Economic behavior of households: cross-country comparison

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Abstract. The basic hypothesis of the research is that social capital has an effect on saving behavior and quality of life of households in different countries. We have used correlation and hierarchical cluster analysis as the methods of research and analyzed the indicators for the 29 countries with different levels of economic development. The cluster analysis has allowed to distribute the countries to the groups with similar meanings of household saving rate and social capital index, life expectancy or Gross national income (GNI).

Keywords: economic behavior, households, saving rate, social capital, quality of life.

Introduction

Households appear to be one of the main economic entities, whose economic behavior influences economic development of the country in whole. We consider household economic behavior in the context of two aspects: basic features of households and peculiarities of their behavior. The fundamental features of households are reflected in social capital which creates conditions for institutional sphere quality estimating. The second aspect analyzes household savings behavior. This current approach reflects I. Fisher`s conception of intertemporal choice [1].

Social capital and economic behavior are considered in works of David. C. Rose, Lorenzo Sacconi, Giacomo Degli Antoni, Bruno S.Frey [2, 3]. However, social capital is generally an equivalent to trust in their data. Current questions are brought up in the works of James De Filippis, Bridger, Jeffrey C., Alter, Theodore R. In some of later works which were done with the use of a big sampling, panel data and various instrumental variable and tests of robustness.

The aim of the research is cross-cultural analysis of household economic behavior. Household behavior reflects the peculiarities of national economic system functioning in the conditions of globalization and integration. This can be seen more clearly in the period of global instability – world economic crisis of 2007-2009. The object of the research becomes household economic behavior in 29 countries with different levels of economic development (10 – developed countries, 19 – developing ones). The basic hypothesis of the research is that social capital has an effect on saving behavior and quality of life of households in different countries.

Method

Social capital determines institutional conditions of households' functioning. Its index was calculated according to the index of human potential development. The partial indices were calculated using the following formula:

$$I_i = \frac{x_i - x_{\min}}{x_{\max} - x_{\min}},$$

where X_i is the value of the relevant initial data meaning for the country *i*; $X_{\min}$ and $X_{\max.}$ are respectively minimum and maximum values of this variable for the considering data fetch. The partial indices include marriage rate (MR), divorce rate, average size of household (ASH), number of people with higher education (Edu). Further the integral index is calculated as the arithmetic average of the partial indices.

The rate of savings was calculated as an average indicator for the period from 2006 to 2011. Two approaches were used for that: 1) according to national accounts as a share of household gross savings in disposable income; 2) according to household surveys: as a part of disposable income residuary after consumption expenditures. Muradoglu and Taskin (1996) is the first that compared the savings behavior of developing and industrial countries using the same data set [4, 5].

As a basis for population's level of life indicators we used the life expectancy at birth which is influenced by systematic long-term factors of social-economic development of the country and gross national income per capita which is used to characterize riches of a country. The main research methods are correlation and hierarchical cluster analysis.

The information base was constructed on official statistic data of Australian Bureau of

Statistics, Economic and Social Research Institute of Japan, Federal State Statistics Service of the Russian Federation, National Bureau of Statistics of China, Instituto Brasileiro de Geografia e Estatística, Italian National Institute of Statistics, National Institute of Statistics and Economic Studies of France, South African Reserve Bank, Statistisches Bundesamt, Eurostat, OECD, Office for National Statistics of UK, Statistics Canada, The Bank of Korea, U.S.Bureau of Economic Analysis, Central Statistical Bureau of Latvia, Central Statistical Office of Poland, Hungarian Central Statistical Office, National Institute of Statistics of Romania, State Statistical Office of Macedonia, Statistical Office of Montenegro, Statistical Office of the Republic of Serbia, Statistical Office of the Republic of Slovenia, National Bureau of Statistics of the Republic of Moldova, National Statistical Institute of Bulgaria, State Statistics Service of Ukraine.

Results
Correlation

The main research hypothesis about influence of social capital on household saving rate was not confirmed. It was based on the idea that social capital as a household complex characteristic influences their decision between savings and consumption during the current period. At the same time there is no correlation between social capital and saving rate for the sample countries as in general (see Fig. 1) and for its separate subgroups: developed and developing countries.

Correlation analysis showed a strong direct interconnection between indicators of life expectancy and gross national income per capita (GNI). Life expectancy and gross national income per capita describe just one phenomenon – population's quality of life. Correlation between these two indicators lies in the fact that gross income performs as a material basis for the increasing of life expectancy because it gives an opportunity to create more effective health care system, medical service, environment protection, healthy lifestyle. It is proven by correlation analysis of 29 countries: the correlation between life expectancy and GNI is close and positive. However, we should pay attention to the following peculiarity: for developed countries the correlation between life expectancy and GNI is negative.

A considerable correlation between life expectancy and GNI without a considerable correlation with other indicators defines the necessity of cluster analysis with three of four variables simultaneously (life expectancy or GNI per capita).

Cluster analysis

We have received two groups of clusters: 1) behavioral characteristics in relation to the quality of life, 2) behavioral characteristics in relation to the economic development (see Table 1). The cluster analysis has allowed to distribute the countries to the groups with similar meanings of household saving rate (AHSR) and social capital index (ISC), life expectancy or GNI.
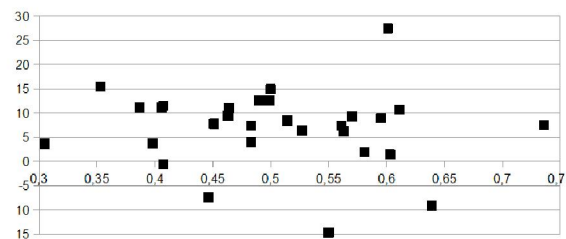

Fig. 1. Social capital and average household saving rate

First cluster – Bulgaria and Romania – is joined by a high index of social capital and medium meanings of life expectancy in combination with negative savings. In 2005-2010 Bulgaria and Romania tended to reduce negative savings. Private pension system, tightening lending requirements, re-pricing of risk and uncertainty over future earnings as the main reasons of saving tendency growth in Romania [6, 7]. The lowest meaning (-33.3%) in Bulgaria was marked in 2007 and during 3 years it rose up to the level of -2.47% [own calculations]. The current cluster is characterized by a small meaning of a households' private index (Bulgaria – 0.2; Romania – 0.37) [own calculations]. Private indexes of a social capital which characterize the level of marriage, divorce rates and education are quite high.

The second, most numerous, cluster connects 8 countries (see Table 1) which can be characterized as dynamically developing ones. The household savings rate in these countries has a positive meaning. They are also characterized by a high life expectancy and meaning of social capital indexes. The current group is the most heterogeneous regarding the composition of a social capital private index. Macedonia and Montenegro have the highest private indexes of the divorce rate: 0.95 and 0.93 correspondingly. Latvia and Lithuania are characterized with the highest meaning of marriage private indexes (1 and 0.91) [own calculations].

The third cluster includes Slovenia, Australia, Italy, and Japan which have the highest meanings of life expectancy. The savings rate is fluctuating from 9% to 14% from the disposable income, which can be defined as an medium level of

savings among the examined countries. The social capital index is on the medium level.

Table 1. Clusters

#	Countries	ISC	AHSR	Life exp.	GNI per capita	Clusters GNI	Clusters LE
1	Bulgaria	0.554520	-14.70	73.4	11412	1	1
2	Hungary	0.572100	9.29	74.4	16581	3	2
3	Latvia	0.603544	1.39	73.3	14293	2	2
4	Lithuania	0.581356	1.90	72.2	16234	3	2
5	Macedonia	0.560711	7.35	74.8	8804	1	2
6	Montenegro	0.527007	6.40	74.6	10361	1	2
7	Poland	0.562767	6.26	76.1	17451	3	2
8	Romania	0.638350	-9.12	74.0	11046	1	1
9	Serbia	0.514395	8.37	74.5	10236	1	2
10	Turkey	0.735680	7.50	74.0	12246	2	4
11	Slovenia	0.499546	14.90	79.9	24914	7	3
12	Moldova	0.446423	-7.49	69.3	3058	5	7
13	Ukraine	0.490241	12.57	68.5	6175	6	9
14	Russia	0.386517	11.17	68.8	14561	2	9
15	Slovakia	0.450856	7.73	75.4	19998	4	8
16	Australia	0.499336	12.69	81.9	34431	9	3
17	Brazil	0.483446	7.36	73.5	10162	1	2
18	UK	0.398743	3.76	80.2	33296	9	5
19	Germany	0.406209	11.14	80.4	34854	9	5
20	EU	0.406999	11.47	80.0	33609	9	5
21	Italy	0.464374	11.00	81.9	26484	7	3
22	China	0.600602	27.45	73.5	7476	6	6
23	Mexico	0.611373	10.72	77.0	13245	2	4
24	USA	0.481398	3.97	78.5	43017	10	8
25	France	0.353432	15.47	81.5	30462	8	5
26	Korea	0.594753	8.93	80.6	28230	8	4
27	Japan	0.463492	9.43	83.4	32295	9	3
28	Canada	0.304773	3.62	81.0	35166	9	5
29	South Africa	0.406594	-0.64	52.8	9469	1	10

The fourth cluster - Turkey, Mexico, and Korea – joined the countries with the highest meanings of social capital index. According to the saving behavior, the households of the current countries are characterized by the medium indexes, according to life expectancy – by the high ones. Given the projected changes in the dependency ratios, the domestic saving rate in Korea is expected to decline from 40% in 2002 to about 26% by the year 2030 [8, 9].

As a result of the World Bank research the main reason of saving rate reduction in Turkey in 2000-2010 is a wide stimulating of household consuming behavior at the expense of available credit and inflation growth [10, 11]. Turkey and Korea are similar by the social capital composition. They are peculiar with high meanings of private indexes. The summary index of social capital in Mexico is heterogeneous.

The fifth cluster contains the UK, Germany, France, Canada and EU in general–countries similar by their level of socio-economic development and social capital level, but differing with saving behavior. They are joint with quite high indexes of life expectancy, but Anglo-Saxon sub-group is notable for much lower meanings of saving rates – at the level of 3,6% – in comparison with EU countries

(12%). Summary index of social capital in this group is the lowest.

The sixth group is represented by China, which cannot be united with any other countries by virtue of specification of its socio-economic development. China differs with its highest level of savings rate and social capital index – 0.77 [own calculations]. Chamon and Prasad prove that the rapidly rising private burdens of housing, education, and health care are the most important reasons for the highest saving rate [12, 13]. But Wang and Wen argue that high propensity to save is not caused by demographical tendencies and housing prices [14]. At current moment China yields to some countries on life expectancy. According Horioka and Terada-Hagiwara investigation, for the 2011–2030 period the negative impact of population aging on the domestic saving rate will be largely offset by the positive impact of higher income levels [15, 16].

Moldova represents the seventh cluster. Low saving rate against the background of a small meaning of a social capital index and life expectancy marks out Moldova among other countries. It is necessary to notice that Moldova is characterized by a low level of higher education private index (0.35) that tells negatively on civic engagement in economics.

The eighth cluster joins the USA and Slovakia which, in our opinion, differ with their level of economic development (it is proven by cluster classification on GNI), but similar with life expectancy and social capital index. There is also a difference in saving behavior. The USA is peculiar with a low household savings rate (3.96%) and it seems as unusual tendency for advanced economy [17] whereas Slovakian savings rate is higher (7.73%) approximate to middle European level.

Russia and Ukraine belong to the ninth cluster as they are similar characteristics: medium meanings of savings rate, life expectancy. Ukraine outstrips Russia by social capital index but fall behind (according to cluster classification by GNI) by economic development. The current cluster is characterized with low meanings of private indexes which describe the level of divorce rate and medium size of households. Besides, further decreasing of marriage rate is occurring that is influencing the number, size and structure of households.

The tenth cluster is represented by South Africa which differs from the examined countries with the lowest meanings of life expectancy and savings rate. South Africa is peculiar with its zero meaning of higher education private index that influences negatively all basic indexes, characterizing socio-economic development.

The cluster analysis by the level of economic development was made on the basis of 3 factors: social capital index, savings rate and GNI (see Table 1). Clusters, in contrast to the first approach, joint the countries in a different order. For example, the biggest number of countries with a low level of GNI per capita was included into the first cluster. The second cluster joins Turkey, Latvia and Russia on the basis of their GNI per capita but they strongly differ by savings rates and social capital index. Poland, Lithuania, Hungary form a common cluster (the third one) that testifies to close characteristics of households economic behavior, quality of life and level of economic development.

Slovakia forms individual cluster (the fourth one) which can be defined as transitional between developing and developed European countries. Moldova (the fifth cluster) differs from other countries: in this case it represents the lowest level of GNI. Ukraine and China by their GNI are very close to each other and form the sixth cluster. Slovenia and Italy make the seventh cluster and are practically identical by all three indicators.

The eighth group represented by France and Korea with the high indexes of population's level of life and economic development but with some differences in saving behavior and social capital. The ninth cluster is formed by Australia, the UK, Germany, EU, Japan, and Canada which refer to highly developed countries. Nevertheless, the USA (the tenth cluster) excels all the countries of the ninth cluster in the GNI, although it could be referred to this cluster by other indexes. The low rate of household savings in the USA steps forward to its well-being.

Cluster analysis made on the basis of GNI produced a result in many ways similar with a traditional classification of countries by the level of economic development. Saving behavior and social capital presented as an important variable when grouping into clusters by life expectancy.

Conclusion

Household economic behavior combines national-cultural peculiarities of a single country as well as common features of the world system development. Correlation between rate of savings and social capital index is absent and at the same time this regularity is obvious as for 29 countries in general and for sub-groups – developing and developed countries. Close relationship is typical for life expectancy and GNI but for all that this correlation for developed countries is regenerative that needs further research.

Cluster analysis let us form 10 groups according to life expectancy, which join countries by close meanings of savings rates, social capital indexes and life expectancy. China, Moldova and South Africa form separate clusters strongly differing from other examined countries. The most numerous cluster is the second one, which joint developing countries such as Europe and Brazil.

Clusters which were formed by GNI strongly differ from the first approach. If the USA got into the same group with Slovakia according to life expectancy, they organize an individual cluster (the tenth one) according to GNI which is close to savings rates and social capital indexes with the group of developed countries (Australia, UK, Germany, EU, Japan, Canada) but excel them in the level of GNI.

It is necessary to notice that the group of developed countries has lower social capital. It can be explained by the fact that during the last decades significant changes in family status have been noticed. The number of divorces is constantly growing. Canada and the USA still keep the leadership that serves a negative factor from the point of view of reproduction of the human potential. Korea appears to be an exception which shows a high meaning of private indexes, characterizing family status. Private index of higher education is maximum here – 1. Our research lets us come to the conclusion that there are common regularities in households' economic behavior, but with some exceptions. Savings behavior isn't influenced by social capital, GNI and population's quality of life (life expectancy). Nevertheless, in some countries the system of social security, restrictions on consuming lending, health care stimulate household saving behavior that vividly became apparent during the world economic crises which led to the reduction of household savings with fast reinstatement during the next years.

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