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Determinants of Household Savings in EU: What Policies for Increasing Savings?

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Abstract

The main sector of a national economy that saves is the household sector. Its saving behaviour is determined by a complex of economic, social, demographic and cultural factors. Their determination is of utmost importance for the foundation of the policies aimed at stimulating household savings.
The present paper aims at identifying the main determinants of population savings using panel data for 15 countries of Western and Central and Eastern Europe for the 1995-2010 period.
The empirical results obtained are quantified with the help of a fixed-country-specific effect model that estimates the gross saving rate. The model allowed for highlighting some individual particularities of the countries or some characteristics of the groups, showing that the type of saving behaviour is influenced by them. Thus, we suggest that the development level of an economy should be a main parameter in the decisional schemes aiming to stimulate household savings. We recommend avoiding to automatically take-up any "success model" of a country and its implementation in another country, because there are national specificities and behavioural parameters.

1. Introduction

Ending the recession and economic recovery in the EU countries are complex processes that imply massive investments targeted towards increasing the productivity of the capital (human, physical and

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financial). Increasing capital productivity requires investments that have as main source both internal and external savings.

On the background of economic recession, the perspectives of finding external resources in circumstances when the internal ones are insufficient are gloomy, since most developed countries in the EU are overwhelmed by the debts accumulated for saving their own financial sectors during the peak years of the financial crisis (2008 and 2009). The states that have a surplus are few and the question is whether they are willing to loan and at what cost. Under these circumstances, internal savings are vital for the economic recovery of any country, thus the G20 decided to follow the evolution of savings at global level, using a set of economic indicators, among which the savings rate, public debt and current account deficit (Callen and Thiman, 1997).

The chances of economic recovery in the EU depend on the level of internal savings, since markets are dominated by vigilance against public debt and fear of inflation and the level of national savings. Furthermore, because the main sector of a national economy that is saving is the household sector, enactment of financial policies that stimulate savings in this sector is fundamental for the governmental anti-crisis and economic recovery programmes (Denizer and Holger, 2000).

The present paper aims at analysing and modelling the saving behaviour of the households in the EU countries, by highlighting the differences between the developed and emergent countries in Central and Eastern Europe. The differences will be the more interesting to look at, the more these emergent countries are affected not only by the world financial crisis, but also by the transition to market economy after 45 years of hyper centralized model of the socialist economy.

2. Literature Review And Hypotheses

2.1. Hypotheses regarding household savings

Individual saving and consumption behaviour, especially those of households, have a particular importance for the financial stability of an economy. An unfavourable evolution of savings may induce financial disequilibria when its functions cannot be realised or they are realised with difficulty (Modigliani and Brumberg, 1954). Thus, at macroeconomic level, population savings are an important source for financing company investments and budget deficit. At microeconomic level, the diminution of savings may decrease the living standard of the population, especially that of the retired population, with all the negative implications that follow.

In the literature, there are two fundamental theories regarding saving:

According to **the theory of life cycle** (Ando and Modigliani, 1963), the financial behaviour differs for the youth and the elderly, as compared to the mature. A still important part of the young people who did not reach employment age yet diminish the savings rate, since their parents allot a big part of their incomes to supporting their children. In the same direction, the increase in the average life span imposes the increase of the saving rate during the active life with the view to maintaining the level of consumption (living standard) during the active life. Thus, the increase in the weight of the elderly in a population is equivalent to diminishing the population savings, since this segment is dissaving or is saving at a very reduced pace. The purpose of the elderly segment is very important from the point of view of its financial behaviour, this being a category that dissaves, thus consumes from the savings accumulated during the active life (Artus, 2002).

Friedman's **theory of permanent income** (Friedman, 1957) states that, in certain contexts, the active population may be stimulated to increase their caution savings in order to compensate for a possible relative decrease of their income after retirement.

2.2. Some issues from empirical tests of saving behaviour

Previous empirical evidence based on the two theories mentioned above has some shortcomings. One of them is the fact that these studies either focus on a single country, or a group of countries, but without comparing the developed with the developing ones. This leads to the conclusion that the samples used are inappropriate for highlighting differences between countries at different development stages.

Another drawback is the fact that national aggregate data is used, which implies the assumption that the most important part of savings comes from the private savings account (Schmidt-Hebbel, Webb and Corsetti, 1992). Thus, inconsistencies between countries appear due to the fact that the computation method is different. Furthermore, the use of aggregate data in such analyses is relevant only if private and public savings are substitutable.

As a consequence, it is necessary to account for the impact of the development level in the household saving behaviour. Although there is consensus regarding the importance of explanatory variables such as income and wealth for estimating household savings, other more controversial factors like demographics, inflation and rates of return need to be included in the analysis in order to be able to better and more accurately highlight differences between saving behaviour of households for different countries.

From the literature on saving behaviour we synthesized a number of important results that may be used as working hypotheses:

H1: The determinants of household saving behaviour for developed countries in the EU are not valid for emerging economies and vice versa, especially during the financial crisis.

H2: The conclusions of the previous studies regarding the influence of interest rate on saving are inconclusive. It is considered, in general, that the interest rate has a direct influence on saving in developing countries (Elmendorf, 1966), while in the developed countries, the combination between high levels of GDP growth and low interest and inflation rates is more efficient for stimulation savings (Russell and Fraas, 2005).

H3: There is a negative relationship between trend income and saving rates in developing countries until a threshold level in trend income is reached, above which increases in income are channelled towards savings, thus leading to higher savings rates (Muradoglu, 1996).

3. Methodology

3.1. Research Goal

The analysis of the determinants of savings is of special importance for the policies aimed at stimulating household savings. This paper aims at identifying the main determinants of population savings, such as the differences between the saving behaviour of the households in and between developed and emergent countries, using data for Western, Central and Eastern European countries for the 1995-2010 timeframe.

3.2. Data and methods

The data come from the following sources: World Economic Outlook Databases, OECD Economic Outlook and EUROSTAT, and they were organized in a panel-type structure. This method made possible the common analysis of the observations from a transversal point of view (by country) realised in different moments in time. This type of analysis allows for the designing and testing of more complex behavioural models than those based on time series analysis or transversal structures. The main advantages of this methodological approach are (Baltagi, 2005):

- Analysis of panel data allowed for the highlighting of the individual particularities of the countries. The econometric analysis of the time series or in transversal section cannot distinguish these particularities, thus there is the risk of obtaining biased estimators.
- The analysis of panel data brings extra information, reduces multicolinearity between the variables, increases the number of degrees of freedom and, implicitly, the power of the tests, thus the degree of confidence in the results obtained. In conclusion, the efficiency and consistency of the econometric estimation increases.
- Panel data allow for a better analysis of the structural adjustments dynamics.

The choice of the countries in the panel was made based on data availability. Due to the fact that our aim is to highlight the differences between the developed and the central and eastern emergent countries, the panel consists of two groups (Table 1).

The former communist countries had a strong orientation towards saving until 1990. The high values of the saving rates were determined, on the one hand by the wish to be able to finance various acquisitions, especially durable goods or cars, and on the other hand, by the shortage of consumption goods (involuntary or "forced" saving) (Deaton, 1991). After 1990 the important political, economic, social and cultural transformations have exacerbated the consumption behaviours and the saving rate registered considerable decreases (Niculescu-Aron, 2011).

In defining the panel timeframe, we took into account availability, but also the stability of the macroeconomic evolution trends. Thus, the annual results after 1994 reflect a trend of economic growth, of restoring balance through inflation decrease and stabilization of the unemployment rate. For these reasons we have chosen 1995 as the first year of the panel.

Table 1. Panel components

Western Europe	Central and Eastern Europe (Former communist countries)
Austria	Hungary
Finland	Latvia
France	Poland
Germany	Romania
Ireland	Slovakia
Italy	Slovenia
Netherlands	
Portugal	
Spain	

The analysis of the evolution of gross saving rates during 1995-2010 for the two country groups presented in Figures 1 (a) and (b) confirms the different behaviour of the two groups.

The Western Europe group is characterized by a decrease of the saving rates after 1995 until 2000 and after that it stabilizes until 2008. The economic crisis determined a diminution of the saving rate for almost all countries in this group (except for Germany, whose trend is still growing).

The Central and Eastern Europe group has a more fluctuating evolution of saving rates (reaching negative values in Romania and Latvia). 2008 brings a change in the saving behaviour in the case of this group as well, but the direction is different. The decrease in and uncertainty about income and insecurity regarding jobs (the first effects of the economic crisis at household level) have strongly stimulated saving (for Romania and Latvia the growth is exponential, increasing from negative values to levels close to the ones the other countries register with plus).
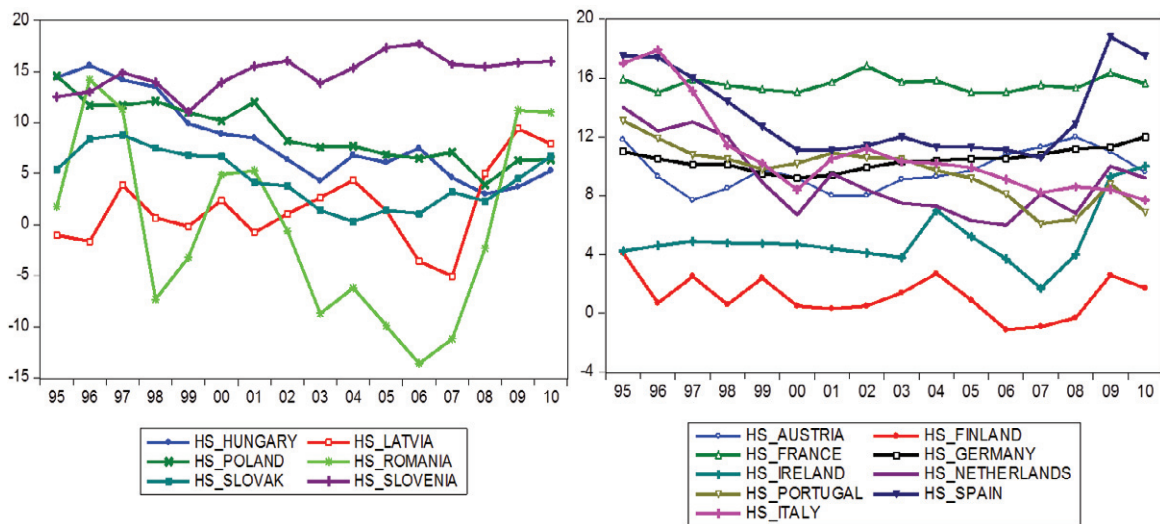

Figure 1. (a) The evolution of the gross saving rates for Central and Eastern Europe; (b) The evolution of the gross saving rates for Western Europe

3.3. Model specification

The dependent variable of the model is *Gross savings of the population* (% of disposable income). The choice of the independent variables is based on the literature and aims at testing the hypotheses mentioned. According to the empirical studies made to the present, the determinants of saving are of economic, contextual, demographic and social nature.

Economic factors

Research made on the saving process identified a direct association between savings and income, respectively economic growth. The econometric analysis of these variables was approached both through modelling the impact of savings on income and economic growth (Solow Model, Mankiw-Romer-Weil, Lucas Model), as well as by analysing the impact of income on saving rate of the household (Edwards, 1996; Masson, Bayoumi and Samiei, 1995; Schmidt-Hebbel, Webb and Corsetti, 1992; Kessler, Perelman and Pestieau, 1993).

We considered as the economic determinant of saving the variable "Percentage change of Gross domestic product, constant prices".

Contextual factors

The economic context, through the macroeconomic equilibrium/disequilibria and the fiscal and social policies of an economic system, leaves marks on savings. Low inflation is the main macroeconomic goal for most western countries. This is because there are many economic costs of high inflation, among which increase in the use of durable goods at the expense of saving.

However, analysing the historic of the correlation between the inflation rate and the saving rate, the conclusions are contradictory. For example, in the USA the economic recession determined, during 2008 and 2009, an unanticipated increase of the inflation with 1%, which meant an increase of 109 USD of the expenses for buying goods. This is not just a coincidence, the conditioning exerted by the inflation rate on the saving behaviour having a long history. Between 1955 and 1964, an inflation of 1.4% made the Americans save less than during 1965-1974, when inflation was 4.7%, and saving grew from 5.8% to 6.9% (Speteanu, 2009).

Since the main fiscal policy instrument that may stimulate savings is "Long-term interest rate", we included it as an independent variable, next to the inflation rate.

Demographic and social factors

The LCH (Life Cycle Hypothesis) Model indicates the role of demographic variables on saving rate. The evolution of life expectancy determined, together with the other demographic variables, the accentuation of the demographic ageing process. The individuals are aware that they will live longer (or at least they realize that the ones around them live longer) and, consequently, they adapt their saving behaviour according to this perception.

The dependency ratios are the main demographic variables considered as determinants of saving in empirical studies. Starting from their conclusions, we decided to include in the model the independent variables of demographic nature "Elderly dependency ratio", "Life expectancy at birth" and "Percentage of rural population".

4. Analyses and Results

With the aforementioned variables we made the econometric model of the saving function:

HS=f(RG, D(RI), PPR, IR(-1), RDE, LE)
where:
HS=gross saving rate of households (% of disposable income);
RG= Percentage change of Gross domestic product, constant prices;
D(RI),= first order difference of inflation rate;
PPR= Percentage of rural population in total population;
IR(-1)=Long term interest rate lag 1;
RDE= Dependency ratio computed as percentage of population age 65 years and more as compared to adult (15-64 years) population;
LE=Life expectancy at birth

The model is with fixed-country-specific effect (recommended in case of the analysis of a specific set of variables for "n" regions or countries in "t" moments of time intervals). The estimation was done through the least squares method, after adding dummy variables for each country "i" and period "t".

The model was initially estimated for all the 15 countries analysed, and the results are presented in Annex 1. The value of Adjusted R^2 is .076, the model being significant for a probability close to one. Since the countries in the sample form two distinct groups, we decided to estimate an equation for each of

them. The explanatory power of the independent variables improved significantly (the adjusted values for R^2 are 0.91 for the western group and 0.77 for the central eastern one).

Interpreting the coefficients of the PANEL - ALL COUNTRIES model

Between economic growth (represented by the percentage change of GDP in PPP per capita) and the saving rate there is a negative relationship, for a GDP increase of 1%, the saving rate decreases by 0.33%.

The inflation rate has a direct influence on savings, a 1% increase of the inflation rate leading to almost 0.01% increase of saving rate.

The interest rate, included in the model with a one-year lag, stimulates savings as follows: an increase in the interest rate of 1% in the previous year is expected to determine a 0.42% increase of the saving rate.

The percentage of rural population also has direct influence, the saving rate increasing by 0.73% at a 1% increase of the rural population.

The demographic dependency ratio of the elderly and life expectancy do not influence saving.

Interpreting the coefficients of the PANEL – WESTERN EUROPE group

Analysing the behaviour of the whole group of western countries, we notice that the saving rate is not influenced by the main indicator of economic growth. The only country of the group with a different behaviour, highlighted by cross-section specific coefficients, is Spain. Here economic growth stimulates consumption at the expense of savings, since a 1% increase of GDP in PPP per capita leads to an almost 1% decrease of saving.

There is a negative relationship between the inflation rate and the saving rate, a 1% increase of the inflation rate determining a 0.65% increase of the saving rate. The percentage of rural population also has a direct influence – the saving rate increases by 1.56% when the weight increases by 1%.

The elderly dependency ratio and life expectancy do not influence savings at group level. However, analysing the cross-section specific coefficients computed for the variable "Life expectancy at birth" we notice that, with the exception of Italy, Spain and Portugal, this variable has significant influence on savings, but the sense of the influence is different. Thus, in Netherlands the increase of like expectancy by 1 year determines the diminution of the saving rate by 1%. In the other countries of the group (Austria, Finland, France, Germany and Ireland) the relationship is direct (increase of 1 year in life expectancy determines a 2% increase in the saving rate).

Interpreting the coefficients of the PANEL – CENTRAL AND EASTERN EUROPE group

Economic growth reflected by percentage of GDP increase determines a decrease of savings, since a 1% increase determines a 0.35% decrease of the saving rate. The inflation rate has a direct influence on saving, a 1% change determining an almost 0.07% change in the same direction of saving rate. The percentage of rural population does not significantly influence the inclination towards saving. The variables "Interest rate" and "Life expectancy" do not have a significant influence on savings.

The dependency ration (computed by dividing the elderly population by the adult population) at group level does not have significant influence. However, analysing the cross-section specific coefficients, we notice that in Hungary, Poland and Romania there is a significant negative influence of the dependency ratio, its increase causing the saving rate to decline.

5. Conclusions

Our study identified, for a period that includes the beginning and the peak of the recent world financial crisis, a number of determinants of the population saving behaviour in European developed and emergent, former socialist countries. The econometric model elaborated allows for the comparison of the two models of fixed-country-specific effect obtained and confirms the H1 hypothesis, according to which the

determinants of the population saving behaviour for the EU developed countries are not valid for the emergent economies as well and vice-versa, especially during the financial crisis.

The H2 hypothesis is only partially validated. Thus, the high values of the GDP growth rate did not produce any effect in the countries of the first group (Western Europe).

Regarding the inflation rate, the conclusions verify the hypothesis. It influences the saving rate of both groups, but not in the same way. The reduction of inflation constitutes leverage for stimulating saving only in the developed countries.

The hypothesis regarding the role of the interest rate as determinant of savings is not confirmed. The increase of the interest rate stimulates saving on the developed countries, but has no statistically significant influence in Central and Eastern Europe.

The last hypothesis, H3, is confirmed and even strengthened. There is a negative relationship between the GDP growth rate and the saving rates in the less developed countries of the second group. The periods of economic boom offer optimistic perceptions to the population regarding the present and future resources, which leads to a strong stimulation of consumption. The population not only does not save, but also uses the previously saved resources for consumption (Romania, Latvia). During recession times, however, the household behaviour changes in the sense of saving.

The conclusions following our analysis are:

- The model formalized the determinants of saving. In elaborating policies that stimulate saving, the national and European level policy-makers must avoid the automatic taking-up of any "success model" of a country and its implementation in another country, because there are national specificities and behavioural parameters.

- The model selected the main determinants of saving. Part of them may be used as leverage in fiscal and monetary policies (interest rate, inflation rate). The demographic determinants cannot be controlled, but it is possible to anticipate the evolution of savings based on these factors.

- The awareness of the fact the not always economic growth stimulates savings leads us to the proposition that during economic booms, the financial policies should aim with priority at stimulating savings.

- Among the many factors that influence the saving propensity of the population, especially in Central and Eastern Europe, during the time frame analysed, the most visible ones were those concerning the security and stability of income, something obvious in the context of the recession we are experiencing.

- During economic prosperity, families save money either because they have an excess from the income increase or they anticipate significant gains from interests, either because they are stimulated to save through adequate fiscal policies or/and they believe in the favourable evolution of the economy. On the other hand, 2008 brought a shock for all European states, which determined major changes in the saving behaviour and the two groups of countries reacted differently. In Western Europe the saving rate decreased, while in the second group it increased, thus narrowing the gap between the groups.

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Appendix A. Regression coefficients

Panel		Determinants of household saving											Adj. R²
		Economic growth			Inflation rate	Percentage of rural population	Interest rate	Elderly dependency ratio (65 years and more)			Life expectancy at birth			
All countries	Variables	**RG**			**D(RI)**	**PPR**	**IR(-1)**				-			
	Coefficients	-0.33			0.097	0.73	0.42				-			
	t- values	-5.79			5.31	3.6	5.24				-			0.76
	p- values	0.0000			0.0000	0.0004	0.0000				-			
Western Europe	Variables	**RG**	*Coeff.*	*p*	**D(RI)**	**PPR**	**IR(-1)**				**LE**	*Coeff.*	*p*	
	Coefficients	Austria	0.14	0.42	-0.4	1.4	0.65				Austria	2.10	0.00	
	t- values	Finland	-0.12	0.26	-3.5	2.27	5.43				Finland	1.60	0.02	
	p- values	France	-0.04	0.88	0.0006	0.0149	0.0000				France	1.71	0.01	
		Germany	0.06	0.68							Germany	1.40	0.00	
		Ireland	-0.13	0.26							Ireland	1.58	0.02	0.92
		Italy	-0.08	0.64							Italy	-0.41	0.36	
		Netherlands	-0.13	0.46							Netherlands	-0.92	0.01	
		Portugal	-0.29	0.21							Portugal	-0.54	0.22	
		Spain	-0.91	0.00							Spain	0.29	0.60	
Central and Eastern Europe	Variables	**RG**			**D(RI)**		-	**RDE**	*Coeff.*	*p*				
	Coefficients	-0.35			0.07			Hungary	-5.15	0.00				
	t- values	-4.17			3.26			Latvia	0.22	0.76				
	p- values	0.0001			0.0017			Poland	-4.29	0.01				
								Romania	-2.60	0.01				0.77
								Slovak	-1.79	0.79				
								Slovenia	0.37	0.53				