Investigating savings-related preferences of a sample of the Hungarian population by using factor and cluster analyses[1]

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Nowadays, attitudes to financial matters are becoming more important as decisions that have a direct or indirect impact on our money matters are made on a daily basis. Such an area is represented by savings. As a result of the crisis, several financial products significantly lost their values, and trust in financial service providers was shaken. Our research examines the decision-making preferences of savings based on questionnaire surveys conducted at two different dates. The first one was carried out in 2015 with 147 respondents and the second in 2016 with over 400 respondents. The answers were analysed with multivariate statistical methods. The final objective was to identify savings-related preferences and to examine whether separate groups can be defined on statistical bases. By means of cluster analysis four well-discernible personality types could be identified that behave differently in terms of safety and liquidity, namely the 'Risk Averse', the 'Conscious', the 'Considerate' and the 'Risk Takers'.

Keywords: savings, preferences, cluster analysis, finance, attitude.

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Introduction

In today's consumer society we can say that due to the increasingly wider choice of different products it is necessary to have all the detailed information when selecting a product. This holds true not only for products in their materialistic form, but also for services. Among services, the financial ones, that could affect everyday life, are basically becoming more and more important. By now, it is a widely accepted fact that consumers gain information from different sources and they buy more consciously, based on their decision making mechanisms, when

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shopping for food (Mellan 1997). The question is whether such considerations and attitudes have a role in our (long-term) financial decisions on savings.

The main goal of our research is to create a typology of the Hungarian population's expectations related to savings. The relevance of the topic is provided by the fact that financial service providers offer different financial products to their customers, but they are not indifferent to their customers' needs and to what customers expect from each financial product. Both service providers and customers can benefit from analysing aspects and evaluating them, as the service provider can grant a targeted product to the customer.

The article starts with a literature review, followed by an overview of the research methods and data. The examined factors of savings were separated into two groups, liquidity and safety factors and, by means of cluster analysis, four well-discernible personality types could be identified, that behave differently in terms of safety and liquidity. At the end of our article, conclusions and suggestions are formulated.

Literature review

Savings have a broad theoretical background. Nowadays, the decisions of households on how much to spend on consumption and how much to save are of micro-economic nature, so it depends on the decision makers' individual behaviour. Although the responses are important from a macroeconomic point of view, the decisions of households influence the performance of the entire economy in the short and long term. Savings are also influenced by income and fiscal political factors.

Adam Smith, one of the emblematic characters in the field of economics, stated in his book entitled 'The Wealth of Nations' from 1776 that individuals are able to increase the wealth of the nation by personal and national savings (Smith 2007). Without savings that last from birth to death it is impossible to pile up a fortune (Bekker 2002). According to Adam Smith a good government does not intervene in the economy.

The personal and societal interests interweave as our predecessors have sensed. In our opinion, the controlling role of the government and the state is crucially important in influencing the individual decisions, especially when it comes to savings and self-financing.

According to Keynes nothing guarantees that the demand for capital goods will be the same as for savings. In Keynes's opinion the private sector is not adequately

able to take care of the products and services required by the society such as accommodation, transport, health care and education. He relates the consuming willingness to the characteristics of the human mentality. In his opinion the human subjective-psychological motivations have important roles. Three psychological basic factors are identified: 1. psychological susceptibility for consumption, 2. relation to liquidity, and 3. evaluation of the capital wealth future yield (Pethő 2004). Based on his tenet, first we have to decide what portion of the income will be spent on consumption and on accumulation. Next, the individual makes a decision on the proportion of the savings which will be monetary or of other nature. As consumption is the centre of his theory he is approaching the savings from the consumption and consuming willingness perspectives. The factors defining consumption were divided into objective and subjective (Mankiw 1999).

The wealth of a country and the well-being of an individual rely on savings. The elements of the financial system should be formed so that, through the instruments of economic policy, both economic and social objectives should be met (Tatay 2009). The saver and the investor are financial players who do not spend part of their income for a specific period, but rather temporarily transfer it to the financial system (Vígvári 2008). In the world of finance extremely rapid changes take place but the basic need of the efficient decision making of the individual and the household alike makes them constantly monitor the legal regulations that affect them (Horváthné Kökény 2014).

The issue of financial culture has become more significant nowadays as it is part of our everyday life and decisions on finances are made on a regular basis.

According to the International Network of Financial Education (INFE) of OECD "financial culture is the combination of consciousness, knowledge, skills, attitudes and forms of behaviour that is necessary to make considerate financial decisions and, ultimately, to reach individual financial well-being" (Atkinson– Messy 2012. 14). Based on the definition above we can state that it is very difficult to grab and measure financial culture. Although there is no standard examination methodology of financial culture, researchers have been dealing with financial personality types since the 1970's to define people's financial attitude based on different points of view. Mellan (1997) identified nine personality types based on attitude towards finances (Saver, Spender, Ascetic, Escaper, Grabber, Waster, Worried, Risk Taker, Risk Averse) and Csiszárik-Kocsir (2016) showed that there are certain social groups who think the financial system is organised on ethical

principles. All in all, it can be stated that different groups prefer different savings and financial products.

Boldizsár et al. (2016) reported that mainly the more liquid forms of savings were typical and widespread in the Hungarian households and that a greater diversification of financial products could only be observed in households with higher income. Moreover, almost forty percent of the Hungarian households did not possess "significant financial assets".

Typically, it is not the geographical situation that determines the saving habits of Hungarian households, but rather their financial attitude, which is greatly influenced by the extent they are acquainted with the different forms of saving (Széles–Horváthné Kökény 2014).

The focus is placed on the extent to which people can decide the veracity of statements or how precisely they can define certain financial terms. The old conservative attitudes, such as thriftiness, are not enough as people are exposed to impulse buying due to the market and other impacts (Németh et al. 2016). That is why it is very important to identify consumer groups based on their preferences related to money matters. After identifying them, special measures could be taken to improve financial culture and develop/create financial services in the future.

Table 1. Proportion of Hungarian households with different forms of savings (%)

Forms of savings	2001	2005	2010	2015
Current account	58	64	72	76
Deposit account	12	9	9	7
Securities	9	7	5	6
Cash	7	18	14	11
Foreign currency account	5	3	5	3
Building savings account	8	6	5	5
Health insurance system	4	11	19	6
Life assurance	28	30	30	23
Pension fund	20	17	na.	11

Source: Medgyesi (2016)

Table 1 presents the forms of saving preferred by the Hungarian households. More than one of the forms of savings included in the survey could be labelled. The highest proportion of households surveyed possess current accounts whose volume shows a steady increase. In addition to the money held in the bank

account, cash was a decisive factor. Securities which would provide higher yields for the Hungarian households were not of great significance during the period under review.

In the past few years the amount of annual savings of the Hungarian population has considerably increased; the annual accumulated funds in 2015 nearly grew by 80% as of 2012. In 2015 the net financing capacity of the households was HUF 2665 billion, while this only amounted to HUF 1512 billion in 2012 according to the National Bank of Hungary. The net savings of households in 2015 translated into 7.9 percent of the GDP (Baranyai-Csirmaz et al. 2017).

Material and method

The objective of the research is to identify and classify the attitudes of the Hungarian population towards financial services through statistical methods.
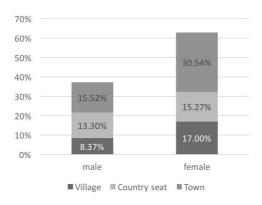
In order to collect data, we carried out a questionnaire survey between September 1 and November 30, 2016. The questionnaire consisted of multiple choice and Likert scale questions and for the selection of respondents we used the snowball method.

The questionnaires were filled out both electronically and on paper. The electronic survey was conducted through the Google forms questionnaire. The paper-based questionnaire was filled with personal interviewing, randomly-minded.

After aggregations and data clean-up, the database was generated by 406 questionnaires, which was 91% of the total number of questionnaires submitted. During the data clean-up, the incomprehensible data and answers were filtered out. There were 406 assessable responses to the study, which were analysed by using statistical methods.

Demographic characteristics were considered when selecting the sample. It can be stated that the sample is not representative, but due to the large item number the results are worth of consideration.
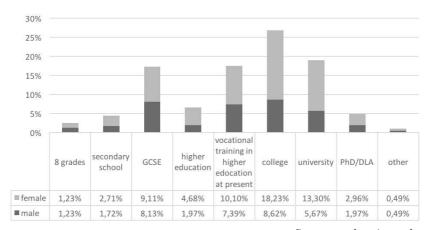
The breakdown of the sample by residence and gender is as follows: 25.37% of the respondents live in villages, 46.06% in towns and 28.57% in county seats; 37.19% of the respondents are male and 62.81% female (Figure 1). Female respondents were overrepresented, which could be explained by the willingness to response.

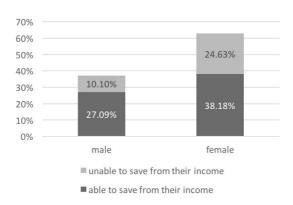**Figure 1. Breakdown of the sample by gender and residence (n=406)**

57.39% of the respondents had a higher education degree, while the proportion of those with secondary or lower education amounted to 42.61% (Figure 2).

	8 grades	secondary school	GCSE	higher education	vocational training in higher edocation at present	college	university	PhD/DLA	other
female	1,23%	2,71%	9,11%	4,68%	10,10%	18,23%	13,30%	2,96%	0,49%
male	1,23%	1,72%	8,13%	1,97%	7,39%	8,62%	5,67%	1,97%	0,49%

Figure 2. Breakdown of the respondents by gender and qualification (n=406)

Respondents were asked if they could make savings in their present financial situation; 65.27% gave an affirmative answer, while 34.73% stated that they are unable to save (Figure 3).

**Figure 3. Breakdown of the respondents by gender and their ability
to save (n=406=100%)**

In addition to the most important demographical data the questions were directed at what characteristics are considered important by the respondents when it comes to savings. On a 5-degree Likert scale 1 stood for "not at all important" and 5 for "very important" and, of course, there was a possibility of opting for "does not apply/cannot decide" as suggested by the literature (Malhotra 2008). The other responses mentioned were considered as missing values and were not counted in the examination, so the results were not distorted.

The database was imported into the SPSS statistical programme package as SPSS is suitable for analysing databases in economics and social sciences (Marques de Sá 2007). Afterwards, by means of proper data transformation and uni- and multivariate selection, statistical methods were used for the analysis.

Our examination was directed at risk preference and group formation. An answer was sought whether there was a possibility of grouping respondents based on their risk taking preferences, i.e. to what extent the conditions of investment are important for them, i.e. safety, return, not risky, guarantee, ensuring earnings during the year, guaranteed yield, state guarantee, additional services and liquidity.

To examine the saving preferences of the population, factor and cluster-analyses were carried out. As a first step of the factor analysis it was examined whether the data could be organised into factors by using the correlation calculation and the value of the KMO (Kaiser-Melker-Olkin) indicator; if it is

above 0.5 it signals that the data could be organised into factors (Sajtos–Mitev 2007). The other criterion of the factor analysis is that the variables examined should correlate. Correlations were identified at the generally accepted 5% significance level, which is an acceptable level in social sciences (Szűcs 2004).

By means of the factors identified we examined if different groups could be distinguished on statistical bases. To this end, the hierarchical cluster analysis was used along with the centroid method. The point here is that the central values of the different groups should be the farthest from each other. The component matrixes were rotated by using the Varimax method and more accurate data were obtained (Sajtos–Mitev 2007).

Results

The preliminary examinations showed a significant correlation (p=0.021) between all variables, therefore a principle component analysis was carried out.

Based on the value of the KMO indicator (0.740) before the examination, the characteristics could be organised into factors. The component matrix obtained was rotated by the Varimax method and as a result, two factors were mathematically separated (Table 2); these results are very similar to the findings of our previous research (Csernák 2012).
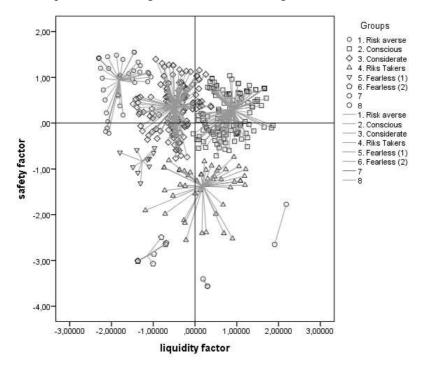
Table 2. Organising saving preferences into factors (rotated component matrix)

Factors	Characteristics	Factor 1	Factor 2
'Safety' factor	capital guaranteed	0.807	0.064
	guaranteed yield	0.792	0.218
	no risks	0.732	0.196
	state guarantee	0.709	0.155
'Liquidity' factor	redeemable within one year	0.006	0.820
	rearning yields within the year	0.219	0.795
	additional insurance product	0.334	0.500

Source: authors' own design

Based on the examined sample, two factors, namely 'Safety' and 'Liquidity', could be mathematically identified. The 'Safety' factor consists only of preferences dealing with the security issues regarding savings. When it comes to the 'Liquidity' factor the decisive element was that the deposit should be redeemable within a

year. The "additional insurance product" shows the importance of liquid savings for the respondents, i.e. to get access to their savings.
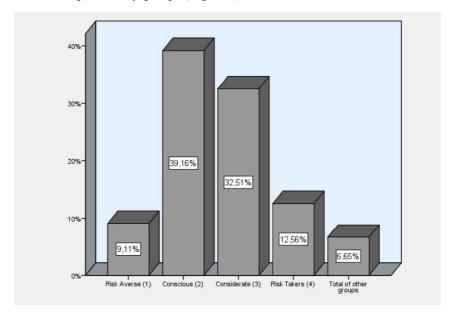
Figure 4. Breakdown of the respondents by the importance of safety and liquidity regarding savings (n=406)

The respondents were grouped by means of cluster analysis based on the characteristics identified in the factor analysis. Eight separate groups could be isolated based on the centroid methodology (Figure 4).

The eight groups with different saving preferences were named after their most typical characteristic. The first group was named 'Risk Averse', as the safety of their savings was the most important for them and liquidity, i.e. flexible accessibility, was not so important. Risk Averse represents 9.11% of the sample. The second group was named 'Conscious' as for them both safety and accessibility were important regarding savings; they represent 39.16% of the sample, i.e. a little more than one-third of the sample was represented by respondents who consider

their savings a complex issue. The third group was named 'Considerate'. What describes them is that, although safety is important in savings, liquidity, i.e. the flexible access to their savings, was not so important for them, so presumably they do not try other products than the classical savings forms. The Considerate group represents 32.51% of the sample. The fourth group was named 'Risk Takers'. They can be characterised by the fact that safety as a factor is less typical for them than for the other groups presented above. In contrast, the impact of the liquidity factor is approximately as high as for the Conscious and the Considerate groups. The Risk Takers represent 12.56% of the sample. In the sample, similarly to other analyses of such kind, there are some groups whose opinions are different, almost extreme, but the number of items in these groups is not significant. In the current sample we differentiated some who are more fearless than the others, but the number of items from this group did not reach 5% of the sample. If we add these small groups, it amounts to 6.65% of the sample. All in all, 93.34% remained in the dominant personality groups (Figure 5).

Source: authors' own design

Figure 5. Breakdown of the respondents by saving preference groups (n=406=100%)

In addition to the consumer habits identified, other important issues to take into consideration are how these groups can be influenced, and how they can be formed. The typology of financial preferences can also be used in education to differentiate such disciplines (Bakos-Tóth–Baranyi 2016).

Conclusions and recommendations

The objective of our study was to examine the saving preferences of the Hungarian households by using factor and cluster analyses on a sample of 406 respondents.

As a result of the principle component analysis we identified two factors, namely 'Safety' and 'Liquidity' (access to savings).

By means of cluster analysis four well-distinguished personality groups could be identified, whose opinions are divided on Safety and Liquidity. The two biggest groups consist of the 'Conscious' (39.16%) and the 'Considerate' (32.51%). For the Conscious respondents both Safety and Liquidity were important factors, so they are presumably more knowledgeable about their savings and can find the offers which are safe and quite flexible regarding accessibility. For the Considerate, Liquidity is less important and the main issue for their savings is Safety.

We can conclude that the Hungarian population is not homogeneous in terms of saving preferences. By means of statistical methods well-distinguished groups could be created in which respondents had different opinions on savings. In our opinion the distinction is essential as the preferences of the different groups and their expectations and attitudes towards financial products must be considered when financial culture is being developed.

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