

## RELATION BETWEEN THE EXTENT OF FORESTS AND LIFE EXPECTANCY AT BIRTH

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### ABSTRACT

*A forest should not be simply regarded as a set of trees, it means much more than that. With no exaggeration, forests are indispensable for preserving the health of the human body and soul; particularly in densely inhabited European countries. In our research, we studied various macro indicators of twenty countries in order to determine which factors are correlated with life expectancy at birth. Index numbers available included: per capita GDP (gross domestic product) (in USD); number of the country's population (n); territory of the country (km<sup>2</sup>); extent of forests (%); and Human Development Index (HDI). Our aim was to determine whether any correlation exists, and if yes, to which degree, between the extent of forests and life expectancy at birth in the different countries.*

Keywords: forests, Human Development Index (HDI), health gain, gross domestic product (GDP), life expectancy at birth

### INTRODUCTION

A forest is regarded in the vernacular simply as a set of trees, but it means much more than that. "A forest is the most complex natural (ecological) system on the mainland, the existence of which, due to its effects exerted on the environment, is one of the basic conditions of healthy human life" (No. 54 Hungarian Law of the year 1996). The role of forests in the lives of humans and in human society underwent many changes and great development throughout history; in our days it guards manifold-biological-ecological-values including objects (undisturbed ruins, castles, remainders of settlements), as well as national treasures and memories. At the same time, the existence of forest means the protection of the environment, sustainable development, the long-term preservation of invested capital, in summary, a pledge for the future. Among other factors, the existence of forests promotes an environmentally-conscious lifestyle within a liveable environment, the maintenance of nature's equilibrium, and regarding the formation of approaches in this regard, it contributes to the conservation of biological diversity, and the respect of nature.

The population's health and psychic status is verifiably influenced in a positive direction by an appropriate state of the environment. With no exaggeration, forests are indispensable for preserving the health of the human body and soul; particularly in the densely inhabited European countries, the society requires forests for recreation and relaxation as well.

Human health-citing Professor PÉTER RÓNA, lawyer and economist of Hungarian origin at Oxford- “is a special property, an irreplaceable commodity; its lack demolishes man’s ability to produce an income”. In society, man is of paramount value. One of the basic determinants of human capital is man’s health, the attainment and preservation of which is a shared interest of individuals and the state alike.

When economical theories are reinterpreted (paradigm change), it should be reconsidered that profit maximization expressed in money has to be replaced by an attitude which appreciates not only the monetary benefit. In association with the paradigm change, economists should cooperate with – among others – ecologists, educators, and social scientists better than up to now in order to hinder e.g. environmental damage, and appropriately estimate health and its value (Seregi, 2012).

## OBJECTIVE AND METHOD

We studied various macro indicators of twenty countries in order to determine which factors are correlated with life expectancy at birth in the given countries. Index numbers available included: per capita GDP (gross domestic product) (USD); number of the country’s population (n); territory of the country (km<sup>2</sup>); extent of forests (%); and Human Development Index (HDI).

We set out to determine whether any correlation exists, and if yes, to which degree, between the extent of forests and life expectancy at birth in the individual countries.

## RESULTS

We presumed that some relationship exists between the extent of forests and life expectancy at birth (CIA, 2013). After having directly examined the presumption (by fitting a regression line), we had come to the conclusion that a relationship exists between the two variables. We performed various transformations in order to analyze the correlation with the extent of forests. Following several tests (logarithmic, square root) we found that the relationship can be described best as a linear relationship. The value of the correlation between the primary variable and the extent of forests was 0.46 (Figure 1).

In the next phase, the study was aimed at building a predictive model from our variables; it had to predict life expectancy at birth as accurately as possible. The following macro variables were available for the analysis from 48 countries (2012):

- Per capita GDP (Worldbank, 2014a),
- Per capita health care expenditure in relation to GDP (Worldbank, 2014b),
- Percentage of the forested areas (Brown, 2012),
- Human Development Index (HDI) (HDRO, 2014).

The preliminary tests with a single variable found a very strong positive correlation for GDP ( $R^2=0.4887$ ) and a somewhat weaker but still significant ( $R^2=0.2963$ ) correlation for per capita health care expenditure.

We tested our results in a linear model (Table 1) and with Pearson Correlation (Table 2).

Figure 1

Correlation between life expectancy at birth and the extent of forests (%)

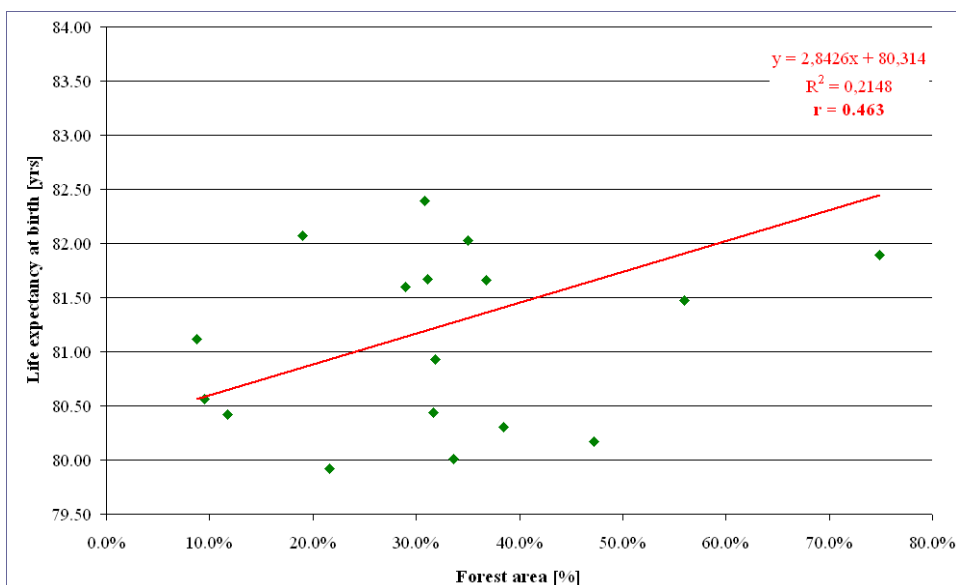


Table 1

Descriptive statistics

	Mean	Std. Deviation	N
Life expectancy (yrs)	78.998750	2.0960445	48
Extent of forests (%)	0.335446	0.1897733	48
Per capita health care expenditure	8.473345	2.7488292	48
Forests reciprocal	8.858180	22.7125983	48
GDP	3.019208E4	2.4303377E4	48

Table 2

Pearson Correlation

Correlations	Life expectancy (yrs)	Extent of forests (%)	Per capita health care expenditure	Forests reciprocal	GDP
Life expectancy	1.000	0.157	0.544	-0.130	0.699
Extent of forests (%)	0.157	1.000	0.129	-0.467	-0.024
Per capita health care expenditure	0.544	0.129	1.000	-0.324	0.349
Forests reciprocal	-0.130	-0.467	-0.324	1.000	-0.087
GDP	0.699	-0.024	0.349	-0.087	1.000

Our final model includes both GDP and health care expenditure. Both variables bear a positive beta value, i.e. a higher GDP with proportional health care expenses projects a higher age in the individual countries. Our two model variables explain nearly 59.2% of the primary variable (Table 3, Figure 2).

**Table 3**

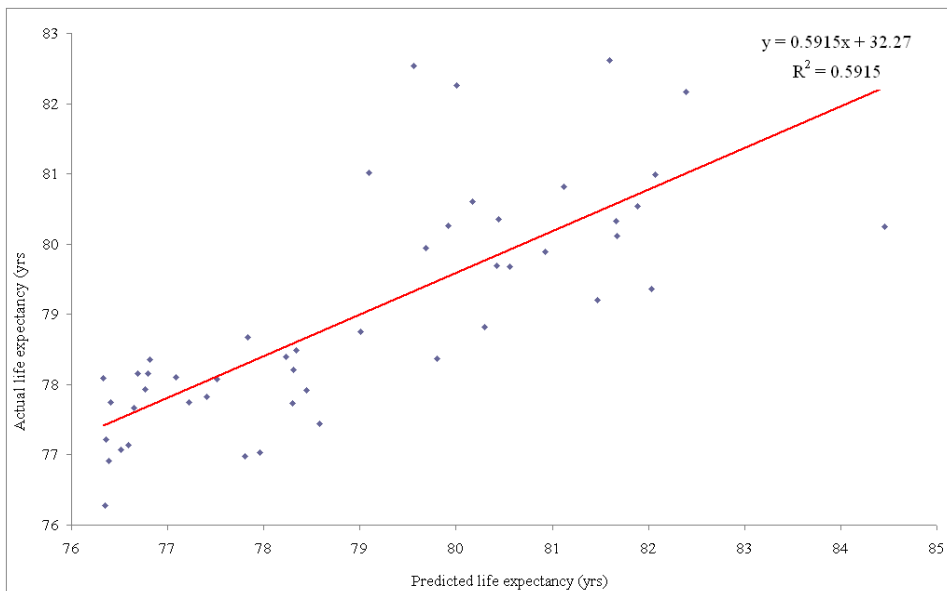
**Final Model**

Coefficients <sup>a</sup>						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	77.178	.351		219.903	.000
	GDP	6.029E-5	.000	.699	6.631	.000
2	(Constant)	75.279	.648		116.259	.000
	GDP	5.000E-5	.000	.580	5.703	.000
	Per capita health care expenditure	0.261	.078	.342	3.365	.002

a. *Dependent Variable: Life\_expectancy*

**Figure 2**

**Actual vs. predicted life expectancy**



Also other analyses have demonstrated the effect exerted by the extent of forest on life expectancy at birth. In addition to the known relationship between the GDP

and life expectancy at birth, the degree of the extent of forests may also be worthwhile. We calculated the average life expectancy at birth in forty eight countries from the same database, according to an order based on the per capita GDP and an order of the extent of forests (*Table 4*).

**Table 4**

**Average life expectancy at birth based on an order of per capita GDP and an order of the extent of forests (n=48)**

Life expectancy (years), 2012		Per capita GDP, 2012		
		1-16. countries ("richer")	17-32. countries ("average")	33-48. countries ("poorer")
Extent of forests (%)	1-16. countries (greater)	81.6 ± 1.9 (n = 5)	78.5 ± 2.1 (n = 5)	76.8 ± 0.8 (n = 6)
	17-32. countries (average)	81.1 ± 1.3 (n = 6)	80.6 ± 1.4 (n = 7)	77.9 ± 0.4 (n = 3)
	33-48. countries (smaller)	80.6 ± 1.1 (n = 5)	78.6 ± 1.4 (n = 4)	77.2 ± 0.7 (n = 7)

In the first sixteen countries in an order based on their GDP the average life expectancy at birth shows a decrease (81.6 years, 81.1 years and 80.6 years on average) as the extent of the forests decreases. We observed similar tendencies also in the countries classified as "average" or "poorer". The same also applies to the setting when we calculated the average life expectancy at birth (81.1 years, 78.1 years and 77.2 years) according to the order of the rates of health care expenses in GDP and on the order of the extent of forests (*Table 5*).

**Table 5**

**Average life expectancy at birth based on an order of the rates of health care expenses in GDP and on an order of the extent of forests (n=48)**

Life expectancy (years), 2012		Health care expenses in GDP, 2012 [%]		
		1-16. countries ("richer")	17-32. countries ("average")	33-48. countries ("poorer")
Extent of forests (%)	1-16. countries (greater)	81.1 ± 1.0 (n = 6)	80.0 ± 1.0 (n = 3)	79.9 ± 3.0 (n = 7)
	17-32. countries (average)	78.1 ± 1.2 (n = 4)	79.8 ± 1.8 (n = 6)	79.1 ± 2.2 (n = 6)
	33-48. countries (higher)	77.2 ± 1.5 (n = 5)	77.7 ± 1.7 (n = 4)	77.6 ± 0.9 (n = 7)

This phenomenon can be observed even more pronouncedly in relation to the twenty richest countries based on their per capita GDP (Luxembourg, Norway, Switzerland,

Australia, Denmark, Sweden, United States, Austria, Japan, Netherlands, Ireland, Finland, Belgium, Germany, United Arab Emirates, Brunei, France, Canada, United Kingdom, New Zealand) (Table 6). As compared to the other countries, in countries with a higher sum of per capita GDP and also with a higher extent of forests, the positive effect of these is reflected by the life expectancy at birth: the population lives longer by 2.1 years on average in these countries.

**Table 6**

**Average life expectancy at birth (years) based on an order according to per capita GDP and on an order of the extent of forests (n=20)**

Life expectancy (years), 2012		Per capita GDP, 2012	
		1-10. countries ("richer")	11-20. countries ("poorer")
Extent of forests (%)	1-10. countries (greater)	81.6 ± 2.1 (n = 4)	80.2 ± 1.8 (n = 6)
	11-20. countries (higher)	81.0 ± 1.4 (n = 6)	79.5 ± 1.6 (n = 4)

Regarding the twenty countries with the greater extent of forests (Sweden, Finland, Japan, Dominica, South Korea, Slovenia, Panama, Spain, Bosnia and Herzegovina, Brunei, Austria, Paraguay, Croatia, Ecuador, Slovakia, Costa Rica, Greece, France, Portugal, Albania) this phenomenon can also be seen (Table 7).

**Table 7**

**Average life expectancy at birth (years) based on the extent of forests and on an order according to per capita GDP (n=20)**

Life expectancy (years), 2012		Extent of forests (%)	
		1-10. countries (greater)	11-20. countries (higher)
Per capita GDP, 2012	1-10. countries ("richer")	80.7 ± 2.6 (n = 7)	77.7 ± 1.1 (n = 3)
	11-20. countries ("poorer")	80.3 ± 0.8 (n = 3)	77.1 ± 1.0 (n = 7)

## CONCLUSIONS

Prolongation of life expectancy at birth bears a benefit of inestimable value for the whole society. The role of the extent of forests in the health and life expectancy at birth of the population has not yet been satisfactorily demonstrated, primarily due to a dominating influence of per capita GDP; nevertheless, in the richest countries life expectancy increased in proportion to the extent of forests.

More than a decade ago attempts were already made in order to describe the correlations of life expectancy at birth. That time twenty seven indices of economy

were examined and in the final analysis nine of those were found to be significant (*Chen and Ching, 2010*). The degree of the extent of forests was one of these; the results showed a moderately strong correlation with the life expectancy at birth.

Our differing results can be explained by the increased role of recreation in the previous decade; countries producing a high GDP can spend more also for the purposes of recreation. For example, physical activity outdoors (hiking, cycling in the forest) results in lower expenses for health care. In parallel with the growing economy of the country, forests can be used for purposes of recreation therapy; it is not a mere chance that at present we obtained such a result in relation to the richer countries.

The maintenance of health requires a new approach, which may create an effective demand also for products and services generated by several branches of industry; thus an investment to health promises much higher yields than investments in any other fields. For instance, areas of the forests and their changes, timber yields can be measured statistically, but the added value (health benefit) is immeasurable, so the value of the forest(s) is inestimable.

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## THE POSSIBLE EFFECTS OF INTER-TEMPORAL CHOICE MODELS ON CONSUMER LOAN AGREEMENTS

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### **ABSTRACT**

*The analysis and understanding of the background of consumer choices get more and more attention nowadays. A significant amount of consumer choices are traceable as one of those inter-temporal decisions of the individual that are made at different times. To map the decision-making process, it is necessary to introduce inter-temporal choice models and to show the characteristic features that are the most relevant for decision making. The discounted utility model shows the temporal features of decision-making, the characteristics of which are the positive time-preference and the time-consistent discount rate. Since the discounted utility model – in numerous cases – did not prove the characteristics of the decisions of everyday life, new models were created to describe these procedures: these are the hyperbolic and quasi-hyperbolic models. With their help it is possible to explain the main features of temporal decisions. The parameters, which show a distortion towards the present and are inconsistent in time, make it possible to explain some human behaviours that were not previously understandable. One of these behaviours is when one extends their present consumption with the help of a loan. Regarding the fact that a consumer loan can be considered to be an inter-temporal choice, it has become justifiable to compare the results of behavioural science in this field with the legislation covering consumer loans. In this study we are going to make an attempt at this comparison while also looking for an answer to the question of whether the results of inter-temporal choice models appear in operative legislation or not. If they do, we would like to see whether they are seriously taken into consideration or not. Furthermore, we would like to know what possibilities need to be considered by the legislature, law enforcement bodies and all others present in this complex field.*

Keywords: inter-temporal decisions, time-preference distortion towards the present, consumer loan agreements

### **INTER-TEMPORAL DECISIONS**

The analysis and understanding of the psychological background of consumer choices – a type of behaviour – was considered important even in neoclassical economics. Adam Smith was the first to deal with the topic, while further analysis showed that the background of consumer choice has a significant influence on the consumer's emotions and evaluation related to time. People associate different future times with typically underestimated preferences. This relationship clearly defines an individual's decision made in the present but influencing his or her future.

In connection with the examination of the topic mentioned in the title of this study, we have started with the following economic assumption: money is considered a general factor of production. At the centre of our study, we analyse



the consumer choices that make it possible to gain the above mentioned factor of production, in other words we examine consumer choices in connection with loans. In the case of a loan, the most important factor is its temporality, ergo an inter-temporal choice in connection to money.

The starting point of our study could be the description of a *homo oeconomicus*, an individual – driven by needs and necessities – who aims to consume as soon as possible, in the present or in the near future. The wish to fully satisfy their needs and necessities soon can easily lead to choices in which the importance of consumption in the present becomes so great that the individual will enlarge that at the expense of his or her future consumption. In this way, the individual restricts some future possibilities while trying to get a certain amount of money – an abstract utility factor – which he or she does not have in the present. Actually, this is what happens in the case of asking for a loan – which according to its aim – is also the extension of some future consumption. One brings forward their present consumption at the expense of future consumption, in other words, exchanges their future (possible future consumption) for the present (present excess consumption) (Andor, 2012). However, these decisions can have severe risks that cannot always be seen beforehand. That is why it is justifiable to analyse the factors that influence the background of these choices.

The issue presented in the first paragraphs of this study – in a much simpler version – was first modelled by Fischer in 1930. He said that inter-temporal choices – the comparison of the present utility factor of different times – depend on the marginal rate of substitution related to time. The marginal rate of substitution is defined by time preference and decreasing marginal utility. A significant breakthrough in this field was Discounted Utility (DU) theory created by Samuelson (1937). Discounted Utility theory spread fast and was really popular primarily because of its simplicity. The other reason for its popularity was that it managed to involve all the psychological factors that influence our choices in one parameter, which is the discount rate (Bölcskei, 2009). Samuelson collected all the heterogeneous and diverse factors of choice in one discount rate and considered it a *constant*. This way different utilities appearing at different times became easily comparable. According to Samuelson: “*at any time an individual behaves so as to maximize the discounted sum of all future utilities. [...] An individual discounts future utilities in a simple and consequent way, which method is known for us.*” (Samuelson, 1937) So a positive temporal discounted unit has to be connected to the theory, which means that a distant temporal point will have smaller utility, and, thus, this will strengthen consumption closer to the present. DU theory considers the discount factor in an exponential way, so the utility rate – related to the present and the one related to the future – will also change in a constant way. We can assume that a constant discount rate and time-consistent preference is a typical characteristic of discounted utility theory.

Numerous experiments done in the field of behavioural economics deny DU theory, since the respondents to the problems did not make their decisions in harmony with the model (Neszveda and Dezső, 2012). As a result, it is evident that the behaviour of the respondents could be much better described with other

discounted models. The experiments and researches resulted in the hyperbolic and quasi-hyperbolic models that describe preferences distorted towards the present.

The phenomena described by hyperbolic models was first analysed during animal testing. The animals preferred a smaller but immediate award to a larger one that they would have received later. The model was created right after the evaluation of the experiment, while the discount rate showing time preference was drawn in the form of a hyperbola. The model was altered more times. Finally, it was *Loewenstein and Prelec* who in 1992 created general hyperbolic discounting, with the help of which it was possible to handle some earlier anomalies as well as a description of human behaviour. However, it was difficult to apply their model in more complex cases. It was the quasi-hyperbolic discount model that became popular within a relatively short period of time (*Neszedi and Dezső*, 2012). It describes an inconsistent behaviour in time – similar to the hyperbolic discount model – however, the model is much simpler and easier to handle.

The idea of quasi-hyperbolic discounting comes from *Phelps and Pollak*. It is inconsistent in time and assigns a bigger discount rate to short-term time preference. The time preference of the distant future can be consistent in time, but its distortion towards the present is significant. The  $\beta$  parameter was involved in the model as a further discounting factor compared to the only (constant) discount rate of DU theory. If we compare the form of hyperbolic function to that of the exponential one, in the case of hyperbolic function the consumption utility close to the present can significantly lean towards the pole – depending on the value of the  $\beta$  parameter. The long-term time preference will become straighter and straighter across time, so the discount rate decreasing in time is typical only in the period closer to the present (distortion towards the present), then the discount rate becomes consistent in time (*Nagy*, 2011).

We must mention here that the two different discounted models have different results regarding the distant future, but in this study we are not going to deal with this aspect.

The significance of the hyperbolic and the quasi-hyperbolic models is the following: with their help it became possible to explain and describe human behaviours that had not seemed sensible earlier (*Bölskei*, 2009). Due to preferences distorted towards the present, present consumption utility is more important than possible future consumption utility. However, if future consumption is postponed to a later date, it will decrease in utility not exponentially but by a larger amount. That is why any individual in this case will try to maximize his or her consumption – or in other words, his or her utility – as much as possible, regardless of the present financial possibilities. Let us not forget that the exchange of the present to the future works the other way round too: an individual can reach an excess of consumption in the present by asking for a loan. In this case, we talk about the results of an inconsistent time-preference distorted towards the present.

Consumers' time-inconsistent behaviour is not a novelty in the field of bank loans. Banks offer numerous banking products that are based exactly on this type of time preference distorted towards the present (*Sebestyén et al.*, 2011). The credit delivery system can easily lead (and has already led) to consumer loans, where the

debtor asked for a loan – because of his or her time-inconsistent time preference and some over-optimistic estimation regarding his or her future financial situation – and finally he or she was not able to pay the instalments. The realization of this type of credit delivery system was the result of the information ascendancy of financial institutions. Instead of ascendancy perhaps we had better use the term: information asymmetry. In the case of banking products and services, the vendor of the product or service – the bank – has significantly more information than the buyer (the future debtor).

An important question comes up here: does the operative legislation take into consideration the circumstances and characteristics of the individual's inter-temporal decision making or not?

## **LEGISLATION**

1. The contract is defined in the Civil Code by Section 6:58 of Act V from 2013 as the following: „The contract is a mutual and unanimous disclaimer of the parties according to which obligation arises for performing the service, as well as entitlement arises for demanding the service.” The New Civil Code – in harmony with Act IV from 1959 in the (Old) Civil Code remained in force until the 14th of March 2014 – primarily ensures the principle of freedom of contract. According to this principle, the subjects of private law can enter into a contractual relationship as they wish. The legal standards relating to contracts are mainly dispositive provisions, from which the parties may differ by mutual consent. The parties can agree on the subject and the details of the contract. Contractual obligations can be defined by law only in exceptional cases. In private law, equality and juxtaposed relationships are presupposed and ensured by main principles. Any intervention in a private law relationship is guaranteed by law for the case only when the legal or contractual balance between the parties is upset because of an information deficit or the lack of necessary professional information. In these cases legislation has the presumption that in order to re-establish the contractual balance, the weaker party has to be supported legally. A typical instance for intervention into a private law relationship – by legislative provisions with mandatory content – is the contractual relationships on General Terms and Conditions and Consumer contracts.

2. Most consumer credit contracts are signed using General Terms and Conditions, so it would be logical to examine these legal parameters now. According to paragraph (1) Section 6:77 of the New Civil Code: „General Terms and Conditions are the conditions of a contract, the details of which were defined unilaterally in advance by one party, without the participation of the other party, in order to be applied on more contracts”. The general Terms and Conditions will become valid only if the applier of the contract makes it possible for the other party to read the content of the contract before signing it. The other condition is that the other party has to accept the conditions of the contract. The New Civil Code prescribes the obligation to inform the other party in connection with the acceptance of the conditions. Another important regulation is that in the case when the General Terms and Conditions differ from any other condition of the contract, the latter

will be in force<sup>1</sup>. In practice it generally means that if the consumer signs a shorter version of the contract – which refers to the General Terms and Conditions – and there is a contradiction between the contract and the General Terms and Conditions, the shorter version will be in force, and the parts that are in contradiction will not be part of the contract.

As we have already mentioned, the justification of the mandatory provisions regulating contractual freedom derives from the fact that in certain cases the balance between the contractual parties shifts or is upset. This situation makes it justifiable to protect the rights of the weaker party. It is typical in the case of the application of General Terms and Conditions, since one party – unilaterally, without the cooperation of the other half – defines the conditions of the contract. As a result, an obligation or condition can become part of the contract, which can evidently be disadvantageous for one party. A good example for this is the right of financial institutions to modify contracts unilaterally. According to the Civil Code<sup>2</sup> it is not a violation of law if a financial institution declares its right – in the General Terms and Conditions – to modify contracts unilaterally. In this case, this new condition becomes part of the contract. It is evident that here the consumer's contractual position weakens by great measure, since there is the possibility to apply a term in the General Terms and Conditions which will provide the possibility for the bank to modify the contract unilaterally and, at the same time, will exclude the right of the court to alter or modify the contract.

The Act CCXXXVII of 2013 on Credit Institutions and Financial Businesses acknowledges the right of financial institutions to unilaterally modify their consumer credit agreements, however, at the same time it partly restricts that right – in order to protect consumer rights – by saying that it is possible to modify only interest, costs and fees. According to the Supreme Court, the financial institutions' right to modify interest, costs and fees is rational, as it serves both parties' interests<sup>3</sup>.

3. The defenceless state – deriving from the nature of the legal relationship – made it necessary to provide legal protection for consumers who suffer from unfair General Terms and Conditions in contracts.

A condition of a contract is considered unfair when the applier of the contract defines the obligations and rights – unilaterally and wantonly – by violating the requirement of good faith and righteousness on the expense of the other party<sup>4</sup>. To

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<sup>1</sup>Section 6:80 on New Civil Code.

<sup>2</sup>True to both the Old and the New Civil Code.

<sup>3</sup> 2/2012. (XII.10.) PK opinion: „The legal possibility to modify rates, interests and fees has the benefits for both contractual parties. The right to modify the contract unilaterally makes it possible – in the case of a long-run contract – to keep the contractual balance that was set at the time of contracting. Its aim is to reduce the risks deriving from calculations of a long-term contractual relationship. It protects the consumer by guaranteeing that the financial institution shall not devolve the calculated rate of rising costs to the consumer and will not offer a more expensive loan because of these calculated costs.”

<sup>4</sup>Paragraph (1) Section 6:102 New Civil Code.

regard a contractual condition unfair, every aspect that led to signing the contract has to be examined. The function of the service, as well as the contracting parties' relationship to other contracts and other conditions in the same contract, has to be examined. With regard to these aspects, one has to refer to the relevant chapter<sup>5</sup> of Act CCXXXVII of 2013 on Credit Institutions and Financial Businesses – referring to the defence of clients. These regulations include how to inform clients properly and declare special regulations related to contracts.

We must emphasise that the regulations that refer to unfair General Terms and Conditions cannot be applied for contract conditions that define the main service or the rate of service and remuneration, if those are clear and understandable. Furthermore, according to the New Civil Code, the General Terms and Conditions are not considered unfair if those are defined by law or if those are drafted according to standard legislation.

### **THE RELATIONSHIP BETWEEN INTER-TEMPORAL DECISIONS AND LEGISLATION**

If we compare the results of behavioural science in connection with inter-temporal decisions and the legislation that we have summarized in the 2<sup>nd</sup> chapter – without attempting to be comprehensive –, we can assume the following correspondence.

The case of legislative intervention – to violate or break the principle of contractual freedom of private law – is acceptable in the case of models describing preferences distorted towards the present. In these cases a consumer can get into a situation – because of inconsistent time preference, his or her over-confidence and over-optimistic estimation regarding his or her future – when the contractual balance shifts at his or her expense. The reasoning for this regulation basically refers to information asymmetry: it is typical in a situation where the contractual balance – deriving from the equal position of the parties – is upset because of the lack of important pieces of relevant information. That is why legislation provided the right to legally intervene in contractual relationships. A strong distortion towards the present and the decrease of time-inconsistent utility will become really significant at this point, since these are typical characteristic features of any inter-temporal decision and quasi-hyperbolic model. The circumstances, that the consumer makes a decision in a state of time-distorted utility decrease, will definitely influence the chance for an objective consideration. In the hope of maximising his or her present excess consumption, the individual will tend to disregard the negative effects on his or her decreasing consumption possibilities. We think that the characteristics of the quasi-hyperbolic model will have a double effect in this case. On the one hand, the disadvantageous situation, with its information asymmetry, will seem „desirable” for the consumer. On the other hand, because of the same reasons, the consumer is not able to evaluate the effects of the information asymmetry in a sensible way and will be inclined to neglect the negative effects of the shift of the contractual balance.

In the case of choices regarding consumer credit agreements based on the inter-temporal and the quasi-hyperbolic models, we have revealed and analysed their

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<sup>5</sup>Chapter XIII. Act on Credit Institutions and Financial Businesses.

negative aspects on consumers at two points. The most important thing is that we have compared them to the relevant law in force. The behaviour deriving from the temporality of the decision places the situation – which leads to asymmetric information and shift of balance – in better light than it is in reality; on the other hand, the chance to take the negative effects into consideration is greatly reduced. As far as we are concerned, we would say that it is evident that the possession of all the relevant information, combined with professional knowledge and experience, would normally counterbalance a decision-making process generated by a distorted time-preference. Since this latter factor is evidently subjective, there is much less chance to make a rational decision based on objective pieces of information. We must add here that the contractual balance will be further shifted if the financial institutions offer banking products which exploit this time-preference distortion towards the present.

If we think about it further, we must ask a question: if time-preference distorted towards the present has such a strong correlation with information asymmetry, like we have shown above, then where is the borderline of legal intervention? How much freedom does legislation have in this field? To what extent can legislation intervene in a situation in order to ensure the contractual balance in the long run – and in a calculable way? By answering these questions we have to emphasise that the only aim of legislation is to guarantee contractual balance and to define the measure of legal intervention in private law cases.

We can also state that by regulating the general terms and conditions, consumer rights and the unfair general terms and conditions of contracts, the legislative system has created a new legal situation. Parts of this regulation can be applied in order to re-establish the contractual balance of inter-temporal consumer decisions. The most important aspect here is the obligation of a financial institution to give proper and relevant information to consumers. However, giving proper information may have the result of decreasing the disadvantages of inter-temporal decisions – not of hindering them. The obligation to give proper information can be especially relevant when one party proposes the invalidation of a contract by referring to its unfair state. Every aspect that led to signing the contract has to be examined in this case.

Theoretically, it can occur that a financial institution offers a banking credit product to a consumer and applies a time-preference distorted towards the present on purpose. In this case the consumer can attack the contract because of an intentional error of the financial institution. It means that the bank intentionally avoids giving relevant information or provides wrong data to the consumer.

We must underline here that our findings cannot lead to procedures which are greatly limited because of taking the characteristics of inter-temporal decisions into consideration. In the case of making an economic decision, reason and the objective ranking of risks are basic phenomena. However, because of the experiences of the last couple of years – especially the case of those who have foreign-currency credits – it is advisable to take into consideration every aspect that can lead to system-level risks. In our view, risk-management can be divided into three fields: providing the necessary and justifiable legislation, offering objective and relevant information to consumers and the legal application of relevant information.

We must also mention that the low level of deposit interest rate<sup>6</sup> offered by the credit institutions at present, combined with the rate of taxation<sup>7</sup> on interest income, further strengthen the distortion towards the present.

The results of behavioural science in connection with the inter-temporal decisions when applying for a consumer credit – especially those of the quasi-hyperbolic model – meet the requirements of the principals of private law contracts. We have found that the behaviour regarding the temporality of the decision when applying for a consumer credit on the one hand supports, and on the other hand strengthens, the shift of contractual balance. In order to re-establish the contractual balance, we have collected the possible fields of intervention and their limits as well. By applying these actions consequently, we hope to minimize the risks of these types of financial transactions for all contracting parties in the long run.

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<sup>6</sup> 1.000.000.- HUF for 6 months, in the case of an unconditioned deposit EBKM (Annual Interest Rate): 0,65 % - 2,9 %, according to the mean of 24 banks the Annual Interest Rate is: 1,95 % <http://www.bankracio.hu/betetkalkulator/lekotottbetet/feltetelek-nelkul?deviza=17>

<sup>7</sup> Act CXVII of 1995 on personal income tax; according to the regulations 16% tax rate has to be paid on the interest of deposits rate. Besides tax rate, since January 1<sup>st</sup> 2013, a 6% health care contribution has to be paid according to Act LXVI of 1998. Total tax after interest income is 22 %.

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## THE FEATURES OF LOCAL CURRENCIES AND THEIR SOCIAL BENEFITS

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### ***ABSTRACT***

*Nowadays no one disputes the role and the significance of local currencies. We can find local currency and types of local currency initiatives in many places throughout the world. Local currency works similar to vouchers but is transferable and has secondary circulation. Local currency complements the trade in national currency and does not seek to replace it. The role of a local currency is to connect economic and non-economic stakeholders, protect the local economy and also be used as an anti-crisis resource. Local currency systems have several advantages but during their configuration difficulties can occur. A local currency can only be operated through regional co-operation and for this the collaboration of the local governments, entrepreneurs and individuals is needed.*

Keywords: local currency, benefits, difficulties, social aspect

### **INTRODUCTION**

What is money? We can find a wide variety of definitions in economics literature and these are sometimes very different. That is why money does not have a real definition; we can define the role of the money by enumerating its functions. Meanwhile, money has changed into an infrastructural factor that allows the division of labour within the community, the flow of information and material among the participants of exchange activity and social agreements, and obviates acceptance, which is necessary to operate the institution of money (Szalay, 2008).

We can find local currencies and local currency initiatives in many places around the world. This type of initiative can be divided into two main groups. The first group is actually a self-help administration system that allows the members of a community to exchange goods and services among one another. These are known as community self-helping systems, exchange clubs, exchange and barter systems, favour banks or bee circles. The appellations and its contents are a bit different but the aim of each system is to link the missed opportunities to the unsatisfied needs of the community.

Some kind of simple system is used to register the exchange (e.g. Time dollars: "Time-keeper" software, Ithaca hours: „Ithaca Daily Journal" newspaper). The second group is the issuing of a local currency - a money substitute. There are those that hold their value (WIR, Kékfrank) but there are those that deteriorate in value over time (Chiemgauer, Urstromtaler).

Each system encourages the sale of local goods and services to operate in a particular location or region. They strengthen the regional economic ties and try to

avoid negative economic effects, e.g. unemployment or the bankruptcy of firms or traders. Local currency differs from vouchers in several features. One of these differences is that while the economic circulation of vouchers is closed because they are only redeemable, a local currency is transferable, which is its most relevant function, and alongside this it creates a secondary market turnover. The other one is that vouchers have an expiration date; but local currency is a currency which normally has no expiration (*Madaras and Varga, 2011*).

### **KEY FEATURES OF LOCAL CURRENCIES AND MONEY SUBSTITUTES<sup>1</sup>**

The role of local currencies is many-sided. The term “local” means regional cash equivalents and the term “national” means a normal official currency. On the one hand, local currency complements the deal with the national currency in a given region; on the other hand, a local money substitute links economic and non-economic actors. This currency cannot be used outside of the region, so the payment function is severely limited.

A local currency protects the local economy against harmful effects of external trade and by using one we can avoid the exclusive secondary multiplier driven development of the region’s economy. If local income is received in local currency, then it will stay in the region, it will be spent locally. It also can be used as an anti-crisis tool. The amount of money in circulation is decreasing; liquidity, job opportunities, salaries and possibilities for taking different loans and credits are also decreasing, which is caused by the recent financial and economic crisis. Based on these factors, the members of the community suffer from a lack of money. The amount of issued “local currency” is deposited in bank notes or on different bank accounts, which ensures the safety of the procedure, although this does not actually mean money creation. Because of this, coverage shall be liquid. It cannot be invested – it is also different in each country – and this may be an obstacle to the organization’s efficiency. In the start-up stage, it is really important to increase confidence, but later on it is possible to invest the deposits into appropriate investments, for example into liquid assets, such as government bonds. If someone buys these technical money-substitutes, he puts money into the institution which issued this “local currency,” but the given institution has no right to have disposal of it because it is re-exchangeable with the national currency at any time. (Exemptions may occur, for example the WIR, which is not re-exchangeable.) Usually the re-exchange has a cost that can be classified between 2-5%. Banks do not provide credit in local currency; the only exception is the credit in WIR.

Another feature of local currency is that it works as a system with maturity and the owner must face the impairment of the currency, too. This means it will be devalued on a monthly or a quarterly basis, so it can lose its value, which is called demurrage. This demurrage provides – exactly accelerates – the usage of the local currency because it prefers consumption instead of savings.

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<sup>1</sup> Based on *Tóth, 2011*

## **DIFFICULTIES AND RISKS**

Of course, the system does not work by itself. For its sustainable operation it is absolutely necessary to set up an organization which considers the tasks of operation with a high priority. Such an organization has many tasks. One of the most important is to compile, manage and update a list about the participating enterprises; shops and markets where this local currency is accepted.

The proverb “Beginnings are scary” is especially true in this case since the launch of the system is not easy because at the beginning it is always difficult to convince enterprises to participate in this system. Persuasion, motivation and communication are also difficult. Powerful and innovative marketing- and public relations tools are required that will convince both businesses and potential consumers about the benefits of the system. Just think how difficult entrenched consumer habits are to change. One tool could be the so called “cheaper exchange,” when a 5% discount is given. In these cases the redemption of 100 units of the national (local) currency is worth 105 units of the local (regional) currency. It is necessary to involve people with relation (ship) capital and also the media, whose opinion is significant due to the exposure accorded to statements they make. Therefore, the local media have a community forming force. It is not enough to stand behind the issue once, but it is a must to continually involve the participants and supporters into the publicity. The citizens may mention on the negative side that they are running into a loss with this system because, contrary to the standard bank deposits, they are not receiving any interest. The lack of state-backed guarantee and the possibility of forgery are also risks in building confidence in a local currency, since it is simply made of paper and cannot have as many safety features as a national currency. Issuers of local currency take this issue into consideration, of course. Based on their opportunities they emit this currency in the best possible quality, with safety features that are usually developed in cooperation with the banknote printing company of the given country<sup>2</sup>.

Of course, the circumstances and the regulatory conditions are different from country to country, but this is caused by the absence of a precise regulatory background. This is the situation in Hungary, too.

Precise regulation is missing concerning (Based on *Helmeçzi and Kóczán*, 2011):

- the redemption of vouchers to legal currency and redemption commission,
- the awareness of the potential changes with the stakeholders,
- prohibition of the emitted unsecured vouchers, potential bankruptcy by a financial institution,
- the way to deal with the coverage, to protect the coverage in case of liquidation
- restricting other activities by the voucher emitting companies,
- the allocation method of the profit from coverage and commission.

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<sup>2</sup> Due Tamás Perkovátz it would be the greatest success of the Sopron Blue Frank, if forging it.

The formal requirements must be regulated (Kovács *et al.*, 2011):

- printed voucher or electronic currency,
- what should be the name of the surrogates,
- exact determination of the amount and denominations of the voucher emitted,
- what should be the source of the costs of the planning, positioning and preparation of safety features, and
- should there be any cost for exchanging to the official currency (and if so, how much should it be).

It also poses difficulties if the local currency does not play its role, it does not remain in circulation long enough. It (this circulation period) basically depends on whether the supply of goods and services that are available in the local currency (voucher) are attractive enough or not. We must also examine whether the sellers (enterprises) who sell in the local currency can find a source of supply for their product or services where they can pay with local currency too, because their aim is not the accumulation of local currency.

### **THE SOCIAL ASPECTS**

The first thing that must be mentioned is “Community Togetherness,” or rather the lack of it, and its strengthening. Since the local currency connects economic and non-economic actors, it increases the feeling of togetherness by communicating that it is our common interest to trade with each other. The income generated should remain local and the participants should enrich each other.

The demurrage, which is the declared expiration date, is a tool for this. The expiration and periodical devaluation makes the region and people physically interested in using the “local currency”. If people take this opportunity, then the “local currency” may circulate even faster than the national currency. If the same note of the “local money” circulates several times before its expiration date, it may generate more revenue and income for the enterprises and organizations. Since people/enterprises will trade with each other in the region it will strengthen and increase the cooperation among the already cooperating parties.

The issue of seigniorage has to be mentioned also. While issuing national currency we are talking about real seigniorage: revenue money creation by the central bank generates a special kind of revenue which flows indirectly to the state budget. Local currency is covered by the collected deposit money. A given part of the coverage must be permanently available. The free reserves are investable, its profit called the gross “seigniorage” income. As I already mentioned, the operating of the system has costs (e.g. designing, printing, defence against forgery, marketing, etc.). By subtracting these costs, we receive the net seigniorage, which is the gross seigniorage reduced by the operating costs (Madaras and Varga, 2011). Using local currency as a surrogate will reduce payments done by cash. This procedure will decrease the income of the central bank and at the same time it will decrease the state budget too. The users of “local currency” consider the evolving social benefits in the region more beneficial than this seigniorage loss (Kun, 2006). Since the

amount and turnover of local currencies is negligible compared to volume of national currencies all over the world, central banks do not block the introduction and use of local currencies. The topic of retention and expansion of job opportunities is very important nowadays.

It should be investigated whether salaries should be paid in local currency in the region or not. If only a part of the salaries are paid in local currency, this mentioned amount will be spent in the region, therefore, that part entirely remains in the region. It is also likely that people who are receiving their salaries in a local currency will not entirely exchange it to the national currency. Probably they will spend it in the region and this indirectly – almost immediately – may create jobs; but at least it saves them. Of course it is a must to have those goods and services available which are needed for the customers<sup>3</sup>.

For a practical reason it is also recommended that the local currency would not be printed but it would be “issued” in an electronic way that would end up with a more appropriate usage in today's age (some kind of card-based solution). The “PayPass” solutions which are really popular and spreading nowadays are also a possibility for low-amount payments. The local governments have – or might have – an extremely important role. A local currency can be really successful if it is not working as “a private initiative” only, but the local government takes an active part in it too. An important issue is the wages and the payment of common charge. It is suggestible for the local government to give a part of the wages in local currency – the first concerned parties could be the public servants or the civil servants at least. The spread of local currency could be helped by the so called “cheaper exchange” solution, which means that the local government pays wages at a higher percentage in the local currency than would be paid in national currency.

After implementing the above mentioned provisions (paying the salaries in local currency), the payment of different aids and subventions should be the next step. It would contribute to the system's efficiency if common charges (such as local taxes, overheads) would be payable in local currency. In that way the local businesses that are participants in the system and receive their income in local currency will be not interested in exchanging their “vouchers”/local currency. Local government has many costs that can be paid in local currency to those acquiring local enterprises. Personally, I cannot imagine the sustainable development of the system without the active participation of municipalities.

## **CONCLUSIONS**

The introduction of local currencies is not a new way of thinking, however here in Hungary it only recently came into the spot light. Several arguments can be listed to strengthen the proposition of introducing and using local currency as a protection/defense of local economy, for the creation of workplaces, and cohesion of the local community. By introducing a local currency, a part of the local

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<sup>3</sup> A good example is the Balaton Lake Korona that can be spent preferentially at the shops of Pólus-Coop Ltd.

consumption could be retained locally. The local acquiring enterprises could be the basis of the system, because they will spend the received amount in the region, which will promote the growth of the local economy. There are several questions arising in relation to this system, such as the regulation background, safety, human background, and the mechanism of real usage, marketing, and the attitude of the local government. There is no clear line between the weaknesses and strengths; economic development is our common interest. The problems should be solved, the advantages should be used. If this will succeed and the local community will become a partner in this procedure, it may benefit the rise of the local economy. I would like to finish my study with a phrase commonly used in the medical sector: "Use it to be useful!"

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## THE HUMAN RESOURCES SITUATION OF THE SOUTHERN TRANSDANUBIAN REGION WITH REGARD TO REGIONAL COMPETITIVENESS

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### ***ABSTRACT***

*At no time in history has competitiveness and economic growth been as important as it is nowadays. In this study I have analysed some of the most important factors at NUTS2 level in the Southern Transdanubian planning and statistical region. I have defined human capital, the basic skills according to the Memorandum, and studied the economic indicators, the economic activity of the population, the employment, education and qualification in Baranya, Somogy and Tolna counties. Finally, I have gathered the most important findings in a SWOT analysis.*

Keywords: human capital, employment, education, skills, labour market

### **INTRODUCTION**

The competitiveness and economic growth of regions is a major research area nowadays. Regional policy can be defined as an intervention to influence the economy, to reduce social and economic disparities between regions. It is typically a reactive, subsequent policy which has attempted to reduce the already existing regional disparities, instead of preventing new differences from arising. Regional policy can serve a wide range of different objectives but in every case its main task is to mobilize the unused resources of the given region, to attract investment from other regions and ultimately to increase production and wages (*Sarudi, 2010*).

The liberalization of trade and economic integration lead to the need to adapt. Increased competition forces regions to reallocate their human resources from loss-making industries to profitable economic development. Experience shows that integration is most profitable for those countries that are at similar levels of economic development and have similar economic structures (*Sarudi, 2010*).

The integration area of the European Union is characterized by cooperation and trade typically within industries and not among them. Among fierce competition only those regions can succeed which have a diversified economic structure. The more diverse the level of economic growth and structure of the member states, the more polarised the integration process is. Without the use of effective compensation, integration rather accentuates the difference in levels of development between the partners instead of compensating.

In the case of economic integration, tackling regional disparities is one of the biggest problems, as the countries which are lagging behind find it difficult to accept this situation for long. There are numerous arguments for active regional

policy. As opposed to the adequate effect of spontaneous adjustment to the market, in active regional policy as an intervening policy we have structural weakness as an argument, the causes of which can be attributed to market inflexibilities, market access criteria and production structures.

Reasons for intervention include the problem of the utilization of production factors. Neoclassical trade theory presupposes the free movement of production factors, which ensures full utilization and employment. The low mobility of a work force prevents the elimination of disparities within the economic union. The reallocation of human resources happens at a low pace.

A further reason for intervention is the fact that capital moves to the already more developed regions. Here, private investors can expect quicker returns and save on their resources, which should have been spent on infrastructure development elsewhere.

In assisted regions, state subsidies and public expenditure can be reduced in the long run. State incentives and supporting economic activities can give a boost to the development of the given region. Unemployment can be reduced, social expenditures can be cut down and tax revenue may increase. Regional policy has a positive effect not only on the target region; its advantages can partly be enjoyed by other regions. Integration is deepening and production factors are better utilized.

Furthermore, in every social community solidarity and tolerance are determining factors.

In the past decades, regional policy assisted the underdeveloped regions' society and economy catch up, while today its main objective is the strengthening of economic growth based on the regions' human resources. Traditionally, the regions' economic growth is defined by the population's (labour) capital, natural resources and technical advancement (innovation).

The objective of this paper is to present those factors by analysing statistical data of the Southern Transdanubian Region that determine the level of human resources and the possible development opportunities (*Lengyel and Rechnitzer, 2004*).

I have analysed the NUTS2 planning and statistical region – the Southern Transdanubian region – more precisely the important indicators of human resources of the third level Baranya, Tolna and Somogy counties and have drawn my conclusions in accordance with my findings.

## **DEFINITION OF HUMAN RESOURCES**

To define this notion is rather difficult as it can be given a broader interpretation. Human Resources must include individual competencies and the minimal social set of conditions which are necessary for social life - in which not lexical, but user knowledge, problem-solving, cooperativeness, openness, ability to change, human relations and the quality of life, physical and mental health and a stable social situation all play their part.

It can also mean the whole individual, the potential and real actors of the labour market.

In the last decade the development of human resources became one of the major development issues in Hungarian society. It plays a major part in regional



performance, and in strengthening the social cohesion of the area. A wide range of different social activities contribute to the development of human resources, but these are organized in an industrial structure. For successful human resources development, the synchronized operation of industries and a synoptic approach, in coordination, are necessary.

According to the economics-based approach, human capital can be defined as follows: the skills and technical knowledge of a given country's workforce that was acquired in organised training or at work. With investments into human capital, return is also expected. Investment includes expenses spent on health care, obtaining information about the labour market, migration to secure employment, plus the costs of commuting (Oroszj, 2005).

The perhaps most important phase of human resource development (HRD) starts with young adulthood, and also this is the venue of intermediate (secondary) education, higher (university) education and adult education programmes. During the analysis of the most important documents on adult education, the social and economic functions of human resource development can be closely monitored. The Hamburg Declaration on adult learning adopted at the UNESCO's Fifth International Conference on Adult Education in Hamburg (The Hamburg Declaration – The Agenda for the Future) defines the objective of adult learning as follows:

Adult education denotes the entire body of ongoing learning processes, formal or otherwise, whereby people regarded as adults by the society to which they belong develop their abilities, enrich their knowledge, and improve their technical or professional qualifications or turn them in a new direction to meet their own needs and those of their society. Adult learning encompasses formal and continuing education, non-formal learning and the spectrum of informal and incidental learning available in a multicultural learning society, where theory- and practice-based approaches are recognized. (Zachár, 2003)

In October 2000 the European Commission issued a „Memorandum on Lifelong Learning” which served as a working document on lifelong learning in the EU Action Programme (*Commission of the European Communities*, 2000).

The basic presumption of the Memorandum is that Europe has to set an example to achieve dynamic economic growth and strengthen social cohesion, and lifelong learning is an essential policy for education and training. This Memorandum contains key messages highlighting the principal elements:

- New basic skills for all – 6 key skills
  - IT skills
  - foreign languages
  - technological culture
  - entrepreneurship
  - social skills
  - competencies
- More investment in human resources
- Innovation in teaching and learning

- Valuing non-formal and informal learning
- Ensuring access to guidance and counselling on learning opportunities for all
- Bringing learning closer to home (*Zachár, 2003*).

The 1990s saw the re-discovery of lifelong learning in European countries, which was initiated by the increasing economic changes. Declining unemployment did not bring about the desired results. The creation of new jobs did not happen in accordance with the timetable and, thus, became the biggest problem of the society. Education and training acquired a special role in tackling the employment problems. Significant results can only be expected from a workforce with higher education and better skills.

Learning is essential for the individual to advance in society and at the same time the reproduction of underprivileged and marginalised classes poses a danger for the society (*Zachár, 2003*).

### **ECONOMIC INDICATORS OF THE SOUTHERN TRANSDANUBIAN REGION**

The Southern Transdanubian Region covers 15% of Hungary and includes the following counties: Baranya, Somogy and Tolna. It ranks as the third biggest region in Hungary but has the smallest population (968 thousand inhabitants) among Hungarian regions.

The Southern Transdanubian Region is sparsely populated, with the lowest population density in Hungary, however with respect to total area, it ranks third among Hungarian regions. There are 65 persons per square kilometre as opposed to the national average of 107 persons per square kilometres.

The population of the region has been declining for years but this simply follows the national trend.

The difference in natural population growth/decrease in the region in 2001 was – 4025, in 2011 -5107. Apart from the natural decline in population, if to a smaller degree, migration from the area also reduced the number of inhabitants. Depopulation process can be observed in small villages (*Table 1*).

The level of economic development of a region is characterized by the production of Gross Domestic Product (GDP), which was the lowest in this region among the Hungarian Statistical Regions.

In 2011 the gross domestic product (GDP) per capita was 1773 thousand HUF in Baranya county, 1758 thousand HUF in Somogy county and 2088 thousand HUF in Tolna county. Southern Transdanubia ranked 4th among the regions in 2011, Hungarian GDP per capita was 2771 thousand HUF (*Table 2*).

The low level of economic development shows that various measures need to be taken to improve the situation; most significantly an analysis of HR management and development is required.

**Table 1**

**Regional distribution of some important data of the Southern Transdanubian Region (Hungary equals 100) (%)**

Name	year					
	2007	2008	2009	2010	2011	2012
Area	15.2	15.2	15.2	15.2	15.2	15.2
Population ( as of 1 January)	9.61	9.56	9.50	9.47	9.42	9.38
Employed people	8.08	7.84	7.67	7.81	7.91	7.70
Jobseekers	13.36	12.97	12.09	11.92	12.09	12.10
Student in higher education *	8.72	8.84	8.77	8.52	8.16	7.79
Registered businesses	8.82	8.88	8.92	8.90	8.83	8.85
Gross Domestic Product**	6.52	6.53	6.58	6.45	6.26	6.52

Source: Based on *Hungarian Central Statistical Office (KSH)* annual yearbook 2008, 2009, 2010, 2011

\*by venue of institution; \*\*at last year's purchase price

**Table 2**

**Gross domestic product per capita**

County, region	In percentage of the national average					Ranking by GDP per capita				
	2007	2008	2009	2010	2011	2007	2008	2009	2010	2011
Baranya	71.1	70.6	69.6	67.6	64	12	13	12	13	15
Somogy	62.8	63.5	63.8	64.7	63.4	17	16	16	15	16
Tolna	70.1	72	76.5	74.5	75.4	13	10	8	8	8
Southern Transdanubian region	68	68.6	69.3	68.4	66.6	IV	IV	IV	IV	IV

Source: Based on *Hungarian Central Statistical Office*

**THE ANALYSIS OF THE SOUTHERN TRANSDANUBIAN REGION'S HUMAN RESOURCES SITUATION**

**Demographic situation**

The potential human resources of the economy, the society's carrying capacity and public welfare (healthcare, education and social sphere) are determined by the development and composition of the population.

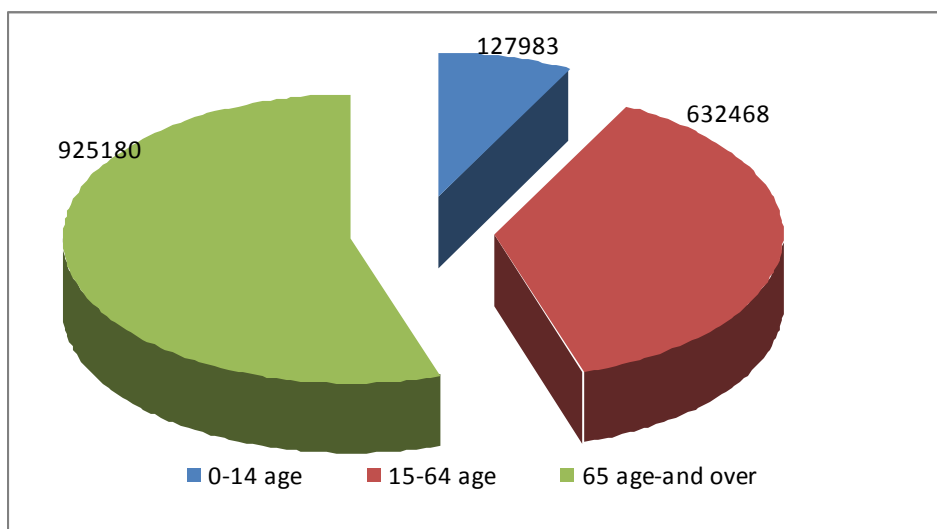
The population of Southern Transdanubia decreased by 20,600 persons from 1980 to 1990, and by 72,491 persons between 2001 and 2013 as a result of the natural population fluctuation. The decrease was mainly caused by the declining birth rates (*Hungarian Central Statistical Office*).

In the previous decade (1980-1990) the average annual birth rate was 12,800, as opposed to this in the next decade only an average of 10,760 babies was born per

year, whereas between 2000-2005 the annual birth rate fell to 8092. Then again in the period between 2006-2011, the average annual birth rate was 8312. So the distribution of the population shows that there are five times more inhabitants over 65 that live in the region than those from 15-16. Altogether the youngsters (0-14) and the older generation are twelve times more than the inhabitant in active ages (15-16) (*Figure 1*).

**Figure 1**

**Distribution of the population in the Southern Transdanubian region by age group in 2013, head**



Source: Based on *Hungarian Central Statistical Office* data

**Main characteristics of the employment situation**

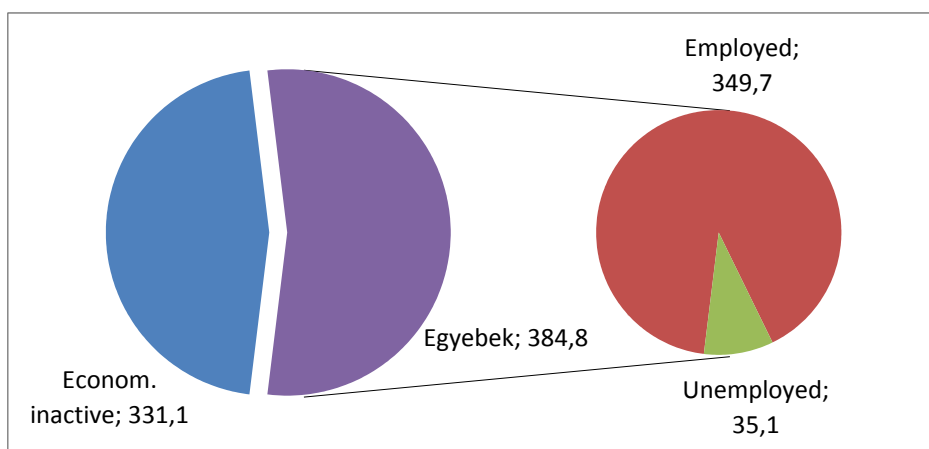
The most important characteristic of a labour market situation is employment, namely the participation of the workforce in the labour market. It can safely be concluded --not only for the country but also for the region -- that the unemployment rate is lower than the average EU rate; however, the rate of inactive population is high. This is particularly true of the employment situation of men and the older generations. The labour market situation of the workforce is greatly influenced by low school qualification. Looking back to the period since the system change, a number of social and economic processes can be detected that had a major influence on the activity of the economy. The large-scale privatization of the 1990s, the compensation, the major redundancies, the closure of firms and factories, the winding up of non-profitable businesses, the closure and transformation of huge agricultural holdings and farms, economic recession - all these factors resulted in the drastic loss of jobs and huge increase in unemployment.

The population can be divided into two categories while analysing and evaluating the labour situation: those economically active and economically inactive (*Figure 2*).

The economically active population includes those in employment and the jobseekers, while the economically inactive population includes those receiving maternity allowances, pensioners, annuitants, full-time students, plus the economically non-active group compiles other dependants.

**Figure 2**

**Economic activity of the population aged between 15-74 at a national level and in the Southern Transdanubian region in 2013 (1000 persons)**



Source: Based on *Hungarian Central Statistical Office* data

**Employment**

In the Southern Transdanubian region the employment figures have not changed significantly in the past 10 years. In 2003, the figure was 357.9 thousand persons, as the major decrease in employment was characteristic of the previous decade (1990).

At the 1990 census 12,000 persons declared themselves to be unemployed and this number was 29,600 in 2001, and according to the data of the Central Statistical Office, it increased to 48,500 in 2011. In 2013, recovery from the world-wide recession was already felt but the unemployment rate dropped significantly to 35,100 in the region only when public work programmes were introduced.

The employment rate is slightly increasing and the number of inactive workers continues to fall. In 2005 only 51.6% of the region's population aged 15-74 was active; this rate has risen by 1% compared to year 2000, in 2013 it was 53.8% as opposed to the national average of 57.5%.

The region's employment rate in 2013 was 48.8%, which falls behind the national average by 2.8%. The difference between the region's counties is a lot more pronounced – Somogy county has the lowest employment rate in the region,

46.6% whereas in Baranya it is 49.7% and Tolna county boasts 50.5 % (*Hungarian Central Statistical Office*).

### Number of people in employment

Among the various age groups the employment rate grew only in the age group of 60+ - their numbers have more than doubled. The reason for this can be explained by the increase in retirement age and the fact that more and more people work after early retirement and superannuation (*Table 3*).

**Table 3**

#### Distribution of employed people by age group in percentage (Southern Transdanubian Region equals 100) (%)

County Region	2001					2011				
	15-29	30-39	40-54	55-59	60-	15-29	30-39	40-54	55-59	60-
	proportion of people aged					proportion of people aged				
Baranya	23.9	25.7	45.9	3.3	1.2	16.5	28.7	39.5	10.9	4.3
Somogy	23.7	24.6	48.1	2.8	0.8	16.0	28.6	39.9	11.7	3.8
Tolna	23.1	25.1	48.2	2.7	0.8	17.1	28.1	40.4	10.8	3.6
Southern Transdanubian region total	23.7	25.2	47.2	3.0	1.0	16.5	28.5	39.9	11.1	3.9

Source: Based on *Hungarian Central Statistical Office data* [http://www.ksh.hu/nepszamlalas/tablak\\_teruleti\\_02](http://www.ksh.hu/nepszamlalas/tablak_teruleti_02)

In the counties of the Southern Transdanubian region, the change in the number of people in employment does not significantly diverge from the regional average. If we take a closer look at the changes in the employment numbers by settlement, major differences can be observed. The smallest decrease in employment numbers was registered in the county seats. According to the data of the last two censuses, the employment numbers rose in the case of Szekszárd and Kaposvár by 5%, in the case of Pécs by 1%, which corresponds to the regional employment rate of 3%. With the evolvement of district centres, in the case of other towns the growth is below the regional rate (In Somogy 13%, in Tolna 2% and in Baranya 13%). In the villages of Somogy and Tolna, the employment numbers dropped by 2-4%, but in the Baranya villages the numbers rose by 5%. The loss of jobs in the villages is caused by the closure of agricultural factories and holdings, mainly affecting those involved in core activities, supplementary activities and branch workshops (*Table 4*).

### Unemployment

In the Southern Transdanubian region, the number of unemployed is higher than the national average. In 1990 it accounted for 3% of the economically active population (total number of employed and unemployed) but by 2005, it rose to 8.8%. From year 2000, the employment number increased by 1.0% as opposed to

the rise in the unemployment numbers by 14%. The last 5 years saw a slight shift within the region, among the counties with regard to the unemployment rate. At the beginning of 2000, the highest unemployment rate was registered in Somogy county (8.3%) but by 2013 the situation was altered and Baranya county produced the highest rate of 10.4% (Table 5).

**Table 4**

**The population's economic activity by gender in the Southern Transdanubian region (head)**

Name/designation	2001			2011		
	total	male	female	total	male	female
Employed	336 796	181 798	154 998	342 915	183 535	159 380
Unemployed	45 007	27 668	17 339	57 515	30 622	26 893
Inactive workers	338 987	131 220	207 767	301 060	112 048	189 012
Dependants	271 578	131 618	139 960	231 449	116 052	115 397
Total	992 368	472 304	520 064	932 939	442 257	490 682

Source: Based on *Hungarian Central Statistical Office* (KSH) [http://www.ksh.hu/nepszamlalas/tablak\\_teruleti\\_02](http://www.ksh.hu/nepszamlalas/tablak_teruleti_02)

**Table 5**

**Unemployment**

County, region, country total	Number of unemployed, thousand persons						Unemployment rate %					
	2008	2009	2010	2011	2012	2013	2008	2009	2010	2011	2012	2013
Baranya	15.7	18.8	21.8	23.6	24	17.2	10.4	11.6	13	14.5	14.7	10.4
Somogy	13.1	14.1	17.3	16.4	12.9	12.4	10.4	11.4	13.5	13.1	10.3	9.9
Tolna	9.8	8.9	7.8	8.4	8.9	5.6	10.2	9.4	8.4	9.0	9.6	6.0
Southern Transdanubian Region	38.6	41.8	46.9	48.5	45.8	35.1	10.3	11	12.1	12.7	12.0	9.1
Country total	329.2	420.7	474.8	467.9	475.6	448.9	7.8	10	11.2	10.9	10.9	10.2

Source: Based on *Hungarian Central Statistical Office* data

In 2000, 45% of the total registered unemployed had completed full primary education or lesser qualifications, and almost 1000 people held college or university degrees. Out of these 141 people were new graduates. By 2003, the number of those having lower education rose by 19% and at the same time the number of those unemployed having secondary education also increased by 4.4%. The number of unemployed with higher qualifications increased by 35%, which highlights the

controversies between education, training, and the demands of the labour market (*Hungarian Central Statistical Office*).

### **The economically non-active population**

The participation rate is one of the lowest in Hungary among all EU countries and in the Southern Transdanubian Region among all Hungarian regions.

In 2012, the economic activity of the population aged between 15-75 years corresponded to 57.5% at national level and to 53.8% at regional level. At the same time, the rate of economically non active population is 42.5% at national level and 47% in the Southern Transdanubian Region. The least economically active age group is those between the ages 15-24 years. In 13 years, the number of economically non active population grew at first, then by 2013 it dropped by 12% (*Hungarian Central Statistical Office*).

The dependency rate with regard to the child population is 20.2%, and 26% for the elderly. No significant differences can be observed among the counties.

Recently, the jobseekers' social security scheme has undergone some changes, more importantly the work incentives were strengthened and new programmes, support schemes were launched – their effect can only be evaluated in the next period.

### **Changes in the level of education and qualification in the region's population**

According to the census data, the educational level of the population – apart from smaller fluctuations – did increase in the past decade (*Table 6*).

**Table 6**

#### **Education and qualification (data from the 2011 census) (Southern Transdanubia equals 100)**

County, Region	0 class	at least		Higher education
		8 classes	secondary	
corresponding age group of population in %				
Baranya	0.6	95.2	45.2	16.8
Somogy	0.8	93.6	40.6	13.8
Tolna	0.7	93.5	38.9	13.3
Southern Transdanubian region	0.7	94.1	41.6	14.6

Source based on KSH [http://www.ksh.hu/nepszamlalas/tablak\\_teruleti\\_17](http://www.ksh.hu/nepszamlalas/tablak_teruleti_17)

### **Changes with regard to school qualification**

From *Table 6* we can draw the following conclusions: at the regional level 0.7% of the population did not complete primary education; this number is 0.1% higher in county Somogy. Also, 41.6% of the 18 years old and older age group are high-school graduates. In county Baranya – mainly because of the city of Pécs – 45.2%



of the population graduated from high school, while only Tolna county is under the regional average with 38.9%.

Almost 10% of those over 25 years old have completed their university educations; here also Baranya county has the highest education index, exceeding the regional average by 2.2%. The difference in this respect between the counties Somogy and Tolna is not significant.

The qualifications (census data) shown on the table reflect the situation in year 2011 (the year of the census), since then there has been significant increase in the level of education, especially in the numbers of university graduates.

### **Vocational and secondary schools - Terms and conditions**

The number of education venues increased in 12 years, from 140 to 245, by 57%. These institutions mostly provide a range of educational and training courses to meet the demands of the given area. In 2012/13 vocational education was carried out in 89 schools, vocational technical education in 77 schools and secondary grammar education in 79 schools (*Hungarian Central Statistical Office*).

Since 1990 there has been a 62% increase in the number of vocational schools, 68% in the number of vocational technical schools, whereas the number of grammar schools rose only by 42%, which is explained by the fact that skilled workers became more sought after and technical and vocational trainings meet the demands best. The growth in numbers of education venues is contradictory to the continuing trend of falling birth rate, and despite the increasing training costs, no improvement can be detected in the professional standards.

In the vocational technical schools of the region, health education and economic education are highly represented. Since the first decade of the new millennium, training in mechanics and electronics has fallen below the average, only education in economics maintained its position.

In the training of skilled workers there was a shift to meet the demands of the labour market, with the introduction of the dual system of vocational training, but according to the reports of the job centre, there is a shortage of skilled workers in certain professions (welder, assembly operator, tiler, etc.).

The past years saw a restructuring in vocational technical training. In Somogy county there are 30 institutions for vocational, 29 schools for vocational technical training. For those with agricultural training – with most big agricultural holdings having closed down – the chances of finding work placement became rather slim. Those technical and vocational schools are gaining ground that train skilled workers for the food industry, trade and commerce, catering and economics. However, the machinery industry struggles to find enough skilled workers. Besides meeting the demands of Lake Balaton for waiters and waitresses - which is also influenced by seasonal work – the offer is higher than the demand in the trade and catering sectors.

The number of schools providing secondary education is 22; the past years saw a significant falling behind in Baranya. In Somogy county education is fragmented and too numerous.

19 institutions for vocational, 17 schools for vocational technical training operated in 2012/13 in Tolna county. The structure of education has changed only slowly, which the experts explain by the fact that the economy undergoes a slow transformation. The human resources are modest and also fragmented.

Secondary education is lower than the national average with regard to the proportion of the population. Within the framework of vocational technical training, training courses in economics, management and trade became popular within a short period of time, which helped provide better services for the locals. There are 19 secondary schools, but most of the talented students go on to complete their higher education out of the county.

Because of its settlement patterns, the range of post-secondary vocational courses is rather limited, which puts county Tolna in a disadvantaged position. This might be remedied with the extension of vocational courses organized at the vocational schools.

In general we can conclude that the restructuring of vocational technical training – which equals the human resources of the Southern Transdanubian region – continues to be tailored to the needs and demands of the labour market but its efficiency varies by profession.

The number of schools providing the venue for training of employees for the business and public sectors and in other areas is very high, scattered and running them is very expensive no matter who finances their operation, the state or businessmen (*Cseres-Gergely and Szőke, 2014*).

### **Higher education**

In the area of human resources management, one of the most controversial subjects is higher education. The last 15 years saw a dynamic increase in the numbers and the whole scale of education underwent substantial changes. Besides the integration of institutions (January 2000) a competition started for students, new faculties and courses were launched parallel with the already existing ones and, in many areas, the demands of the labour market were not taken into consideration (*Szék, 2004*). Over-education resulted in the growing number of graduate unemployed. This negative tendency has also affected the Southern Transdanubian Region, the number grew by 35% between the 2000/2001 and 2005/2006 school years, but by 2012/2013 the numbers were reduced by 2% (*Hungarian Central Statistical Office*).

Besides university and college education, different forms of adult education programmes are gaining ground. Obtaining the first degree, then participating in specialization programmes (second degrees) – the result was that the distribution of students shifted. In 1990, 80% of students were full-time students and 20% were in adult education, now it changed to 72%-28%.

The new Act on Higher Education entered into force on March 1<sup>st</sup>, 2006 complying with the principles set out in the Bologna Declaration – adapting to the European education system – which regulates the structure of higher education and takes legal steps to start broad reforms. The transition to three-cycle education was introduced and interoperability between institutions became possible.

There are approximately 206 research & development units, most of them operate within the institutional system of higher education. The most complex of these is the University of Pécs, with high-profile teaching activities closely linked with research. In Somogy, the results of Kaposvár University can be mentioned especially in the field of agricultural research.

## CONCLUSIONS

Strengthening the region's human resources is the most important requirement for the continuous and comprehensive modernization of the education and training system. It can be concluded that the education level of the working age population and the number of secondary and higher education students are growing, which is considered to be the greatest strength of the region. However, there's a low level of employment, which weakens the social and economic performance of the region in addition to positive indicators of education. The obstacle to further development is the unfavourable age structure of the population. Much more of the population consists of youngsters and the elderly than those in active ages. The population of the region has been declining for years, but it is a national trend. During the last years the unemployment rate is decreasing. Recently the jobseekers' social security scheme has changed, but the program will be evaluated in the future.

The revealed processes are evaluated in the following SWOT analysis (*Table 7*).

**Table 7**

### **Most important findings of the analysis of the Southern Transdanubian Region human resources SWOT analysis**

<b>Strengths:</b>	<b>Weaknesses:</b>
Continuous increase in the education level of the working population in the region Growing number of participants in secondary and higher education contributed to meeting the demands of the labour market The new Act on General Education created the conditions for the restructuring of higher educational programmes and for altering the structure and content of training In education the restructuring started in accordance with the National Qualifications Register Improvement in mobilizing EU and national funding Basic health care ensured	Level of employment in the Southern Transdanubia is below the average regional level, which has a fundamental impact on the social and economic situation of the region High number of people receive various unemployment benefits Low level of contribution to the national GDP, regional GDP per capita corresponds to 67% of the national average Net wages of those in employment are below the regional average (2012 data) Fragmented network of vocational and training schools, too many small institutions Many parallel courses In many fields education does not adapt to the needs of the labour market In certain areas higher education is oversized, not enough jobs going around and graduates have difficulty finding employment, which results in graduate unemployment

<b>Opportunities:</b>	<b>Threats:</b>
<p>Regional infrastructure can be improved by using EU Funds and national co-financing in the period between 2014-2020, therefore, the chances are greater that new businesses will be launched or already existing ones will be attracted to the region, which can lead to the greater mobility of the workforce</p> <p>Central measures improve the chances of those in a disadvantaged position to find new jobs</p> <p>The Regional Employment Service improves the chances of finding employment and helps raise the level of employment by coordinating the collaboration of institutions and businesses more effectively</p>	<p>Unfavourable age structure and continuing low birth rate might be a problem in the long run and it can pose a threat to the supply capacity of the region in the labour market</p> <p>Small villages have limited means to encourage economic development, which prevents the creation of new jobs. This is especially dangerous when there is no cooperation at the level of micro regions or cooperation is only formal</p> <p>Migration of highly qualified work force due to the limited work options to other regions or even abroad</p>

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## MOTIVATION FOR TRAVEL AND SATISFACTION OF TOURISTS SPENDING THEIR HOLIDAYS ALONG THE TISZA RIVER

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### ***ABSTRACT***

*People's travel decisions are influenced by several internal and external factors. Research on consumer behaviour has discovered many types of factors, the scope of which has been constantly widening in recent years and decades. Our decisions are influenced by the social group we belong to and to cultural and family backgrounds. We obtain information from our social group, which has an impact on our consumer decisions. At the same time, consumer behaviour can be affected by sex, age, marital status, and the life cycle as well. Internal factors include motivation, attitude and also personality. In 2013, a survey was conducted to measure the tourists' motivation, satisfaction and the correlation between their stay and the programs offered during the holiday season at the Tisza River. Its main focus was to find out why people visit the area under examination and study their consumer behaviour. This paper presents the results of the survey: The decision of tourists visiting this region was influenced primarily by their previous experience and by others who spent an earlier holiday there. When choosing a holiday in this region, financial factors like income levels and travel expenses are particularly important. Nevertheless, in choosing this destination respondents consider most of the factors included in the list more important in planning a holiday than in general.*

Keywords: travel, facts on consumer behaviour, internal factors, motivation, satisfaction

### **INTRODUCTION**

An individual's behaviour and decisions are influenced by a lot of motives which could be both positive and negative. The dominant motivation for travel decisions is influenced by many factors, among others by the incentive's power or by the person's value judgement. All kinds of human activities are governed by our needs, as are the activities directed on spending our free-time. The classic hierarchy of basic human needs spans from basic biological needs to the most complex motivations. Especially strong motivating factors are the satisfaction of physiological and safety needs. After a tourist has satisfied his basic needs and some of his demands built up to financial certainty, he can dispose over enough free time and discretionary income to satisfy the remaining three levels of need. Motivation directed on spending free-time and travelling can be fitted into one of the above mentioned hierarchy levels. In tourism motivation plays a dual role, which means we can differentiate between "push" and "pull" type motivation (Crompton, 1976). "Push" type motivations compel the traveller to secede from daily routine. "Pull" type motivations are connected to the lure of the chosen destination and its specific characteristic features. There are several models used for classifying and interpreting motivations. However, only a small part of them can be

fitted into the system of tourism; the general consumer decision-making models do not consider the peculiar features of tourism as a service, offering a “fleeting” product.

We are all consumers. Where, when, for how much and what quantity we buy depend on where we come from, how old we are, and how much we earn. In each case the circumstances of a purchase are made in the consumer’s head, that is why their psychological background is so important, from the birth of an idea to buying a product. “Travelling motives are those factors that create the desire for travelling” (*Tasnádi, 2002*). These motives cannot be strictly separated from each other. Tourists can be grouped according to several aspects.

The motivational groups for tourism are:

- Physical motives (vacationing, medicinal, thermal and sports tourism);
  - Relaxation;
  - Recovery;
  - Sports;
- Psychological motives (experience, event, vacationing, cultural, club and rural tourism);
  - Breaking-out of everyday isolation;
  - Entertainment;
  - Desire for experience;
- Sociological motives (visiting friends or relatives, experience and camping tourism);
  - Seeking out friends or relatives;
  - Social life and social relations;
  - Back to nature from the civilized world;
- Cultural motives (educational, learning, cultural, religious and pilgrim tourism);
  - Learning about other countries’ habits, traditions and language;
  - Interest in art;
  - Religious reason;
- Status and prestige motives (business, congress, event tourism, experience and adventure tourism);
  - Self-esteem;
  - Desire for recognition and appreciation (*Tasnádi, 2002*).

Once the motive for travel has been established, people make travel decisions. A tourist makes a decision under the influence of many internal and external factors. The internal factors affecting decisions are the motivations, emotions, attitudes, the personality itself and the lifestyle. These are all different and the external factors can change them as well. *Maslow* (1968, 1970) analysis the hierarchy of a self-actualising person’s needs, who recognises the world very efficiently and precisely, is able to experience spontaneously the whole scale of emotions, but experiences negative emotions not merely through his own lot but through the problems of mankind as well.

In the hierarchy of needs each level is built on the other: it is necessary to partly satisfy lower needs, and to be able to move on to higher ones. “If we examine Maslow’s pyramid of needs, we can note that all need levels defined there can act as motivation for tourism-aimed travel: e.g. physiological needs are in the background of travelling for leisure and relaxation. Based on these needs there is a growing

number of beauty farms – getting more and more popular - providing wellness, and fitness services, where, besides getting more beautiful, guests can enjoy relaxation and recreation. Medicinal tourism can also be included in this group. The need for belonging to somewhere may encourage people to visit friends and relatives; this is called VFR (visiting friends and relatives) type of tourism. The desire for social esteem encourages professional and business travel, but we could add to this group the highly expensive trips resulting in social admiration and prestige. The need for self-fulfilment can encourage people to take part in adventure tours, which are getting more and more popular nowadays, where participants can test their courage and physical abilities” (Puczkó-Rátz, 2000; Lipp, 2004).

Plog’s model can be considered as a tourist typology, but as Andreu and his colleagues pointed out in their critical review, it is not really suited to exploring real motivations since tourists decide to travel for utterly different reasons. Following an allo-centric winter destination the same tourist may decide on a customary, psycho-centric family summer holiday. Of the motivation-based tourist typologies, Hahn’s activity-based typology system deserves consideration, as well as F. Romess-Stacke’s classification, which distinguishes four basic groups from the aspects of motivation, consumer behaviour and environmental consciousness (Kaspar-Fekete, 2006).

A widely accepted theoretical approach, which can be proved empirically, does not exist even to this day. One explanation may be that travel motivation is a psychological process which possesses an underlying multi-dimensional structure and is very difficult to integrate into a system. However, the models that have been created so far can be of practical help to experts managing particular destinations in their market segmentation work as they can assist in mapping out the needs and motivations of the potential target groups.

Others tried to define the factors affecting people’s decisions by applying different motivation and personality theories. “Most motivation theories concentrate on what is common in people, while personality theories would rather turn towards the differences between the individuals. Motivations are the energy sources ensuring consumers’ purposeful behaviour, while their personalities will guide their behaviour selected to reach the desired goal in the various situations” (Hoffmeister-Tóth, 2006).

Motivations are strongly interlocked with personality theories. According to researchers, the subject of motivation theory is primarily to find what is common in people. On the other hand, personality theories tend to cast a light upon the differences. Tourist travel decisions constitute a special type of consumer decisions, in which the tourist is supposed to make a decision when the product is offered to meet his personal needs but also as a segment-specific product with common motivations. Thus, in these decisions certain elements of personal and motivational theories also do appear.

## **Hypotheses**

Related to the topic we put forward the following hypotheses:

- Tourists spending holidays along the Tisza River make their travel decisions influenced primarily by their previous experiences.



- The decisions in this destination are more emphatically defined by financial factors, e.g. incomes, cost of travel, etc. than in general.

## **MATERIAL AND METHODS**

Commissioned by the Department of Tourism and Catering of the College of Szolnok and the North Alföld Regional Marketing Directorate of Hungarian Tourism Zrt., the survey was conducted in 2013, with the organised involvement of students completing their summer 'Tourist Police' practice with the Water Police. The survey set out to measure the tourists' motivation, satisfaction levels and the correlation between their stay and the themed programs of the 'Year of Domestic Tourism'. Its primary aim was to gather information about the consumer behaviour of the tourist arriving in the region in question.

In the course of the research oral and written surveys were conducted based on the same questionnaire in the settlements lying along the Tisza River. This twofold method enabled a wider sampling. In order to avoid double questioning, previous participation was recorded and repetition excluded.

The questionnaire was designed by Hungarian Tourism Zrt. ÉAF RMI in consultation with the College of Szolnok taking into account the aspects of easy processing. The survey encompassed the following issues in relation with the region:

- Visiting habits to the region (frequency, duration, ranking of destination) (3 questions identical to the ones asked in earlier surveys)
- Methods and means of obtaining information (one multiple choice question; in comparison to earlier surveys, answers about printed advertisements appeared consolidated here)
- Motivations (one complex question, which assesses general attitudes and particular decisions on travelling)
- Staying habits (company, accommodation) (two questions, narrower in scope, the sensitive issue of tourist spending was not raised this year)
- Satisfaction (one group of questions by factors measured on a five-degree scale.)
- Attitude to local produce (one question qualifying attitude)
- Experience expectations and their fulfilment (one two-dimensional scale question)

The main parameters of the data collection were as follows:

- 403 element sample
- 38%-62% division of oral-written personal questioning (according to pollsters)
- not provided any single aspect of representativeness
- arbitrary sampling
- may serve the purposes of complementary information and orientation

Questionnaires were checked for form and content and recorded in a closed computer system. Due to a relatively low item number the database was not filtered; every usable item was added to the database for analysis. All data were analysed by SPSS version number 19.0, graphs were created by using Microsoft Office Excel 2007.

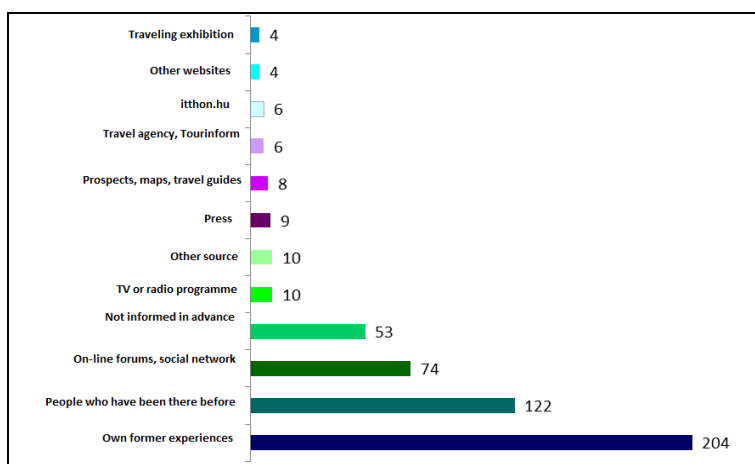
## RESULTS

### Methods and means of obtaining information

Information gathering and the forms of media used before the travelling decision were measured by the first multiple choice question. The high rate of returning visitors proves that previous experiences play a defining role here. The reasons appearing in the first four places were: personal guarantee and word-of-mouth propaganda provided directly or via community sites or acquaintances. The role of tourist brochures, travel exhibitions or the media is negligible and shows a downward trend. Marketing communication messages from travel agencies or from radio and television advertisements cannot be termed effective. The number of mentions is shown in *Figure 1*.

**Figure 1**

### Ranking of main information sources before the holiday, based on the number of mentions



Returning visitors used several sources of information when making the travel decision; they know better what to look for and their knowledge of the premises meant an advantage in putting together their programmes. 72.5% of all respondents marked only one source of information on the list, and the satisfaction with the types of information sources shows a significant decrease probably because of the multi-functional nature of the Internet. (*Figure 1*)

From these findings we can draw a conclusion concerning the cost planning of marketing communications. We have to put a greater emphasis on ensuring a place where tourists can share their experiences, and with the help reminders sent in the off-season we can still maintain the discussion about previous summer's holiday. This way we can encourage the tourists and even their friends to take another holiday again. Even the second round of the prize-winning competition can be arranged for winter to preserve the pleasant experience in their memory as long as

it is possible. Community sites represent a growing proportion; they should not be neglected in the planning process.

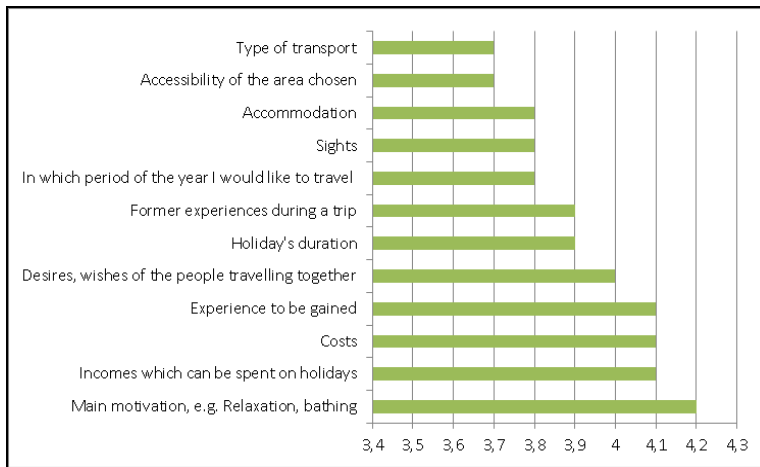
### **Motivation of tourists visiting the region in question**

We asked about the motives playing an important role in making a travel decision with a new type of question. On the one hand, we asked which of the selected 12 decision determining factors influenced the tourists in their travel decisions, and on the other hand, in this particular holiday which factors they took into account and to what degree.

As we can see in *Figure 3*, decisions are mostly influenced by income, motivation, cost and previous experience. At the same time, regarding the present travel (*Figure 2*), the proportion of the answers is quite the same, but in extent - except for one factor – they attributed less significance to all other factors. This single factor is the time of the year, which signifies a stronger correlation between the summer season and the visits to the Tisza Region. Accessibility and means of transport do not play such an important role any longer like a few years ago. Great importance was attached to the desires and wishes of fellow travellers. This indicator corresponds to respondents' composition and the high rate of friendships and colleague groups.

**Figure 2**

#### **Determining factors in a travel decision in case of the present holiday (%)**



Determining factors of tourist decisions were assessed on a five-degree scale where answer No. 1 means “absolutely insignificant”, and No. 5 “very important”. In *Figure 4* we can see the decisive factors in holiday decisions in general and in the case of the present one. According to the responses we can establish that out of the 12 factors listed, in 9 cases they deemed it more important, in 2 cases equally important and in 1 case less important in making a travel decision in general compared to choosing a holiday along the Tisza River.

Figure 3

Determining factors in travel decisions in general (%)

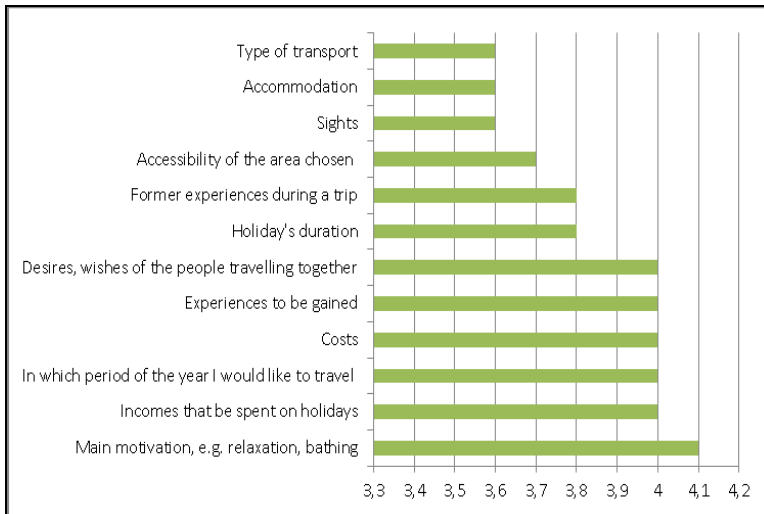
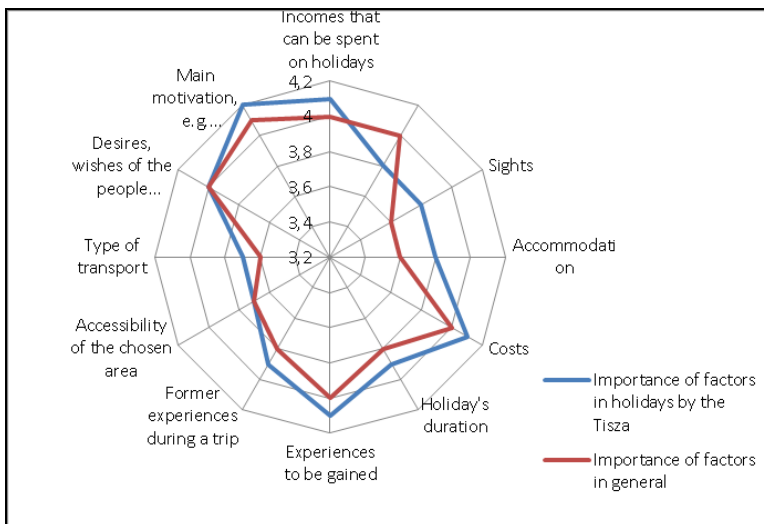


Figure 4

Comparing tourist decisions made in general and in choosing holidays along River Tisza



This means that for the respondents the following factors were more important: sights of the region to be visited, types of accommodation, cost of travel, duration of stay, experiences to be gained, previous experiences, means of transportation,

the main motivation for travel, and incomes as main motivators when choosing a holiday along the Tisza River, than in general. However, the season was not considered important, which means according to respondents that at any time of the year it is suitable for going on a holiday along the Tisza River.

## CONCLUSIONS

Tourists' decisions are influenced by several internal and external factors. Age, gender, school qualification and occupation form only a part of the pile of factors influencing decision making. If a tourist possesses a sufficient amount of free-time, discretionary income and well-defined motivation, then the process can start which ultimately results in the travel decision.

The consumer habits, motivations, attitudes and criteria of satisfaction revealed by the research carry a significant amount of subjectivity. Nevertheless, the modern, well-informed tourists are able to make an objective assessment based on their previous experience.

Our hypotheses have been justified:

- The decision of tourists visiting this region was influenced primarily by their previous experience and by others who spent there a holiday earlier.
- Our second hypothesis has also been justified. When choosing a holiday in this region, financial factors like income levels and travel expenses are particularly important. Nevertheless, in choosing this destination respondents consider most of the factors included in the list more important in planning a holiday than in general.

Mapping and segmenting the target audience's motivation is an important tool of tourism marketing. Motivations can significantly influence the direction of tourist product development. Consequently, the findings of this survey can serve as the basis of further research.

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## REGRESSION BASED MODELS AND EXPERT JUDGEMENT IN PREDICTIVE SITUATIONS

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### ***ABSTRACT***

*The main scope of this paper to give a short conceptual overview and comparison of regression based multivariate techniques and professional expert judgements in decision-making situations where the goal is to predict the value or the membership of a certain target variable. As a secondary research we overview the related literature. Within the framework of the survey, the most widespread CRISP-DM model development standard and the selection criterias of the appropriate regression based model are discussed as well.*

Keywords: expert judgement, classification, regression, logit, CRISP-DM

### **INTRODUCTION**

When browsing on an online bookshop, it is not unusual that we are automatically offered certain books which are very likely to fit our interest. We receive text messages from our mobile service provider, in which we are directly offered new products. When setting up a claim for a bank loan, our request is immediately judged by the loan-office. The above listed examples share that, in all cases, the calculations require predictive classification methods which forecast our expected behaviour.

In the last few decades, a noticeable technological revolution took place in the field of computer science. The sudden explosion of developments enabled us to do millions of operations on personal computers. Prior to that the application of complicated mathematical-statistical algorithms (henceforward: algorithms) in practice were only accessible to circles of academic researchers because of the process' significant time consuming nature and the limited access of the capacity of computers. However, the situation has drastically changed. A separate industry has been created in order to make the algorithms available to users. Special software finally became accessible that enables us to carry out in a few minutes analyses that formerly took weeks.

The quick pace of the expansion of computing possibilities and easy access have given a further push to the fundamental researches, and to the innovation of algorithms. New procedures and algorithms are regularly unveiled in professional scientific workshops. The most viable ones are immediately used in practice. The possibilities of new technologies in practice were first utilised by the corporate/business sector. In those industries that are characterized by the fulfilment of mass-

demand and service, the process of business statistical analysis and modelling are evident. In situations of the claim for multiple decisions modern enterprises soon realized that, as a result of algorithms, predictive decision rules/formulas help them to make decisions faster and, more importantly, cheaper.

## **STATISTICAL ALGORITHMS VERSUS EXPERT EVALUATION**

In contrast to the experts' judgement, these algorithm based decisions are free from cognitive distortions or biases. In general cognitive biases can be characterized as the tendency to make decisions and take action based on limited acquisition and/or processing of information or on self-interest, overconfidence, or attachment to past experience. Cognitive biases can result in perceptual blindness or distortion (seeing things that aren't really there), illogical interpretation, inaccurate judgments, irrationality (being out of touch with reality), and bad decisions. Cognitive biases can be broadly placed in two categories. Information biases include the use of heuristics, or information-processing shortcuts, that produce fast and efficient, though not necessarily accurate, decisions and not paying attention nor adequately thinking through relevant information. Ego biases include emotional motivations, such as fear, anger, or worry, and social influences such as peer pressure, the desire for acceptance, and doubt that other people can be wrong.

Decision algorithms are free from tiredness and exclude subjective elements. Another important difference is that algorithms are coherent in time, namely, they evaluate the same situation of a decision in two different times. A good example for that is the research (*Hoffman et al.*, 1968) in the course of which experienced radiologists were asked to evaluate chest radiographs into the categories of "normal" and "abnormal" in two different times, so those who participated in the research did not know that they were shown the same radiographs for the second time. In the 20% of the cases, the assessments were self-contradictory. A similar percent of inconsistency was observed in a research in which 101 auditors were asked to rate the reliability of the inside controls of the company (*Brown*, 1983).

In those situations, when the examined problem's complexity "size" is significant as a result of the decision point's complexness, algorithms are able to reveal such correspondences that a human mind would not be able to capture. Let's take the example of half a million clients and a loan-office possessing an accordingly vast amount of descriptive data. For instance, where they are looking for answers to these questions: How and what does someone's paying back of a loan depend?, or - Is it possible to give a probability estimate in the case of a new client who is likely to not be able to pay a loan back, or to decide who qualifies to receive a loan based on this data? With the help of suitable statistical analyses, these factors can be characteristically disclosed, which have an effect on the payment willingness. Together with the help of proper algorithm, a kind of formula can be produced that is able to estimate a specific case of a client's non-payment probability. Based on the revealed correspondences, such business decision making



rules can be set up that run along with a target function, resulting in an optimal procedure, and are automatically executed during the application<sup>1</sup>.

On the grounds of the above mentioned decision point's complexity, it might not be surprising that in these fields human (professional) decision/estimation performs worse than algorithmic analysis.

At the same time, it is surprising that in many other instances the same thing happens in the "small-sample" cases, namely, where the problem can only be described with far less data. *Paul* (1954), summed up 20 such research results that examined whether the qualified professionals' subjectivity-based evaluation on the clinical predictions were more accurate or the statistical predictions derived from given rules.

Based on the outcome of the research, the statistical prognoses are characteristically performed better than the ones made by professional estimations. Even more striking is that of *Kahneman*, who was honoured with the Nobel Prize in Economics in 2002 for his book *Thinking, Fast and Slow*, who wrote this:

"About 60% of the studies have shown significantly better accuracy for the algorithms. The other comparisons scored a draw in accuracy, but a tie is tantamount to a win for the statistical rules, which are normally much less expensive to use than expert judgment. No exception has been convincingly documented" (*Kahneman*, 2013).

The effectiveness and the relative power of statistical predictions can be observed in exotic areas, like *Ashenfelter's* wine price forecast. In this study (*Ashenfelter*, 2007) a proper linear model was developed to predict the price of mature Bordeaux red wines. Surprisingly, the model performed better at auction than expert wine tasters did. This particular proper linear model has the following form

$$P = w_1(c_1) + w_2(c_2) + w_3(c_3) + \dots w_n(c_n) \quad (1)$$

The model calculates the summed result P, which aims to predict a target property such as wine price, on the basis of a series of variables. Above,  $c_n$  is the value of the  $n^{\text{th}}$  variable, and  $w_n$  is the weight assigned to the  $n^{\text{th}}$  predictor.

In the wine-predicting statistical model,  $c_1$  reflects the age of the vintage, and other predictors reflect relevant climatic features where the grapes were grown. The weights for the cues were assigned on the basis of a comparison of these variables to a large set of data on past market prices for mature Bordeaux wines.

As a short list of studies here are some other examples (including small sample problems) of using statistical models successfully in contrast to expert judgement:

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<sup>1</sup> Connected to the previously mentioned two questions, the bank-loan approval, or the so called scoring systems applied by great banks, is a good example. These systems work automatically based on the given data, with the exclusion of human agency, and they accomplish the estimation of the loan-applicants non-payment probability within a few seconds, and based on the results they take an offer whether to sign a contract or not if the non-payment probability is high.

- *Howard and Daves* (1976) found they can reliably predict marital happiness with one of the simplest statistical model, using only two cues:  $P = [\text{rate of lovemaking}] - [\text{rate of fighting}]$ . The reliability of this model was confirmed by *Edwards and Edwards* (1977) and by *Thornton* (1979).
- *Wittman* (1941) constructed a statistical model that predicted the success of electroshock therapy for patients more reliably than the medical or psychological staff.
- *Carroll et. al.* (1988) developed a statistical model that predicts criminal recidivism better than expert criminologists.
- A predictive model constructed by *Goldberg* (1968) did a better job of diagnosing patients as neurotic or psychotic than did trained clinical psychologists.
- Statistical models regularly predict academic performance better than admissions officers, whether for medical schools (*DeVanl et al.*, 1957), law schools (*Swets et al.*, 2000), or graduate school in psychology (*Daves*, 1971).
- Statistical models predict loan and credit risk better than bank officers (*Stillwell et. al.*, 1983).
- The prediction of newborns at risk for Sudden Infant Death Syndrome better with models than human experts do (*Lowry*, 1975; *Carpenter et al.*, 1977; *Golding et al.*, 1985).
- Statistical models are better at predicting who is prone to violence than are forensic psychologists (*Faust and Ziskin*, 1988).
- *Libby* (1976) found a simple model that predicted firm bankruptcy better than experienced loan officers.

According to some studies (*Leli and Filskov*, 1985; *Goldberg*, 1968) even when experts are given the results of statistical models, they still can't outperform the predictions of the models. As a consequence *Robyn M. Daves* (2002) drew out the normative implications of such studies:

„If a well-validated statistical model that is superior to professional judgment exists in a relevant decision making context, professionals should use it, totally absenting themselves from the prediction.”

An unexpected result of the researches, the superiority of the statistical predictions was even observable as the rules of the explanatory factors of simple linear combinations (*Kahneman*, 2013). Furthermore, *Robyn M. Daves* presents evidence in the 1979 article *The robust beauty of improper linear models in decision making* that even such improper linear models are superior to clinical intuition when predicting a numerical criterion from numerical predictors. Improper linear models are those in which the weights of the predictor variables are obtained by some nonoptimal method; for example, they may be obtained on the basis of intuition, derived from simulating a clinical judge's predictions, or set to be equal.

The statistical predictions are based on models that are not only useful to forecast but also to reveal the predictions' explanatory factors, their correspondences with each other and with the required predicted quantity. Therefore, they are not just used as well-functioning “crystal balls” during the prediction but we can also gain knowledge, understanding the phenomenon of modelling from its inside mechanisms and its system of coherence. Schematized,

we could have said that with the appropriate database a good statistical model is able to “learn” everything within a few minutes, as opposed to an expert of the field who might need decades to acquire this knowledge.

So far, we may conclude that in situations of prediction human wisdom and professional knowledge are completely unnecessary. However, “luckily” the statistics based algorithmic prognoses are not free from disadvantages. One instance of this is Paul Meehl’s “broken leg phenomenon”. Meehl, in his mind-experiment, assumed that we possess a statistical algorithm that is able to predict based on previous experience that a specific professor is going to the cinema on Wednesday evening. The algorithm works perfectly until the time when the professor suddenly breaks his leg on a Tuesday, so he cannot go to the cinema on Wednesday. Thereby, algorithms malfunction in those situations where a previously never experienced, low probability and rare situation occurs, whose result is significant<sup>2</sup>.

Another problem is the development of the particular algorithm, specifically its base, related to the structure of data. The predicting models can only perform good results in the world represented by the data. If there are some important data missing for some reason, the variables that highly affect the required prediction of quantity will worsen the quality of the prediction. In practice a very important problem is the quality of the data. Data quality essentially relates to the predictive power of the statistical models. If we run a model on inaccurate data, the explained contexts and prediction of the model will be misleading. The so-called GIGO rule sharply highlights this situation: "Garbage In Garbage Out", that is, if "garbage" is used in the modeling, the result will be "junk".

## **INDUSTRY STANDARD OF MODEL DEVELOPMENT**

The correct practical development and application of predictive models is provided by the Cross Industry Standard Process for Data Mining (CRISP-DM). CRISP-DM was conceived in 1996. In 1997 it got underway as a European Union project under the ESPRIT (European Strategic Program on Research in Information Technology) funding initiative. The project was led by five companies: SPSS, Teradata, Daimler AG, NCR Corporation and OHRA, an insurance company. The process diagram on *Figure 1* shows the relationship between the different phases of CRISP-DM.

The sequence of the phases is not strict, and moving back and forth between different phases is always required. The arrows in the process diagram indicate the most important and frequent dependencies between phases. The next informative *Figure 2* shows a breakdown of CRISP-DM with tasks and roles for each iteration.

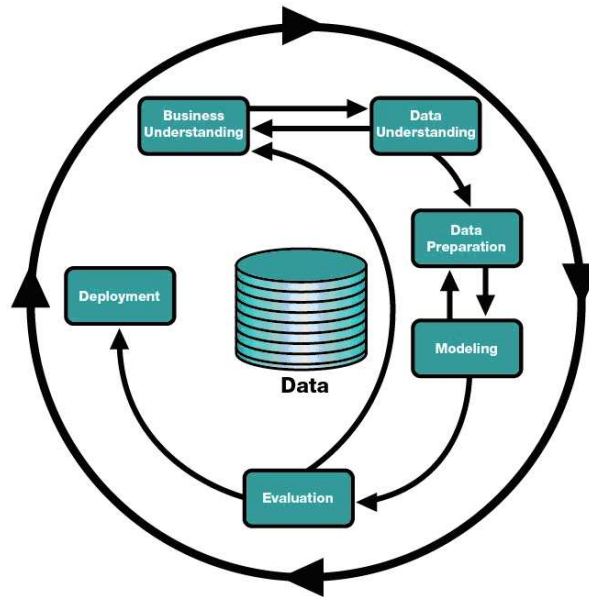
As can be seen, building up and applying a model is a very complex multistep process that requires knowledge and experts from different specializations. In the further section we focus on the modelling step, namely how an appropriate predictive method can be selected.

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<sup>2</sup> In these short-term economic predictions, such an atypical event is the turn of the trend or crises situation

Figure 1

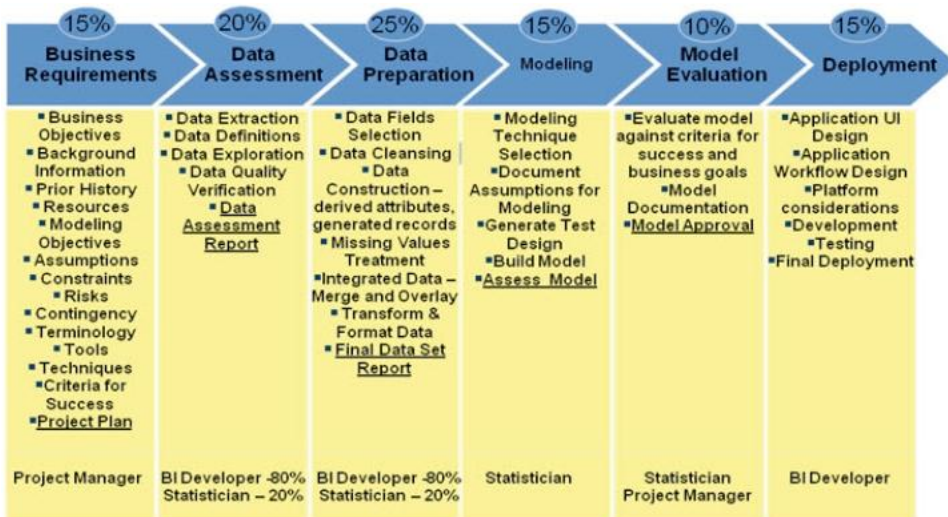
Process diagram of CRISP-DM



Source: [http://www.infobuild.co.za/wp-content/uploads/2012/10/www\\_predictive\\_analysis\\_11.jpg](http://www.infobuild.co.za/wp-content/uploads/2012/10/www_predictive_analysis_11.jpg)

Figure 2

Breakdown of CRISP-DM



Source: [http://www.infobuild.co.za/wp-content/uploads/2012/10/www\\_predictive\\_analysis\\_21.jpg](http://www.infobuild.co.za/wp-content/uploads/2012/10/www_predictive_analysis_21.jpg)

## SELECTION OF THE PREDICTIVE MODEL

The most frequent prediction tasks can be separated into two sections from a statistical point of view. One of them is when the predicted result is defined on a quantity scale. Typical examples are the expected tax incomes or the prediction of given products' selling figures. The most popular technique of these type predictions is multivariate linear regression. The other predicting situation takes place when the forecast refers to a kind of group where the prediction belongs, namely the target variable's outcome is a category. These situations are called classifications. In practice, classification exercises could be enumerated at length. Its importance in economics is the customer non-payment predictions (scoring) of the big enterprises, first of all banks, clients' non-payment probability. In these cases, classification refers to the prediction of which group a client belongs to: "paying" or "not paying". Another, mainly in the case of telecommunication companies, the prediction of the churn of the clients is a highly important task. Based on the predictable future behaviour of the clients, we can distinguish two categories: "stays" and "churns". It is also a classification task. Statistical classification is used to reveal cheats. The tax authorities use statistical algorithms to state a given client's probability of evading tax, or rather to pay correctly. In healthcare researches and applications, it is frequently used to determine chance a particular patient has in the occurrence of a given disease or state.

The listed examples show the great influence binary classifications have among predicting tasks these days. Generally, the aim of the listed predicting situations is twofold. On the one hand, it is highly important to have good classification efficiency, so-called "good predicting ability". It is especially important, in the case of profit orientated enterprises. On the other hand, with the help of modelling we can understand what factors lead to the occurrence or avoidance of a particular event. Several statistical methods can be used in order to reach these goals. In practice, binary classifications out of statistical algorithms are the most popular, and the most often used traditional technique is the dichotomy logistic regression<sup>3</sup>. Its popularity comes from many factors. First, it has hardly any restrictions in the processing of data, so it is seen as a robust method. Adequate predicting efficiency is paired with the good interpretability of the model; in the case of sufficient requirements, the factors on the occurrence of the event and their prediction's weight is identified with the model. Its spread relies highly on its accessibility in every statistical/data mining software available on the market. Connected to this, in higher education the topic of advanced, multivariate statistics has been taught for years as the basis of the curriculum. The interest in this method indicates that it is a

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<sup>3</sup> As a reminder: In the case of binary logistic regression, the natural logarithm of the oddity of estimated classification probability of the two group membership can be described as a linear function of explanatory variables:

$$\log\left(\frac{\hat{p}_i}{1-\hat{p}_i}\right) = \beta_0 + \beta_1 X_1 + \dots + \beta_k X_k = \beta'x \quad (2)$$

very well researched field, with many publications about the different technical details of logistical regression in the last few decades.

## CONCLUSIONS

The quick changing, atypical, low level of structure and data with missing the decision point situations proves that the human wisdom still seems to be inevitable. In this field the analysis of the effectiveness of combining statistical models with expert judgements should be the subject of further researches.

However, the priority of statistical predictions is unquestionable in those environments where the mass-like decisions and the information are structured and are expansively available<sup>4</sup>. Nevertheless, the predictive power of a statistical model depends largely on the availability of data and the data quality, as well as the applied methodology for model development. In most cases of binary decision situation, multivariate logistic regression is one of the most favourable modelling techniques.

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<sup>4</sup> Nowadays, such a typical environment is an enterprise (the most characteristic are banks/insurance companies, the pharmaceutical industry, telecommunications, trade and mass-production) Further examples could be the government system, for instance, the health care, retirement system or the authorities of taxation.

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## RESEARCH ON CONSUMER DEMAND IN THE CONTRACT CATERING INDUSTRY

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### **ABSTRACT**

*The main aim of the research was the examination of a very up to date issue with the help of recent market research tools. After summarizing the results, different conclusions have been made. On one hand consumers are getting familiar with their own specific expectations through practice, on the other hand the research analyzes and evaluates the behaviour and quality expectations of the stakeholders participating in contract catering. The conclusions of the study will be useful not only for non-profit organizations or for educational institutions but also for participants in the healthcare industry in a wider sense. Because of the high volume of contract catering and the high number of participants affected by the service, the research is based on questionnaires. Furthermore, several interviews were made with key decision makers, such as institution leaders and managers. These ensure that relevant data was collected to make the final conclusion. Our goal was to set up a relevant, reliable and flexible feedback system to measure consumer opinion. With the help of proper data analyses and the assessment of consumer needs, higher, even complete, customer satisfaction could be achieved regarding the service provided by contract caterers. I will show the sufficient nutrition and energy intake of different age groups participating in contract catering and the materials and methodologies needed to achieve these amounts. As a contrast to this, I will summarize the everyday eating patterns and the familiar and accepted meals and materials of the consumer groups on the basis of the answers to specific questions. The recent presence of different trends in diets (vegetarian, bio food, religious practices) and the challenge these diets mean to service providers will be examined. I will also discuss the challenges service providers have to face because of the changes in eating patterns and living standards affected by diseases and environmental changes and to what extent these changes can be handled in the contract catering industry. I will examine the correlation between the recommendations of different scientific institutions and the summarized consumer needs on the basis of the questionnaire. A recommendation will be made in order to develop a program that is informative, promotes and declares healthy lifestyle and changes the approach of the future generation, as well as the thinking of their parents.*

Keywords: contract catering, market research, consumer needs, health, lifestyle

### **INTRODUCTION**

According to the World Health Organization one of the most important public healthcare actions a government can do in order to spread healthy lifestyle and increase economic outputs is the supplement of secure and healthy food. The education of children regarding healthy lifestyle choices and proper nutrition in

kindergartens and schools is even more important since it has a great influence on their state of health when becoming adults.

The huge significance of contract catering derives from the fact that it is the main source of daily food, except eating at home, and supplies food in an organized way to people from different ages, genders, occupations, social and health groups.

On the other hand it is very important to know whether the guidelines set by the authorities and the law regarding public catering, food standards and production requirements are meeting the eating habits, expectations and taste of the target group of this research. It is important to know the regularity of meals compared to the recommendations made by international studies. Of course it is also very important to see the quality of the food and to find out whether it has all the nutrients required for the proper and balanced growth of the particular age group.

## **MATERIAL AND METHODS**

In recent years we have conducted a questionnaire survey regarding elementary school and kindergarten students' dietary habits. The results justify that further more efficient research should be carried out by the exploration of the knowledge and habits of the examined groups and through finding more suitable devices for raising their interest in good nutrition. As the first step of this exploration we have expanded the target group and applied a quantitative market research method using the results of the previous researches. Budapest was chosen as a test city for the completion of the survey. Several elementary school and kindergarten groups were involved in the survey. 400 children were chosen and we evenly distributed the participants according to their age and gender. We have used the questionnaire method of surveying and the results were analysed with statistical methods. In case of age groups not yet able to write, we used personal interviews to receive answers. We have compared the results with the Nutrition Guidelines for Contract Caterers and Food Suppliers issued by the National Institute for Food and Nutrition Science (OÉTT). The raw materials, food types listed in the Guidelines were compared with the substantive eating habits of the target group. Furthermore, we have compared the results of the survey with the proposed regularity of food intake according to dietitians and other dietetic experts offered to the age groups involved in the research.

## **RESULTS AND DISCUSSION**

Before the detailed discussion of the results, we will summarize the most important factors in contract catering in general and the eating habits of those participating in contract catering (especially youngsters), based on different researches.

We have found that less than half of the participants eat fresh vegetables, and almost 80% of them are putting extra salt to their meal or eating salty snacks. These results very much exceeded the recommendations made by national and international health and nutrition organizations. Even though the number of children participating in contract catering is far higher than in other age groups,

according to statistics the number is lower than it should be. In nurseries and kindergartens almost 100% of the children are eating catered food (in nurseries it is obligatory to provide catering). On the contrary, in elementary schools 50%, and in high schools only 30%, of the pupils are eating under organized conditions.

The reasons for this were not examined in this research, but experience shows an obvious correlation between parent welfare and the frequency of meals.

There are several researches showing that overweight parents will create an environment that disposes the child to gain more weight, simply because of the effect of their own eating habits and behavior patterns. These researches also put in light the fact that higher television viewing time increases the chances of overeating, and through increased consumption of snacks, chips and junk food the rise of body mass finally results in overweightness or obesity (Vári, 2012).

The broad, representative research of the National Institute for Food and Nutrition Science (OÉTI) in 2005 has stated that 18% of school age boys in Budapest are overweight and 7% of them are obese, on the other hand nearly 20% of girls are overweight and the rate of obesity is over 6% (Bácsi and Tusor, 2005). The majority of children eat five times a day, but the distribution of daily nutrient intake is very unequal. The main energy source is lunch but during this meal mainly fat and proteins are consumed. On the other hand, the main source of carbohydrates is in the snacks taken between the two full meals.

During research conducted by HBSC in 2002, among other topics, the eating habits of pupils between 5<sup>th</sup>-10<sup>th</sup> grade was also evaluated. The report revealed that the consumption of healthy food was relatively rare, moreover the ratio worsens as the age increases. On the other hand, it is positive that the ration of unhealthy food decreases by the 11<sup>th</sup> grade. Another problem is missing certain full meals (especially breakfast) during weekdays (Németh and Szabó, 2003).

### Analysis of eating habits of researched age groups

Table 1 shows the eating habits of different age groups represented by the research according to meal types.

**Table 1**

#### Eating habits of different age groups, %

Meal types	Every day	Weekly (3-5 occasions)	Rarely
Breakfast	82.6	10.4	7.0
10 hour snack	51.2	38.3	10.5
Lunch	95.0	4.9	0.1
Dinner	55.6	29.4	15.0
Supper	85.0	11.7	3.3

Comparing the main and other meals on the basis of gender, we can see that more than 80% of children are having breakfast (boys 85.2% and girls 80%). Out of those who are having breakfast only three-five times a week 12.5% are boys and 8.4% are girls.

It is important to mention that the 10 o'clock snack is missed by twice as many boys as girls on a daily basis (13.6% and 7.4% respectively). On the contrary, the ratio of children having their 10 o'clock snack every day is only a little over 50%.

*Lunch* is the most consumed meal with more than 95% of the children who participated in the research eating it every day. 100% of those who have lunch three-five times a week are eating in the school under the organization of contract catering. This means that they either do not have lunch on the weekend or they skip those menus that they do not like and the missed meal is not supplemented. It also was found that some only have lunch once a week. This also makes the distribution of daily nutrient intake very uneven and causes children to eat higher amounts during later meals.

15% of children have dinner once every week or rarer. On the other hand, the ratio of those who are having dinner more than once a week is also lower than 30%.

Consumption of supper represents higher values. The majority of children are eating something in the evening.

Finally, the research showed that a little over 10% of the participants in the survey are eating fast food every week. We have found that fast food is the main supplement to missed school meals. Unfortunately, children are mainly eating different street food instead of the missed lunch.

On the whole it can be stated that the frequency of eating diminishes as age increases. In high school, children often miss breakfast, which is not supplemented with any proper, quality meal. Unfortunately, even in elementary school main meals are also often missed. The research has clearly confirmed the drawbacks of irregular eating.

### **Analysis of OÉTI guidelines on raw materials and food groups**

*Table 2.* represents the different materials and food groups for different age groups for 10 nutrition days according to the guidelines of OÉTI.

OÉTI makes other guidelines according to the number of meals per day. In the case of every age group and at least *three meals per day*, the following should be included in the diet: a) 0.3 liter milk or other dairy product with the same calcium content, b) 2 portions of vegetables – except potato – out of which at least one portion is fresh. In the case of one meal per day, at least one portion of fresh vegetables – except potato – or fruit should be served (*Paller, 2011*). On the basis of the research the target groups are eating the above listed materials and food groups with different frequency. As you can see in *Table 3*, the questionnaire compares the guidelines with real, every day eating habits.

After comparing *Table 2* and *Table 3*, it is clear that neither children in kindergarten nor pupils in schools are eating the suggested food types according to the frequency recommended in the guidelines to cover nutritional requirements. It

is interesting that third of those who answered said that they eat sweets, snacks or chips every week, and 20% of them said that they eat them on a daily basis. Additionally, a third of them never or rarely, in this case only 1-3 times a month, eat fresh vegetables, even though when this age group was asked about the general rules of healthy eating, the first answer given was the importance of eating more vegetables and fruits (Fülöp *et al.*, 2009)

Researches about the body mass of the age group show that on average 30% of the children are overweight, fat or underweight. In these cases the continuous control of proper nutrition is very important. Obesity, high salt consumption and low vitamin intake are high risk factors, on the long term, for cardiovascular diseases, diabetes and some tumors or allergies. 22% of the research group does not add extra salt to their food at all. On the other hand, 30% add salt moderately, while 6.5% of the children eat fast food with high salt content on a daily basis. The effect of this is already measurable in contract catering, as children requiring special diets are increasingly common. Contract caterers have to face the challenge of different diet trends spreading widely. It is important to take note of vegetarianism, organic food, or other fashionable diets, since in the case of children unbalanced eating habits could be harmful to their health, thus contributing to the diseases mentioned above. The main advantage of contract catering is that an organized service is able to provide a balanced diet that meets the nutritional requirements in the case of every age group.

**Table 2**

**Guidelines for different materials and food groups for 10 nutrition days**

<b>Materials and food groups</b>	<b>Service for three meals per day</b>
Meat	at least 6, not more than 10 times
Processed meat	at least 6 times,
Fish	at least once
Liver, processed liver	at least 3 times
Egg	at least 3 times, not more than 5 pieces
Rice	not more than 3 times
Pasta	as a side not more than 2 times
Potato	not more than 5 times
Legumes	not more than 3 times
Fruit or vegetable juice	not more than 2 times
Sweets, pastry, bakery products	not more than 4 times
Flavored milk	not more than 2 times
Jam, chocolate cream, peanut butter	not more than once
Oily seeds	at least once

Source: Based on OÉTI data

**Table 3**

**Frequency of consuming different food types, %**

Food types and groups	Frequency of consumption		
	Not, rarely	Weekly	Daily, more times a day
Milk, dairy products	7.6	31.8	60.2
Egg	36.7	50.3	12.6
Pork, beef	34.8	49.3	15.5
Poultry meat	28.6	56.4	14.7
Fish (also canned)	86.7	10.6	2.4
Processed meat	11.6	26.4	61.4
Butter	31.2	19.3	39.2
Margarine	23.9	20.9	54.9
Cooked vegetables	49.3	32.6	7.8
Fresh vegetables	33.1	38.8	27.9
Fresh, frozen fruit	11.1	33.7	54.9
Potato	12.2	56.4	31.2
Legumes	66.7	28.5	4.5
Rice	61.7	32.5	5.5
Pasta	39.4	47.9	12.5
Vegetable, fruit juice	29.1	29.1	41.5
Bread, bakery product	1.8	7.1	83.8
<b>Other food</b>			
Jam, canned fruit	59.7	27.1	12.9
Candy, chocolate	24.5	33.9	41.3
Soft-drinks	21.7	22.9	55.1
Salty, oily seeds, snacks, chips	46.4	31.6	21.7
Hot dog, hamburger	68.4	21.3	10.0

The most important task of contract catering is to supply sufficient food to every age group while meeting the required daily nutritional guidelines for each category. Moreover, appetizing food needs to be served in a way that is attractive to the senses while ensuring variety. Producing quality, diverse food in contract catering requires sufficient financial resources together with production technology, equipment, and the professionals behind production working to control the outcomes.

To increase the number of children served by contract caterers, the participation of national institutions and public governments is very important. Spreading of the importance of healthy nutrition, helping children get familiar with different ingredients and food options and raising awareness about the effects of unbalanced nutrition can only be organized and carried out effectively with governmental coordination. Education should be started with the youngest age groups, but it is

also very important to raise the awareness of parents as well in order to change their eating habits.

## CONCLUSIONS

As a summary of the results of the research it is clear that the official guidelines about contract catering do not correlate with the everyday eating habits of children. This means serious effort must be undertaken by contract caterers, because if they keep sticking only to the guidelines, the number of nutritional problems will continue to rise. Children generally reject unfamiliar ingredients. A high percentage of children regularly eat three meals per day on average. The ten o'clock snack and dinner are missed by almost half of the surveyed children. Another problem is that the missed meals are not supplemented. This is also true for all of the meals during the day. The uneven distribution of meals and unbalanced eating habits mean hidden health risks, which could be the reason for different diseases experienced as an adult. Regular, evenly distributed meals five times a day is one of the main reasons for stable blood sugar levels, feeling good, having higher stamina and better concentration. The main role of daily meals is to provide enough energy for working, studying or sporting activities. Those diets that end with a square supper but without a good walk or other activity could have the effect of storing the energy taken in with the food, finally resulting overweightness or obesity. The ingredients and food types in the guideline are important in order to ensure a balanced and healthy diet and normal growth. On the other hand, it is hardly effective if the children are not eating the food provided in schools or only eating a few types of food outside of school.

Proper education, raising awareness, is required to reach these goals in the case of schools and parents as well. To achieve this goal, long term programs are needed to change the approach to health conscious contract catering. The participation of government offices and authorities has great importance in this goal.

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## EXAMINING THE MANAGEMENT OF PUBLIC UTILITY COMPANIES OWNED BY MUNICIPALITIES OF COUNTY RANK

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### **ABSTRACT**

*As regards the selection of tasks in the municipality sector, the local authorities have freedom both according to the former and current legislation. The advantages of providing tasks through companies owned by the municipality include the flexible adaptation to market conditions and integration into the relation network of the economy. In case of appropriate operation, the companies can be characterized by higher cost efficiency and by providing services of higher quality to the citizens and business actors. Moreover they ensure revenues for the municipality. The operation of companies, however, depends on municipality management, it is part of it because in many cases the tasks are assigned to them by the law. Some research works have proven, however, that their operation is rather risky, which in return determines the municipality operation, according to the above outlined thoughts. Out of the companies owned by municipalities of county rank, the present paper examines the management of water works, waste management and district heating companies between 2009 and 2011. We selected these three sectors because the (which?) municipalities had pricing authority competences at that time, therefore the operation of these companies was substantially affected by the fee policy of the municipality. In the frames of the research we reviewed the reports of companies and compared the formed indices, evaluating primarily their profitability, indebtedness, and solvency. In regards to liabilities of the examined companies, the dominance of short-term liabilities, increasing receivables and the profitable management were clear phenomena in most cases within the sample.*

Keywords: municipalities, management, provision of tasks, public utility companies

### **INTRODUCTION**

The most important function of municipalities is providing public services, in which people, local institutions and economic actors use public utilities. In the new system after the regime change, local authorities had freedom in their public duties.

As a result, municipalities provide services through municipality owned business organizations. Rentability and the effective use of received resources are key factors. Beyond the organization of services, municipalities (city councils) are the main price regulators in public utilities. We can conclude that both regulatory and ownership functions are represented by local governments regarding public services.

This study is seeking to answer how (city-owned water utilities, waste management and district heating businesses) businesses have been operating in the last three years and what risk do they have on municipalities and what are the operating tendencies among them?

## LITERATURE REVIEW

After the regime change, the emphasis was on tasks outside the budget, which was carried out by taking over non-profit organizations and utility companies and outsourcing these public services to the market.

There are two main reasons for the development of municipality owned business organizations:

- privatization of utility companies after the regime change, in which asset management rights were converted to ownership rights, followed by more asset transfers (*Vigvári, 2007a*).
- Regarding the obligatory task performance of municipalities – as a result of the New Public Management paradigm – local authorities are directly responsible for the organization of public services (*Vigvári, 2009*). Municipality owned business organizations meant flexible solutions regarding obligatory and voluntary municipal tasks, as more and more business organizations started their own operations and not only in the utilities sector (*Kopányi and Hertelendy, 2004*).

As a significant part of their capital, transferred assets played a major part in the balance sheets of municipalities, and this helped public utility companies. In order to verify my claim, we examined the transferred assets of select municipalities between 2003 and 2009. We chose 2003 as the starting value since local authorities had between 2001 and 2003 to evaluate the previously recorded assets without values. The reason for this is the pick-up in government projects implemented during the development, during which the development of the utilities could gain the support amounts. In parallel, the proportion of municipal assets also recorded a significant increase in the municipal property elements of dynamic growth.

The municipal utility companies, from the regulatory and administrative point of view, work like business organizations, and in some cases, provide not only public services. It was an important advantage over the municipal investments that VAT is recoverable; many projects were set-up on that (*Hegedűs and Tönkő, 2007*). Municipalities have many profiles which are regulated by the Local Government Act in force, as well as sector-specific laws.

The performance of tasks (outside the budget) can be carried out in three main ways which depends on local needs and local government decisions. As a result, municipal utility companies play an important role in task performance. Their task performance moves more and more towards being outside the budget (*Szabó, 2012*).

According to the literature, contingent liability has the greatest risk and reckons municipalities form relationships with the private economic sector, which in the case of a possible future loss will fall on local government or central budget (*Polackova, 1998; Schick, 1999; Hegedűs and Tönkő, 2007*). In this respect, the risk is the ownership guarantees resulting from municipal borrowings. It is not included in the local government's reports, but due to rigid revenues and unpredictable financing, it may cause substantial risks in the management of local governments. Based on *Vigvári (2009)*, primarily cities with county rights are affected.

Similar problems may occur in the municipal company's over-indebtedness and, if loss making operation, as these activities cannot be terminated by the government

at a loss during operation, so the owner must stand firm in their company's obligations. Consequently, the literature sees the lack of transparency as a risk (Vigvári, 2009; Hegedűs and Tönkő, 2007).

The issue of ownership rights is not being properly enforced in the management of local governments. The operational management tasks are removed from the jurisdiction of local government, and mainly trust exists between the management and the owners (Hegedűs and Tönkő, 2007). It should be noted that in case of any change of political course, in many cases, the management of companies are also frequently changed. It is therefore an often cited proposal to consolidate the accounts of these companies (Vigvári, 2007b).

The revenue of utility companies is largely determined by the fact that prices of the services are not determined by the company's management, but the municipality or ministry responsible for that sector. It is a problem that local governments' price formulas and calculations allow minimal returns, which are influenced by political considerations, risking the profitability of public service companies. The local governments do not establish specific rules and regulations of pricing and product costing, thus it can be concluded that they were not prepared for a price regulator function. The payment difficulties of the general public can project liquidity problems as in the case of late payment, value added tax has to be paid anyway (Kopányi and Hertelendy, 2004). It was common for local governments to use "cross-financing" - that the losses of public service utility companies or low profitability be supported from the dividends of companies mostly operating in the real estate sector (Varga, 2005).

It can be concluded that the assets of local government-owned companies are recorded in the local governments' balance sheet. However, a number of tenders, due to EU accession, are available to local governments, which serves the development of public utilities. A number of these projects have been implemented in the National Development Plan and the New Hungary Development Plan, which increased the municipal assets.

It is thus concluded that the municipal utility companies are highly integrated in the municipal economy, which is monetization, largely determines the availability of credit.

## **MATERIALS AND METHODS**

In our research we tried to find an answer how municipal property management companies' assets, financial and earnings situation developed over the examined period. To this end, we analyzed the fixed assets ratio and liquidity ratio of equity to companies and private equity, as the profitability of the municipal contribution and potential areas which may require shareholder intervention, where is the risk in the municipal asset management.

In our research, we examined companies owned by local governments with county rights in water utilities, waste management and district heating services sector. Companies operating in these sectors belong to the regulatory and operating business model; the services rendered are paid by the customers. These public services serve not only cities with county rights but also the region, in particular

water utilities and waste management companies. The sample contains a total of 40 pieces under taking the distribution of attitude that is shown in *Table 1*.

Companies included in the whose profile clearly contains the given activity, as in terms of the organizational forms local authorities had freedom, so many companies also have multiple profiles, and several companies of local government-owned holding company has also been among the sampled companies. The selection was made by the local government data, businesses were selected from three sectors accordingly.

**Table 1**

**Distribution of examined municipality companies among the three sectors**

	<b>Pieces</b>	<b>%</b>
Water utility	19	47,5
Waste management	13	32,5
Heating	8	20,0
Total	40	100,0

## RESULTS

*Figure 1* presents the distribution of firms by settlements. During the sampling, I found three settlements which companies supply principal profile of the examined tasks. In the case of Salgótarján, water and sewage works as separate organizations which is local government-owned. Szolnok has interests in two waste management companies, the same in Székesfehérvár. These tasks can be found in each of the villages, but they differ in the forms of organization.

The distribution of the studied sample was the following. All three company profiles only occur in Nyíregyháza, Pécs and Miskolc, in the other settlements public responsibilities are carried out in different organizational schemes. Examining the ownership structure it can be determined that 10 majority-owned and 3 are minority-owned while the seven local government owners. In the case of waste management companies, there are four cases when the municipality is in minority, in 6 cases the majority, while in four cases it is a sole owner. In the case of district heating supply, we found four sole and four majority-owned companies. The growth was due to the increase in receivables, which also shows liquidity problems. The reason for the high inventory is that a given company performs district heating service as well. The next field we wanted to analyze the ratio of equity to liabilities. The changes in the indicators are largely scattered in the three examined sectors, mainly in the water utility sector. The change of equity is important, since it determines the credit worthiness of the company (*Figure 2*).

According to the creditworthiness threshold value (30%), there were in 2009-2010 five water utility companies (local government owned) and six companies in 2011 under this value. The average value was 44.9% in 2011 and 45% in 2010 and 46.25% in 2009. In 2009, there were 11 companies above the average and 10 in

Figure 1

Distribution of examined municipality companies by settlements

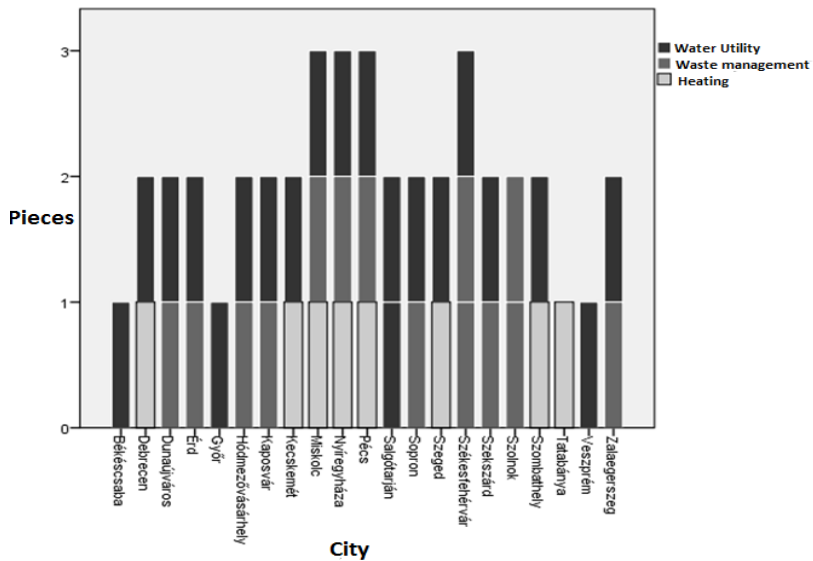
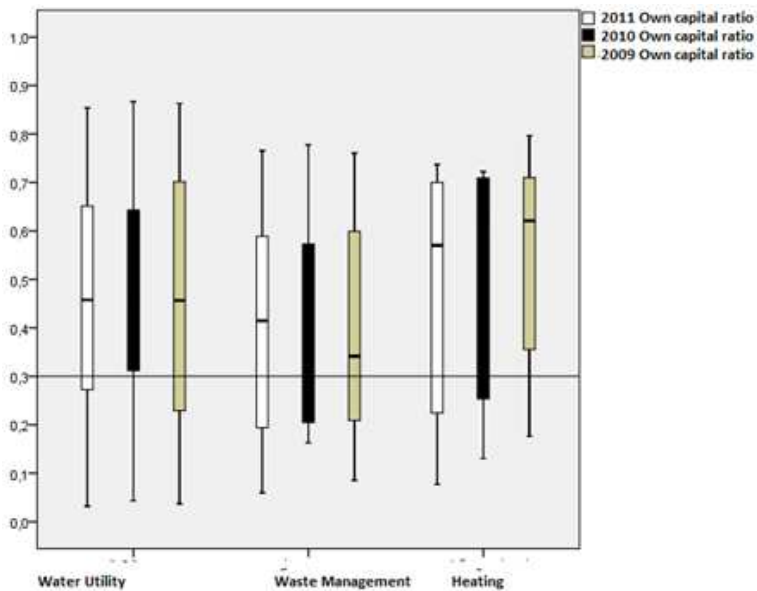


Figure 2

Distribution and volume of own capital ratio index of the examined municipality companies within the three sectors, between 2009 and 2011



2009-2010. From the base ratios, the value of changes in equity, except for one business, is growing in the test sample, which is regarded as a favorable development because companies do not survive on their property, and they can increase the value of the assets entrusted to them, and to assets of the invested capital returns back shooting stems.

The breakdown of liabilities also shows an interesting dimension of the sector, since 9 companies did not have any long-term liabilities in the examined 3 years, resulting that the current liabilities represented the bigger part. Similarly to local governments, only three companies issued a foreign currency bond, which is believed to be a risky way to fund from external sources. The municipal improvements exist liabilities from purchase of two asset management businesses, public service contract duration. For the remaining companies long-term debt is less than HUF 100 million, which includes investment loans and leases.

Among the waste management (government owned) companies, short term liabilities were dominant. In our analysis, there were six companies, which have low equity and did not reach the minimum 30%. Among them are present either professional investors or minority government property for two businesses. The increase in equity was in 11, so they are considered favorable rate and the value of the capital increase, contrasted to the case of a company experiencing a significant downturn, which is due to the negative result.

In the case of district heating companies, three of them were found to be under the level of creditworthiness, others were over 50%. The increase of the equity was positive in every company. Suppliers were found to be the highest in short term liabilities, which is the result of the fact that the examined companies do not perform production activities, this it is the most significant liability (*Figure 3*).

Analysing liquidity status, we concluded that six companies, mainly in the water utility sector, have a higher liquidity rate (seven companies in 2011, and nine in 2009-2010), which means that current assets are double the amount of current liabilities. Among the companies with great liquidity we can state that cash played a major role, as it financed the current liabilities, thus, it provides a stable and safe operation. In 2009-2010, there were three companies with poor liquidity (less than 1), 6 in 2011 and overall 12 companies' liquidity indicator worsened due to an increase in their short term liabilities.

In the waste management sector, there were only three companies with great indicators and six companies in 2009-2010 and seven in 2011 with liquidity less than 1. The favorable liquidity situation in enterprises is not primarily a high proportion of liquid assets, but the assets portfolio of high value, because this sector is not affected by a high value of stocks, so liquidity is not considered to be appropriate, since neither of the claims money can be made always right. The sample tested how six company liquidity ratio deteriorated.

In the case of district utility companies, beside two normal liquidity companies, we found three other companies that can be rated as poor liquidity (less than 1). In this sector, we can also see that companies with higher levels of cash have better liquidity. Three companies have poor liquidity. A declining tendency can be observed in five companies, which are adverse in the sector (*Figure 4*).

Figure 3

Distribution and volume of short-term and long-term liability ratio index of the examined municipality companies within the three sectors, between 2009 and 2011

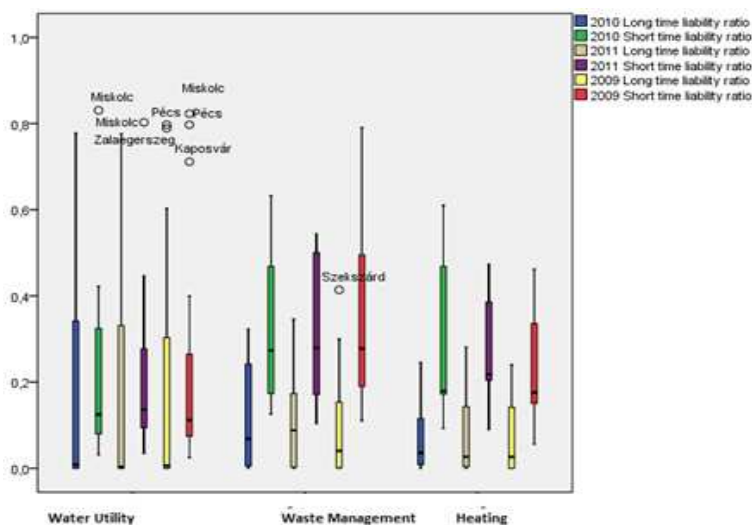
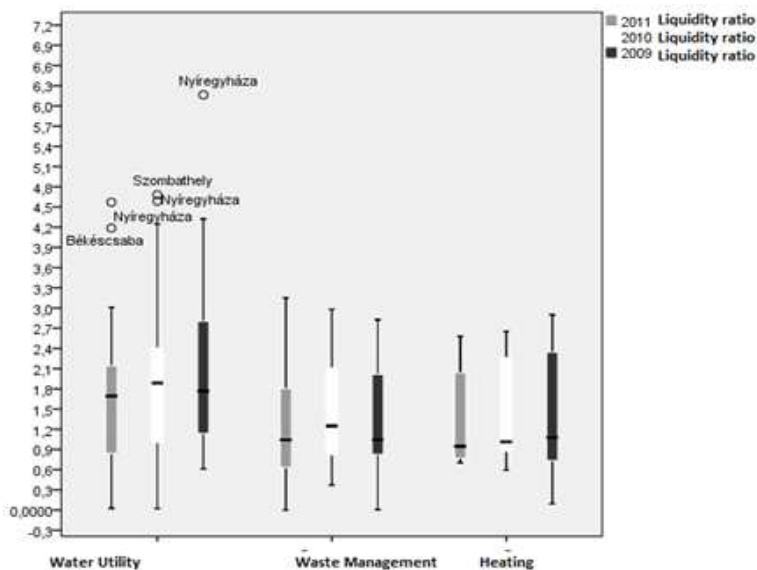


Figure 4

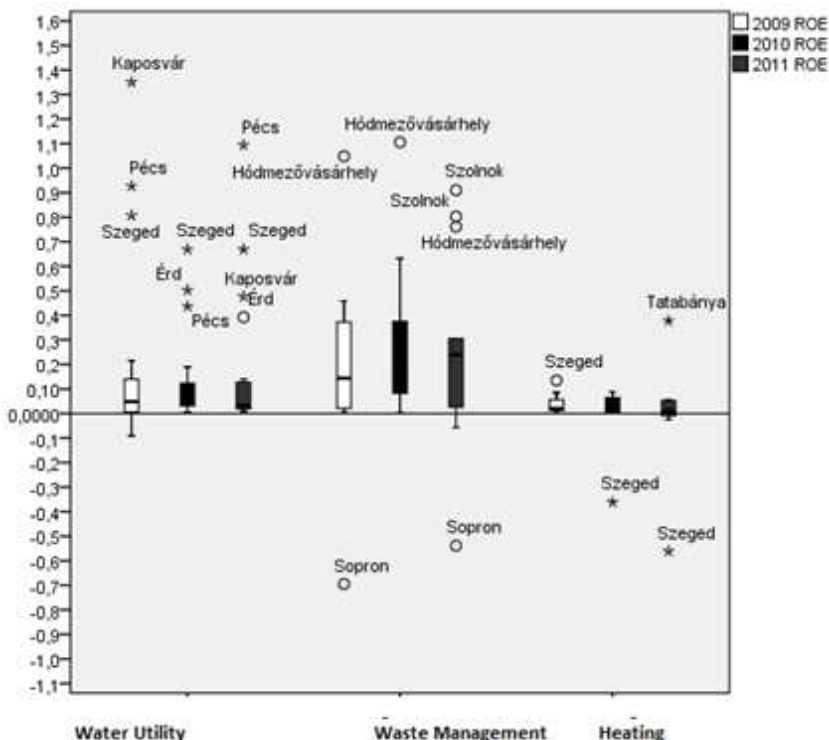
Distribution and volume of liquidity ratio index of the examined municipality companies within the three sectors, between 2009 and 2011



Efficiency was observed through return on equity. Profitability regarding the water utility sector in 2009 showed a negative trend as three companies could not operate profitably, though in other years they performed well. This is advantageous, since the public services are operating well. The figure shows that there are several companies with outstanding values. The outstanding companies are either new or have low equity (*Figure 5*).

**Figure 5**

**Distribution and volume of ROE ratio index of the examined municipality companies within the three sectors, between 2009 and 2011**



The value of the average, not including the salient data, shows a negative trend in the sector. In 2009 it was 10.20%, in 2010 it was 6,16% and it was 4.24% in 2011. Ten companies' profitability has decreased compared to 2009. An interesting aspect of the business cost structure is that indirect costs are major cost factors in the sector, which show an increase as a function of larger asset companies.

The explanation for this is that higher asset maintenance means a major cost ratio. Analysing the cost structure we can conclude that depreciation is high. The depreciation period is long in the case of assets, thus, it allows replacing them. In Hungary, the waterworks is worn out, and EU accession commitments undertaken to ensure adequate drinking water and sanitation can be an important source of the



resulting depreciation, and retained earnings of replacement, accordingly. Analysing the material expenses, we found only one outlier value, which is probably due to the cost of water production and wastewater treatment technology. Local deviations can be discovered in the costs which could have similar reasons. Financial operations are not considered to be indebted to the companies in the sample. The general tax changes in 2010 increased the tax liability by increasing the tax rate and the local business tax written authority of disks. Overall, corporate tax was decreased in 2011, changed to the band progressive taxation.

In the case of district heating, the number of companies with a loss was: none in 2009, one in 2010, and two in 2011. The indicator improved in the case of the other companies. In our sample, the average value was: 4.175% in 2011, 1.89% in 2009, 4.27% in 2010 and only increased in three companies and so did the after tax profit in two companies. In this sector, material costs represent the largest cost factor, which is a growing trend for each company in each year. This is because of the price of energy increased. Revenues decreased in seven cases showing the deterioration of the population's solvency. Investigating the factors that shape the level of sales, a strong positive Pearson's correlation can be observed in 2011, a 5% significance level, the residential heat consumption rate in effect on the developments of the retail amount of energy used.

In 2011, there were also loss-making enterprises in the case of waste management companies. Small equity firms showed outlier values, but other companies in the sample show a downward trend in the value of ROE. Revenue showed an increasing trend and only decreased in one company. We examined what factors influenced the change of revenue in the examined settlements. The turnover and material expenses were positively correlated with the number of homes placed in regular waste in 2009, with 5% of significance level considered medium (0.63), strong in 2010 and 2011 (over 0.7 and 0.8) relationship can be found at the 1% significance level. As a result of the scope of activities in this sector, material expenses are dominating, which results from high fuel costs.

## **CONCLUSIONS**

The given sectors are not indebted, as their long term debt was due to the takeover of assets. It was not normal to have such debt as municipalities and only three water utility companies issued foreign currency bonds. It was also a great achievement that companies managed to increase capital, which was due to reinvested earnings showing their rentability. More and more receivables and overdue debts show exactly how the financial status of the population has worsened, which resulted in many cases in a decrease in revenue.

In the waterworks sector, companies are profitable, which means that the pricing policy of the municipalities has worked. Unprofitable companies are mainly in the district heating and waste sector, which means that the owners must intervene in order to remain viable or revise some activities and decrease costs. Mainly in the case of district heating companies engaged in the use of renewable energy sources in order to reduce dependence on energy.

In the operation of the companies, it is mainly short term liabilities which dominate in the liabilities. Analysing the liquidity indicator we concluded that only companies with high asset-level managed to have good liquidity, in cases of smaller companies with low level of cash this indicator was lower. We believe that municipalities should act in this field as it is always a problem for smaller companies to be solvent.

There will be many changes in the sector, as a new tax will be introduced in the following sectors: water utilities, waste and district heating sector. This will probably put more weight on service providers with more assets, which can damage competitiveness without a compensation and profitability; and it will depend on the central government and local government consensus.

In the waterworks sector, it is a statutory requirement that assets must be assessed and recorded in the balance sheet of the municipalities until 2015, which will influence and change the values of companies. It is also an important change that in the waste management sector not only government-owned companies can operate, thus former professional investors could be pushed out of the system.

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