THE UNCERTAINTY EFFECT ON HOUSEHOLD SAVING RATES IN EASTERN EUROPE

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Abstract

The paper aims to explain the role of uncertainty on household saving rates in Eastern European Countries (EEC), and to draw a comparison with more developed European economies. We consider that uncertainty plays an important role on household saving formation in EEC. For this purpose we perform a panel analysis over the period 1995-2014, for each group of countries. We consider different uncertainty indicators and a series of control variables; including macroeconomic and demographic determinants of household saving rates. As econometric model we use a fixed-effects GLS regression testing data for heteroscedasticity and contemporaneous correlation. The results underline that uncertainty expressed through people expectations has no clear influence on household saving rates in EEC, while unemployment and taxation are the main determinants. The findings of the paper can be useful for future policies aimed to increase household saving in EEC as a cheap and stable funding source of investments.

Keywords: Household saving, Saving behavior, Panel data, Uncertainty

JEL Classification: C12, C25, D14

1. Introduction

Saving is a key macroeconomic indicator, potential source of investment and thus economic growth enhancer. Saving evolution was extensively studied, showing strong links between domestic saving, domestic investment and growth. If a perfect mobility of international capital would exist, the development and growth could be financed by foreign capital, minimizing the importance of domestic savings.

Limited access to international capital markets and the volatility of foreign capital flows increases the importance of domestic savings in Eastern European countries (EEC). The volatility of international capital flows are strong in times of economic crisis, access to capital becomes more restrictive or

costly, destabilizing these economies, especially those with high dependence. For transition countries in Eastern Europe, domestic savings represent a cheap and reliable source of investment funding. Domestic saving rates and household saving rates in EEC dropped sharply in the 90's, the moment of transition from a centralized, planed system to a market economy. It is assumed that the high rates of over 30% (World Bank databases) from the socialist period were maintained by:

a) an intense propaganda to encourage individual savings beginning from school years;

b) the lack of consumer goods which led to a "forced" or "involuntary" saving; (considered also by Denizer and Wolf, 1998);

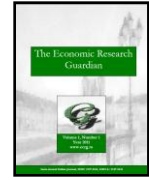c) the lack of consumer credit for durable goods purchase.

Denizer and Wolf (2000) considered that the sharp decrease in household saving during the years following transition was due to the price liberalization, which led to a saving equilibrium. However, the level of uncertainty plays its role.

The uncertainty measures the divergence of business and consumer expectations about the economy and their finances. The underlying assumption is that the more economic agents disagree in their expectations, the higher the uncertainty in the economy (Kose and Terrone, 2012). Uncertainty is present in Eastern Europe since the 90's when former planned economies moved to a market economy which caused many imbalances: high inflation, increasing unemployment, a new banking and financial system, etc. These developments were hardly understood by a population with a low degree of financial literacy.

Different from previous studies addressing the determinants of saving rates, in this paper we check if the uncertainty has a different effect over household saving rates in EEC and Western European countries, representing the old European Union (EU) members. The uncertainty is approximated by the economic sentiment index and households' expectation regarding their financial situation and unemployment. We expect to find a greater influence over former centralized countries taking into consideration frequent economic problems after the transition to a market economy, which contribute to a higher uncertainty level.

We perform a panel data analysis using a fixed-effects generalized least squares (GLS) model. As control variable we use different macroeconomic indicators considered as determinants of household saving as the inflation rate, unemployment rate and real wages(similar control variables are used by Ismail and Rashid, 2013).We analyze than the effects of uncertainty, while controlling for the effect of other macroeconomic indicators.

The paper is organized as follows: in the next section we make a review of literature regarding household saving rates, factors of influence and models used; in section 3 we present the data used and the econometric methodology; section 4 is devoted to the empirical findings and in section 5 we conclude.

2. Literature

The importance of savings rate generates a lot of interest over researchers in analyzing its determinants: macroeconomic and demographic factors, as well as psychological factors. There are a variety of studies that analyze the influence of macroeconomic factors on saving rates. On the one hand, Loayza et al. (2000) conduct a worldwide investigation employing World Bank data for 150 countries over the period 1965 to 1994. On the other hand, Schrooten and Stephan, (2003) assess the determinants of saving rates for a panel data of countries in Eastern Europe (Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovenia and Slovakia) for 1990-1999. Both studies show a positive influence of previous savings rates in the current savings rate, meaning persistence in saving behavior. Referring to the former socialist economies, this explains positive saving rates maintained even in the difficult years after transition.

According to the expectations generated by the consumption theory, both studies indicate a positive influence of the income variation on savings rate. Thus an economic growth or a growth in individual income in t-1 induces an increase in saving in t. Both studies show the negative correlation between demographic factors and saving rates - a higher proportion of young or higher age people (seen as people with no income or low income) will induce saving decreases. This correlation is consistent with life-cycle theory: the population reaches the highest level of savings at the time of obtaining the highest income, during the active period of their life. Furthermore, both studies reinforce the negative correlation between public and private saving. Besides the macroeconomic determinants, the consumption behavior also influences the saving rates.

At the individual level, studies attempt to identify those characteristics that determine people to save. For the first time, Keynes (1936) identifies eight basic reasons inducing propensity in individual save: precautionary reasons, life cycle evolution, using the accumulated interest, the possibility of future spending growth, gain financial independence, accumulating a mass of maneuver for future business, desire to bequest and for avarice reasons. Many of these reasons are complementary i.e.: money saved for retirement period (second cycle life evolution) can be used in turn to cover some shocks in the income evolution (precautionary reasons) for use of interest or for businesses

Recent empirical studies validate some of these theoretical determinants, but also identify others (Kulikov et al., 2007; Abdelkhalek et al., 2010; Rehman et al., 2010). On the one hand, saving rates are positively correlated with the level of regular income, but more strongly linked to exceptional income. On the other hand, propensity to save of self-employed persons is lower and people owning durable goods, especially cars, save less. The age, gender, education and financial education can also affect savings (Seonglim et al., 1997; Devaney et al., 2007; Beckmann et al., 2013). In this line, in a recent paper, De Freitas and Martins (2014) analyze the impact of health, pension systems and longevity on savings and discover that reforms that reduce replacement rates without reforming health system may not have all the expected impact on household savings in 22 OECD countries.

Historical influences, traditions and culture can have a significant impact on the propensity to save. Accordingly, Fan et al. (1998) examine the differences between saving motives of Chinese and American students. While Chinese students report abstract reasons ("for better things in the future"), American students advance more clear motivations ("the purchase of durable goods, i.e. cars, houses, etc."). Xiao and Fan (2002), analyzing the differences between saving motives of urban workers in China and America, show that the most common reason of Chinese workers is saving for children, while for American workers, the retirement is the most common reason.

Bucks et al.(2009) analyze the reasons for saving reported in the United States (US) between 1998 and 2007 by the Consumer Financial Survey, and find two main arguments: saving for retirement and saving for precautionary reasons. Alessie et al. (1997) use data from a socioeconomic research in the Netherlands held between 1987 and 1989 and show hierarchy of reasons for saving, first being the precautionary reason, followed by the purchase of durable goods and the retirement. Precautionary reason appears as an important reason for saving in other studies as Johnson (1999) and Harris et al. (2002). Brugiavini and Weber (2003) consider the prominent factors that determine household saving as: the necessity to smooth consumption over time (life-cycle saving), precautionary motives and the desire to bequeath wealth to their heirs. The authors associate the second reason with "the way prudent consumers behave when facing uncertainty". Even when income is spread over the life cycle, individuals will feel the necessity to save for unexpected events (unemployment, health risk).

The uncertainty's influence on household saving is investigated inter-alia by Skidmore (2001) and Chamon et al. (2013). While, Skidmore (2001) considered the impact of risks coming from natural disasters on household savings, more recently, Chamon et al. (2013) deploy their analyses on the income uncertainty and its effect on household savings in China and find a positive influence of uncertainty on saving rates.

We did not find studies that consider the uncertainty as one of the important determinants of saving in developing countries. Moreover, there are no studies focusing of the determinants of saving rates in EEC. Therefore, taken into account the relevance of precaution between saving motives, and considering the uncertainty as a determinant of precaution, we investigate the influence of uncertainty on household saving rates in European countries, with a focus on EEC.

3. Data and methodology

Analyzing gross household saving rate[1] by expressing the household saving as a component of domestic saving, we should observe an increased drop before the financial crises and a strong recovery in the following years. We can also observe other instability periods (Figure 1). In this paper the data series used are those published by European Commission in Annual Macroeconomic Database (AMECO) and Euro barometer surveys, by World Bank in World Development Indicators and by Eurostat. We also use The Economist Intelligence Unit country data. We consider a panel of

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[1] Gross saving is the part of the gross disposable income which is not spent as final consumption expenditure (http://ec.europa.eu/eurostat/sectoraccounts)
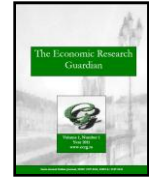
annual data between 1995 and 2014 for 18 countries, 8 developed European countries with a high population number (Germany, France, Italy, Great Britain, Netherlands, Belgium, Spain and Sweden) and 10 Eastern European countries (Romania, Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia and Slovenia). The panel starts with 1995 and contains only 10 EEC because previous data is not available for all variables and all the Eastern European countries analyzed.
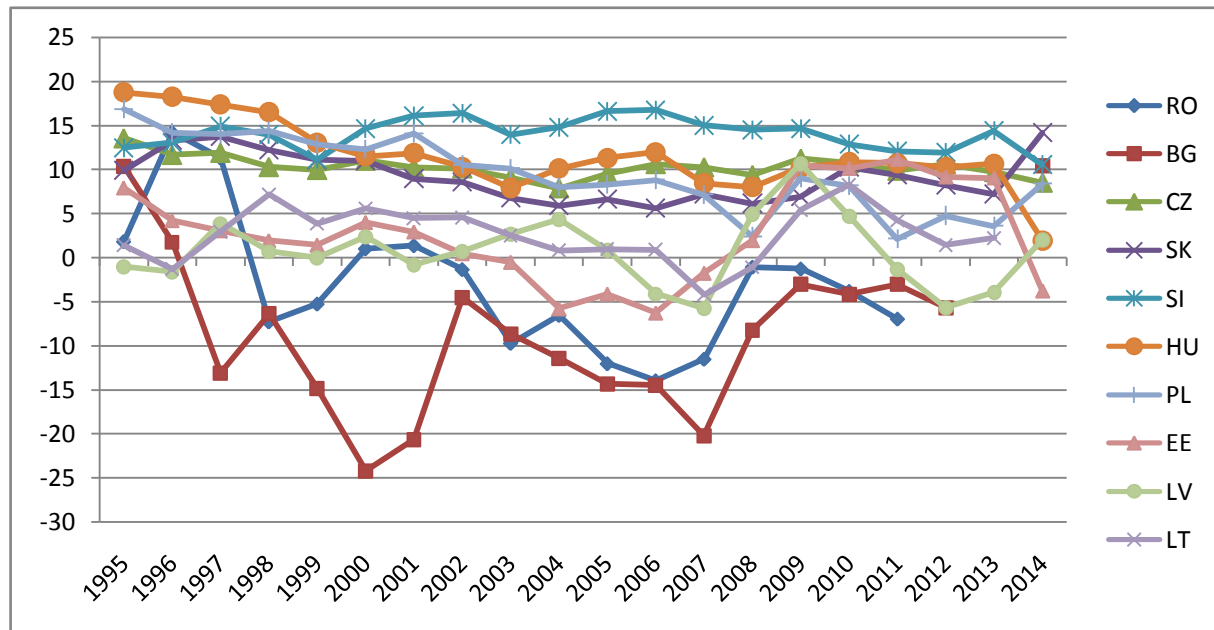
Source: Eurostat, author processing. For Romania and Bulgaria there are no available data for years 2013-2014

Figure 1 - Gross Household Saving Rate (% of disposable income)

In order to measure household saving, our models take into consideration the gross household saving rate (GHSR) as dependent variable. This rate is defined as gross saving divided by gross disposable income. Loayza (2000) considers a more appropriate method to calculate the saving ratio using disposable income, but these statistics are unavailable for the analyzed countries.

The independent variables of interest taken into consideration are the Economic Sentiment Index (ESI) and the expectation about household financial situation, country economic situation and unemployment. We use a set of macroeconomic determinants of saving as control variables. The description of the independent variables, as well as the expected sign and explanations are presented in Table 1.
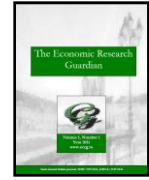
Table 1 - Independent variables' description

Name	Expected sign	Definition and measurement
ESI	-/+	*Economic sentiment index (ESI)* - a composite index build by the European Commission based on responses to questionnaires applied by the statistical offices of European countries. It takes in account the confidence in the industry (40%), expectations on services evolution (30%), consumer confidence (20%), building expectations (5%) and retail trade (5%). A positive economic sentiment stimulates the consumption and has a negative influence of savings. At the same time, the confidence in banks increases.
NeFSH	+	*Negative expectations about the financial situation of the household* – the percentage of people from Eurobarometer survey which consider that financial situation of the house will worsen next year. Negative expectations increase the saving rates due to precautionary reasons.
NeESC	+	*Negative expectations about the economic situation of the country* – the percentage of people from Eurobarometer survey which consider that economic situation will worsen next year. Negative expectations increase the saving rates due to precautionary reasons.
NeU	+	*Negative expectations about unemployment* – the percentage of people from Eurobarometer survey which consider that unemployment will be higher next year. Negative expectations increase the saving rates due to precautionary reasons.
Unply	-	*Unemployment rate-* recorded official unemployment as a percentage of total labor force. An increase of unemployment rate has a negative impact.
Infl	+	*Inflation rate* – as the annual changes in consumer price index. In order to protect themselves against a loss of purchasing power, households increase their savings. A positive influence is then expected.
CAvRW	+	*Average real wages* – percentage change in hourly wages in local currency adjusted for inflation, over previous year. The influence is positive.
GPSR	-	*Gross public saving rate* – change in public sector saving as a percentage of nominal GDP. A negative impact is expected (see, Schrooten and Stephan, 2003).
YOdr	+/-	*Youth and old-age dependency ratio*– as people aged 0-14 and 65-and-over to the working age population, to account for unequal income flows over the life-cycle. The effect depends of the proportion of each category.
CA	+	*Current account balance as a percentage of GDP*–used as a proxy for international borrowing and therefore for international financial integration. A positive influence is expected.
DCG	+	*Domestic credit grow* – the annual percentage change in bank lending to public and private sectors, plus bank lending in domestic currency overseas. An increase of the credit volume determines banks to attract deposits, increasing thus the savings rates.
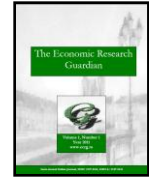
For modeling the influences of these variables over household saving rates, we use a GLS method accounting for panel heteroscedasticity and contemporaneous correlation. Regarding the type of regression we follow the fixed effects model, assuming that time-invariant characteristics are unique to the individual and shall not be correlated with other individual characteristics. Each entity is different, therefore the entity's error term and the constant (which captures individual characteristics) should not be correlated with the others. We also apply a random effects regression for robustness check. However, the Hausman test recommends the fixed effects GLS regression.

The equation for the fixed effects model is:

$$GHSR_{it} = \alpha_i + \beta_1 ESI_{it} + \beta_2 NeFSH_{it} + \beta_3 NeESC_{it} + \beta_4 NeU_{it} + \beta_5 X_{it} + \mu_{it} \qquad (1)$$

where α_i (i=1….n) is the unknown intercept for each country, $GHSR_{it}$ denotes the dependent variable, with i = entity and t = time, $ESI_{it,} NeFSH_{it}, NeESC_{it,} NeU_{it}$ represent the interest independent variables, X_{it} captures the set of control variables, β_i are the coefficients of independent variables, while μ_{it} is the error term.

There are other studies which propose the Ordinary Least Squares (OLS) model regression that includes a dummy variable for each country to account for country-specific effects (Verbeek, 2000).However, for large macro panels, the OLS estimation is not optimal as it has inconsistent estimates, and OLS standard errors are unreliable (Schrooten and Stephan, 2003).

4. Results

We test four models for both groups of countries: EEC and developed European countries. The first model includes only the interest variables expressing the expected uncertainty. In the second model we include as control variables the main macroeconomic determinants of saving: inflation and unemployment rate. The third model includes in addition the changes in real wages, gross public saving, domestic credit grow and current account as percent in GDP. Finally, for the last model we eliminate the variables with a lower significance. Estimation results are presented in Table 2.

First, we notice that our results are robust regarding the tested model and the coefficient sign and significance. Second, it appears that, contrary to our theoretical argument, the uncertainty influences saving rates only in the old EU, developed countries, and has no influence on EEC. Accordingly, for the developed countries the economic sentiment index (*ESI*) has a positive influence on the saving rates in the Models 3 and 4. These findings are important, stating that a positive economic sentiment favors the savings to a larger extent than the consumption. In addition, in all models the negative expectations about unemployment (*NeU*) determine household to increase their savings. However, it appears that the negative expectations regarding the financial situation of households (*NeFSH*) and about economic situation of the country (*NeESC*) have an opposite impact on the saving rates than expected. In this case the precautionary reason does not manifest. Instead, households observe the
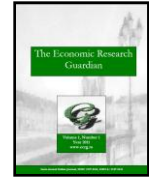
economic negative situation only in the moment when their revenues are negatively affected. Thus, we find that saving rates decrease when uncertainty increases.

Table 2 - Household saving (dependent variable - Gross household saving rate), results of GLS fixed effects regression

Independent variables	Model 1		Model 2		Model 3		Model 4	
	Eastern European	Developed European	Eastern European	Developed European	Eastern European	Developed European	Eastern European	Developed European
ESI	-0.090 (-1.39)	0.048 (1.59)	-0.075 (-1.03)	0.036 (1.17)	0.062 (0.98)	0.065** (2.01)	0.100 (1.63)	0.089*** (3.01)
NeFSH	-0.003 (-0.03)	-0.076 (1.90)	-0.014 (-0.11)	-0.107** (-2.68)	0.040 (0.39)	-0.077** (-2.15)	0.042 (0.39)	-0.077** (-2.15)
NeESC	-0.085 (-0.69)	-0.137** (-2.84)	-0.058 (-0.45)	-0.125** (-2.64)	-0.013 (-0.91)	-0.105** (-2.44)	-1.114 (-0.99)	-0.130*** (-3.18)
NeU	0.115 (1.16)	0.165*** (3.68)	0.099 (0.99)	0.149*** (3.41)	0.059 (0.67)	0.143*** (3.64)	0.111 (1.28)	0.169*** (4.43)
Unply			0.188 (1.01)	0.232** (3.11)	-0.510*** (-2.78)	-0.187 (-1.83)	-0.575*** (-3.13)	-0.152 (-1.51)
Infl			0.008 (0.04)	0.360 (1.60)	0.374 (1.92)	0.131 (0.56)		
CAvRW					0.006 (0.01)	0.220 (1.65)	-0.007 (-0.06)	0.166 (1.40)
GPSR					-1.215*** (-4.72)	-0.365** (-2.95)	-1.069*** (-4.25)	-0.354*** (-2.90)
YOdr					-0.476 (-1.31)	0.369** (2.90)	-0.621 (-1.73)	0.458*** (3.76)
CA					0.361 (2.78)	0.339*** (4.29)	0.228** (2.01)	0.278*** (3.63)
DCG					0.423 (1.19)	0.004 (0.32)		
prob>F	0.0087	0.0008	0.0256	0.0001	0.0000	0.0000	0.0000	0.0000
R²	0.241	0.152	0.420	0.168	0.558	0.414	0.541	0.375
Number of observations	190	152	190	152	190	152	190	152

Notes: (i) ** - significant at 5% level, *** - significant at 1% level; (ii) t-statistic in brackets.

Third, the coefficients of control variables have in general the expected sign. While the unemployment rate (*Unply*) has a negative impact over household savings, especially in EEC, the rate of inflation (*Infl*) has no significant influence. As we observe, public savings *(GPSR)* have a strong negative influence over household saving in both groups of countries, but most prominent in EEC. This means that household savings are highly influenced by an increase in taxation or a low
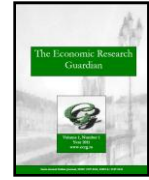
investment rate of public revenues. EEC' households also seem to be more sensible because of the low income level.

We also found a positive correlation between household saving rate and young and old proportion in the working age population *(YOdr)* for developed countries. Looking at EEC we observe a negative sign for the coefficients, which are however non-significant (similar results are reported by Denizer and Wolf, 1998 and 2000). These scholars conclude that during the early period of transition in EEC the dependency ratio displayed is insignificant, because of the income decline, uncertainty and underdeveloped financial market.

As in Schrooten and Stepan (2003), in our study the current account deficit *(CA)* is used as a proxy for foreign borrowing, since it implies that a country receives credit from other countries. The authors assumed that domestic saving and foreign capital may be substitutes and an increase in current account deficit will produce an increase of domestic saving. We find positive and significant correlations especially in developed countries, which imply that in these countries domestic savings and foreign capitals operate as partly substitutes, better than in EEC.

In addition changes in real average wages *(CAvRW)* and household saving are positively related. However, we do not find significant influence over the saving rates. This result can be explained by the fact that in our estimations we cannot distinguish between changes in savings caused by permanent or temporary changes in income levels. Finally, we find no evident influence of domestic credit grow *(DCG)* on the household saving rates, either in EEC and developed EU countries.

5. Conclusions

In this paper we have analyzed the effects of uncertainty represented by the economic sentiment index, expectation of household financial situation, economic situation of the country and expectation of unemployment over household saving rates. We used a GLS fixed effects model and control for the role of inflation, unemployment, real wages and other macroeconomic indicators. Our intuition regarding a larger effect of uncertainty over household saving in EEC as compared to the EU developed countries was not validated by the empirical results. The EEC household saving rates are more influenced by a confirmed economic uncertainty through the unemployment rate. The negative expectations appear to have a greater impact on developed countries household savings.

One cause of post-factum reaction in EEC can be the weak financial literacy and a low understanding of the market economy principles in these specific countries, especially during the 90s, saving being influenced more by real facts and evolutions than a prospective thinking. Regarding macroeconomic variables, the results confirm the other studies for saving determinants in EEC which documented a negative influence of fiscal policy, an unconvincing influence of demographics and a positive influence of financial integration. However, different from previous studies, we did not obtained a positive influence of income level over the saving rates.
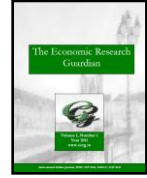
These findings have several policy implications. Regarding the importance of domestic saving and especially the household saving as a cheap and stable source of investment funding, EEC should be interested in finding away to increase it. It is obvious that a higher development will induce higher saving rates but a closer eye should be on fiscal policy. An increase in taxation level will have a great impact in household saving rates because of low incomes.

The unconvincing results of future financial and economic expectations over household saving determine us to consider that policy makers should be more preoccupied in developing financial literacy of the EEC population.

Acknowledgements

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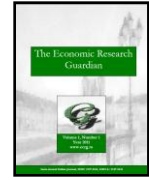
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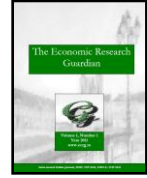
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