In addition to paying taxes they provide support for many kinds of regional activities, initiatives and institutions. These companies are long-term orientated and do not want to change their location. As a consequence, these companies are highly interested in improving the regional well-being, quality of life, innovation potential and human resources in the long run.

Looking at the number of non-(deeply) integrated companies (Taker, Customer), we can conclude that a significant part of the companies are really "footloose companies" that have no loyalty to any particular region or country, but build facilities in whichever location is most convenient and close them down as better opportunities arise.

The reasons for regional engagement are manifold. Based on the motivation we can distinguish two broad categories: direct and indirect factors. The regional engagement of the companies included in the first group is motivated by direct economic benefits and by clear business considerations, especially in the case of medium-sized and large companies.

The owners and managers of companies feel regional engagement as a moral imperative.

The reasons for the lack of regional engagement are rather diverse. The common ground is economic.

Despite the high presence of foreign capital investments in the case of the companies investigated, generally the management and key staff come from the region. The regionally enrooted leaders (who are brought up within the region) bear at least some of the typical regional mentality and mind-sets, thus enforcing the cultural impact generated by the regional core workforce.[15] Many further parts of the results have been published since 2009.[16]

[15] Dörhöfer, S. – Minnig, C. – Pekruhl, U. (2009): Regional Report Basel-Area D29. In: *Regional Report on Empirical Analyses in Switzerland*. University of Applied Sciences: North Western Switzerland. 14–17.

[16] Konczosné Szombathelyi M. (2009a): Az interkulturális együttműködés és szerepe a túlélésben. In: Majoros P., – Zimler T. (szerk.): *Világméretű pénzügyi és hitelpolitikai válság és Magyarország.* MTA VEAB. Veszprém. 463–470.; Konczosné Szombathelyi M. (2009b): Egy EU projekt, mint az interkulturális kommunikáció példája. In: Kukorelli K. (szerk.): *Hatékony nyelvi, idegen nyelvi és szakmai kommunikáció interkulturális környezetben.* Dunaújvárosi Főiskola. Dunaújváros. 162–167.; Konczosné Szombathelyi M. (2009c): A kapcsolati marketing szerepe a vállalatok elismertségében egy EU-projekt tapasztalatai alapján. In: Szakály Z. (szerk.): *Új marketing kihívások a XXI. században - Fenntartható fogyasztás*. Kaposvári Egyetem. Kaposvár. 1–8.; Konczosné Szombathelyi M. (2010a): Nemzetközi projekt a régiók együttműködéséért. In: Beszteri B. – Majoros P. – Zimler T. (szerk.): *Magyarország határ menti térségeinek és városainak fejlődése a rendszerváltás és európai uniós tagságunk következtében*. MTA VEAB, BGF, Komárom város, Széchenyi István Egyetem. Veszprém. 225–234.; Konczosné Szombathelyi M. (2010b): Az innováció szerepének vizsgálata egy EU projekt eredményei kapcsán. In: Lőrincz I. (szerk.): *„Kreativitás és innováció" tanulmánykötet.* NYME ACSJK. Győr. 297–304.; Konczosné Szombathelyi M. (2011): Személyes kötődés és szervezeti beágyazódottság. In: Lőrincz I. (szerk.): *Európaiság, magyarság Közép-Európában.* NYME ACSJK. Győr. 484–491.; Konczosné, M. – Losoncz, M. – Józsa L. (2010); Ridley, J, – D'Silva, K. – Konczos, M. (2011).

CONCLUSIONS AND IMPLICATIONS

All culture studies, open system theory and communications studies consider the good relations between an organization and its public as a crucial element of the embeddedness and engagement. These theories state that organizations are strongly influenced by their environment.

The main purpose of the CURE research was to explore the reciprocal effects between regions and organisations. As indicators of corporate embeddedness, fields of Innovation, Human resources, Sustainability and Quality of life were taken into consideration. It has been proven that there is a strong relationship between regional importance and regional engagement. The more important the region is for the companies in the four fields of investigation, the more engaged they are for the region.

In both foreign/international and domestic companies the management has significant cultural influence on the degree of reciprocal cultural influence between company and region. The local roots of the management play determinative roles in the regional embeddedness and regional engagement. On the one hand, the regional engagement is not visible in the case of domestic enterprises. On the other hand, the en-rootedness is stronger in the case of the local management.

There are plenty of reasons for embeddedness or rather lack of embeddedness (based on ethics and business). Most embedded companies show the highest rate of innovation, responsibility for human resources, sustainability and quality of life. They are the so-called Citizens. Based on the rate of reciprocal effects between regions and organizations we created four categories of companies: citizen, visitor, customer and taker.

Corporate embeddedness can be considered as an indicator of the economic vitality and innovation dynamics of regional economies. Cultural, institutional and social factors as crucial assets for regional economic development have been emphasised. It is underpinned both by theories and by our research data that a unique regional/national culture can be used to create a competitive advantage for companies operating in particular region.

As a key result of CURE, a region's change competence to transform the interaction between regional and corporate cultures' "virtuous circle" depends on the mobilization of regional potentials. But economic potentials are not equally distributed among the European regions. The question therefore has to be asked as to how much interregional distinctiveness can cope with. There might be a need for a new conception of regional development since interregional equality .[17]

[17] Gärtner, S. (2008): *Final Activity Report.* CURE. Project paper. 27.

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HUNGARIAN SUMMARY

A tanulmány a régiók és a bennük működő vállalatok közti kölcsönhatást elemzi egy nemzetközi kutatás néhány fő eredményének bemutatása alapján. Az elméleti hátteret a regionális és szervezeti kultúra, a rendszerelmélet és az intézményesült kommunikáció megközelítései adják. A tanulmány összegzi a Corporate Culture and Regional Embeddedness (CURE) (Vállalati kultúra és regionális beágyazódás) project (2007–2009) néhány eredményét, a regionális és a vállalati kultúra közti kölcsönhatása és ennek vállalati versenyképességet növelő hatása

szempontjából. A hat európai ország hét régiójában zajlott (Ausztria, Németország, Magyarország, Hollandia, Svájc, Egyesült Királyság), régiónként 30, összesen 210 vállalat vizsgálati módszerei, a vállalatok vezetőivel készített mélyinterjúk, továbbá stakeholderekkel történt fókuszcsoportos interjúk voltak, melyben a tanulmány szerzője is részt vett. Az írás a régiók kutatási jelentéseire épül. Ismerteti, hogy a vizsgált négy területen – innováció, humán erőforrás, gazdasági értelemben vett fenntarthatóság és az életminőség – mennyire mutatható ki a vállalat beágyazódottsága és a régió iránti elkötelezettsége, továbbá kitér az elkötelezettség meglétének és hiányának okaira is.

Imre Varga: Glider Ikarus

ECONOMICS

BALÁZS KOTOSZ[1] – AJÁNDÉK PEÁK[2]

Economic Growth and Fiscal Expenditures in Hungary

Stylized Facts Based on VAR Modelling

The effects of fiscal policy on economic growth, and more generally the relationship between government expenditures and output is a central question in macroeconomics. In this paper we use a two-equation VAR model to estimate a mixed (Keynesian and Lucasian) theoretical model on Hungarian data between 1960 and 2011. We found that results differ in several aspects of both short and long term implications, as well as in terms of criteria for stability. Generally over this period our result does not prove the presence of Keynesian mechanisms, but Wagner's law proves strongly to be true. Our result show that stability is possible, but it requires sticking to a defined expenditure/GDP ratio, otherwise consolidations will unavoidably hurt growth. Based on our conclusions and a detailed analysis of our time series with regard to various economics features we also offer possible econometric alterations of methodology that might provide better estimations and more reliable answers to the proposed economic questions.

INTRODUCTION

The effects of fiscal policy on economic growth, and more generally the relationship between government expenditures and output has been a central question in macroeconomics since Keynes' General Theory. The appearance of theories with contradictory implications and the generally observable phenomenon of growing government/GDP ratios have made the issue, if possible, even more relevant.

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The theoretical background of this paper is based on an article by Mellár (2001)[3] who constructed a simple, but easily verifiable economic model to investigate the Hungarian economy. The model can be transformed to a two-equation vector-autoregressive model which is to be estimated on the basis of GDP and general government expenditure data. With help of this framework four main questions could be answered, namely whether:

1. the aggregated demand or aggregated supply adjusts faster;
2. the Keynesian multiplier effect is working;
3. Wagner's law is true; and
4. the government expenditures are limited.

Thus the model provides the possibility to describe and understand the complicated relationship between the GDP and spending in the last 50 years, which is a necessarily prerequisite for future policy decisions, especially at times when an economic growth stimulus is needed.

We begin our paper with a brief review of the relevant literature followed by a summary of the original model. In addition, we offer an extended model that allows for a deeper analysis of the equilibrium, but barely affects the econometric diagnostics and the estimation process. In the second half, we describe the database used for the empirical estimations and tests.

Firstly, through the tests of integration and cointegration we analyse the statistical characteristics of the time series. After we have answered the previously posed four questions we turn our attention to the stability issue and also analyse causality. Finally, further research possibilities are explored and the paper is concluded by a brief summary of our results and their implications.

SUMMARY OF RELEVANT EMPIRICAL RESULTS

The relationship between government expenditure and economic growth is an issue that has been addressed several times by scholars, each time using a slightly different approach and running tests on data from different countries over different periods. Thus the results and conclusions differ in each case. In this chapter we would like to provide a quick overview of the most relevant literature with the aim of placing our case study among the existing papers and to show the readers how it differs from them.

Initially the driving force behind the detailed study of this issue was mostly the growing size of the government that has been a generally observable phenomenon over the past 50 years. Researchers naturally posed the question: what are

[3] Mellár, T. (2001): *Kedvezményezett vagy áldozat: A GDP és a költségvetési kiadások kapcsolata.* Statisztikai Szemle. Vol. 79. No. 7. 573–586.

the implications of growth? As economic theory gives contradictory predictions in general, it follows that a time and country specific econometric approach is very much required in order to get applicable answers.

Research done on this issue can be categorized into two major groups in terms of its methodology. The first group of papers applies simple regression techniques on the time series that are usually based on a production function. They might study one single country or a region with panel methods. A positive effect of government spending on growth is implied among others by Alleyne et al. (2004)[4] studying Caribbean countries between 1975 and 2002 or Alexiou (2009)[5] based on an inquiry into seven countries in the SEE region spanning from 1995 to 2005. Negative effects with this approach are presented for example by Ghura (1995)[6] after analysing Sub-Saharan countries between 1970 and 1990 and by Knoop (1999)[7] based on his research on the US economy spanning from 1975 to 1995.

The second group with regard to methodology includes papers using VAR (Vector AutoRegressive) models. This type of approach usually takes advantage of the properties of VAR models to be able to study causal relationship without any theoretical assumptions in the background. It is also common to add a third variable to the equations, to decrease biases by leaving out variables. Most of the papers find a bicausal relationship between our two variables and indicate a positive relationship between government spending and growth. One example is Cheng and Lai (1997)[8], who found a positive, bidirectional relationship when adding money supply in the case of South Korea on data running from 1954 to 1994. An interesting paper from Varadi and Vanlalramsanga (2012)[9] finds similar results conditional on low debt/GDP rations using Indian data between 1987 and 2010. Loizides and Vamvoukas (2005)[10] add unemployment and inflation (separately) as third variables between 1950 and 1990 and find positive, unidirectional relationships in the cases of the UK and Ireland, running from expenditures to growth, whereas in Greece evidence supports only growth causing

[4] Alleyne, K. – Lewis-Bynoe, D. – Moore, W. (2004): *An Assessment of the Growth-enhancing size of Government in the Caribbean*. Applied Econometrics and International Development, Vol. 4. No. 3. 77–94.
[5] Alexiou, C. (2009): *Government Spending and Economic Growth: Econometric Evidence from the South Eastern Europe (SEE)*. Journal of Economic and Social Research. Vol. 11 No. 1. 1–16.
[6] Alexiou, C. (2009).
[7] Knoop, T. A. (1999): *Growth, Welfare, and the Size of Government*. Journal of Economic Inquiry. Vol. 37. No. 1. 103–119.
[8] Cheng, B. S. – Lai, T. W. (1997): *Government Expenditures and Economic Growth in South Korea: A VAR Approach.* Journal of Economic Development, Vol. 22. No. 1. 11–24.
[9] Varadi, V. – Vanlalramsanga, C. (2012): *Assessment of the Impact of Fiscal Policy on Economic Growth: An Empirical Analysis*. EERI Research Paper Series No 06/2012. Economics and Econometrics Research Institute, Brussels.
[10] Loizides, J. – Vamvoukas, G. (2005): *Government expenditure and economic Growth: Evidence from trivariate Causality Testing.* Journal of Applied Economics. Vol. 8. No. 1. 125–152.

increasing government size. Oriakhi and Arodoye (2013)[11] also find a unidirectional, positive relationship on Nigerian data between 1970 and 2010 connecting spending to growth. Some of the observed negative relationships from spending to growth include a study from Ramayandi (2003)[12] on Indonesia during the period from 1965 to 1999.

Our case study joins the second group of papers in terms of using a VAR approach. The big difference though is that behind our VAR model there is a macroeconomic model developed by Mellár (2001)[13]. Thus in our case there is no arbitrarily chosen third variable, but because of the economic modelling in the background we are able to draw further conclusions with regard to stability for example. One other difference in our analysis is that we investigate a longer period than any of the studies mentioned above. In terms of how our results differ see the chapters on empirical evidence.

THE THEORETICAL MODEL

In this chapter, we would like to provide a critical presentation of Mellár's model[14]. Through this simple model, we can analyse the two-way relation between the GDP and the general government expenditures allowing it to follow spill over effects. Due to its simplicity, the model cannot faithfully describe either the effect of different budget expenditures or the evolution of macro-processes. For the detailed analysis of the effects of different budgetary actions in Eastern Europe, see Purfield (2003)[15] and Kotosz (2006/a)[16].
The dynamics of the GDP is based on three equations:

$$1 \qquad YD_t = c\left(Y_t - \tau G_t\right) + A_t + G_t \qquad 0 < c < 1, \qquad \tau > 0\,,$$

$$2 \qquad YS_t = Y_t + \gamma G_t - \delta\left(\tau G_t\right) \qquad \gamma, \delta > 0\,,$$

$$3 \qquad \Delta Y_t = Y_{t+1} - Y_t = \alpha\left(YD_t - YS_t\right), \qquad |\alpha| < 1\,,$$

where Y means the GDP, c is the marginal rate of consumption, G means the budget expenditures, A represents autonomous expenditures, and t is for time. [17]

[11] Oriakhi, D. E. – Arodoye, L. N. (2013): *The Government Size - Economic Growth Relationship: Nigerian Econometric Evidence Using a Vector Autoregression Model*. International Journal of Business and Management. Vol. 8. No. 10. 126–133.
[12] Ramayandi, A. (2003): *Government Size in Indonesia: Some lessons for the local Authorities.* Working Paper in Economics and Development Studies. No 200302. 1–13.
[13] Mellár (2001): op. cit.
[14] ib.
[15] Purfield, C. (2003): *Fiscal adjustments in transition countries: Evidence from the 1990s.* IMF Working Paper 03/36, International Monetary Fund, Washington D.C.
[16] Kotosz, B. (2006/a): *Megszorítások és lazítások – A rendszerváltás fiskális politikájának szerkezetéről*. Közgazdasági Szemle. Vol. 53. No. 2. 158–174
[17] $\tau, \gamma, \delta, \alpha, \beta, \omega, a, h, k$ are parameters indirectly estimated with restrictions clarified after equations /1-5/. Generally they have a technical role unless stated otherwise in the text.

The dynamics of the budget expenditures is as follows:

4a $$\Delta G_t = \beta\left(Y_t^T - Y_t\right) + \omega\left(\bar{G}_t - G_t\right) \qquad \beta, \omega > 0\,,$$

where Y_t^T is the expected GDP, $\bar{G}$ the practical upper limit of budget expenditures.

Additionally:

5a $$A_t = aY_{t-1} \qquad Y_t^T = hY_{t-1} \qquad \bar{G}_t = kY_{t-1} \qquad a, h, k > 0\,.$$

Equation /1/ is a simple Keynesian demand function, and it suggests that budget expenditures are covered only by income taxes; financing can be partial ($\tau<1$) or full ($\tau\geq 1$). Equation /2/ is a mixed supply function; the first and the third elements are Lucas-type, while the second element is Keynesian. Equation /3/ is not so trivial. As the sign of the α parameter is not fixed, the active role of the aggregated demand is not presupposed. Therefore in small, open economies (like some Eastern European countries) the increase of demand through the expansion of the import and through the devaluation of the national currency can generate the cease in production. Equation /4a/ suggests that the larger the lag between expected and actual GDP, the larger the growth of budget expenditures, though this increment is reined by the upper limit. The dynamic kind of the model requires flexibility of the autonomous terms; the benchmark can be the lagged GDP (see equation 5a).

At this point, Mellár makes three simplifications to gain a model which is easy to deal with. With his idea, we can replace the lagged GDP by current GDP in equation /5a/. By this manipulation, the matrix form of the model is:

6 $$\begin{bmatrix} Y_{t+1} \\ G_{t+1} \end{bmatrix} = \mathbf{A}\begin{bmatrix} Y_t \\ G_t \end{bmatrix} \qquad \mathbf{A} = \begin{bmatrix} 1+\alpha\left(c+a-1\right) & \alpha\left[\left(1-\gamma\right)+\tau\left(\delta-c\right)\right] \\ \beta\left(h-1\right)+\omega k & 1-\omega \end{bmatrix}.$$

The /6/ version of the model is very favourable for statistical analysis, but doubtful from a theoretical point of view. Let us see what happened. First, the autonomous demand depends on the current GDP, i.e. not autonomous. This inconsistency cannot be filtered out at this level of simplicity of the model.[18] A new interpretation of equation /1/ is the following: a part of the demand is the

[18] A clear solution would be the separate analysis of autonomous demand time series, but as they do not exist, the direct measuring is not possible. If we investigate relatively short time series, the autonomous demand (in real terms) can be considered as constant. In this case, equation /6/ is transformed, $a_{11} = 1 + \alpha\left(c-1\right)$. The stability feature of the model does not change, but we have a constant in the first equation, without a constant in the second one. This restriction causes problems in econometric estimations and we have to estimate an SVAR model.

function of the income but not of the disposable income, so some demand is directly independent from taxes. Second, the expected GDP is the function of the current GDP. The conflict is clear; there is no more expectation about a known measure. Furthermore, the coming year's budget expenditures grow accordingly as we have faulted the measurement of the GDP (i.e. as the difference of current and expected GDP for year t). This conflict can be eliminated by a simple change in equation /4a/, instead of Y_t^T we use Y_{t+1}^T (equation /4b/). This form of the equation suggests that the budget expenditures are higher in year *t+1*, if the expectation of the government for GDP for year *t+1* is higher than the current GDP in year t. This is a usual assumption, and it is sustainable without change in the expenditures/GDP ratio. Third, the practical upper limit of the budget expenditures is defined in the function of the current GDP. This change is not too extreme, and it can be restored by the different use of equation /4a/, where instead of G_t we use G_{t+1} (equation /4b/). On account of the latter two variations, the model becomes more prospective, budget expenditures are planned on the basis of the future possibilities and not on the present bias. The new equations are:

4b $$\Delta G_t = \beta\left(Y_{t+1}^T - Y_t\right) + \omega\left(\bar{G}_{t+1} - G_t\right) \quad \beta, \omega > 0 \,,$$

5b $$A_t = aY_t \qquad Y_t^T = hY_{t-1} \qquad \bar{G}_t = kY_{t-1} \qquad a, h, k > 0 \,.$$

The stability of the model depends on the absolute values of eigenvalues of the A matrix. As Mellár shows [19], calculated by economically rational parameter values, $tr\mathbf{A} \in [0, 2]$, thereby one of the necessary conditions is fulfilled ($|tr\mathbf{A}| < n$)[20]. Mellár supposed that $|det\mathbf{A}| < 1$ We still have doubts whether this condition is always fulfilled as in Kotosz (2009)[21]. If the economy is demand-directed ($\alpha > 0$), the condition on determinant is normally in order; but in a supply-oriented ($\alpha < 0$) economy, if the adjustment of government expenditures is slow (ω is low, the increase of government expenditures is based on supply expansion), the determinant may exceed 1. Based on these strongly Lucasian circumstances, the typical Keynesian model becomes unstable.

If the model is stable, and eigenvalues are real numbers (as they are by the empirical evidence), the equilibrium is stable node or saddle-point. When the eigenvalues are complex numbers, the equilibrium is stable spiral.

[19] Mellár (2001): op.cit.
[20] On necessary and sufficient conditions of stability, see Dameron, P. (2001): *Mathématiques des modèles économiques*. Economica, Paris.
[21] Kotosz, B. (2009): Fiscal Expenditures and the GDP – Baltic Transformation Compared. In: Glavanovics, A. – Szele, B. (eds): *Közép-Európa: Transzfer és dialógus*. Kodolányi János Főiskola, Székesfehérvár. 203–222.

The previous criticism of the original model can easily be dealt with as we can see in Kotosz (2006/b)[22]. First, the autonomous demand in the previously analysed model was not really autonomous. We can unravel this inconsistency by assuming a constant autonomous demand (*At=a*). To be able to estimate the parameters of the new model, we need a theoretical constant in the second equation, as well. The easiest way is to hypothesize a constant (g) in equation /4b/ transformed to equation /4c/.

$$4c \quad \Delta G_t = g + \beta\left(Y_{t+1}^T - Y_t\right) + \omega\left(\bar{G}_{t+1} - G_t\right) \qquad \beta, \omega > 0$$

This constant means that we suppose that there is a permanent change in the government expenditures. For simplicity and coherence with the original model, we do not place any restrictions on this constant. If *g=0*, then equation /4b/ is equal to equation /4c/.

The new VAR model is as follows in equation /7/:

$$7 \quad \begin{bmatrix} Y_{t+1} \\ G_{t+1} \end{bmatrix} = \mathbf{A}\begin{bmatrix} Y_t \\ G_t \end{bmatrix} + \begin{bmatrix} \alpha a \\ g \end{bmatrix} \qquad \mathbf{A} = \begin{bmatrix} 1+\alpha(c-1) & \alpha\left[(1-\gamma)+\tau(\delta-c)\right] \\ \beta(h-1)+\omega k & 1-\omega \end{bmatrix}.$$

DATA AND METHODOLOGY

The dataset of the model to be estimated needs only two time series, the real GDP and the real government expenditures. Our dataset has three sources; first we used the dataset of the original Mellár-model[23] that has the series for 1960-1999. This dataset overpasses all feasible methodological changes, and has been developed by a team of specialists from the Central Statistical Office (KSH). From the on-line dataset of KSH we have these series on nominal values for the period 1995-2011, accompanied by the GDP-deflator series. The government expenditure price index was obtained from Eurostat. Having a common period for the two series (1995-1999), we could adjust data to assure continuity and to avoid structural breaks created by the dataset.

To test stationarity we used three unit-root tests, the Augmented Dickey-Fuller test (Said-Dickey, 1984)[24] and the Phillips-Perron test (Phillips-Perron, 1988)[25],

[22] Kotosz, B. (2006/b): *Fiscal expenditures and the GDP – Interdependencies in transition.* Statisztikai Szemle. Vol. 84. No. 10. 18–40.

[23] Mellár (2001): op. cit.

[24] Said, E. – Dickey, D. A. (1984): *Testing for Unit Roots in Autoregressive Moving Average Models of Unknown Order.* Biometrika. Vol. 71. No. 3. 599–607.

[25] Phillips, P. C. B. – Perron, P. (1988): *Testing for a Unit Root in Time Series Regression*. Biometrika. Vol. 75. No. 2. 335–346.

and also the Kwiatkowski–Phillips–Schmidt–Shin (KPSS) test[26]. To estimate the theoretical model, we applied the vector autoregressive (VAR) approach (Sims, 1982)[27] and Kirchgassner et al, 2012[28]) considering warnings and approaches by Toda-Phillips (1993)[29] and Toda-Yamamoto (1995)[30]. Granger causality was tested by the original Granger test (Granger, 1969)[31], also counterweighed by the modifications of Dolado-Lütkepohl (1996)[32].

EMPIRICAL EVIDENCE – THE ORIGINAL MODEL

In this chapter we present our empirical results based on the estimation of the theoretical model described earlier. We begin by examining the stationarity of the dataset, using several different unit root test. After estimating the VAR model, we proceed with interpreting the elements of the resulting matrix and connect them with the theory that best explains the relationship of the fiscal policy and growth in Hungary in the past 50 years. Afterwards we address the question of stability by deriving the necessarily conditions for a stable path from theory. Finally, we conclude by analyzing the long term relationship of our variables with the help of the impulse response functions and we also explore the possibility of a causal relationship based on the Granger test.

Before starting the econometric estimation of the model, we are beginning our inquiry with analysing the general characteristics of the dataset. After plotting the data to get a preliminary idea of their nature, we examine the integration of our time series. As shown in Figure 1 both GDP and government expenditures have an upward trend mostly throughout the entire time frame as expected (graph on the left). Yet, even though, by and large, the two variables move together, the differences prove that the relationship is more complex (graph on the right). Furthermore, we also see that the expenditure/GDP ratio increases slightly toward the end of the time period. Several questions arise following these observations. Our objective is to study these phenomena with precise econometric tools and by the end we hope to be able to answer some of the questions with our results.

[26] Kwiatkowski, D. - Phillips, P. C. B. - Schmidt, P. – Shin, Y. (1992): *Testing the Null Hypothesis of Stationarity against the Alternative of a Unit Root.* Journal of Econometrics. Vol. 54. No. 1–3. 159–178.
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[29] Toda, H. Y. – Phillips, P. C. B. (1993): *The spurious effect of unit roots on vector autoregressions.* An analytical study. Journal of Econometrics. Vol. 59. No. 3. 229–255.
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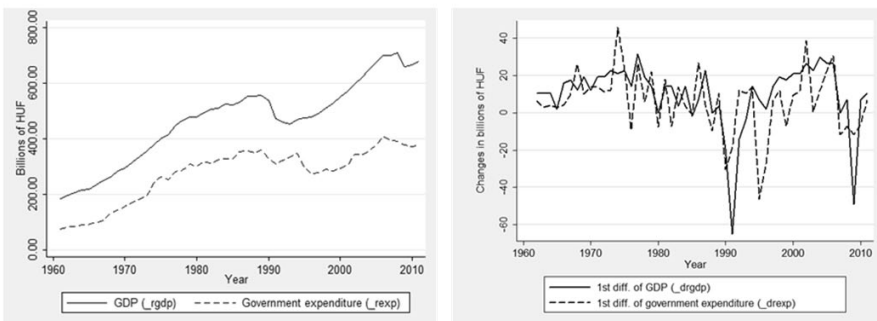
[31] Granger, C. W. J. (1969): *Investigating causal relations by econometric models and cross-spectral methods*. Econometrica. Vol. 37. No. 3. 424–438.
[32] Dolado, J. – Lütkepohl, H. (1996): *Making Wald tests work for cointegrated VAR systems. Econometric Reviews*. Vol. 15. No. 4. 369–386.

As a next step we perform several different tests in order to provide a detailed picture and more robust conclusions about stationarity. Luckily our long term series enables us to run unit root test reliably as opposed to several other studies that mostly lack this advantage because of their insufficient number of observations.[33] The trade-off here might be that given the drastic changes in the political regime of Hungary, longer term series might contain structural breaks. Keeping this in mind, firstly we run Augmented Dickey-Fuller tests for up to 6 lags then proceed with the Phillips-Perron test for the suggested 3 lags and finally perform KPSS tests for a default maximum of 3 lags on our dataset. The null hypothesis in the first two types of tests has a unit root whereas in the case of the KPSS test it is exactly the opposite. So it follows that in the case of stationarity we expect the ADF and PP tests to be significant and the KPSS test to be insignificant. The results are shown in Table 1 and Table 2 for output and government expenditure, respectively.

Figure 1: **Line plots of GDP and government expenditures (graph on the left) and of their differences (graph on the right)**[34]



[33] Kotosz (2006/b): op. cit.
[34] Source: The authors' calculation.

Table 1: **Test statistics of various unit root test for output**[35]

	Y	**1st diff. of Y**	**2nd diff. of Y**
ADF (no lag)	-1.280	-4.154 **	-9.827 ***
ADF (1 lag)	-2.003	-3.055	-5.368 ***
ADF (2 lags)	-2.356	-3.052	-4.657 ***
ADF (3 lags)	-2.189	-2.888	-5.016 ***
ADF (4 lags)	-2.314	-2.142	-4.034 ***
ADF (5 lags)	-2.756	-2.070	-2.927
ADF (6 lags)	2.754	-2.430	-3.098
KPSS (no lag)	0.620 ***	0.174 **	0.019
KPSS (1 lag)	0.320 ***	0.120 **	0.030
KPSS (2 lags)	0.221 ***	0.097 ***	0.034
KPSS (3 lags)	0.173 **	0.086 ***	0.041
PP (3 lags)	-1.711	-4.204 ***	-10.384 ***
stationarity	non-stationary	non-stationary	stationary

Table 2: **Test statistics of various unit root test for expenditure**[36]

	G	**1st diff. of G**	**2nd diff. of G**
ADF (no lag)	-1.318	-5.898 ***	-10.321 ***
ADF (1 lag)	-1.554	-4.564 ***	-7.528 ***
ADF (2 lags)	-1.619	-3.775 **	-7.092 ***
ADF (3 lags)	-1.711	-2.782	-5.781 ***
ADF (4 lags)	-2.088	-2.352	-4.423 ***
ADF (5 lags)	-2.434	-2.261	-3.399 *
ADF (6 lags)	-2.541	-2.272	-3.326 *
KPSS (no lag)	0.940 ***	0.106	0.012
KPSS (1 lag)	0.489 ***	0.093	0.021
KPSS (2 lags)	0.338 ***	0.091	0.031
KPSS (3 lags)	0.263 ***	0.090	0.049
PP (3 lags)	-1.429	-5.868 ***	-13.617 ***
stationarity	non-stationary	non-stationary	stationary

As we see all three tests suggest second order integrity in case of the output variable, as opposed to the expected I(1). With regard to the budget expenditure, the majority of the tests points in the same direction, implying that this variable

[35] *** Significant at 1 percent ** Significant at 5 percent * Source: The authors' calculation.
[36] *** Significant at 1 percent ** Significant at 5 percent * Source: The authors' calculation.

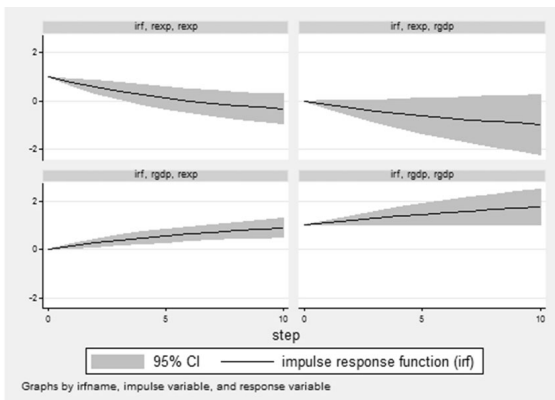
is also I (2). One reason for these results, as suggested by Mellár[37], might be a structural break in 1990, caused by the change of regime. This hypothesis calls for further studying of the time series and possible alterations of the modelling with regard to structural breaks which is beyond the scope of this current examination.[38] As both time series are integrated from the second order we also test for the existence of a cointegration vector. The Johansen test fails to prove the existence of a cointegration equiton with or without a constant.

After the detailed study into the nature of our variables, in this section we proceed with the econometric testing of the model that we introduced in the previous chapter. The model - as described in /6/ - can be translated into a VAR model, which might easily be estimated with the help of most statistical software, in our case with STATA[39]. Results are shown in Table 3.

Table 3: **Results of VAR estimation without constant**[40]

	Y	**G**
Y_{t-1}	1.107 **	0.142 ***
S.E.	0.051	0.046
p-value	0.041[41]	0.002
G_{t-1}	-0.152 *	0.776 ***
S.E.	0.086	0.078
p-value	0.077	0.000
Eigenvalues	1.0174	0.866

Figure 2: **Impulse response functions**



[37] Mellár (2001): op. cit.
[38] However, the test results are contradictious, and do not affirm a break in 1990.
[39] As the estimation of VAR models is based on iterative methods, some smaller differences among different platforms may occur.
[40] *** Significant at 1 percent ** Significant at 5 percent * Source: The authors' calculation.
[41] Null hypothesis is that the coefficient is not 1.

First of all, it is worth pointing out that three of the estimated parameters are significant on at least the level of 5%, and the a21 element is significant on the 10% level. So, based on our data, in the case of all 4 types of relations we will be able to draw conclusions.[42] Interpretations of the values follow from the model. The a11 element indicates whether aggregated demand (if $a_{11}<1$) or aggregated supply (if $a_{11}>1$) is determinant in growth. A negative a_{12} element means that there is no effective Keynesian multiplier present, namely increasing budget expenditures has a stronger effect on supply than it has on demand. In light of these significant results we conclude that the circumstances were so; that in Hungary during the examined period there were no observable Keynesian multiplier effects and growth was determined by supply, rather than by demand. The a_{21} parameter tells us whether or not Wagner's law [43] proves to be present in case of Hungary. A strongly significant positive value suggests that higher GDP is followed by higher budget expenditures in the following year. A more in-depth study of causal relationships will be continued by running Granger-causality tests later on. Finally, the value of a_{22} conveys information about the strength of control over the budget. A positive parameter means that the control is weak, so there is no effective upper limit that would prevent the expenditures from growing.

With help of the estimated values we calculate the eigenvalues, also presented in Table 3. These values determine the stability of the model, and the nature of the equilibrium. In case either of the values is bigger than the other, the equilibrium is saddle point. Although it says that the model is mathematically unstable, it does not mean that it is unstable economically as well. On the contrary, economic growth is only possible in the case of an unstable saddle path. Stable node equilibrium would mean that the economy evidently returns back to its origin point, which is the state of no GDP and budget. From an economical point of view that would be a collapse. According to the calculated eigenvalues the equilibrium in our system is saddle point.

In the case of a saddle-point equilibrium in order for there to be stability there has to be a constant expenditure/GDP rate. Examining the gradients of $\Delta Y_t=0$ and $\Delta G_t=0$ the phase diagrams tell us important implications about the way the economy can be brought back to the constant rate. As the gradient of $\Delta Y_t=0$ is larger than the gradient of $\Delta G_t=0$ so it follows that once expenditures have become too high, consolidation is only possible by sacrificing growth, thus depression is unavoidable in this case.

Finally, we study the impulse response functions, which not only describe the long term behaviour of our economy, but also provide visual interpretations of our previous findings. The functions are plotted in Figure 2. The starting

[42] As values of the VAR estimation correspond to the elements of the A matrix in /6/, the matrix notation will be used for future reference.
[43] Wagner, A. (1883): *Finanzwissenschaft*. Winter, Leipzig.

points of the functions correspond to the estimated matrix-values. An increase in expenditures is expected to have a positive and significant effect on itself for approximately 4 years. This might be interpreted as the rigidity of the budget. Furthermore, expenditures' negative effect on output seems to be long-term, but since it is not significant, further conclusions will not be drawn from this fact. Wagner's-law on the other hand seem to have a long-term significant effect, the positive relationship is still present after 10 years.

Our analysis is finished by addressing the issue of causality in Grangerian terms. As we indicated previously, almost all the reviewed literature study the causal aspect of the relationship and they also apply methodology introduced by Granger[44]. Since our time series are non-stationary, running the Granger-test on the previously estimated VAR model would be likely to distort the result. To circumvent this problem, we use the idea developed by Todo and Yamamoto (1995)[45] and add to the equations two further lags of both variables, as they are both integrated of the second order. When testing the significance of first lags, the null hypothesis is that there is no Granger-causality, so small p-values indicate causality. As for GDP causing expenditure the p-value is 0.677, whereas when the opposite is assumed, directionality it is 0.166. Based on these results we conclude that the relationship between the GDP and the government expenditures has not been a causal period in Grangerian terms during the examined period. However, it must be emphasized that in order to make econometric testing technically possible, we had to deviate from the original model that includes one lag.

EMPIRICAL EVIDENCE – THE EXTENDED MODEL

As explained earlier, changes are motivated by economic considerations and on the level of modelling they manifest as adding a constant. (see /7/) Otherwise we follow the same steps as we did with the original model and we present and contrast these results with the previous ones.

The newly estimated matrix-elements and eigenvalues are reported in Table 4. The matrix elements do not change enough to alter our general findings from the previous section. One big difference is though, that once we assume constant autonomous demand, significance of the estimated parameters decreases. As a result our previous conclusions about growth being driven by supply and no observable Keynesian multipliers lose ground. Results about the Wagner-law and the weak control over budget remain the same and significant.

[44] Granger (1969): op. cit.
[45] Todo-Yamamoto (1995): op. cit.

Table 4: **Results of VAR estimation with constant**[46]

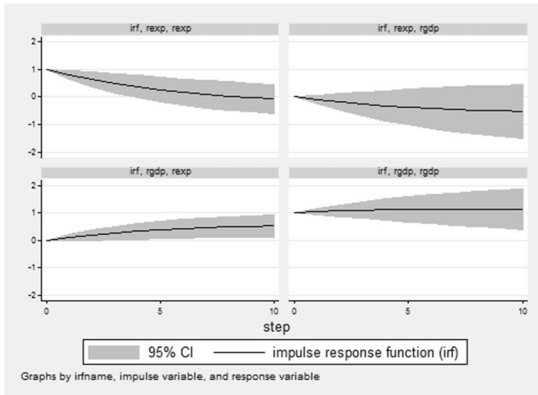
	Y	**G**
Y_{t-1}	1.041	0.104 *
S.E. p-value	0.057 0.481[47]	0.053 0.051
G_{t-1}	-0.102	0.806 ***
S.E. p-value	8.124 0.023	0.079 0.000
constant	18.499 **	0.866
S.E. p-value	8.124 0.023	7.602 0.155
eigenvalue	0.981	0.866

The other important difference is that the equilibrium in the extended model is stable node as opposed to the previous saddle point. Adding the constant to the equations means that the equilibrium does not necessarily have to be the origin point anymore. Thus stable node equilibrium becomes economically plausible in this new model framework, assuming it is in the positive quadrant and the equilibrium GDP is larger than its current level. This assumption is met if the equilibrium real GDP is 42.3% higher than the 2011 value. The computed equilibrium expenditure/GDP rate for the examined economy is 59.2%.

As shown in Figure 3, impulse response functions remain the same in all important aspects, only the effects become insignificant slightly faster. Consequently, effects seem to last for a shorter period when adding a constant. Finally, based on the result of Granger tests we still cannot reject that there is no causal relationship in either direction. In case of government expenditure causing output the p-value is 0.191, in the opposite direction it is 0.855.

[46] *** Significant at 1 percent ** Significant at 5 percent * Source: The authors' calculation.
[47] Null hypothesis is that the coefficient is not 1.

Figure 3: **Impulse response functions**



ECONOMETRIC EXTENSIONS OF THE MODEL

From an econometric point of view we were looking for estimation possibilities for the theoretical model instead of a strict econometric solution. However, finding a consistent and reliable methodology that unites both econometric and economic considerations proved to be a difficult task. Given the integration and co integration properties of the dataset the best solution from a statistical point of view would have been to construct the VAR model with the second differences of variables that are stationary. This solution, however, makes economic interpretations practically impossible. So we opted to remain in the framework indicated by the economic model, but consequently it limits the reliability of our results due to statistical concerns. One way out of this trap might be running unit root tests that allow for structural breaks and then revisit the question of co integration in the light of the result. It very well might be the case that problems we face at the moment are the results of structural breaks and thus can be solved. However, these estimated structural breaks are widely scattered, without any uniform focus around 1990. It also suggests a continuity of the Hungarian economy; and strengthens the legitimacy of the analysis over the 50 year period.

CONCLUSIONS AND SUMMARY

During the course of this writing we first tested the original model that was based on Keynesian assumptions about our economy. Short-run results imply that the Hungarian economy has been driven by supply rather than by demand. Also, since there was no observable Keynesian multiplier effect, this model implies that a circumstances are so, that based on the experiences of the past 50 years, a Keynesian fiscal policy is not likely to stimulate growth. However, this

result is not backed by estimations of the extended model. This approach finds no significant evidence for the lack of Keynesian mechanisms, though it also fails to prove they were indeed present. The original implications, however, also fall more in line with the results of the Granger causality test, which concluded that no causal relationship exists running from expenditures to output. Even if our readers might not be entirely convinced by the results of the immediate responses, both of the models clearly predict the lack of significant expenditure effects on both mid- and on long-term.

On analysing the opposite direction of the relationship it is much easier to take a stance. Both models support the fact that GDP has a positive effect on the government expenditures not just in the short run, but it is still observable in 10 years' time. A similar unanimity is found in case of government control, but unfortunately no modelling alterations hide the fact that government expenditures tended to rise above their limits. Present strict EU regulations on debt and deficit measures might finally be able to put an end to this trend; however it assumes that previous leniency will not be resumed once the crises passes.

In terms of stability both approaches offer the prospect of economic stability and potential growth on the condition of committing to a certain equilibrium expenditure/GDP ratio that defines the saddle path. As co integration tests in the case of both models failed to show the existence of this constant rate, it is thus concluded that the economy has not been on its equilibrium path during the examined period.

When combining our results some potential traps materialize as results of the characteristics of our economy. We have seen that all our estimations confirm the tendency to exceed budget limits. Unless we manage to change it permanently, combining this fact with the mind-term rigidity of the budget and the unavoidable sacrifice in growth in the case of consolidations (implied by the equilibrium saddle path in the original model) we will constantly limit our possibility to grow. There may be disagreement about whether a rigorously enforced EU budget limit is the best policy when trying to restore growth in a serious global crisis, but in case of the Hungarian economy under normal circumstances it is definitely a long-run necessity to strengthen budget control in order to be able to meet potential growth prospects in the future.

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HUNGARIAN SUMMARY

A makroökonómiában központi kérdés a fiskális politika gazdasági növekedésre gyakorolt hatása, illetve általánosabban a kormányzati kiadások és a kibocsátás közötti kapcsolat. A tanulmány 1960 és 2011 közötti magyar adatokon VAR modell segítségével becsül egy kevert, keynesi-lucasi jellegű elméleti modellt. A kapott eredmények eltérnek egymástól mind az időtáv, mind a stabilitási feltételek tekintetében. Az ezek alapján levont főbb következtetések értelmében rövidtávon nem bizonyítható a keynesi folyamatok jelenléte, a Wagner törvény érvényesülése azonban bármely vizsgált időtávon erősen kimutatható. Az eredmények továbbá azt mutatják, hogy a stabilitás megvalósítható, ha a gazdaság egy meghatározott kiadás/GDP pályán mozog. Amennyiben ez a feltétel nem teljesül, akkor folyamatos konszolidáció válik szükségessé, ami elkerülhetetlenül növekedési áldozatokkal jár. Végül a dolgozat az idősorok alapos vizsgálata és a kapott eredmények értelmezése alapján lehetséges módosításokat javasol az ökonometriai modellezésben, melyek pontosabb becsléseket és megbízhatóbb válaszokat eredményezhetnek.

Lajos György Mátrai: Károly Kisfaludy, poet, writer and painter

MAN AND SOCIETY

ADRIENN REISINGER[1]

Social responsibility: the case of citizens and civil/non-profit organisations

Nowadays on hearing the word responsibility we associate it with corporate social responsibility (CSR) and there is certainly literature available on this relation. According to my readings, citizens, organizations and also the state can take responsibility. Citizens and organizations (firms, civil organisations, etc.) can also take responsibility for their own lives and actions and also for the events in their surroundings, namely social and economic processes. The state can take responsibility for the latter as well. The study shows the following approaches of responsibility: individual social responsibility and organisational social responsibility. The paper is based on theoretical and empirical information.

INTRODUCTION

The paper focuses on the social responsibility of the citizens and civil/nonprofit organisations. In the literature this topic is often mentioned in accordance with companies, but my study shows that other actors are responsible for the society, too. In accordance with these ideas there is individual responsibility and social/economic responsibility. Personal interest and personal opinions are the most important when speaking of individual responsibility. Social responsibility is a little more than that: social interest and goals are the most relevant.

In my study I show how can the citizens and civil/nonprofit[2] organisations take responsibility for the society concentrating on the development process, after it based on a citizen (2012/13) and organisation (2013) survey[3] I will show one aspect of social responsibility, namely: Did citizens and organisations participate in the decision-making process of their settlement?

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[2] Under the expression civil/nonprofit organisation I understand such organisational form, which has been established by citizens, and/or national, self-government will in favour of realization individual, community or public purposes voluntary.
[3] Author and Márta Nárai Phd, Széchenyi István University.

I would like to stress that this study is not about the corporate social responsibility (CSR)[4], it is about the concept that according to my opinion – based on researches – also the citizens and civil/nonprofit organisations have responsibility for the society. Of course this responsibility comes from other goals than the responsibility of the firms. Their main goal is the profit and beside these goals they can have social goals, too. But being a person means that citizens are living in a society and they have to take responsibility for the society because they are part of it. So the motivation of the responsibility is different. This is the same with the civil/nonprofit organisations. Their responsibility comes from the activity in behalf of the public. My goal is to show how citizens and civil/nonprofit organisations[5] can take responsibility, in focus with participation in the development process.

The concept of the study is mainly based on my researches and experience. There is a lot of literature on CSR, but on the responsibility of the citizens and civil/nonprofit organisations there are only a few ones, so most of the theoretical part is own concept[6].

1. SOCIAL RESPONSIBILITY

1.1. DEFINITIONS

At first I would like to show what I mean by responsibility and who can take responsibility for whom.

Responsibility means that a person or other social and economic actors are consciously aware of the consequences of their actions. So taking responsibility means that the actors are aware of the positive and negative effects of their decisions and they do not shift it onto other actors[7].

Who can take responsibility?

- citizens,
- organisations, institutions (firms e.g financial institutions[8], banks[9], civil/

[4] That's why the study does not show literature on this topic.
[5] The responsibility of the state is not the theme of this study.
[6] Author and Márta Nárai Phd, Széchenyi István University.
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non-profit organisations, health and education institutions, other public institutions, etc.)
- the state.

Both citizens and organisations can take responsibility for their own lives and actions and also for their environment, namely for the society in which they live and operate. Based on these thoughts I will separate responsibility into two types:
- individual responsibility[10]: only the individual interest counts
- social/economic responsibility (social issues are in the focus of our paper): the goal of the actors is to care about social happenings, so the way of thinking is at a community level, not an individual one.

I believe that these two types can be utilised for all of the actors, so we can speak about the following categories of responsibility.
- self-personal responsibility
- individual social responsibility – ISR
- corporate responsibility
- corporate social responsibility – CSR
- civil/non-profit responsibility
- civil/non-profit social responsibility
- institutional responsibility
- institutional social responsibility

1.2. INDIVIDUAL RESPONSIBILITY

When we speak about individual responsibility we can distinguish between self-personal and individual social responsibility (ISR). Self-personal responsibility means that people take responsibility for their own lives in the following four contexts:
1) The citizens' basic responsibility is to live their life as is good for them: both their physiological and intellectual needs should be satisfied. By this it is meant that people have to live healthily and to be balanced emotionally.
2) The second level is when people care about their environment if they are asked to do so (external intentions).
3) In this level people care about their environment because of internal intentions.
4) The highest level is when people also take responsibility for their close environment, for example: taking care of siblings or animals, etc.

[10] Bénabou, Roland – Tirole, Jean (2010): *Individual and Corporate Social Responsibility.* Economica. 1. 1–19.; Brown, Alexander (2009): *Personal Responsibility – Why it matters*. Continuum.

In these four cases responsibility refers only to the citizens' own and family lives. I believe that if a person has no serious psychological problems then they can take responsibility for their lives, and sum up the consequences of their actions.

If a citizen cares about both their close and wider environment, we can speak about individual social responsibility. This means that citizens are involved in the life of the community where they live. It means that people solve problems together, look after the environment (for example they do not litter, etc.) and care about not just their own lives, but also about the community.

I think that citizens can take responsibility in the following ways:

- for other people: caring about other people (for example behaving in a way that causes no negative consequences for others), helping poor people, donating to charity, helping people suffering from the negative effects of disasters, etc.
- for local public issues (public services),
- for development of the settlement or a region: participation in the development process
- for the environment: people are aware of the environmental issues
- for civil/non-profit organisations in the following ways:
  - → establish an organisation
  - → membership in an organisation
  - → donations
  - → one per cent donation of personal income tax
  - → as an employment
  - → as a volunteer

With these actions citizens can take responsibility for all members of society in the following two ways:

- at an individual level,
- at an organisational level, when citizens join a civil/non-profit organisation and help other people through their activity in the organisation.

It is very important to mention that citizens will only be able to take responsibility for each other if they are able to do this in their own life. And even the other social and economic actors will be able to this, if their members, leaders are aware of it in their own life. So I think that every activity at a social level depends on how the people can take responsibility for each other.

The aim of the study to concentrate on the participation in the development processes, the following chapter shows the theoretical background of it.

1.3. RESPONSIBILITY OF THE CIVIL/NONP-ROFIT ORGANISATIONS

At an individual level organisations have to operate in a balanced way; in that case they can take responsibility for their environment. What do I mean by balanced operation? Effective operation of organisations has internal and external factors. The external factors are determined by the state and by the economic situation of a country. These factors are the followings: laws, political environment, economic aspects, etc. Organisations have to accept these factors, and have to adjust to the situation of a country. Contrarily, internal factors are dependent from the organisations: proper income structure, effective leadership, motivated employees, widespread relationship, clear view about the future, flexibility, etc.

If the organisations face financial and leadership problems, they cannot concentrate on their goals and tasks, so they are not able to take responsibility for their own actions. In this case they cannot take responsibility for their environment and society either. So I think that being socially responsible has the requirement of acting effectively. If organisations cannot satisfy the needs of their members and the actors who are affected by the activity of the organisations they are not able to take responsibility for society[11]. But it just would be the basic role of a civil/non-profit organisation. Vidal et al.[12] noted, that taking responsibility for society by firms is a voluntary task, but in the case of civil/non-profit organisations it is an integral part of their existence.

In everyday life civil/non-profit organisations can take responsibility for society in the following ways:

- organising programs for the members and for other actors,
- publishing brochures, books,
- being involved in the decision-making process of a local government → civil control
- activity in public issues,
- offering special services,
- maintaining institutions,
- employing well-trained people,
- having active participation in the settlement development.

[11] This idea has a lot of similarity with the responsibility at individual level.

[12] Vidal, Paul – Torres, Domingo – Guix, Bárbara – Rodríguez, María Peña (2005): *The Social Responsibility of Non-Profit Organisations*. Observatori del Tercer Sector, Barcelona. Elérhető: www.observatoritersecter.org. Letöltve: 2013. február 17.

1.4. PARTICIPATION IN THE DEVELOPMENT PROCESSP

In my opinion every concerned actors (citizens, civil/nonprofit organisations, firms, etc.) in a settlement is responsible for shaping their environment, namely it can be stated that all of the social and economic actors and the decision-makers are together responsible for the development of a territorial unit. If citizens and other actors take responsibility for society, it means that they participate in the everyday life of a settlement or in the development of a territorial unit.

Participation in the development policy[13] means that actors have the opportunity to communicate their ideas and opinions about what is going on in their settlement, region or country. This is the form of appearance of social responsibility. If these actors take responsibility for their environment they will participate in those forums, etc. where they can express their willingness to care for other people. In my opinion, there are two main aspects of this participation:

1) With local or regional decision-makers: mainly participating in the development of a settlement or a region; making laws.

2) Citizens themselves through individual or civil/non-profit organisation actions: issues which do not need local authorities are mainly local affairs which affect people living in a certain settlement or village.

Both decision-makers and citizens have to know that the society where they live and operate will be more effective when the actors can formulate their willingness that they are able to give opinions on social and economic issues and on development.

All these things can be come true only when local governments give the people the opportunity to speak about their opinions of their lives and their settlement. To do this, the local governments have to change their way of thinking about managing a settlement and its development. The tasks of the local governments in this case are not only to ensure local services, but also to give sphere for the local actors to participate in. This kind of approach is the new way of operation of local governments. The following table shows the old and new tasks of local governments. The new one is called local governance, where the citizens and other actors have the main role in a settlement. The local decision-makers provide only the framework to social participation, and if needed they coordinate the process.

[13] Ploštajner, Zlata – Mendeš, Ivona (2005): *Citizens Participation. – How to Improve Development on Local Level?* Fridrich Ebert Stiftung, Zagreb Office, Zagreb. 97–113. Pike, Andy – Rodríguez-Pose, Andrés – Tomaney, John (2006): *Local and Regional Development*. Routledge, London and New York.

Table 1: **The old and new tasks of local governments**

Old view (20th century model)	New view (21st century model)
local governments are in focus	citizens and their organisations are in focus
local governments are responsible for the central government	local governments are responsible for citizens
closed and slow model	opened and flexible model
try to avoid risk	innovative and risk taker
totally dependent form the central government	has own decision-right in everything
bureaucratic	has participatory approach
centralized	glocalized

Source: Shah, A. (2006) A Comparative Institutional Framework for Responsive, Responsible and Accountable Local Governance. – Shah, Anwar (ed.) Local Governance in Industrial Countries. The World Bank, Washington D. C., 2006. 1–40.

I think that the base of the development of a settlement or a region is social responsibility. The question is why? If people are asked what they would like to develop in a settlement, it has a positive effect on the budget of the settlement and people will feel better because their opinions are taken into consideration. Projects – supported by the local actors – can be profitable not only in the short but also in the long term, and can serve not only the interests of politicians but also the interests of other actors. In this case local actors accept the results of the development also, so protests against the development processes will not occur. This type of development can save a lot of money for the settlement and also for the country, because the development plans are harmonized, so projects with no future will not be realized.

2. QUESTIONNAIRE RESEARCH

2.1. METHODOLOGY

The goal of the citizen survey was to get information from the citizens about their opinion and actions regarding social responsibility[14]. The national questionnaire survey was paper and on-line based, and it was carried out between April 2012 and March 2013. It must be noted that as 1 071 people filled in the questionnaires and our sample does not represent the Hungarian citizens, so I draw up my results only about those who participated.

[14] There have been no researches about this topic in Hungary yet.

About half of the sample is under the age of 30 (above 18), so there are a lot of students (35%). The ratio of women to men is 65%. The ratio of people who have a higher education degree is about 37%, much higher than the average in society. About ¾ of our sample live in a town or city.

I made analyses using demographic factors, but the age and the territorial unit were the most important ones in the following way:

- age: above and under the age of 30;
- territorial aspect: living in the North-Transdanubian Region and in the other part of the country.

My hypothesis is that local governments involve only small part of the citizens into decision-making process, if they do it; they ask citizens' idea mainly by questionnaire or phone. I supposed that there are no differences between the two groups of place of living, but citizens above the age of 30 are involved more often than the younger generation.

The goal of the organisation survey was to get information from the civil/nonprofit organisations about their opinion and actions regarding social responsibility. The research area was the North-Transdanubian Region (5 counties), we sent the questionnaires to 3 800 organisations by e-mail, about 7,7% of them answered. Our sample does not represent the organisations in the region (but the ratio of the organisations by activity and form is quite the same as in the region), so I draw up my results only about those who participated.

My hypothesis is that organisations are asked by the local governments at a higher rate than citizens, and the methods of asking are different.

2.2. ARE PEOPLE ASKED FOR THEIR OPINIONS BY THE LOCAL GOVERNMENTS?

Only 28,2% of the sample said that the local governments had asked them about the development or local issues in the settlement (Table 2). The ratio was not influenced by the territorial dimension, but was by the age: above the age of 30 people were asked in a bigger ratio than younger people. The background of the difference can be the following: older people have been living more ages, so the chance to be asked is higher.

There are no strong connections, but I can say that the following demographic characteristics significantly determined the positive answer:

- above the age of 30,
- high qualifications,
- living in a village,
- working as employee or retired,
- married,
- high income.

Based on these results I deduct that in a small settlement people have more opportunities to voice their opinions, some former researches also had the same results (e.g.: Márta Nárai[15], Adrienn Reisinger[16]). Not surprisingly people who have a higher income and qualifications said that they had been asked, as they are more interested in local issues, so local governments find them more easily. About 55,7% of them said that they had filled in a questionnaire in the settlement issues, also forums were mentioned quite often (39,2%). Other methods (for example: interviews, phone, personal survey) were rarely mentioned. In point of the methods there are differences between groups: the citizen forums were mentioned in a lower ration among the younger people. Furthermore asking by phone is not at all typical among the older generation and beyond the North-Transdanubian Region, whilst the interviews and the roundtables were used more often.

It is very good that 81,8% of these people said they took advantage of the opportunity, so they gave their opinions on a certain issue. 12,5% of those people who were asked were uninterested and 5,7% of them rejected the opportunity. These ratios are not so high, but show that people can be uninterested in these issues even if being asked. I think that the 81,8% is very positive; it let me conclude that if people are asked, they mostly tell their ideas. This can be an important message for the local governments: they have to be intent on asking more and more citizens with a various methods namely they are open to it.

[15] Nárai Márta (2008): *A nonprofit szervezetek helye és szerepe a helyi társadalmak életében – A nyugat-dunántúli nonprofit szektor helyzetfeltárása. (The role of the non-profit organisations in local societies – Characteristics of the non-profit organisations in West-Transdanubia).* Doktori disszertáció. ELTE Társadalomtudományi Kar, Szociológiai Doktori Iskola, Győr–Budapest.

[16] Reisinger Adrienn (2010): *Társadalmi részvétel a helyi fejlesztéspolitikában – különös tekintettel a civil/nonprofit szervezetek szerepére. (Social participation in the local development policy – with the focus on civil/nonprofit organisations.)* Doktori értekezés. Széchenyi István Egyetem, Győr.

Table 2: **Citizen participation in the decision-making process of the local governments**

		Whole sample	Territorial dimension		Age	
			North-Trandanubian Region	The rest of the country	under 30	30 or older
Are people asked for their opinions?	**Yes**	28,2%	28,2%	28,4%	**17,9%**	**38,5%**
If yes, in what way?	***Questionnaire***	*54,7%*	*55,8%*	*56,1%*	*59,6%*	*53,7%*
	Phone	15,5%	15,2%	**1,5%**	19,1%	**0,5%**
	In person	21,3%	22,3%	19,7%	14,9%	24,9%
	Interview	2,0%	0,9%	**6,1%**	1,1%	2,5%
	Citizen forum	*39,2%*	*37,5%*	*45,5%*	***24,5%***	*46,3%*
	Roundtable	8,8%	10,3%	**19,7%**	6,4%	10,4%
Did people take opportunity to tell their ideas?	**Yes**	82,3%	82,5%	79,1%	77,9%	83,5%
	Reject	5,4%	5,4%	6,0%	**9,5%**	4,0%
	Unconcerned	12,2%	12,1%	14,9%	12,6%	12,5%

Source: Own table based on questionnaire research.

2.3. ARE CIVIL/NON-PROFIT ORGANISATIONS ASKED FOR THEIR OPINIONS BY THE LOCAL GOVERNMENTS?

Half of the sample said that local governments have been asked them so far to tell their ideas about the development of the settlement or about other issues in the settlement. This ratio is much higher than in the case of the citizens (about twice as much). The reasons can be the followings:

- Citizens can voice their ideas more effectively in organisations; so local governments consider peoples' ideas in organisations rather than of their own.
- According to the local government act the ideas of the local actors have to show up in the decision-making process, that's why local governments have to involve citizens into the process.

The most popular methods were the personal way and the roundtable coming into contact with the organisations (71,8% and 51% of them said they have been asked in these ways). The methods were different from the citizens, among them the questionnaire was the most popular, and among organisations it was not often mentioned. The reason of the difference can be that that the way of asking is different between citizens and organisations. There are maximum several hundred organisations in a settlement, it is easier to reach them, and so it is more practical to choose the personal way.

Organisations were asked did they tell their opinion to the local governments, except three organisations all of them said „yes", that means the involving of the organisations were successful (I do not have any information about the future of the ideas, so I do not know if the local governments did they use it or not).

3. SUMMARY

The aim of the paper is to show that the social responsibility is more than the voluntary task of the companies; also other social and economic actors are responsible for the society and for the happening in their settlement. If citizens and other local actors can take responsibility for their own lives, they will be able to do the same for the society too. It means that actors feel that they have to do something for the society where they live through voicing their opinions about the settlement. In this approach the participation in the development process is one type of social responsibility. It is very important that local governments have to be open to this type of development; namely they have to give the opportunity to citizens and other actors to speak about their goals, opinions and ideas about the community. I believe if actors have this opportunity it will benefit the settlement, because they also accept every action, which is realised, resulting in a higher level of satisfaction among people. In my paper I concentrated on the social responsibility of citizens and civil/nonprofit organisations.

In my research I tried to find out whether local governments give the opportunity to citizens and civil/nonprofit organisations to voice their ideas. Two pieces of questionnaire-based research were done in 2012 and 2013. My first hypothesis was that local governments involve only a small part of the citizens into the decision-making process; if they do so then they ask for the citizens' ideas mainly by questionnaire or telephone. I supposed that there are no differences between the two groups of place of living, but citizens above the age of 30 are involved more often than the younger generation. I can accept my hypothesis: only 28.2% of the sample said that they were asked by the local government about the settlement's development and local issues, and the older citizens were asked in a higher ratio. Based on these results I can say that local governments are not active in asking people about their ideas. Of course that there are occasions when there is no room for the local actors, because the local MPs are the

experts in terms of local issues, but I think that there lots of issues when citizens and other actors have to have a voice (e.g. building new buildings, roads, bridges, discussing local problems, shaping the future plans, etc.). I think both the local decision-makers and the citizens have to be open to take part in these kinds of actions; the first step should be if somebody has an opinion, it has to be listened to. For example, if citizens indicate that there are problems in their surroundings to the local MPs, decision-makers have to deal with the problem and not neglect it. In this case people will feel that they are important and can have a voice. It is also important that the young generation as well has to be taken into consideration; most of them learn about the form of democracies and about the civil/nonprofit sector, so if they have the opportunity, they are able to voice their ideas. The most important thing is that there is someone who listens to them.

My second hypothesis was that organisations are asked by the local governments at a higher rate than citizens, and the methods of asking are different. My research verified the statement: half of the organisations were asked and the methods were different. Citizens were asked mainly by questionnaires and in forums, but the organisations in person. From these answers I can conclude that local governments regard organisations as a partner in the development process rather than the citizens on their own. It is important to stress that organisations were more active; almost all of them voiced their ideas, whereas about 20% of the citizens were passive.

What is the solution? I believe that politicians and also the citizens and other actors themselves have to be open to the opportunity to speak about the future of a settlement. It is true that the any decision-making process will take longer in this case, but it will be more successful and ultimately a communal process, which benefits both society and the economy in the long term.

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HUNGARIAN SUMMARY

Manapság a társadalmi részvétel fogalmát hallva gyakran a vállalati-társadalmi felelősségvállalásra asszociálunk, szakirodalom is elsősorban e témában található. Úgy gondolom, hogy az állampolgároknak, a különböző szervezeteknek, intézményeknek és az államnak is van felelőssége. Az állampolgárok és a szervezetek felelősséget tudnak vállalni saját életükért, működésükért, a társadalmi folyamatokért és a településük fejlesztéséért. A tanulmány az állampolgárok és a civil/non-profit szervezetek társadalmi felelősségvállalására fókuszál egyrészt szakirodalmi, másrészt empirikus bázis alapján.

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Alternative indicators: can socio-economic advancement be measured?

The target of our study is to examine the possibilities as well as the limitations of the application alternative composite indicators. Our study focuses on what kind of relations the indicators are in; to what extent they can substitute the GDP and what kind of morals can be indicated for Hungary. The basic question of our research is how possible is to group countries clearly based on the values of alternative indicators. In this study three composite indicators (HDI, HPI, EPI) and the ecological footprint and GDP trends were examined. In the first phase of our research, we revealed that these indicators could be observed in pairs to linear relationship; the Pearson's correlation index values are shown in the correlation matrix. Based on our analysis, these two indicators are independent from each other and also independent from the GDP; these are the HPI and the EPI. The classification of countries was performed using cluster analysis. Based on the three-cluster model, a specific path of development was determined in Latin America, which proves a useful experience for Hungary.

1. INTRODUCTION

Recently, two analyses have been conducted in which the possibilities as well as the limits of the application of alternative composite indicators were examined. In our first study the connection between the alternative indicators, local trading systems and happiness was under investigation[4]. It has been found that there is a relation between stronger local cooperation and happiness. In the focus of our

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[3] Budapest Business School College of Finance and Accountancy, Head of Department, associate professor (farkas.szilveszter@pszfb.bgf.hu).
[4] Szigeti C. – Farkas Sz. – Borzán A. (2012): *The appearance of the theory of "degrowth" by composite indicators, the presentation was given in the I.* Conference of the Alternative Financing. 3rd October. Sopron. And it was published in CD form of the conference.

second analysis[5] the relation between the sustainable indicators and the undertaking inclination was set and based on this, an alternative development way was defined for Hungary. In our present research, the specific Latin American development way of outlining based on the previous findings is being examined. The developmental differences between North and South American countries are attributed to the fact that such institutional as well as legal systems were established in the north to protect private ownership and favour market mechanisms[6]. However, the economic crisis queries the success of the model resting on conventional market operation as well as the private ownership and the values of those communal characteristics, which previously have not belonged to the features of successful countries, are rising. The influences of the economic crisis beginning in 2008 can be experienced even today[7]; the most significant crisis of the new Millennium has unusual effect on every participant of macroeconomics. The public budget was hard hit by the finance ability of the public debt and the economic crisis has meant significant events for both enterprises and the household, for instance the rise in the price of loan costs and the decline of consumption as well as investments, which can ultimately be recognised as the damaging factors of the welfare.[8] Due to the impact of the economic crisis, the professional interest toward the reform of macroeconomic indicators has increased and since the report of Stiglitz – Sen – Fitoussi[9] dealing with the limits of the GDP index, the accepted opinion is that the present clearing of accounts system is untenable, which appears not only in the theories and research findings of alternative economists but also in the decision making of economic policy.

[5] Farkas Sz. – Szigeti C. – Borzán A. (2012): *The state of Hungary based on some alternative indicators, the presentation was given in the Conference of Science Day of BGF.* 8th November. Budapest.
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[9] Stiglitz, J. E. – Sen, A. – Fitoussi, J.-P. (2009): *Report by the Commission on the Measurement of Economic Performance and Social Progress*. (Elérhető: http://www.stiglitz-senfitoussi.fr/documents/rapport_anglais.pdf. Letöltés ideje: 2013.11.04.)

In recent years, several assessments and criticisms have been published on the research of Stiglitz, mainly as a result of social studies.[10]

Even from the beginning, the measuring experiments and their standpoints presented considerable variety; the basis of the measurements was the industrial achievement in England and mainly the agricultural performance in France. The contemporary measuring system based on the GDP started to be established in the 1930s and its difficulties emerged even in the first years: „In 1931 a group of governmental and private experts was called for congressional audition in order to provide answers to basic issues in connection with the economy. It came to light that they were not able to do this: the latest facts and figures had reference to 1929 and they were also incomplete. In 1932, in the last year of the Hoover administration, the senate called upon the Ministry of Commerce to conduct an overall estimation about the national income. Soon after, a young economist, Simon Kuznets was commissioned by the ministry to develop a unified system of the national clearing of accounts. This became the prototype of today's GDP. Simon Kuznets had serious reservations about the clearing of the accounts system of the national economy aided by him. In his first report of 1934 to the congress, he tried to draw the nation's attention to the limits of the new system. » Hardly can we conclude about the welfare of a nation from the measure of national income determined above«– drawing his conclusions. (...) Simon Kuznets rejected the most of the leading economic priori conceptual schema. When an economy starts to increase, as he claimed, the parts of that economy must increase as well. The economists ought to attempt to conduct the measure of more and varied items. In his book, *The New Republic*, 1962, Kuznets set down in writing that there is a need for a basic reconsideration of the national clearing of accounts. » We need to pay attention to the distinction between the quantity and the quality of increase, between the costs and the yields and the differences between the long and short-term considerations« according to Kuznets. » The targets of the 'larger' increase must be determined specifically, in other words, what should be increased and for what reason."[11] The situation remained unchanged for a long time: „After the GDP was welcomed completely in the United States, the calculation system of the national economy represented above was accepted globally. In the previous forty years this system was not being modified at all while mankind and the face of the Earth transformed to an extent, which had not been experienced before. Only some of the dynamic changes constitute the conquest as well as the exhaustion

[10] Tsai, M.-C. (2011): *If GDP is Not the Answer, What is the Question?* The Juncture of Capabilities, Institutions and Measurement in the Stiglitz-Sen-Fitoussi Report Social Indicators Research. 102. 363–372. and Michalos, A. C. (2011): *What Did Stiglitz, Sen and Fitoussi Get Right and What Did They Get Wrong?* Social Indicators Research. 102. 117–129.

[11] Cobb, C. – Halstead T. – Rowe J. (1997): *Ha a GDP felmegy, miért megy Amerika lefelé?* Kovász.1997/1. 30–47.

of the environment, the denial of the existence of the subsystem of the economy and the incorporation of other social factors (family, politics, public administration) by the economy, the huge population explosion and the incredible financial differentiation".[12] The development of national accounts was set in many ways due to the concerns related to environmental problems caused by the increasing economy from the 1970s.[13] Researchers have developed several indicators in the past decades as a result of the improvement of additional GDP or substituting alternative indicators[14]. One of the most completed overview of the findings of recent years can be found in the article of Bleys.[15] The author is not willing to determine the exact number of alternative indicators; however, Brent Bleys presents almost 200 indicators and its various clustering opportunities. The study by Vackár[16] is outstanding in its examinations aimed at exploring the connections among the indicators in which the correlation matrix of 27 alternative indicators was prepared. Detailed analysis about the relation between the GDP, the ecological footprint and happiness can be read in the article by Kocsis, in which the influences and consequences of the varied developmental ways are outlined for Hungary. Environmental sustainability would often require a decrease of the GDP per capita in the so-called developed countries among the possible and positive future prospects.[17] The various indicators are important at a global level, but we think that it could be also at a macro regional level too; for example the interpretation of the indicators could also be important in the cohesion policy of the EU. Also the local players (civil organisations, firms, etc.) can contribute to the success of the cohesion policy (Reisinger 2012)[18], so they can also contribute to the utilizations of the indicators in a wide range of the players.

[12] Dabóczi K. (1998): *A mérhető balgaság, avagy miért nincs olaj a közgazdaságtan lámpásában?* Kovász. II. évf. 2. sz. 32–57.
[13] Lawn, P. (2007): *A stock-take of green national accounting initiatives.* Social Indicators Research. 80. 427–460.
[14] Hák, T. – Moldan, B. – Dahl, A-L. (2007): *Sustainability Indicators.* A Scientific Assessment Island Press. 14–448.
[15] Bleys, B. (2012): *Beyond GDP.* Classifying Alternative Measures for Progress Social Indicators Research. 109. 355–376.
[16] Vackár D. (2012): *Ecological Footprint, environmental performance and biodiversity: A cross-national comparison.* Ecological Indicators. 16. 40–46
[17] Kocsis T. (2010): *„Hajózni muszáj" A GDP, az ökológiai lábnyom és a szubjektív jóllét stratégiai összefüggései.* Közgazdasági Szemle. LVII. évf. június. 536–554.
[18] Reisinger A. (2012): *Civil/nonprofit szervezetek a kohéziós politikában – elméleti alapok.* Tér és Társadalom. 1. 41–66.

2. MATERIAL AND METHODS

In our study we examined the indicators belonging to the group of alternative indicators of substituting the GDP. We took into consideration two factors when we selected the indicators. We were in search of such indexes, which can evaluate at least two pillars (environmental, economic and social) of sustainability and which are available in most countries. We present below the components of the examined alternative indicators:

Human Development Index (HDI)

The Human Development Index (HDI), an overall complex index including four indicators and three dimensions, evaluates the developmental level of certain countries with the combination of GNI per capita, life time expected by birth, combined gross school enrolment and the index of adult literacy. The HDI index is the member of a four-member index-family (HDI, IHDI, GII and MPI) of the United Nations Development Programme-UNDP. In 2010, an overall reform of indexes was accomplished which can be recognised in their renaming and content change. Although it is a characteristic of every indicator that they provide more a precise picture of the welfare of a country compared to the GDP, none of the indexes contain direct data about the state of the environment. The HDI index ensures a wide variety of comparison possibilities and detailed HDI data of 187 countries can be downloaded from the homepage of the UNDP. The values of indexes can be from 0 to 1. The higher the value of the indicator, the better the case is.

Environmental Performance Index (EPI)

Researchers at the Universities of Yale and Columbia together with scientists of the EU created the Environmental Performance Index, which is the successor of the Environmental Sustainability Index. The index of 2010 divides altogether 163 countries based on 25 performance indicators, which are listed into 10 categories including environment, public health and the health of the ecosystem. Among the indexes the DALY (Disability-Adjusted Life Year Index) index appears with 25%. These indicators show how close the governments are in order to set up a comprehensive environmental package of measures. In the database the data of 132 countries can be found. The values of indexes can be from 0 to 100. The higher the value of the indicator, the better the case is.

Happy Planet Index (HPI)

The HPI (Happy Planet Index) measured by the New Economic Foundation (NEF) includes 3 factors: expected life time, ecological footprint and satisfaction

with life; in other words, it complements the ecological footprint with objective and subjective factors determining people's quality of life. The database of the Happy Planet Index (HPI) contains the data of 151 countries. The values of indexes can be from 0 to 100. The higher the value of the indicator, the better the case is.

Ecological footprint (FP)

The Ecological Footprint means how much productive land is needed for a human society to maintain itself and to process its manufactured waste as well as given technological development. The measurement unit of the Ecological Footprint is the global hectare/person (gha). According to the European Commission, the ecological footprint and the carbon-dioxide footprint together make up those environmental indexes, which can fill the role of an overall environmental index; however, its circle of application is restricted. We can download the ecological footprint data of 142 countries from the homepage of the Global Footprint Network and estimations about further 9 countries can be found in the database including the calculation of the Happy Planet Index. The most common criticism against the Ecological Footprint Index is that it contains neither the social factors nor people's satisfaction. This index is not suitable for covering all the aspects of sustainability although it is often mentioned among the sustainability indicators. However, this criticism is irrelevant since the creators of the ecological footprint have never claimed that, for instance, it would be a composite indicator, such as the HDI or ESI, which include more pillars of sustainability. The Ecological Footprint gives information about the application of hypothetic area; it does not promise anything more or less.[19] The Ecological Footprint is applied on more levels from the beginning of measurement by its creators.[20] Besides global evaluation, they also use national, regional, settling and individual EF indicators in order to compare the spatial demands of the consumption with the disposable biological capacity. The general recognition of this index differs considerably in the different application areas and while the global EF is considered to be the best index of „sustainability"[21], its spatial application is criticised from more sides.[22] For this reason the national use of the Ecological Footprint must be treated with increased caution. The values of this indicator are more than 0, although it does not have a top limit. The smaller the value of the index, the more favourable the case is.

[19] Csutora M. (2011a): Az ökológiai lábnyom számításának módszertani alapjai. In: Csutora (szerk): *Az ökológiai lábnyom ökonómiája.* Aula Kiadó. 12.
[20] Rees, W. – Wackernagel, M. (1996): *Urban ecological footprints: why cities cannot be sustainable and why they are a key to sustainability, Environ*. Impact Assess. Rev. 16. 223–248.
[21] Stiglitz, J. E. – Sen, A. – Fitoussi, J.-P. (2009): i. m.
[22] Bergh, Van den, J. C. M. J.– Verbruggen, H. (1999): *Spatial sustainability, trade and indicators: an evaluation of the ecological footprint*. Ecological Economics. 29. 61–72. and McDonald, G. W. – Patterson, M. G. (2004): *Ecological Footprints and interdependencies of New Zealand regions (analysis)*. Ecological Economics. 50. 49–67.

By selecting the methodology of our examination, we relied to a large extent upon the research of Mostafa[23]. We have investigated whether linear relation can be observed among the alternative indicators in pairs. We conducted our analyses with the help of the software package of IBM SPSS20 and based it upon the data analysis manual of Sajtos – Mitev[24] when selecting the methods and assessing the results. The basic query of our study is whether it is possible to group countries based on their ecological footprint structure. We accomplished the grouping of countries as well as regions with the help of cluster analysis. In the first phase of our study we revealed whether linear connection could be noticed among the alternative indicators in pairs.[25] We conducted the examination with the data of those 126 countries whose indicator values included in the calculation are available. We indicated the values of the correlation index of Pearson in a correlation matrix. Since the cluster analysis is sensitive to the presence of outliers, in the second phase of our research we checked the prominent data with average linkage method and excluded these values from our study. From the point of the assessment of the findings, it is significant that we did not exclude the prominent values of single data but rather those created by one member team during the examination, so after the elimination we continued the study with the data of 122 countries. We set two conditions, which mean that we take it as a relevant division: (1) the spreading within the cluster is smaller than the spreading of the whole mass as it refers to the fact that we managed to establish a homogeneous group according to the examined factor, (2) the findings of at least two examinations are similar.

3. THE RESULT OF OUR FIRST EXAMINATION

Based on the values of the correlation coefficient of Pearson (Table 1.), there is close connection between certain indicators (these are indicated by the highlighted cells). Two indicators, the HPI and the EPI can be considered independent from the GDP and all the other indexes. As a result of this, besides these two indicators, the GDP or any other indicators can be included in the cluster analysis without a deformation in the findings. The other essential aspect of the assessment of the findings is that the close connection between the Ecological Footprint and the GDP can question the suitability of the Ecological Footprint.

[23] Mostafa, M. M. (2010): *Clustering the ecological footprint of nations using Kohonen's self-organizing maps.* Expert Systems with Applications. 37. 2747–2755.
[24] Sajtos L. – Mitev A. (2007): *SPSS kutatási és adatelemzési kézikönyv.* Alinea Kiadó, Budapest.
[25] The availability of the above-mentioned database applied by the calculations can be found in the reference list by indicators.

Table 1: **The correlation coefficient of Pearson**

n=92	HDI	FP	HPI	EPI	GDP
HDI	1	0.744	0.145	0.535	0.758
FP		1.00	-0.336	0.377	0.909
HPI			1.00	0.174	-0.189
EPI				1.00	0.484
GDP					1.00

In the estimation of Vackár[26] the value of the correlation coefficient is 0,289 between the ecological footprint and the EPI, which confirms that only a weak-medium relation can be noticed between the two indicators. According to the study by Csutora, the correlation is 0,356 between the ESI (the predecessor of the EPI) and the ecological footprint.[27]

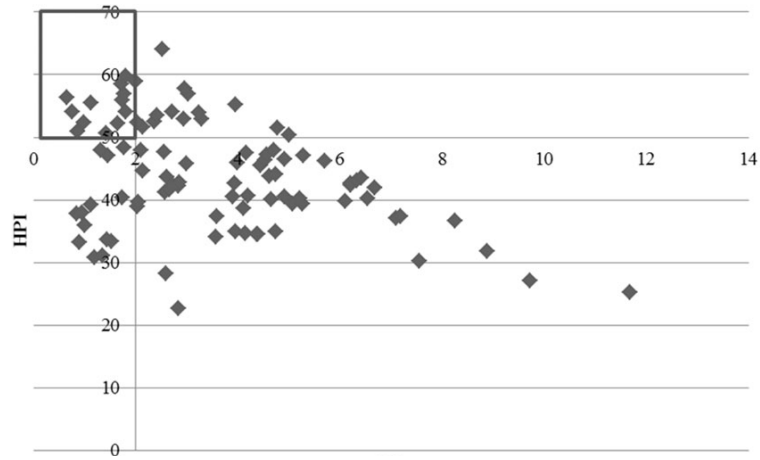
We can receive a more significant result from the analysis including the two indicators when comparing the values of HPI and FP. The Figure 1 is placed in the intersection point (2; 50) of axes. Since the value of the ecological footprint can be maintained under 2 gha / person and the value of the HPI is favourable above 50, (according to the usual naming) the countries belonging to the 2nd quarter (e.g. Jamaica, El Salvador and Columbia) are in the most favourable position based on the two indicators. A different strategy can be determined for those countries belonging to the other three horizontal quarters:

- 1st quarter (e.g. Costa Rica, Venezuela, Norway and Switzerland): decreasing the ecological footprint, holding the HPI on level.
- 3rd quarter (e.g. Angola, Kenya): holding the ecological footprint on level, increasing HPI.
- 4th quarter (all of the Members of the European Union): decreasing of both indicators.

If we exclude the impact of the GDP with partial correlation calculation, the connection between the HDI and the ecological footprint practically disappears. It is interesting-professionally surprising-that there is no close connection between the values of HPI and the ecological footprint but nevertheless the ecological footprint is part of the HPI.

[26] Vackár D. (2012): i. m.
[27] Csutora M. (2011b): *From eco-efficiency to eco-effectiveness?* The policy – performance paradox in Society and Economy. 33. 1. 161–181.

Figure 1: **The relation between the ecological footprint and the HPI**



In our contemporary study we conducted the cluster analysis of countries based on the trio of EPI-HPI-HDI.

4. THE RESULT OF OUR SECOND EXAMINATION

The extreme outliers excluded by the simple chain method are Costa Rica, Botswana, Iraq and Switzerland. The value of the HPI index of Costa Rica is the highest in the world (64.0359) and the lowest value of the HPI index is Botswana's (22.5912). The highest value of the EPI index is in Switzerland and the lowest is in Iraq (25.32) (Table 2).

Table 2: **The most and the least favourable values of the examined alternative indexes and the data of Hungary**

Country	Index	Value	Source	Information
Qatar	Ecological footprint (gha/person)	11.68	HPI database	The value of the index is better if it is smaller (The value of the sustainable ecological footprint is under 2 gha/person)
Afghanistan		0.54		
Hungary		3,59		
Botswana	HPI	22.59		The values of indexes can be from 0 to 100. The higher the value of the indicator is, the better the case is.
Costa Rica		64.03		
Hungary		37.4		
Democratic Republic of the Congo	GDP/person	347		
Luxemburg		50700		
Hungary		20545		
Democratic Republic of the Congo		0.286	HDI database	The values of indexes can be from 0 to 1. The higher the value of the indicator, the better the case is.
Norway		0.943		
Hungary		0.816		
Iraq		25.32	EPI database	
Switzerland		76.92		
Hungary		57.06		

After the exclusion of countries consisting of the four prominent data, we accomplished a cluster analysis and we present the findings by the simple chain method (between-group linkage) in Table 3. In the grouping of the three clusters, it is true for all the three variables of the examination that their spreading is lower than the spreading of the whole mass and we received similar findings with the help of the ward method; for this reason the grouping is suitable for the original conditions. In Table 3 the values of the non-examined indicators

are indicated as well. We examined the deviation from the average of the values of certain indicators (expect for the ecological footprint the higher value is the more favourable). In the boxes highlighted in black the values of at least 15% more favourable than the average and in the boxes highlighted in grey the values of at least 15% more unfavourable can be found.

Table 3: **The findings of the cluster analysis**

	HDI	FP	HPI	GDP	EPI
means	**0.70**	**3.18**	**43.36**	**15800.99**	**53.07**
1. cluster	0.79	4.45	41.68	25954.03	61.12
2. cluster	0.71	2.14	55.03	9266.4	55.08
3. cluster	0.61	2.43	39.64	8856.92	44.26

1st cluster: the indicators of the GDP and EPI of the countries of the first cluster are more favourable than the average; in this sector the highest is the value of the HDI and Ecological Footprint indicators. Among others, the Members of the European Union, Japan and the USA belong to this cluster. These are the richest countries examined in this study. Among the Latin American countries Uruguay can be listed in this cluster.

2nd cluster: the values of the ecological footprint and the HPI indicators of the countries of this cluster are more favourable than the average while the GDP is lower than the average; typically Latin American countries belong to this cluster. The happiest countries belong to this cluster.

3rd cluster: the values of the ecological footprint of these countries are the most favourable while their GDP and EPI are lower than the average. The happiest countries belong to this cluster. Among the Latin American countries Haiti is part of this cluster.

5. CONCLUSION

As the result of the criticism of the GDP and the increasing changing demand, the different scientist teams have established several alternative indicators and some of these (e.g. HDI or the ecological footprint) strongly correlate with the GDP despite the differing calculation methods. The significant surplus information in the indicators can be a useful addition in relation to the judgement of sustainability of certain countries. However, this fact can question the applicability instead of the GDP. The independence from the GDP provides a possibility for two complex indicators, namely for the EPI and for the HPI to conduct analysis based on other points. In our study, besides these two independent indicators, the values of the HDI index were placed in our examination. On the basis of the three indicators, the countries can be clearly grouped.

The countries of the 2nd cluster represent a specific and significantly different development route from the European one. They can live more happily with a lower than average GDP and with smaller environmental problems. (The Latin-American country, Costa Rica, the extreme outlier excluding from the study, is the happiest state in the world.) It is interesting that The HPI index (50.34) of the happiest European state, Switzerland lags behind the HPI index (50.65) of the least happy Latin American country, namely the Dominican Republic. In the 21st century, a paradigm shift happened in the economical policy thinking of the Latin American countries. It is a common belief among Latin-American politicians and economists that it is not appropriate to view the neoliberal economic policy as one without an alternative and it is not obvious that the steps initiated by the IMF mean the long-term solutions for the region.

It would be worth considering for Hungary as well as for the European countries that, besides the economic development presented in GDP, they should favour improvement based on community building and local cooperation, which is a characteristic in the high number of the local trading systems (LES) in Venezuela.[28] On the website of the Complementary Currency Resource Center, we can find some detailed information of 163 Local Exchange Systems of only 27 countries. The number of the members of the LES is altogether more than 792 000. 47 different types of LES system can be distinguished; however the most common (including 43 organisations) is the Local Exchange Trading System – LETS. The datum of 3 Hungarian organisations can be found in the database: Bakonyi Cserekör, Charity Exchange Shop (Szolnok) and Soproni Kékfrank. In those countries where the LES system is more widespread, people are more satisfied with their life. There is no absolute relation of cause and effect between the two factors, so it is likely that the many-coloured local relationships can promote the establishment of LES, which can contribute to the satisfaction of demands on higher levels as well as to the contentment with life even at a lower income level.

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[28] http://complementarycurrency.org/

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HUNGARIAN SUMMARY

Kutatásunk alapkérdése, hogy lehetséges-e az országokat egyértelműen csoportosítani az alternatív indikátorok értékei alapján. Jelenlegi tanulmányunkban három kompozit indikátor (HDI, HPI, EPI) és az ökológiai lábnyom, valamint a GDP alakulását vizsgáltuk. Az alternatív indikátorok kiválasztásánál két tényezőt vettünk figyelembe: olyan mutatókat kerestünk, amelyek a fenntarthatóság legalább két pillérét (környezeti, gazdasági, társadalmi) mérik és a lehető legtöbb országra rendelkezésre állnak. Kutatásunk első szakaszában feltártuk, hogy a mutatók között páronként megfigyelhető-e lineáris kapcsolat, a Pearson-féle korrelációs index értékeit korrelációs mátrixban tüntettük fel. Elemzésünk alapján két olyan mutató van, amely egymástól és a GDP-től is független, a HPI és az EPI. Az országok csoportba sorolását klaszter analízis segítségével végeztük. A létrehozott háromklaszteres modell elemzése alapján meghatároztunk egy sajátos latin-amerikai fejlődési utat és ennek hasznosítható tapasztalatait Magyarország számára.

Environmental Science

PATRÍCIA HONVÁRI[1]

Global climate change: Little steps towards a new energy policy?

It is almost impossible to find any issue today – political, economic or social – where climate change does not play a part. We hear about it on a daily basis, mostly in a negative context. However, we hear less about the origins of this phenomenon, and about the consequences, which will affect every inhabitant of the Earth. Because the change is slow and gradual, we tend not to sense the obvious signs. However, our Earth is already sending distress signals.

In the first part of this study, climate change and its potential effects are presented. Then the international efforts are discussed. In my opinion, the different international and global agreements are not able to stop the negative consequences of climate change. The only way to reverse the expected outcomes is to cut down on greenhouse-gas emissions, and to start a new energy policy, where renewables have a determinative role. In the second part of the study Hungary is in focus. It can be established that there are positive changes, "little steps" in the direction of using alternative energy sources. But these examples are rather isolated and individual initiatives. The study determines the push and pull factors of this issue, namely the success factors and the obstacles regarding the use of renewable energy in Hungary.

1. A FEW WORDS ABOUT CLIMATE CHANGE

'Climate change' and 'global warming' are often used as synonyms. In the past the phrase 'global warming' phrase was used for the rising of the surface temperature, but this expression does not cover all the common effects. But 'climate change' includes beyond the rising of the temperature; it also covers changes in the quantity and distribution of rain, in the height of the sea level, and in the meteoric current. Hence experts nowadays prefer the expression 'climate change', because this term describes not just the warming but also all of its consequences.[2]

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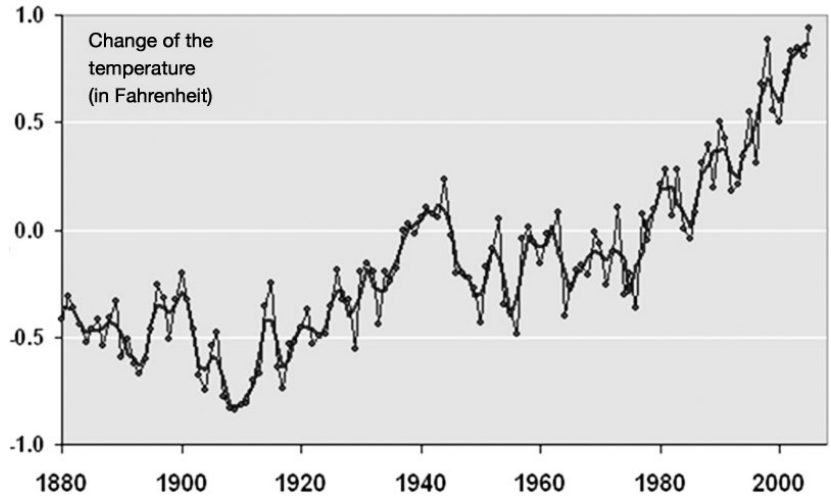
[2] Európai Bizottság: *Climate Action, Mi az az éghajlatváltozás?* Elérhető: http://ec.europa.eu/clima.

Figure 1: **Change of the global temperature, 1880-2005**



Source: NOAA[3]

It is undisputedly proven that the average temperature of the Earth has been rising since the Industrial Revolution. But what generates this? There are two accepted answers. According to one of these, our Earth is always in a cycle regarding the temperature: sometimes in a falling and sometimes in a rising period; and presently we are going through a warming period. The other answers claims that we have undergone a lot of changes since 1880 – for example, the population has increased from 1 billion to 7 billion – which influence the climate of the planet[4], and the phenomenon is basically a consequence of the human activity.

The different effects of the warming which concern both human and natural systems are already noticeable today. If the present tendency of the greenhouse-gas emission remained unchangeable, the temperature of the Earth could rise by 4-6 Celsius degrees by the end of this century. Even if this rise were half this projected number, that would also cause huge damage and a potential disaster. The fourth report of the IPCC[5] calculates with several dangers and disadvantages in the future, which are more serious than earlier expected.

Weather extremities and the changed water supply will manifest the most important impact. A larger extent of ultraviolet radiation and longer periods of drought are also likely to happen. Climate change can have an effect on the geographical location of different species. Intruder animals can appear and

[3] *National Oceanic and Atmospheric Administration.* Elérhető online: http://zfacts.com/node/280.
[4] Láng István (2006): *Klímapolitikára van szükség.* Európai Tükör. XI. évf. 3. sz. 2006. március. Elérhető: http://www.euvonal.hu/kulugy/upload/M_29/rek5/427.pdf. Letöltés ideje: 2009.02.15.
[5] Intergovernmental Panel on Climate Change – IPCC: international body of scientists, whose aim is to give impartial and unbiased informations about the climate change, in the forms of reports. The latest report was the fifth, which came out in September 2013.

overwhelm the native wildlife, and we have to calculate with the definite disappearance of many species. The higher temperature can cause serious physiological disorders, or it can even cost human lives, especially amongst the elder generation.[6]

The above-mentioned effects of climate change can originate from two phenomena: the immense growth in the population and the cumulative hunger for energy. The Population Division of the United Nations prognosticates that the population of the world will exceed 9 billion by 2050.[7] But the problem is that the surface of the Earth cannot be increased. Demand for food, consumer and luxury goods is creating a major pressure. People always desire a higher standard of living and this has a direct effect on the careless usage of the environment.

2. HUNGER FOR ENERGY

The different natural resources and other goods are not equally available for the population. A reasonably small proportion leads a wasteful lifestyle, while the bigger proportion has to deal with poverty. This so called welfare gap results in growing tension, which leads to riots and emigration in many countries. The consequences are also harmful for nature. The destruction of the environment is not only specific for the developed societies. People who live in necessity and poverty also damage the nature, as they must utilize everything useable, unfortunately without any regard to its consequences. The result is often ruthless exploitation, burned forests and extinct animals and plants. Growing welfare and consumer needs and an increasing population are all leading to the exploitation of the non-renewable raw material sources, which is irresponsible from the next generation's point of view, as the utilized resources, as well as extinct animals and plants are cannot be brought back.[8]

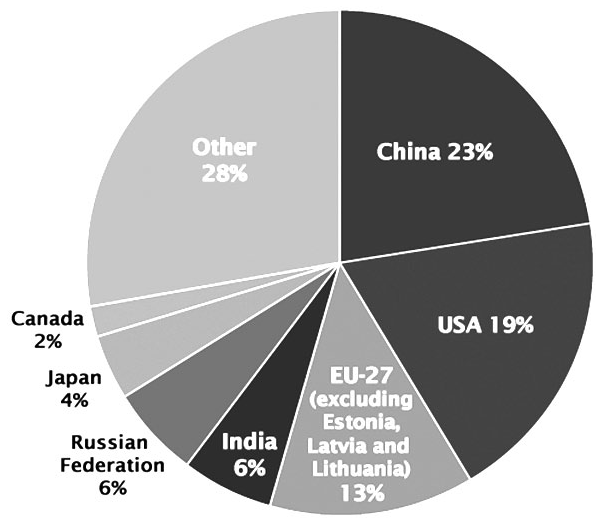
Due to climate change a new group of emigrants can appear: the environmental migrants. Current international legal regulations do not cover the status and definition of these people. Their number is predicted to reach 150 million by 2050, which would mean 1.5% of the population. Regarding migration, host countries already have visible social tensions and racist manifestations are becoming more frequent. The above-mentioned emigration would definitely intensify this already volatile situation.[9]

[6] W. L. Hare (2009): Az éghajlat biztonságba jutásáért. In: *A világ helyzete 2009. – Úton egy felmelegedő világ felé*. Worldwatch Institue,Föld Napja Alapítvány, Budapest.
[7] United Nations (2008): *Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, World Population Prospects: The 2008 Revision*. Elérhető: http://esa.un.org/unpp. Letöltés ideje: 2009.02.25.
[8] Sojka, Nikolaus (1997): *Környezetvédelem és környezeti jog*. Jatepress, Szeged.
[9] Dr. Kondorosi Ferenc (2010): *Rend és szabadság: esély Európában*. Magyar Közlöny Lap- és Könyvkiadó.

An increase in the world population has already attracted the attention of science and scientists. An explosive rise in figures would already create confusion by itself, among others in the food supply, the drinking-water resources, or the growing rate of the poverty, even if it didn't go hand in hand with the damage of the environment. Changing this process would demand a very long-time commitment; in addition it also creates a great deal of moral questions regarding, for example, the rights of the women. So, restriction or limitation of the population cannot give an appropriate answer to climate change and the damage of the environment.

A growing hunger for energy can be much more an impressionable factor and it does not induce any ethical questions. Decision-makers of the world should concentrate on this issue because cutting down on the use of fossil fuels, and an increase in the application of the alternatives could give a solution only in the short run. Technologies are given in many places; however the application is still below the realizable rate.

Figure 2: **Global CO2 emissions from fossil fuel combustion, 2008 (Million metric tons of CO_2)**



Source: EPA[10]

The majority of the world still uses pollutant fossil fuels with huge carbon intensity, in spite of the growing expenses and medical, environmental and even national security risk. In Figure 2 the biggest carbon dioxide emitters can be

[10] *US Environmental Protection Agency.* Elérhető: http://www.epa.gov/climatechange/ghgemissions/global.html. Letöltés ideje: 2009.04.10.

seen, with China in the first place and the United States in the second. Until now fossil fuels were cheap and abundant, and as a consequence their application was wasteful. But the easy available, convenient sources are becoming depleted; explorations cannot keep up with demand. The competition for non-renewable energy sources already deepens the international tensions, and this trend will probably intensify in the future.

3. EFFORTS ON AN INTERNATIONAL LEVEL

The global community recognized the urgent demand of cutting down carbon-dioxide emissions a long time ago, in order to avoid a disastrous scenario. Climate summits in Stockholm, Rio, Johannesburg, Kyoto or Copenhagen are all demonstrate this effort. Yet the climate change conferences up to the present have proved to be unsuccessful because they do not contain any legal sanctions. The main reason for this is the lack of political will. Out of the numerous documents, agreements and accords from 1972 regarding the slowing of climate change, only the Kyoto Protocol disposes of obligations and not just recommendations. However, even in this case, the enforcement mechanism is missing.

The environmental law has many antecedents: for example the boundary waters treaties from the second half of the 19th century, or the first protection agreements of different species.[11] After the Stockholm Conference, the international law constitutions on the environment have become very intense. Hundreds of multilateral and bilateral environmental agreements are in force nowadays. Besides this, many decisions, recommendations, guidelines, directives and action programs have been made. The environmental agreements have undergone not only quantitative but also qualitative changes. From the regional and sub-regional agreements we arrived at the global handling of the problem; to the necessity for joint collaboration. The common issue for mankind has appeared.

Still, it is to be established that the content-related conversion did not go hand in hand with the improvement of the legal quality, namely the establishment of stricter international obligations. The grand multilateral treaties are rather frameworks and for further development additional complementary protocols would be needed, in order to determine legal commitments. In many cases, relevant nation states are staying away from the agreements, which can also cause problems.[12][13]

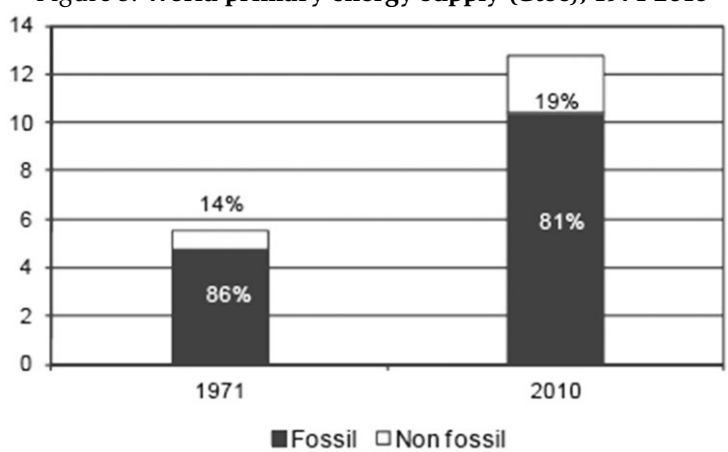
[11] Bruhács János (1999): *Nemzetközi jog II. – Különös rész*. Dialóg Campus Kiadó, Budapest.
[12] A very good example for this is the Kyoto Protocol. In one hand, positive effect, that it determines obligations. On the other hand, it can be observed, that a relevant state, namely the United States is staying away.
[13] Bruhács János (1999): i. m.

The creation of a global climate agreement is going to be a difficult task for the nation states, particularly if the aim is the constitution of a legal obligation. The process is moving slowly, because every country keeps its own interest in mind, while sitting at the conference table. Saving the Earth's climate and protecting the ecological systems should become the national issue of about 200 independent nation states. The creation of a successful agreement would be a diplomatic action with no historical precedent, considering the fact that the solution for the climate problem will probably require some real sacrifices. The sources, the technology and the people's ability to change are already given. The only missing element of the formula is the political will – but this is a renewable source.

4. DOES THE "ENERGY-REVOLUTION" EXIST?

It is a fact that the present energy-scenario is unsustainable. The world needs more and more energy: growth in the global energy demands pro year is expected to reach 1.5% by 2030, according to the International Energy Agency. It can be seen from the following figure, that although the share of non-fossil sources in the total energy consumption rose (from 14% to 19%), this result was achieved beside the growth of the total energy consumption. As a consequence, the utilized absolute amount of fossil energy sources also grew.

Figure 3: **World primary energy supply (Gtoe), 1971-2010**



Source: IEA[14]

[14] International Energy Agency (2012): *CO2 emissions from fuel combustion – Highlights, 2012*. Edition. Elérhető: http://www.iea.org/co2highlights/co2highlights.pdf. Letöltés ideje: 2013.10.22.

During the past decades, the volatile changing in prices of fossil energy sources has ruined a lot of economies. The need for change in energy-production is becoming more urgent.[15] Ultimately, the population may have to reduce the emission of greenhouse gases to zero. As the biosphere is only able to absorb a limited amount of these gases, in order to avoid a man-made climate change, the world will have to cut back emissions to a negligible level. Most people find the concept of a zero-emission society impossible, but this would be essential to maintain our civilization.[16]

Positive changes can be found regarding renewable energy sources. A series of renewable technologies are being used nowadays for the production of electricity, and to satisfy cooling or heating demands. The bigger proportion of the current capacity can be found today in the developed world, although 40% of the renewable energy capacity would be available in developing countries.[17] According to a United Nations' study, the incentive factors of using alternative energy sources are not the same everywhere. Europe, Japan and the United States are turning in the direction of non-fossil fuels because of climate change, environmental issues and the energy-security, while for the developing countries the satisfaction of consumer demand and economic development are motivating factors. Rising responsibility also emerges as influential.

Figure 4: **Key drivers for renewable energy**

	Factors Affecting Demand for Renewable Energy					
	Climate Change[1]	Environ-mental Issues	Energy Security	Consumer Demand	Increased Reliability	Local Economic Development
Europe	●	●	●	◑	○	◑
Japan	◑	●	●	◑	○	○
United States	◑	◑	●	◑	◑[2]	◑
Developing Countries	○	○	◑	●	◑	●

1. Government vs. individuals
2. Region specific

● High ◑ Medium ○ Low

Source: UN[18]

[15] Sawin, Janet L. – Moomaw, William R. (2009): A fenntartható energiaellátás jövője. In: *A világ helyzete 2009. – Úton egy felmelegedő világ felé.* Worldwatch Institute, Föld Napja Alapítvány, Budapest.
[16] Engelman, Robert: Álljon az alku az éghajlat megmentésére. In: *A világ helyzete 2009. – Úton egy felmelegedő világ felé*. Worldwatch Institute, Föld Napja Alapítvány, Budapest.
[17] Sawin, Janet L. –Moomaw, William R. (2009): i. m.
[18] United Nations (2005): *Department of Economic and Social Affairs, Background Report, Increasing Global Renewable Energy Market Share*. Elérhető: http://www.un.org/esa/sustdev/sdissues/energy/op/beijing_re_egm/beijing_re_report.pdf. Letöltés ideje: 2009.03.17.

Opinions are often heard that the switch to renewable energy sources is costly and very expensive compared to fossil fuels. This is because there are many ways to calculate and express different energy-expenses. The question arises: may the world have a price, where climate change, pollution, and all the problems arising from these issues – starvation, lack of drinking water, natural disasters, extinction of animals, and the growing welfare gap - are vastly smaller. If we also consider these expenses, is fossil fuel still cheaper?

5. HUNGARY: LITTLE STEPS TOWARDS SUSTAINABLE ENERGY-PRODUCTION

Environmental investment and the growing significance of renewable energy sources are not a novelty today in Hungary. The population have become environmentally aware and the new ways of energy-production gaining more recognition and acceptance. In Hungary, a determinant proportion of the renewable energy can be produced in rural areas.[19] This is why alternative energy sources should play an important role in rural development issues and in economic innovations. The main question is, if the renewable energy sources would be able to cause economic innovation in a rural settlement, and if so, what are the push and pull factors.

To understand the need of the examination[20] better, it is important to mention a few facts about the current renewable energy situation in Hungary. The country is in a similar situation regarding energy import dependency than the European Union average; however the Hungarian rate is a little bit higher: 58% in 2010.[21] This means that it is crucial in Hungary – similarly to the Union – to increase supply-security and to diversify the energy sources.

In accordance to the European Union directive (2009/28/EC), Hungary has to increase the rate of renewable energy sources to 13% of its whole energy-consumption. The country has raised this number to 14.65% in its own national action plan. In Hungary, the rate of the produced primer energy from renewable sources was 7.4% in 2010. This number is twice as much as 10 years ago; however it is still only half of the 2020 target. It is also a fact that the most significant factor is biomass, making up almost 80% of the produced renewable energy. The use of other alternative sources is increasing slightly, but their adaptation is still slow.[22]

[19] Hungarian Central Statistical Office (2012): *A fenntartható fejlődés indikátorai Magyarországon*. (Statistical database.) Elérhető: http://www.ksh.hu/docs/hun/xftp/idoszaki/fenntartfejl/fenntartfejl12.pdf. Letöltés ideje: 2013.06.12.
[20] This study was issued in the frame of the Hungarian Rural Research 2012-2013, carried out by the Hungarian Academy of Sciences, Centre for Economic and Regional Studies.
[21] Hungarian Central Statistical Office (2012): *A fenntartható fejlődés indikátorai Magyarországon*. i. m.
[22] U.o.

During the study, three good domestic examples[23] were chosen, to analyse the use of renewable energy (or other forms of environmental investments) in rural areas. The main qualitative method was personal interviews with mayors of these rural settlements. The aspect of choosing the settlements was the use of environmental investments and renewable energy sources. After analysing the domestic models, one Austrian model[24] was also chosen for comparison and both the European and the Hungarian current situation regarding the use of renewable energy was analysed.

More consequences and experiences can be drawn. It can be established that the use of renewable energy sources is able to create economic innovation and prosperity in rural areas. (For example by creating workplaces, using local sources, decreasing the council's expenses, etc.) However, there are also differences between the Hungarian and the Austrian examples. In order for renewable energy to play a bigger role in the future, both the success-factors and the obstacles need to be mentioned and considered.

It is clear from all of the case studies that the innovation regarding the use of renewable energy could not be realized without an innovator, more specifically without a local innovator. In all of the examples, the mayor was the main player, who started the developments at the given settlement. It is essential for a mayor to have a conception, a theory and willingness. All of the innovators in the case studies see the environmental investments as a way out of economic stagnation.

It is also a fact that the mayor was not responsible for the expertise and the know-how. It should be emphasized that in the case of renewable energy sources, a respective knowledge base is essential with the aim of realizing the idea. This knowledge base can be another innovator-player, an organization or another good example. In one of the domestic case studies, there was no knowledge base and no helping hand behind the mayor, although the willingness was there. This was the main reason why the investments failed to take off in this settlement.

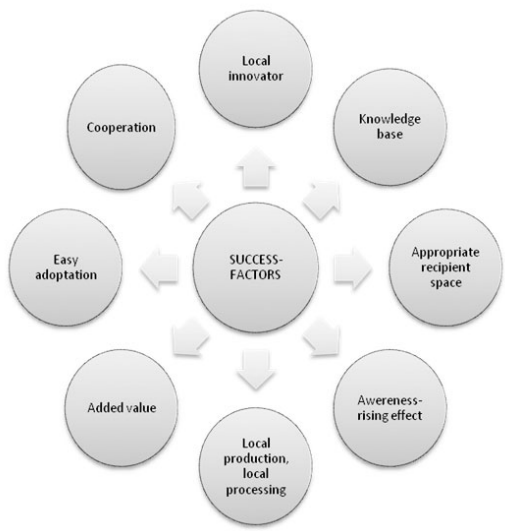
Creating an appropriate recipient space is also important for the success of the innovation. Although alternative energies have an awareness-raising effect of their own, it is essential to inform and prepare the local population about the innovation. In other words, a social innovation has to be achieved before the realization of the economic innovation. In the case of the Austrian model, a lot of attention was paid to this factor.[25] Changing the mentality of the population is a longer process, and a great deal of energy needs to be invested. It turned out from the Hungarian case studies that the mayors acting as innovators do not have enough time and capacity for this. Public information has to be continuous and systematic, but there is no opportunity to this without an office organization.

[23] Répceszemere, Sopronhorpács and Bakonyszombathely.
[24] Güssing (southern Burgenland).
[25] Krantz, Timothy (2010): *Güssing's quiet revolution.* Engineering & Technology. Vol. 5. Issue 12. 22-25. ISSN: 1750-9637

However, good examples were also seen in the domestic case studies. In one of the settlements the mayor installed the first solar panels in the primary school. Even if there is not always capacity to inform the whole local population, in the case of younger people it is even more crucial. This primary school won the eco-school prize in 2008, so the settlement is already over target: educating an environment- and energy friendly new generation.

One of the important factors of rural innovation is to focus on local production and local processing. Renewable energy sources can be used most effectively on a local scale. Besides this, they also mean a significant added value. A positive quality of alternative energy is that it can be easily adopted. There is no need for original innovation ideas. In all of the Hungarian case studies, the provenance of the innovation was mentioned. However, cooperation is also an important factor. In the case of the Austrian model, not only the settlement, but also the whole region altogether recognises the significance of the use of renewable energy sources. This is an essential edification for the Hungarian rural areas, because it is easier to adopt an innovation through cooperation.

Figure 5: **The success-factors of using renewable energy sources**

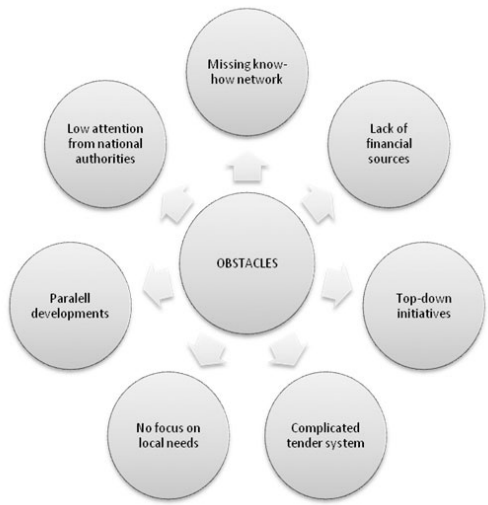


Source: author's editing

By analysing the case studies, besides the success-factors, more differences were also observed. The Austrian model settlement started from a bad economic position, but today it is a well-known innovation centre and a renewable energy

knowledge base across Europe[26]. Yet this is not the case regarding the Hungarian examined settlements, which has several reasons.

Figure 6: **Obstacle-factors for using renewable energy sources**



Source: author's editing

First of all, the know-how is missing from the rural areas. The expertise is given, but the network is not well evolved, so the knowledge does not find the needs. The only opportunity for advancement is to use the domestic or the European subvention system. But these tenders do not always consider the local facilities, for example the most effectively useable renewable energy source in the given area.

Rural settlements are not able to implement different investments without external help. There is no opportunity for a settlement to make its own decision about the use of the financial sources. Most of the tenders are created according to the European Union's development policies, and these are often different from the Hungarian rural development needs.

It is important to mention that the basis for the Austrian model settlement was given by bottom-up initiatives with the involvement of local innovators. This opposes the practise that the domestic rural areas have to adjust their own, local needs to the top-down initiatives. Even though a tender can be successful, and numerical measurable, it will be purposeless if the created develop-

[26] This settlement is the seat of the European Centre for Renewable Energy (Europäische Zentrum für erneuerbare Energie).

ment trend does not match the local demands and facilities. The fact that the tender application systems are complicated creates problems regarding the use of financial sources. Skilled application-writers have to be employed, and during the execution process a lot of administrative obligations have to be fulfilled. Subsequent financing is also not favourable.

It should be stressed that local councils and communities need to focus more on cooperation, in order to avoid parallel investments and developments. Regarding environmental innovations and especially in case of renewable energy sources, collaboration is particularly important, because joint investments can be more effective.

Last, but not least, more attention is also needed from the national authorities. The Hungarian energy production is based on the nuclear power plant in Paks, while the highest proportion of energy-import is made up of natural gas and fossil fuels.[27] Hungary has a long-term National Energy Strategy until 2030. This document notes the increase of renewable energy sources in the total energy-consumption, but it does not want to change the present trend: it is based mainly on nuclear energy and on coal. However, a clear renewable energy strategy would be needed, where different support systems and utilization plans are formulated.[28]

To summarize the case studies, it can be seen, that in order to adopt an environmental innovation, many factors have to be taken into consideration. Success-factors are able to help the realization, by determining those factors, which are easier to change and to focus on (like the election of a committed mayor, or the systematic information of the local population). On the other hand, they also indicate the positive qualities of using renewable energy (like the easy adaptation, or the local production). Changing the obstacles can only be a result of a longer process (like the national strategy or the subvention system). It needs to be stressed that both the success-factors and the obstacles need to be considered. However, further research and analysis is needed in order to widen the determining factors.

6. CONCLUSIONS

On the whole it can be established that one of the most effective strategies to reduce the impact of climate change would be provided by the growing use of the renewable energy sources. But there are no simple solutions to this issue. Alternative energy can have a determinative role in the task, but it will not be

[27] Hungarian Central Statistical Office (2012): Hungary, 2011. (Statistical database) Elérhető: http://www.ksh.hu/docs/hun/xftp/idoszaki/mo/mo2011.pdf. Letöltés ideje: 2013.05.16.
[28] The question also arises as to how the investment in Paks 2 will influence the potential national strategies regarding the renewables.

enough itself. More emphasis should also be placed on the present on-going international climate summits, because a consensus has to be achieved in order to collectively overcome the huge challenge faced by the global population. The global community is forced to make a choice between cheap, harmful fossil fuels and the higher cost clean energy, which could be readily available; only the infrastructure needs to be established.

If we switch to a carbon-free system, we will be able to help prolong life on Earth for another few million years. How we act depends on us. We can continue our „free lunch" from fossil fuels until they run out. Or, we can start the change-over now.

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HUNGARIAN SUMMARY

A globális klímaváltozás kétségkívül mai világunk egyik kiemelkedő jelentőséggel bíró problémája. Jelen tanulmány első részében a klímaváltozás jelensége és a várható hatások kerülnek bemutatásra. Bár a globális közösség felismerte, hogy a változások elkerülése vagy azok csökkentése érdekében erőfeszítésekre van szükség, véleményem szerint a különféle nemzetközi egyezmények nem alkalmasak a klímaváltozás negatív hatásainak megállítására, főként azért nem, mert a szankció hiánya jellemzi azokat. Lehetőséget az jelenthet, ha a politikai döntéshozók az üvegházhatású gázok kibocsátásának csökkentésére koncentrálnak, és új energiapolitikát kezdenek, ahol a megújuló energiaforrások meghatározó szerephez jutnak.

A tanulmány második felében Magyarország kerül a középpontba. Különböző magyarországi és egy európai gyakorlat kerül összehasonlításra annak érdekében, hogy a megújuló energiák alkalmazását érintő lehetőségeket és nehézségeket, akadályokat megismerjük. Megállapítható, hogy vannak pozitív változások, „kis lépések" az alternatív energiaforrások irányába. Ugyanakkor ezek a példák inkább elszigetelt és egyéni kezdeményezések. Holott a megújuló energiák alkalmasak arra, hogy egy adott településen gazdasági innovációt gerjesszenek. Ráadásul ez a típusú energia legnagyobb részben a vidéki térségekben állítható elő. Ezért is lenne fontos, hogy a jövőben a vidékfejlesztési politikában is nagyobb hangsúlyt kapjon a kérdés.

Virgin Mary in the centre of Széchenyi square

Book review

NORBERT KOVÁCS[1]

George A. Akerlof – Robert J. Shiller: Animal Spirits

How Human Psychology Drives the Economy and Why It Matters for Global Capitalism[2]

The professional life of the two authors and the title of their co-work grabbed the attention of the writer.[3] He wonders whether the work places particular emphasis on Keynes' "animal spirits". He also wonders whether the path searching of economics in recent years and its growing number of self-examining questions have encouraged the two noted professors of economics to re-read, interpret and think further about the few lines of Keynes' General Theory. Keynes uses the term animal spirit in Part VII of Chapter 12.[4] „Even apart from the instability due to speculation, there is the instability due to the characteristic of human nature that a large proportion of our positive activities depend on spontaneous optimism rather than on a mathematical expectation, whether moral or hedonistic or economic. Most, probably, of our decisions to do something positive, the full consequences of which will be drawn out over many

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[2] Akerlof, George A. – Shiller, Robert J. (2011): Animal Spirits: *How Human Psychology Drives the Economy and Why It Matters for Global Capitalism.* Corvina Kiadó, Budapest.
[3] Akerlof's name is widely known by his analysis examining the effect of asymmetric information on market equilibrium (George A. Akerlof (1970)), his study is a basic literature among economists dealing with insurance market; Shiller, professor of economics of Yale University is perhaps well-known for his writing titled Tőzsdemámor (Robert J. Shiller (2007)).
[4] We note that before Keynes there are some treatise on the influence of spirit on human decisions and behaviour in different economic and social decision making processes. Without the claim of completeness Plato's tripartite theory of soul (Platon (1984)) and Max Weber's idealized types of rationality are mentionable. Plato argues that the soul is composed of three parts: the logical, the spirited, and the appetitive. These three parts of the soul also correspond to the three classes of a just society. Max Weber proposed an interpretation of social action that distinguished between four different idealized types of rationality. The first, which he called purposive/instrumental rationality, is related to the expectations about the behaviour of other human beings or objects in the environment. The second type, Weber called value/belief-oriented. Here the action is undertaken for what one might call reasons intrinsic to the actor: some ethical, aesthetic, religious or other motive, independent of whether it will lead to success. The third type was effectual, determined by an actor's specific affect, feeling, or emotion. The fourth was traditional or conventional, determined by ingrained habituation. Weber emphasized that it was very unusual to find only one of these orientations: combinations were the norm. (Weber, Max (1967): *Gazdaság és társadalom.* Közgazdasági és Jogi Könyvkiadó, Budapest.)

days to come, can only be taken as a result of animal spirits – of a spontaneous urge to action rather than inaction, and not as the outcome of a weighted average of quantitative benefits multiplied by quantitative probabilities. ... Thus if the animal spirits are dimmed and the spontaneous optimism falters, leaving us to depend on nothing but a mathematical expectation, enterprise will fade and die; - though fears of loss may have a basis no more reasonable than hopes of profit had before. ... But individual initiative will only be adequate when reasonable calculation is supplemented and supported by animal spirits..."[5]

After World War II Keynes' General Theory was very determinant in economic thinking and also in its economic policy and practical reflections all over the world. The questions of interventionist national economic policy and of economic growth were met with keen interest. Growth and wealth were the success indicators of the intense race between the two poles of the world torn into two parts. Although there were some theoretical debates on the rate of statism and of state control, its necessity was hardly queried.[6] However, Akerlof and Shiller draw attention to the fact that only some certain parts of Keynes' theory are widespread, especially those formalised by Hicks; therefore other parts e.g. animal spirits are forgotten. It is an interesting question why the Keynesians, the followers of Keynes, neither emphasised it, nor took it into consideration.[7]

In the range of Keynes' ideas it played a central role – as is properly indicated by the citation – that in uncertain situations economic players might make their decisions by operating and invoking animal spirits. Without this factor the Keynesian model is not what was originally aimed at by its author. According to Akerlof and Shiller, it is for this reason that after a while the theory became undefendable; thus Milton Friedman and his followers queried the adequacy of the Keynesian theory in the 1970s and emphasised once again the almightiness of market in the style of classical economists. By the 1980s neoclassical principles had taken the leading role in the competition of economic theories behind economic policy decisions both in the United States and in the United Kingdom.

The reader who picks up this book is in for a serious and entertaining economic read. By rehashing and rethinking Keynes, Akerlof and Shiller state that economic processes and systems cannot be understood without variations in individual feelings, impressions, passions and human nature and without animal spirits.

[5] Keynes, J. M. (1936): *The General Theory of Employment, Interest and Money*. Part VII of Chapter 12. Elérhető: mercury.ethz.ch/.../Files/.../1366_KeynesTheory of Employment.pdf.
[6] Augusztinovics Mária (1996): *Miről szól az input-output modell?* Közgazdasági Szemle. XLIII. évf. 4. sz.
[7] According to Csaba László (2011) heterodox traditions (he mentions the Austrian School and the old-line Keynesianism), which were always present in economics, were eradicated all over the world from education and thinking by the shrinking of courses and curriculum regarding the history of theory and by reducing the time spent on theoretical education. (Csaba László (2013): *Kérdőjelek a közgazdaságtanban és oktatásában*. Közgazdasági Szemle. LX. évf. 1. sz.)

The first part of the book specifies and explains animal spirits, whereas the second part tries to explain some significant present day macroeconomic processes with the help of the factors introduced in the first part. The five animal spirits are the followings: confidence, fairness, corruption and antisocial behaviour, money illusion and stories.[8]

In connection with the meaning of the term confidence, the authors highlight an implicit belief, which overrides rationality. When making a decision the trusting individual ignores or ill-manages the information. Confidence is impermanent since in a favourable, optimistic environment humans trust and make their decisions spontaneously as they anticipate success by instinct. The authors identify the spill over effects of confidence with a confidence multiplier similar to the Keynesian one, and they state that it affects every other multiplier. They are in no doubt of painting a proper picture of the future development of consumption with the help of the analysis of the data collected on confidence during surveys.

Fairness has been treated in several economic writings and its role in decisions can be as emphasised as other considerations regarded as strictly economic. The authors introduce the role of fairness in economic decisions by using the examples of the findings of questionnaire surveys and experiments. They then present theories regarding fairness and finally deal briefly with the relation of fairness to norms and economy. Although their examples are thought provoking, the definition of fairness is missing, particularly if compared to the chapter dealing with confidence.

According to the authors, the comprehension and the discussion of corruption and antisocial behaviour, or in other words, those of the dark side of economy are essential to correctly interpret collapses, failures and dysfunctions. They mention the three major recessions of the U.S. to represent what problems can be caused by corrupt and antisocial behaviour. They guess that economic and business cycles are not independent on how human commitment to ethical behaviour changes. The intensification of corruption and antisocial behaviour may be affected by more factors, i.e. the probability to discover a crime, the judgement of the measure of punishment, the social acceptance of crimes, the appearance of economic innovations and their regulation and supervision, and the changes in norms and in law-abiding behaviour.

Money illusion, the phenomenon that economic players decide based on nominal value, has a fundamental effect on economic legalities. From the brief presentation of the theories of Fisher, Keynes, Phillips and Friedman it emerges that the authors consider both the pure theory of Fisher and Keynes and its counter pole, the conception of Friedman, according to which money illusion

[8] We note critically that the authors do not emphasize that these spirits are on different levels of abstraction and some elements by way of example stories and the role of past were important in the previous phase of the economic theory from Smith to Samuelson.

does not exist, as naive. Although money illusion can be observed in several fields of economy i.e. in the field of wage and money setting, in case of credit moratoriums and in accountancy, its inquiry and the precise interpretation of the phenomenon requires further investigation.

Stories and the telling of stories have a basic effect on human knowledge. Facts, which we remember, live typically in our minds linked to some story. The authors illustrate the strong influential effect of stories with the help of the very illustrative example of Mexico.

In the second part of the book the authors describe how the mentioned five factors play a role in the evolution of recessions; how central banks can affect economic actors; why there is unemployment. Beyond that, using the idea of animal spirits they analyse the relation between inflation and unemployment, the suddenness of savings, the volatility of the price of monetary assets and that of company investments, the cyclicism of real estate markets, and the continuance of poverty observed among underprivileged minorities.

From the standpoint of the authors macroeconomics has to deal with the reason for the lack of total employment. They think that the theory of Adam Smith does not respond to the existence of economic fluctuations and does not appropriately confirm why there is no need for state intervention. To their mind, although the theory of Adam Smith correctly took account of rational human behaviour, the essence of which is that humans try to make economic decisions in accordance with their selfish interests, it did not take account of the fact that the presence of this behaviour is not exclusive in decisions. It did not take animal spirits into account. At this stage the authors definitely disregard The Theory of Moral Sentiment, a book, which provided the ethical, philosophical, psychological, and methodological underpinnings to Smith's later works, including The Wealth of Nations (1776), Essays on Philosophical Subjects (1795), and Lectures on Justice, Police, Revenue, and Arms (1763). Smith's classic work puts forward ideas about moral judgment and conscience and virtue that have taken on renewed importance in business and politics.

The stance adopted by Akerlof and Schiller is admittedly one, which views a better state to be the solution for the observed economic problems. Strengthening the role of state, according to them, is needed to maximise the advantages of capitalism and to minimise its disadvantages. They believe that capitalist societies are able to be enormously creative, thus state should restrict this by its intervention as little as possible. At the same time the self-abandoned capitalist economy is capable of all extremities as we could see and experience in the past years. On this basis the most important is the correctly interpreted role of state and the formation of frames. Regulators and frames should enable the entire evolution of capitalist creativity and at the same time should prevent fluctuations caused by animal spirits. They are not alone in this thought. Wagener also argues at length that there is no effective market and welfare surplus without strong, professional and consistent governance.

It is an interesting phenomenon that this thought - according to which approaches based on models applying simplifier assumptions should be forgotten, as these do not allow us to describe complex reality appropriately – has also been increasingly strengthening in the writings of eminent economists since the neoclassical world. Stiglitz encourages the restoring of the traditional relation between aim and means. He does not suggest the rejection of modelling and calculations but their appropriate handling.

Having read the book, the question arises as to which economic theory comes out on top from the decade-long fight against both one another and reality. From the point of view of the wealth of mankind it is uncertain which is preferable: the combination of a complex, unsteady human nature causing economic fluctuations and the need for state intervention, thus reducing the social costs of the previous or the combination of unlimited individual freedom, self-realization and the market performing the necessary corrections. Or perhaps a new determinant theory is about to emerge, which de-emphasises the old ones to the world of historiography? I feel this book is not a new determinant theory but rather part of a new round in the fight, enabling and hoping that in the minds of the authors a new and a (practically) better working theoretical system is set to come into being. It is recommended reading to younger generations studying economics, albeit probably not in the mass education restricted to the basics of both macro- and microeconomics.

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FERENC KISS[1]

Erzsébet Noszkay: A knowledge management system approach[2]

„Knowledge management – science living with us"

The conference series of the Hungarian Science Festival organised every year for the last ten autumns by the Hungarian Academy of Sciences (MTA) selected "science living with us" for its subject in 2013. As The President of the MTA, academy member József Pálinkás said in his greeting speech: „... it is about science living with and acting for us. (...) This year's presentations and programs were focused on the research offering targeted solutions and developments for our social and economic needs."

As an opening to this high level series of events, the Hungarian knowledge management profession also had something to celebrate: In mid-October the literature of the Hungarian knowledge management specialists was enriched by a new, valuable work by a Hungarian author – Erzsébet Noszkay presented her volume: The System View of Knowledge Management.

It makes for exceptional reading. Professor Erzsébet Noszkay is a cooperation liaison representative of the Hungarian knowledge management research establishment and has been working in the entrepreneurial sector for more than four decades as a trainer, advisor and expert. She has a wealth of experience of the workings of large companies as well as of – being the chairperson of the National Association for Crisis Managers – the world of SMEs. Her prosperous professional career is worthy of a book in itself. As an author, she has here undertaken to present the general consequences to be learned of numerous knowledge management system-establishing projects.

It is to be noted that in this respect, even international specialised literature still has a relatively narrow range of comprehensive textbooks, although there are a great number of case studies available. International authors mainly analyse projects and "stories" of given companies, whereas an overall system-based elaboration of the subject is hard to find. Therefore, Erzsébet Noszkay's publication is an important work at a global level too.

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[2] Pearson Publisher ISBN 978 1 78365 277 8 Edinburgh Gate, Harlow, 2013. (7 a., 137 p.)

To write a book in itself is a knowledge management activity: the author, with the help of her own language tools, as well as with pictures, charts and diagrams sets up a form i.e. formalises her ideas and knowledge to write about a given subject. And if the topic of the volume – as it is in this case – is knowledge management itself, a rare situation is encountered, namely that the issue of examination is to be elaborated by its own tools. It is not an easy task at all but the writer of this book has successfully overcome these difficulties. While she is collecting the subject matters on a new train of thoughts, she is also making a synthesis: she quotes several publications of her own research achievements from the previous years. Through this, it becomes evident even for unqualified readers that a conscious architecture, many years of practical work and parallel executed systematic and scientific research have produced an actual result, namely this book. It is unusual from other aspects as well: the titles of the chapters are not concise; some are several words long and some are even several lines long, describing precisely the essence of the topic. There is no doubt that Erzsébet Noszkay fully intends to transfer her knowledge as efficiently as possible.

First the author presents her readers the basic terms of knowledge management in a light, easily understandable way, then provides them with a short overview about the development history of this territory. The generation notion frameworks discussed here are going to be the basis for further comparisons when the grouping of knowledge management projects and service types are introduced.

She reveals such fundamental questions like the relationship between knowledge management and innovation, as well as analysing in detail the similarities and differences of knowledge, experience and professional communities. At the same time, she also sets up the new guidelines for further investigations and research. For instance – modestly in a footnote – she remarks, „I have to admit that topics and combinatory are to complement aspects of the creative process – the rules of combinatory are empty without topics and the topics without the driving forces of combinatory processes are only static building stones."

Following a theoretical beginning accompanied by examples, in Chapters 4 and 5, the author continues the book with the most interesting part in my opinion; the methods of employment in practice. In this section, the professor has an actual hands-on approach of how a good knowledge management system can be established. Anyone considering the introduction of such a solution as a manager or proprietor can receive satisfying answers to his questions in an easy to understand way. Based on the author's experience, she explores from the aspect of opportunities and conditions what methods and application development models are available if the event is part of the corporate strategy, initiated from the top, or if it is to be created by the participants of the organisation organically built up from the bottom.

Chapter four presents in fact the system approach: how the details have to be reached while constantly paying attention to the whole of the organisation, applying the People – Process – Technology tripartite methodological approach. One of the advantages of this scheme is that it is not organisation specific, i.e. it can be equally applied in the same way in the case of SMEs or large companies as well as in that of NGOs or civil organisations and even in that of state or municipal organisations. The general applicability of this chapter's materials provides the users with an important tool as they can make considerations in a unified way at an organisational unit, group or community level, thus the original development intention can be put into service in a unified way everywhere. The examples cited by the author give excellent guidance to all the abovementioned initiatives

The propositions for practical steps for introducing the knowledge management method can be read in Chapter 5. These steps and the applied method has already undergone numerous tests, so it can be declared that we receive a well-tried instruction in the way that in the appendix of the book, the cluster of forms to evaluate the knowledge management level of the organisations can also be found. This mapping has a key importance in the course of project planning and preparation, as is underlined by the writer at several points in her work. Basically it is decided here whether the organisation has a chance of carrying out a successful knowledge management project: if the assessment in the examined area is not complete, comprehensive or honest, it is later impossible to implement a successful development strategy.

The volume is available through Pearson Publishing, adding its international textbook publication experience and references to the high quality manuscript. I am convinced that soon a second printing is to be considered as the study and regular reading of the current book can be honestly recommended to all medium and senior managers as well as to company owners

József Somogyi: Nimrod, the mythological father of Hungarians