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INCREASING PRIVATE DOMESTIC SAVING FOR SERBIA'S ECONOMIC GROWTH

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PART 1: FINDINGS AND POLICY IMPLICATIONS

1.1 Stylized facts on saving

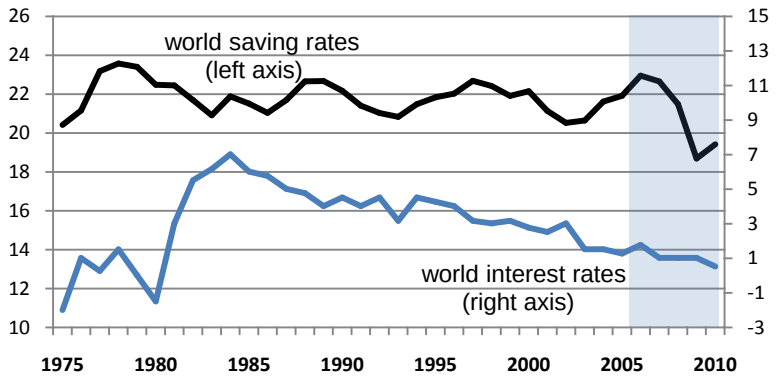
Probably the greatest curiosity in development economics is that after almost seven decades of research on the fundamental determinants of saving, consumption and growth, economists have still not determined whether it is saving that causes growth, or growth that causes saving – or whether both variables act simultaneously, making room for multiple growth-saving equilibria. This causation is crucial, not only for comprehension of the process itself, but also for specifying economic policy guidelines. If saving is just a corollary of the growth process, then growth policies should be directed at improving the investment climate and its competitiveness, and saving would follow. But if the process goes the other way around, the authorities should urge to increase saving incentives – and saving rates.

Today in Serbia, there is a widespread presumption in favor of the latter hypothesis – that a necessary prior condition for sustained growth is an increase in the private domestic savings rate, to provide the resources for investment, since foreign savings inflows are not what they were and government budgets are constrained. This study in fact is aimed at analyzing the sources of savings in Serbia, and whether and how domestic saving and saving rate can be increased.

Accordingly, a review of the stylized facts on saving and growth starts the analysis.

Stylized fact no. 1 – World saving rates show no signs of declining. The global saving rate in the last 35 years reached its peak in mid 1970s and then in late 2000s, immediately before the financial crises. Furthermore, the correlation between the average world saving rate and the long-term interest rate is not significant – evidence confirms that interest rates have little effect on saving at the aggregate level.

Chart 1: World Saving Rate and Real Interest Rate, 1975-2010.

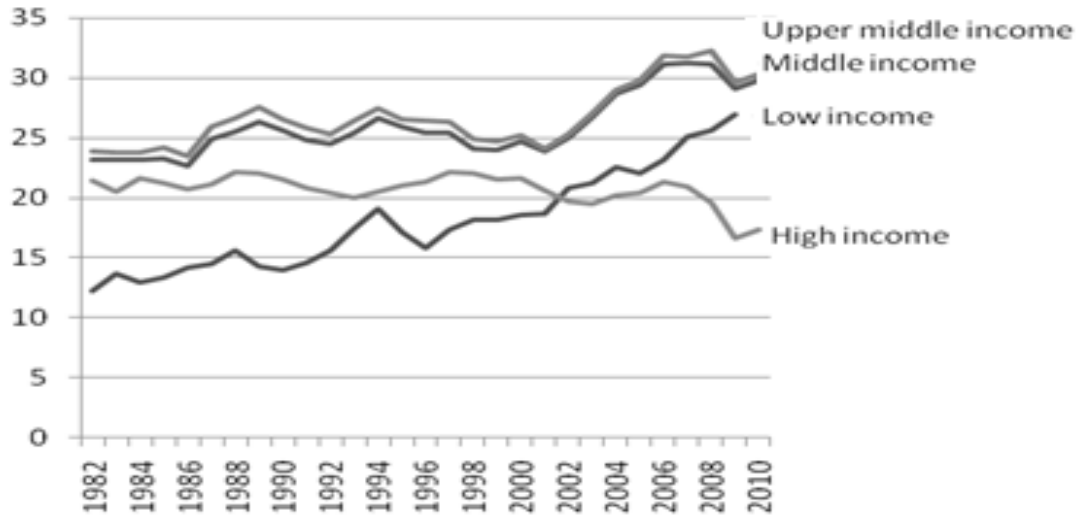


Source: World Bank database

*) Gross saving rate is calculated as a share in GDP.

Stylized fact no. 2 – World regions show diverging patterns of saving rates. The graph clearly shows that over the last thirty years the saving rate in low income countries (and to a lesser extent lower middle income countries) has significantly increased, from about 12% in 1982 to about 27% in 2010. Middle income and upper middle income countries have also somewhat increased saving rates (from about 24% in 1982 to about 30% in 2010).

Chart 2: Saving rate by income group (% of GDP), 1982-2010

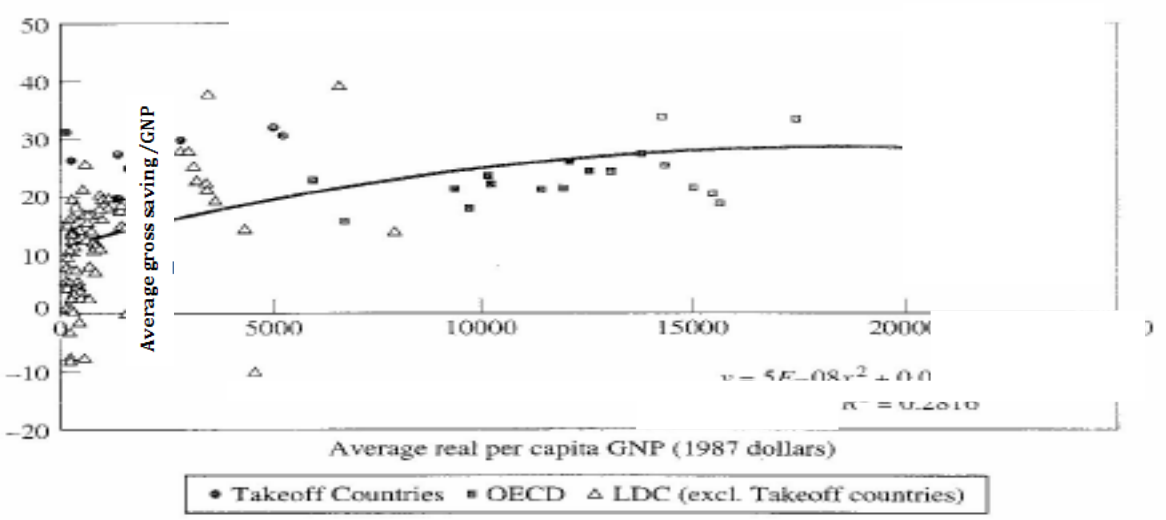


Source: World Bank database

However, interesting here for our purposes interesting is what is happening in the low and middle income countries, including Serbia, a member of the latter group: the very substantial increase in saving rates over the decade up to the global financial crisis that started in 2008, and the leveling off since then. Meanwhile, the saving rate in high-income countries has fallen since the crisis, which is one reason behind the significant reduction in the availability of foreign inflows.

Stylized fact no. 3 – Saving rates are positively correlated with income levels, at least up to a high level. Numerous empirical studies indicate that the relation is not linear, i.e. saving rates start declining after a country reaches a high income level. The relation depicted at Chart 3 is not linear and not even monotonic. The fitted curve shows a positive association indeed exists on lower and middle income levels, and ceases to hold after reaching the high income level, and then turning into a negative relation.[1]

Chart 3: Long term world saving and income level



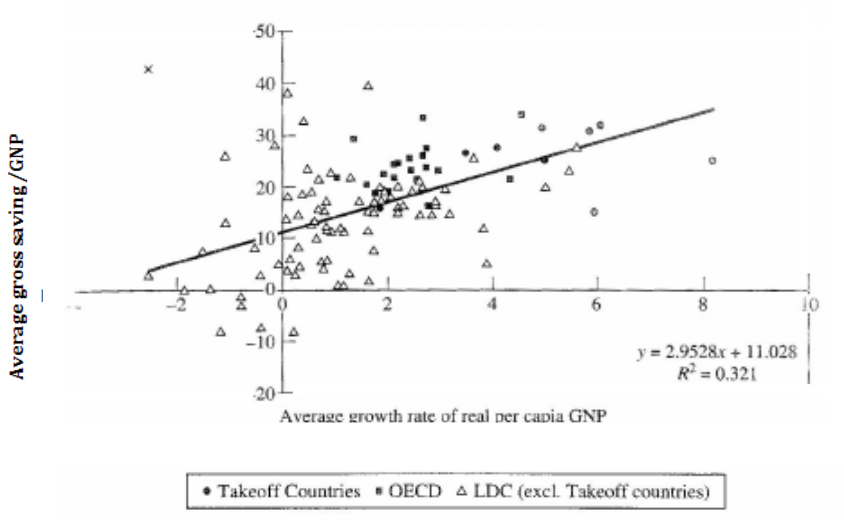
Source: Schmidt Hebbel, Serven (2000)

Stylized fact no. 4 - Long term saving rates and growth rates are positively correlated across countries, but the patterns vary according to the income level. The takeoff countries had both

[1] See Stahota (1995), Smidt-Hebel & Serven (2000), Triantis (2007).

high saving and growth rates, while OECD countries, achieved significantly lower growth with the same level of saving rates. But all income groups show positive saving-growth correlation. The question remained, however, what causal relation stands behind these correlations. Economic theory is ambiguous on this question.[2]

Chart 4: Long-term world saving and growth rates



Source: Schmidt Hebbel, Serven (2000)

[2] For more detailed description o different theoretical description and models, see Annex 1. The new empirical literature on the subject provided some contradictory results though in the majority of the cases the conclusion is that the direction of causation runs from growth to savings and *not* vice versa. Numerous studies imply that growth Granger-causes saving, but saving does not Granger-cause growth. Modigliani (1970) showed that a very simple version of the life-cycle model can predict that high growth causes high saving and he found empirical support for the theoretical prediction using cross-country data. More recently, Baumol, Blackman, and Wolfe (1991), Deaton and Paxson (1992), and Bosworth (1993), Carrol, Weil (1992), Mavrotas, Kelly, (2001), Triantis (2007), have also provided evidence that faster growth may raise saving, while Cullison (1993), Alguacil, Cuadros and Orts (2004), and recently Lorie (2007) found the reverse causality.

Stylized fact no. 5 - Long term saving and investment rates are positively correlated.

This empirical finding (Feldstein, Horioka, 1980) contradicts economic theory which postulates that in the presence of full capital mobility there can be no saving-investment correlation. There has been a considerable debate about whether these results can be attributed to low capital mobility in high income countries. Latest evidence indicate that capital mobility among high income countries has kept on increasing while the correlation between saving and investment rates has only slightly decreased. In addition, in years when saving is high, so is investment.[3]

Those are the most important "stylized facts" about saving and economic growth. More details about the basic theory of saving and growth including the clarification of the main concept are in the Annex 1. More about the theoretical and empirical finding on the determinant of private saving are in Annex 2.

1.2 Saving in Serbia: cross county comparison

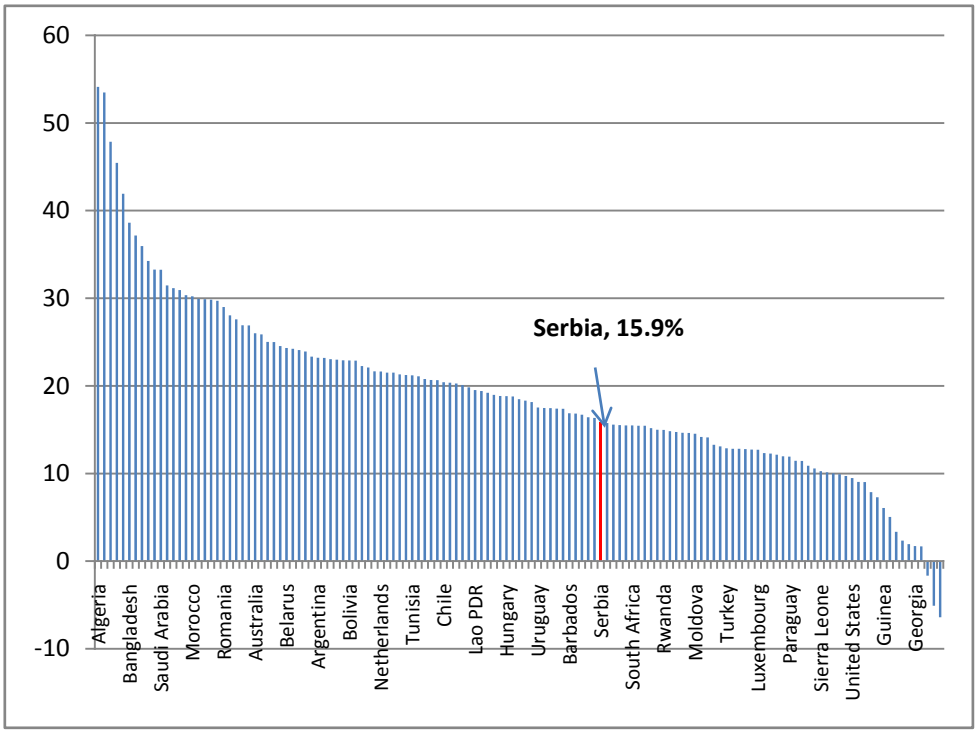
Saving rate in Serbia

As noted above, during the past 30 years, although the total global saving rate has remained roughly constant at about 22% of GDP, the world has witnessed a significant change in the structure of the saving rate across the different income groups. Namely, over the last thirty years the saving rate by the low income countries (and to a lesser extent lower middle income countries) has significantly increased, from about 12% in 1982 to about 27% in 2010. Middle income and upper middle income countries have also somewhat increased their saving rates (from about 24% in 1982 to about 30% in 2010).

[3] Feldstein, Horioka (1980), Giannone, Lenza (2008). The authors claim that these findings are relatively robust for OECD countries as a whole, but indicate some studies that have found evidence of a reduction of the saving-investment correlation in some countries and in some sub-periods (Coakley, Kulasi, and Smith, 1998). Blanchard and Giavazzi (2002) also find that the correlation between saving and investment rates has decreased in the 90's but only in euro area countries.

Globally, the distribution of the saving rate is given in the following chart.

Chart 5: Gross national saving rate (% of GDP) by country, 2009



Source: World Bank database

The saving rate in Serbia in the aftermath of the global financial crisis was very low, even by regional standards, and has somewhat increased since. The following table provides an overview of the gross national saving rate in the world (gross saving rate is defined as gross national income less total consumption, plus net transfers) and in Serbia.

Table 1: Gross National Saving (% of GDP) by geographic position and income

Country Name	2007	2008	2009	2010
World	22.6	21.5	18.7	19.4
East Asia & Pacific (all income levels)	32.2	31.3	28.9	29.5

Table 1: Gross National Saving (% of GDP) by geographic position and income				
Country Name	2007	2008	2009	2010
Europe & Central Asia (all income levels)	22.7	21.6	19.0	19.5
European Union	22.1	21.0	18.4	18.6
North America	14.6	13.0	10.0	11.4
Latin America & Caribbean (all income levels)	22.60	22.5	19.2	20.8
South Asia	34.9	31.3	33.0	32.6
Sub-Saharan Africa (all income levels)	15.5	15.4	15.5	17.3
Low income	25.1	25.5	26.9	27.9
Lower middle income	29.5	27.2	27.4	28.0
Middle income	31.3	31.2	29.1	29.9
Upper middle income	31.8	32.3	29.6	30.4
High Income	20.5	19.1	16.3	17.2
Serbia	12.8	8.2	15.7	15.5

Source: World Bank database

The table demonstrates that Serbian saving rate is lower than the average of any income group or geographic entity. If we take a regional outlook, Serbia's position is not very favorable.

Table 2: Gross national saving rate (% of GDP)											
Country Name		2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
The Region	Albania	25.5	20.8	20.5	22.3	22.8	23.6	19.1	17.3	15.5	14.3

Table 2: Gross national saving rate (% of GDP)											
Country Name		2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
and	Bosnia and Herzegovina	13.1	10.5	9.2	10.4	9.2	12.6	15.7	14.2	14.7	13.3
Transition	Bulgaria	14.7	17.3	15.8	16.3	15.9	14.6	8.9	14.5	20.4	21.6
countries	Croatia	18.5	18.1	21.3	22.6	22.0	22.8	22.2	21.8	22.0	22.4
	Czech Republic	24.6	22.7	21.0	22.1	25.6	25.6	25.4	26.8	21.6	22.1
	Estonia	22.7	21.7	21.8	21.8	23.8	23.4	22.7	20.7	22.5	23.1
	Hungary	21.1	18.7	16.7	18.5	17.1	16.7	15.2	16.2	17.7	19.5
	Latvia	19.0	20.1	20.6	20.1	21.9	16.5	17.5	18.0	29.2	23.9
	Lithuania	14.0	15.2	14.6	14.8	16.6	15.8	16.2	13.9	15.1	17.9
	Macedonia	11.9	11.3	18.1	13.8	18.8	21.1	17.6	14.0	19.1	21.5
	Moldova	21.5	20.5	16.6	24.6	23.3	21.4	22.9	23.1	14.6	15.2
	Poland	17.6	15.8	16.2	14.8	16.9	17.2	18.2	17.3	16.4	16.3
	Romania	17.8	18.7	16.1	15.3	14.7	16.1	17.6	19.7	21.2	20.4
	Serbia	**11.4**	**2.8**	**7.2**	**16.1**	**15.0**	**13.9**	**12.8**	**8.2**	**15.7**	**15.5**
	Slovak Republic	22.4	21.6	18.2	19.7	20.3	19.7	22.2	21.4	16.3	19.8
	Slovenia	25.2	25.0	24.6	24.8	25.4	26.4	27.2	25.0	21.2	21.8
	Turkey	17.0	17.3	15.1	15.7	15.4	16.0	15.1	16.1	12.8	13.6
	Greece	16.0	15.8	17.9	16.7	12.4	9.1	7.5	5.8	5.1	4.6
	Portugal	17.1	17.2	16.8	15.7	13.2	12.3	12.7	10.6	9.4	9.9
Other	Spain	22.4	23.4	23.9	23.0	22.1	22.0	21.0	19.5	19.2	18.7
countries	Netherlands	24.1	22.3	24.9	26.6	26.4	29.3	27.1	24.8	22.9	25.2
	Germany	20.3	20.1	19.7	22.3	22.3	24.4	26.7	25.6	22.5	23.4
	Denmark	23.5	22.9	23.1	23.4	25.2	25.7	24.7	25.2	20.9	22.7
	Ireland	22.0	21.1	23.3	24.0	23.6	24.5	20.7	15.9	11.4	11.5
Serbian rank (out of 16 countries in the		16	16	16	11	14	15	15	16	12	13

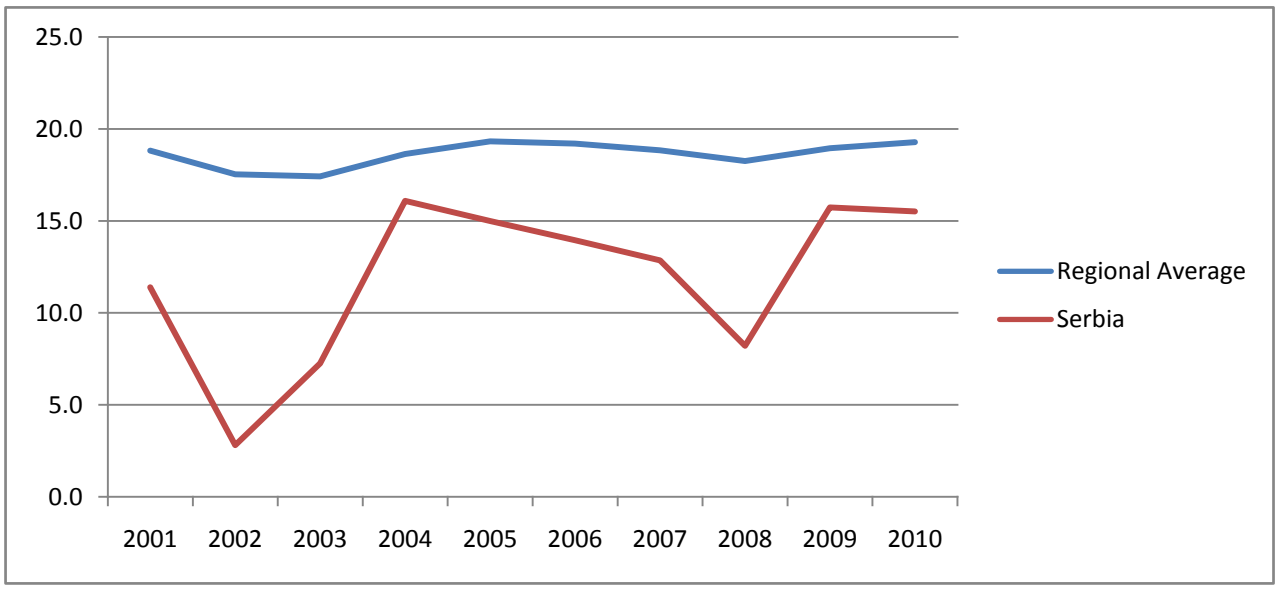
Table 2: Gross national saving rate (% of GDP)										
Country Name	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
region)										
Serbian rank (out of 24 selected countries)	24	24	24	17	20	21	21	23	16	17

Source: World Bank database

In the period 2001 – 2010, Serbia has ranked between 11th and 16th position in the region, which already has a rather low average saving rate. If we add eight other countries in the selection Serbia only in some years ranks somewhat favorably.

The following chart compares Serbia and the regional average:

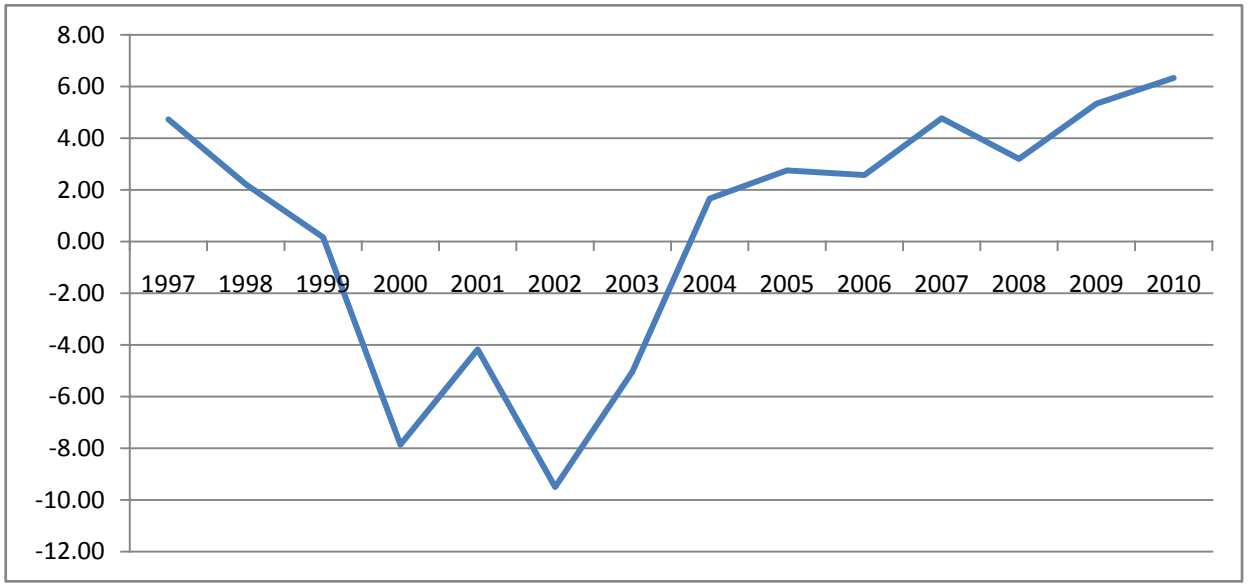
Chart 6: Gross national saving rate in Serbia and regional average (% of GDP), 2001-2010



Source: World Bank database

If instead of gross national saving we focus on gross domestic saving (calculated as GDP less final consumption expenditure), the situation is even less favorable.

Chart 7: Gross Domestic Saving rate (% of GDP), Serbia 1997-2010



Source: World Bank database

Although there is a significant rise of the gross domestic saving in the 2002-2010 period (from about -9% of GDP in 2002 to about 6% in 2010), the level is still extremely low, compared to regional peers.

Table 3: Gross domestic saving rate (% of GDP)

Country Name		2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Region	Albania	9.4	-1.8	-1.8	2.1	-0.5	1.0	3.6	5.5	3.3	3.9
-	Bosnia and Herzegovina	-28.5	-28.0	-34.0	-25.9	-18.2	-5.8	-5.6	-8.6	-1.8	-1.3

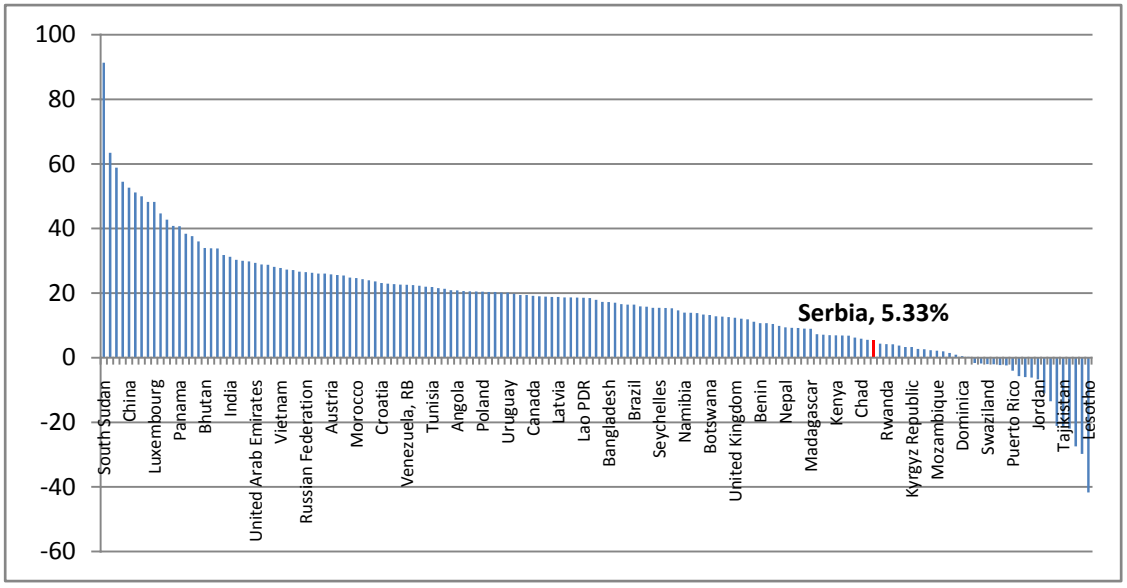
Transition Countries	Bulgaria	10.8	11.6	10.8	11.3	12.5	14.6	14.4	17.0	20.5	23.0
	Croatia	17.6	16.9	19.4	20.3	20.8	22.4	21.8	22.4	23.1	22.9
	Czech Republic	27.0	26.5	24.9	27.6	28.9	30.2	32.0	29.9	27.3	27.4
	Estonia	25.4	24.9	25.7	26.0	27.3	28.5	29.1	25.4	24.8	26.7
	Hungary	24.2	22.8	19.8	22.3	22.4	23.2	23.3	24.0	22.8	24.9
	Latvia	17.1	16.9	16.2	17.4	20.0	18.2	20.4	17.5	18.8	19.8
	Lithuania	13.8	15.0	16.1	15.6	16.8	16.2	17.5	14.9	9.2	15.4
	Macedonia	5.2	0.5	2.7	1.9	4.3	3.7	6.2	1.5	4.3	6.8
	Moldova	-3.7	-3.5	-10.6	-4.9	-9.7	-13.9	-11.6	-13.6	-13.5	-15.0
	Poland	17.1	15.2	16.1	17.7	18.5	19.2	21.6	19.9	20.4	19.7
	Romania	14.9	16.0	14.3	13.2	12.3	14.7	16.9	18.6	23.6	25.1
	Serbia	**-4.2**	**-9.5**	**-5.0**	**1.7**	**2.8**	**2.6**	**4.8**	**3.2**	**5.3**	**6.3**
	Slovak Republic	21.5	21.8	22.7	23.6	24.2	24.0	26.7	25.3	19.0	22.1
	Slovenia	24.2	25.1	25.2	26.2	26.8	28.4	30.2	28.7	23.9	23.2
Other countries	Turkey	19.2	19.2	16.6	16.8	16.5	17.1	16.3	17.3	13.8	14.4
	Greece	11.6	10.2	13.9	14.1	12.1	13.4	12.2	9.3	7.0	7.3
	Portugal	17.5	17.4	16.7	15.7	14.1	14.4	14.8	13.1	12.8	12.4
	Spain	23.8	24.5	25.0	24.3	24.2	24.6	24.3	23.3	22.3	20.8
	Netherlands	27.3	26.2	25.6	26.4	27.5	27.7	28.6	28.8	25.4	26.1
	Germany	22.3	22.6	21.8	22.7	22.5	23.8	26.3	25.6	21.5	22.8
	Denmark	27.0	26.2	25.9	25.2	25.7	25.9	25.7	25.5	21.3	22.4
	Ireland	38.0	39.1	39.2	39.4	38.8	37.6	35.0	30.6	29.8	30.1
Serbian rank (16 regional)		15	15	14	14	13	13	13	13	12	13
Serbian rank (all 24)		23	23	22	22	21	21	21	21	20	21

Source: World Bank database

There are basically two groups in this region regarding the gross domestic saving rates: one group is consisted of Macedonia, Serbia, Albania, Bosnia and Herzegovina, and Moldova where gross domestic saving rates are very low, below 10% and even negative in some cases. The remaining countries mostly have saving rate above 20% of GDP (Lithuania is somewhere in between), even in high 20's range in some cases (Czech Republic, Estonia, Slovenia).

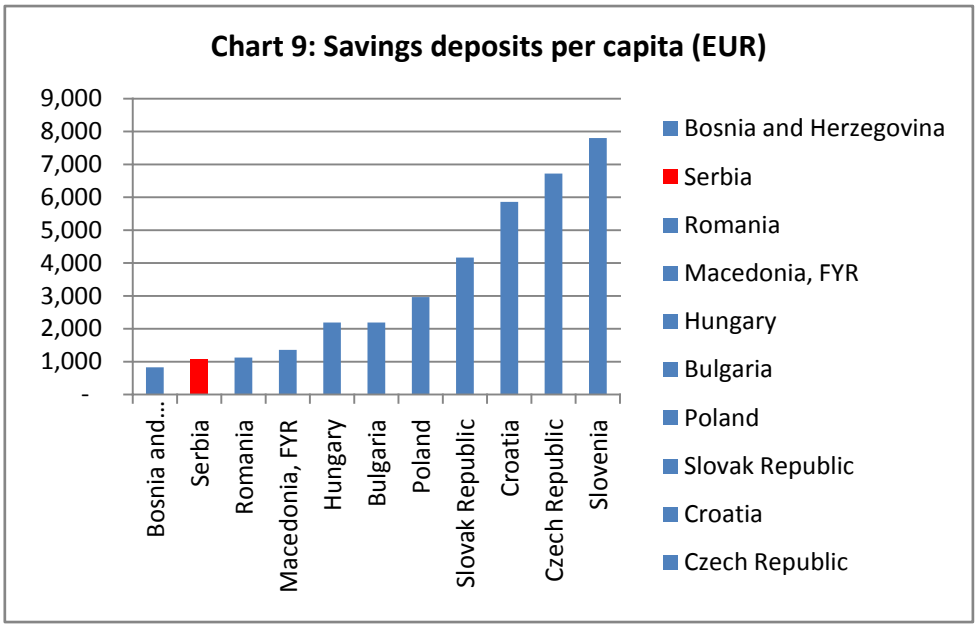
Globally, Serbia ranks even worse than on the gross domestic saving rate.

Chart 8: Gross domestic saving rate (% of GDP) by country, 2009



Source: World Bank database

Instead of the flow measures, we can also take a look at the stock of savings. However, it is almost impossible to account for all the potential household financial assets and here we focus on the savings deposits in the banks, as the most common type of financial assets.



Source: World Bank database

The table demonstrates that Serbia still lags significantly behind the regional peers. Per capita savings deposit in wealthier countries (such as Slovenia and Czech Republic) is about 6 to 7 times higher than in Serbia.

Table 4 Gross saving in Serbia as % of GDP

	2008	2009	2010
Total domestic saving	3.6%	5.3%	6.3%
Total private domestic	6.2%	9.8%	11,0%
Households	4.1%	8.3%	10,1%
Corporations	2.1%	1.5%	0.9%
Government	-2.6%	-4.5%	-4.7%
Foreign saving inflow	21.8%	7.6%	7.1%

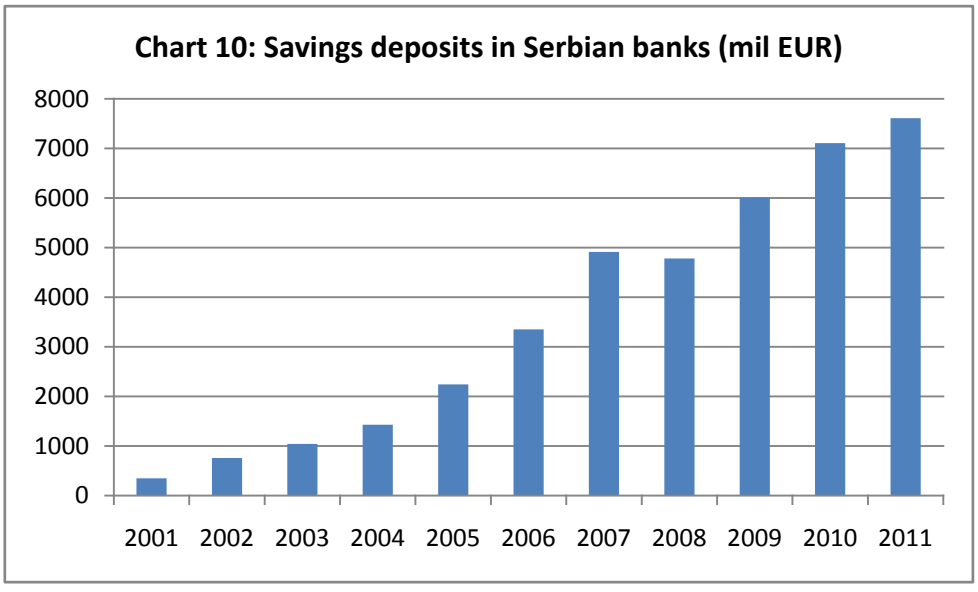
Obviously, the prospects for importing foreign saving to Serbia are have been diminishing in the recent years.

Table 5 Financial assets and instrument in Serbia as % of GDP

Financial asset/instrument	Stock end 2011 as % of the GDP
Commercial bank deposits	78.6%
Private pension funds assets	0.4%
Insurance companies reserves	2.8%
Loans by banking sector	62.6%
Assets on leasing	2.8%
Stock market capitalization	25.7%

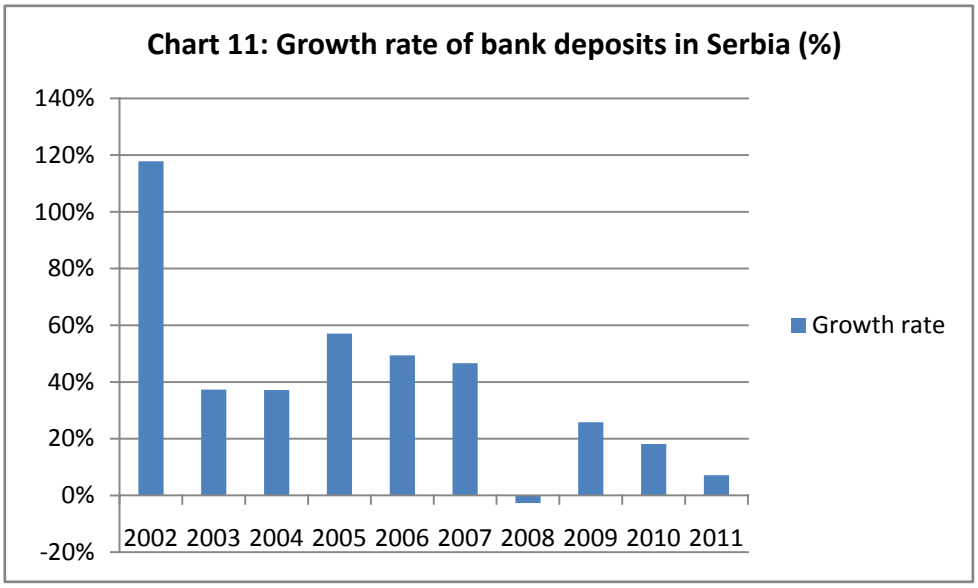
The table demonstrates how dominant the commercial banking sector is in Serbia and how underdeveloped are other channels for attracting and intermediating saving. Our empirical results, reported below, further supports this observation. Increasing domestic saving in Serbia depends in part on a concentrated effort to widen and deepen the financial sector.

Although the regional comparison is less than positive, the growth over the last decade was rather high, as the saving basically started from zero in 2000.



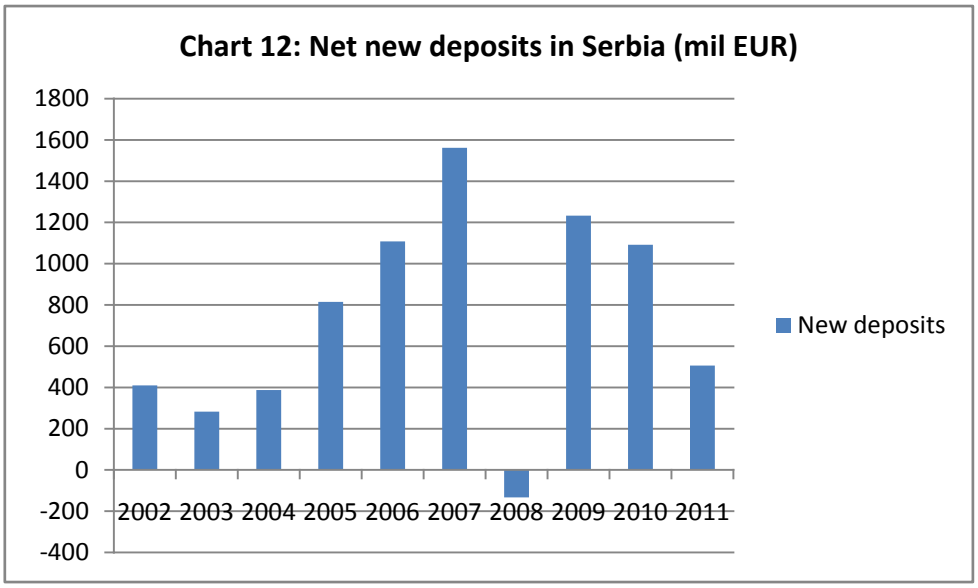
Source: National Bank of Serbia

The growth rate of savings in Serbia was much higher than the overall GDP growth rate



Source: National Bank of Serbia

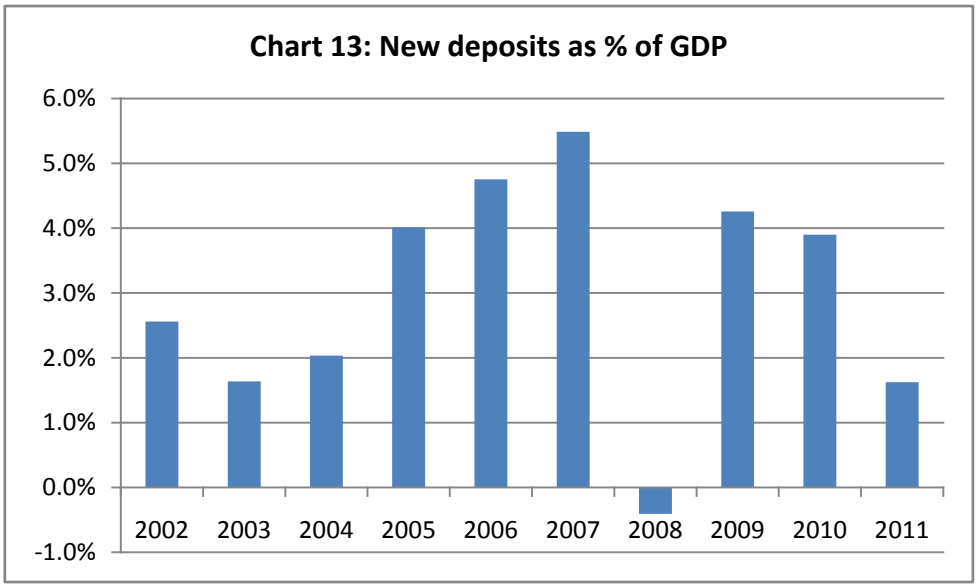
It is clear that confidence in the domestic banking and financial sector was restored remarkably quickly after the democratic changes. Probably, it is mostly the result of new entries in the banking market by some of the leading European banks, but also because of the new and more credible central bank supervisory policies.



Source: National Bank of Serbia

Net new deposits were increasingly growing until the financial crisis in 2008, when the limited panic resulted in the net withdrawal of the savings. However, it seems that confidence was quickly restored.

The following graph shows the measure of net new deposits as a share of GDP. This measure is off course a very rough measure of the savings rate, as it reflects, to a large extent, the level of trust in the financial sector.



Source: National Bank of Serbia

1.3 Major empirical findings

The empirical testing whose hypotheses and results are reported in Part 2, below yielded a number of interesting results, some as expected and some ambiguous. Here we summarize the major findings. There are three important "stories" that can be told from the empirical results.

a) One of the most important econometric results of the empirical analysis of households' saving is highly statistically **significant and very strong relation between the level of household income and the saving rate**. This confirms the increasing marginal propensity to save in Serbia. That means that there could be a specific "saving trap": low level of income *per capita* influences low level of saving (low saving rate), that influences low level of investment rate and that influences low or zero economic growth preserving low level of *per capita* income. From the public policy point of view, there is a need to break this vicious circle. One way to do this is through policies that stimulate additional domestic saving, which we will discuss further below. The other is by importing saving from abroad. Taking into account the level of Serbia's foreign debt, however, the space for more borrowing is very limited. Furthermore, the conditions on the international capital market are such that borrowing constraints are substantial, particularly taking into account global financial crisis and euro-zone sovereign debt problems. Therefore, rather than borrowing, the way out is through foreign equity investment – that is, by attracting FDI. It is crucial that the FDIs are those of the strategic investors because in addition to the foreign saving, these investments bring modern technology and know-how as well as international networks, increasing the efficiency of the investments. Accordingly, although saving influences investment and economic growth, in the case of Serbia sequencing is crucial. A policy priority should be improvement of business environment that will attract FDI, catalyzing economic growth, enabling *per capita* income growth, in turn generating higher domestic saving. Improvement of the business environment is crucial first step for establishing this virtuous circle: high growth rates and high saving rates reinforcing each other.

b) The second crucial finding is that the **development of the financial system in Serbia is asymmetrical.** The financial system as exists today in the country is not well balanced. On the one hand, financial system development is succeeding in reducing borrowing constrains. It is now relatively easy for a household to borrow money, overcoming liquidity constraints in purchasing durables. However, as discussed above, this kind of financial sector development actually removes some of the incentives for households to save, and may reduce the financial surplus of the household sector for intermediation to the business sector. On the other hand, meanwhile, the segments of the financial system that are crucial for financial investments of the households are greatly underdeveloped.

There are not many options for convenient and attractive saving – for a diversified portfolio of risk-return investment option. The range of financial instruments is extremely limited, as indicated by the data in previous section. Aside from time deposits in commercial banks, all other options – life insurance, voluntarily (or mandatory) funded pensions, earmarked saving schemes, public stock markets, mutual funds, etc. – are virtually negligible, meaning that incentives for households to broaden their saving are rather weak.

The empirical evidence from this study suggests that the absence of financial sector depth in Serbia means that the decreased saving rate due to easing borrowing constraints is not compensated by increased saving through other instruments. In other words, the asymmetrical development of Serbia's financial system may be having a *negative* effect, on balance, on the overall saving rate. This division between lending money and financial investment operations is, to a great extent, also division between banking and non-banking financial system. While banking system is rather well developed in Serbia, easing liquidity constraints, the non-banking system is lagging far behind. From a public policy view, there is a priority to develop and implement a comprehensive financial sector development policy to improve the non-banking financial system, especially in the areas of insurance, pensions, and securities markets, and to create incentives for households to save more. It is not only the issue of whether there is a legal ground for some of the financial activity (mutual funds, for example), but a whole set of various policy incentives for households to be engaged in financial investments.

c) The findings on the **lack of precautionary saving** motive in Serbia gives a clear signal how widespread is (compulsory) insurance in Serbia. In some cases formal compulsory insurance (health and pension) removes virtually all incentive for precautionary saving. In some other cases (unemployment insurance, for example), these incentives are weakened, though not removed. In some other situations although there is no formal insurance, the expectations are that the government will step in and bail out those who suffer damage or income loss. Our empirical results indicate that farmers have a lower saving rate than others, suggesting that the effect of their lower average income on saving dominates any precautionary motive. Neither do they purchase property insurance from the insurance companies, counting that in the case of natural disaster (drought, flood, hail), the government will step in and bail them out: a specific moral hazard emerges. From the policy view, although in some cases the room for changes that will decrease such a moral hazard is not huge (the first pillar of the pension insurance), specific policies could be designed to strengthen incentives either for precautionary saving or for formal insurance whose premium is part of saving on the macroeconomic level.

These are the three major "stories" that emerge from our econometric testing. All of them have policy implications that we will explore further. Now we discuss the institutional setting for saving in Serbia and its policy implications.

1.4. The institutional framework relevant for private saving in Serbia

The most important pieces of legislation that decisively influences the institutional framework of the financial system are: Banking Act, Deposit Insurance Act, National Corporation for Insurance of Mortgage Loans Act, Insurance Act, Voluntary Pensions Funds Act, Securities Markets Act and Investment Funds Act. These statutory texts with related sub-statutory texts provide for a legal framework for operations of the financial system of Serbia and they create incentives for all economic agents to behave in some specific way regarding saving – to save more or to save less. Of course, other prices of legislation, particularly those that regulates taxation, are also relevant for the operations of the financial system as they create incentives for the economic agent regarding saving. Generally speaking private sector decisions are also influenced by a level of protection of private property rights that is decisively related to the efficiency of the judiciary.

Serbian financial system is dominated by the commercial banking. The legislation regulating banking system is modern, it has been swiftly introduced and it has been rather efficiently enforced by the NBS which is in charge of regulating banks and their operations. This development has followed the bold political move to enforce the bankruptcy of four big domestic banks with highly contaminated assets due to huge share of NPLs (non-performing loans). Accordingly, most of the contemporary banking sector in Serbia is based in the FDI of European banks, either as greenfield investments or as takeovers of domestic banks without contaminated assets. Bank regulation has been rather efficiently enforced, particularly with the respect to the foreign-owned banks.

Taking into account that the banks foreign-owned have had substantial reputation, not only because they were not involved in the frozen foreign accounts scandal in the 1990s, these banks managed to attract a substantial share of the households' saving. Such a position of the foreign-owned banks has facilitated financial intermediation and improved saving mobilization. As bank time deposits are basically the most important mechanism for attracting saving as well as one of the sources of credits in the financial intermediation, in the wake of the 2008 financial crises, a deposit insurance scheme was introduced by the government legislation (Deposit Insurance Act) to prevent run of the banks and huge money withdrawals in the country in which memories to various deposit frauds are still very lively.

Modern insurance legislation has not been introduced as swift as the modern baking legislation. That is the reason why life insurance operations have been introduced to Serbia with a

substantial delay. Furthermore, Serbia does not have tradition of life insurance, hence a completely new product has been offered to the households. No institutional (public policy) incentive has been created for households/individuals to purchase life insurance, like some form of tax credit for the amount of premium; hence the share of life insurance premium in total insurance premium is still small, far below 20%. In the case of non-life insurance, still compulsory non-life insurance (mainly third party auto insurance) dominates the market, as there are no institutional incentives for the cases of voluntary insurance(property insurance, liability insurance etc.).

Institutional development regarding pension insurance in Serbia in the last decade has been based on a government decision to focus on the operations of the first pillar of the pension insurance (public compulsory pension insurance – "pay as you go" system), and not to introduce the second pillar (private funded compulsory insurance), but to introduce the third pillar (private funded voluntary insurance) as a supplement of the first pillar. There are no institutional incentives for the individuals to pay the premium (contribution) to the voluntary pension insurance funds, i.e. the amount of the premium (contribution) is treated for the tax purposes exactly the same as the compulsory contributions to the public "pay as you go" fund. The level of capitalization of the third pillar pension funds is rather low as the incentives for individuals/households to save in this way are rather weak, particularly taking into account that there is no tradition of this kind of pension insurance in Serbia and that the level of uncertainty of the clients of the private funded pension funds is still substantial.[4] Furthermore, there are legislative provisions, i.e. legal obligations regarding the investment of the third pillar pension funds that provide strong incentives for them to invest in the government securities, so these end up funding the budgetary deficit and are not available for private investments.[5]

Securities market legislation in Serbia has been frequently changed in the last decade as the effort to boost these markets and to develop non-banking financial sector. This is also a testament of conceptual confusion of the law makers. Nonetheless, these efforts proved to be somewhat futile as Serbian Stock Exchange is rather shallow with market capitalization of 18% of the GDP (compared to 35-100% in advanced economies) and miniscule volume, with a turnover ratio of less than 4% of the GDP (compared to 125-200% in the counties with well-developed financial sector). Though some of the companies are legally obliged to be organized as joint stock companies, they are not PLCs and their shares are not traded on the stock market. One of the main institutional sources of shallow capital market and undeveloped non-banking financial sector is the model of privatization of the real sector in Serbia that has been enforced from 2001 onward, based on the selling of majority stake of the capital. New owners have all

[4] Total net assets of the private pension funds in Serbia in the Q2 of 2012 are only 0.44% of the total GDP.

[5] More than 85% of total investments of the third pillar pension funds are investment in government bonds including frozen hard currency accounts bonds.

incentives to “close” the company and to move it away from the stock-market, as they have other opportunities to obtain capital for further investment. Furthermore, protection of the private property right of the minority shareholders is weak – Serbia scores poorly in this area of World Bank Doing Business Survey – decreasing the incentives for households to invest their saving on the stock exchange and enjoy returns and capital gains from such an investment. On the other hand, small prospects for purchasing capital on the stock market form small investors turned away companies to the other sources of capital.

Delayed introduction of the Investment Fund Act that provided legal ground for mutual funds to operate on the Serbian stock exchange market (and to regulate them) reduced incentives for the households to invest their saving into mutual funds and in that indirect way to invest it on the stock exchange. Due to the substantial delay of the legislation support of the mutual funds their operations proved not to be significant drivers of the stock exchange trade. On the other hand, the low level of trade with very few “blue chips” listed on the Belgrade stock exchange, limits the operations of the domestic mutual funds, taking into account legal provision requiring the great majority of financial assets collected by the mutual funds must be invested on the domestic stock exchange.

Although legislation enabling municipal bonds has been enacted, though with substantial delay, and municipalities started to issue bonds, these bonds are out-off-bounds for households, i.e. natural persons cannot invest their saving in municipal bonds. The very same legal restriction applies for corporate bonds that have been launched recently. In any case, in well-developed financial sector the main buyers in bond markets would be pension funds, insurance companies and investment funds, which as we have noted are extremely limited in Serbia. Accordingly, municipal bond market and corporate bond market are very shallow in Serbia.

Institutional development of the financial sector in Serbia demonstrates two distinctive segments. Institutional development in the area of banking financial sector has been swift, benefiting from bold political decisions; hence Serbia in the early stage of the transition gained a modern banking institutional framework. Accordingly, Serbia has operational, sound (with some exceptions, primarily banks in which the government is the majority/biggest shareholder), well capitalized and well regulated banking sector. The test of the 2008 financial crises demonstrated the strength of Serbian banking sector. On the other hand, such development has been missing in the area of the non-banking financial sector: leasing, investment banking, pension funds, insurance companies, mutual investment funds and capital market. There has been no bold political decision, second thoughts about specific institutional solutions have been widespread, and institutional development was substantially delayed. Even today there are conceptual dilemmas regarding some features of the institutional framework of the non-banking financial

institutions. Accordingly, the level of both institutional and operational development of the non-banking financial sector in Serbia is far below the banking financial sector.

1.5. Political economy of private saving in Serbia

Analysis of the political economy of private saving in Serbia should be divided into two main sectors. One is political economy of institutional building, predominantly of financial institutions (that are relevant to saving decisions by the private sector) described in the previous section. The other one is political economy of economic (public) policies of the country that are not focused to the saving decisions of the private sector but inevitably influence them.

1.5.1. Political economy of institutional building

Political economy of the banking sector reform and its institutional building has been based on three cornerstones. The first one was failed big domestic banks involved in the frozen foreign currency accounts and accordingly with no reputation for attracting any further deposit whatsoever. Furthermore, these banks assets have been heavily contaminated by cumulative losses of their biggest credit clients. The second one was a political estimate that increase in private consumption (more about it in the next section) should be substantial and that foreign saving should be imported to increase domestic income available for consumption. The best way to accomplish it is the entry of foreign banks though FDIs and appropriate legislative ground for such a move was needed. The third one was a strong pressure from the IFIs side to thorough reform banking sector, encourage government to enforce the bankruptcy big domestic banks and liberalize capital account. Giving the power of IFIs to influence capital (foreign saving) inflow to the country and the lack of capital that exists, their preferences regarding the institutional framework of the banking sector had strong political significance, taking into account the first cornerstone.

Such a political economy constellation provided strong incentives for a swift and decisive institutional reform of the banking sector. That was not the case in the non-banking financial sector. Insurance industry has traditional been small, most of the insurance was compulsory auto insurance, no life insurance whatsoever and domestic insurance companies were not in big trouble, like big domestic banks. Total amount of assets of insurance companies to GDP was not substantial. Accordingly, there were no strong political motives for swift and decisive institutional reform but by a painstaking step-by-step reform took place. The additional political economy reason for such a pattern was the very fact that entry of FDIs in insurance cannot facilitate huge inflow of capital, apart from the investment itself. Finally, the very institution of

life insurance was virtually unknown to the general public, so there was no pressure from constituency to introduce legislation that will enable life insurance operations.[6]

Political economy of the pension insurance institutional reform has been dominated by the sheer vast share of pensioners in the constituency, that being the consequence of bad demographics (age structure, i.e. dependency ratio), liberal regulation of the retirement benefit parameters, and inconsistent enforcement of that regulation. Incumbent pensioners are completely preoccupied with the operations of the existing first pillar, as they expect high and regular pensions for that very pillar. They have no reason to be interested in any other pillar as it is too late for them to make any investment in their pension insurance, and no reason to support any substantial reform of the first pillar. Accordingly, with such a strong pressure from very big constituency, there has been strong political motive to deal with the reform of the first pillar fund of the pension insurance, not to take radical moves in the area of second and third pillar. The argument for focusing on the third rather than second pillar of the pension insurance are rather technical (mainly huge transaction costs) than in the area of political economy, particularly as Serbia has available experience of other countries that opted for the second pillar. Finally, with a rather short time horizon that dominates in the decisions making process of individuals and households in Serbia, the working-age population are not very much interested in the pension reform issues, making pensioners to dominate the political economy of the reform.

With rather small constituency interested in the issues of stock market operations political incentives for thorough institutional reform of the area were weak. People who got shares free or with a discount in pre 2001 privatization were not interested on regular trading on the stock exchange. General public has been hostile towards shareowners, i.e. capitalists; hence increase in political ratings cannot be expected with improving conditions of the stock market operations. The same arguments are valid for the political economy of the mutual funds legislation.

It is evident that political economy arguments can explain the difference that exists in the institutional development of banking and non-banking financial system. More developed banking financial sector is the consequence of strong political incentives that has existed for the institutional reform of that sector. It seems that such strong incentives still do not exist nor will exist in due course in the area of non-banking financial sector.

[6] Government policies of bailing out households and firms affected by large scale property losses due to natural causes (flood, draught, hail etc.) created specific moral hazard that decreases demand for property insurance and development of that sector of insurance industry.

1.5.2. Political economy of economic policies

One of the crucial political priorities of the Serbian governments after October 2000 has been to increase private consumption. After a decade of political and economic hardship and depressed private consumption of the population/constituency, it was important for any government to deliver on the front of increasing private consumption. This was particularly important in the case of private consumption of durables that were not replaced during the turbulent 1990s.

Basically, three economic policies have been influenced by this political aim. The first one is a wage policy in the public sector. The wages have increased far above the increase of productivity of the labor. The wage increase in the public sector produced spillover effects to the private sector labor market pushing wages up and enabling that wages in this sector also have increased above the increase in productivity. Although increasing marginal propensity to save has been recorded in Serbia in the conditions of worn out durables, households redirected increased income into private consumption, particularly purchasing durables, rather than in long-term saving.

This development created optimistic expectations about future income and increase the level of permanent income of households. That development, according to the Permanent income hypothesis increases consumption of the households.

The second one is increase and regular payment of pensions and basically that has the same effect as the increase of wages. Due to the rather low starting level of pension, increasing marginal propensity to save has been negligible and incremental income has to the great extend ended up in private consumption. Furthermore, permanent income level increased.

The third one is exchange rate policy. For almost a decade RSD has appreciated in the real terms. Although the basic reason for RSD appreciation has been out of reach for the government (basically huge inflow of foreign exchange due to grants, loans and FDIs in the privatization process), Serbian policymakers did nothing to stop or even contain that appreciation. The main political motive for that was to make import goods cheaper for domestic consumer. This is particularly the case for durables, which are almost completely imported. The political relevance of durables consumption has already been explained. In this way public policies to increase income (with increased wages and pensions) and to make import goods cheaper influenced that the increased income has been consumed on (imported) durables rather than saved. Availability of consumer loans from the domestic banks just facilitated the process.

1.6. Areas for policy improvements

Perhaps the most important finding of the study is the strong relation between the level of per capita income and private saving. The higher is per capita income, the higher is saving rate because of identified positive marginal propensity to save. No disputing that higher saving rate creates higher growth rate, that means that causality also goes from growth of income to the higher saving rate. Accordingly, policies for improving saving rate are also policies focused to boost economic growth. In the conditions of low domestic saving rate, and high level of public and private foreign debt, the main source of investments need for economic growth should be FDIs. Accordingly, policy improvements in the area of business environment would be crucial for improving incentives' for foreign investors to invest in Serbia. It is considered that explicit subsidies that are now offered as incentives for FDIs are not efficient, nor sustainable. Thorough reform of the business environment is needed reducing and eliminating barriers to entry. Apart from improving business environment for the foreign investors, this reform will also have effect on domestic investors (barrier to entry are to the great extent universal), facilitating allocation of domestic saving in to investments and improving efficiency of these investments.

The other area for policy improvement is relating to the financial sector, particularly non-banking sector. Accordingly, the most important areas for consideration will be: private (funded) pension insurance, including policies towards second and third pillar, life insurance and property insurance. One of the major areas of policy improvement that should be considered is the area of tax invectives for households for buying insurance as well as policies of regulation of insurance companies' investments. Additionally, the policy area for consideration is the one regarding the stock market, its regulation and policy towards regulation of the mutual funds. The central issue of these policies should be the protection of small shareholders, as that kind of ownership is crucial for private saving.

Taxation in general and specific taxes associated with returns to capital is an important policy area for improvements of both households and corporate saving. The changes of some relevant tax rates that took place in the Q4 of 2012 should also be taken into consideration.

The area of widespread social and health insurance, as well as various informal insurances (bails out) provided by the government should also be considered as it was demonstrated that they influence precautionary saving as well as formal property and/or forms of insurance.

Finally, it should be pointed out that no swift and substantial changes of the private saving rate in Serbia should be expected – this is a long-term process. The decisions regarding saving are made decentralized by all economic agents influenced by many incentives and based on enduring habits. That does not mean that policy recommendation should not be formulated,

but only that expectation form the implementation of these policies should not be great, at least not in the short-run.

PART 2: THEORETICAL HYPOTHESES AND EMPIRICAL RESULTS

2.1. The testing hypotheses - overview

Based on the theoretical consideration exposed in the Chapter 1 and the Annexes of this Report, a set of key factors/drivers of the saving in a country, the mechanism and direction of influence that are theoretically identified, and appropriate indicators that should be used in the empirical testing of the hypothesis follow.

The main factors/drivers of the private households' saving in Serbia as well as in other countries are:

- *Household income* has several potential effects on saving. Its main one should be positive: greater disposable income normally means a higher rate of saving. However, the *rate of growth of income* can have an offsetting effect, because when income grows rapidly, it may lead households to expect higher income in the future, so they feel less need to save as much now. Meanwhile, *income volatility* may exercise a third influence, positively affecting saving, because households need to put money away for times when income is low: precautionary saving. This latter effect may be expected for example in rural farm households, whose earnings are affected by unforeseeable seasonal climatic changes.
- *Demographics.* People save most beginning in the middle of their working careers, to support the education of their children, and to save for their own retirements. Younger populations save little, and older post-retirement populations dis-save. Serbia's demographic structure should have an impact on its saving rate.
- *Possession of real estate and other durable goods* can have a negative effect on saving. If the population already owns its housing, in particular, there is less reason to put money away for this major household investment.
- *Interest rates*. In general a higher interest rate should stimulate saving, because it increases the reward for it. However, there is some potential for an offsetting effect, if the increase in interest rates, by increasing the cost of existing household debt, reduces disposable income.
- *Financial sector depth* means a wider range of instruments through which households (and businesses) may save. Beyond simple bank deposits, the existence of pension funds, well-developed insurance products (especially life insurance), a liquid stock market accessible to individuals through mutual investment funds, all provide attractive and accessible options for saving. Again, however, there is the potential for some offset,

because a well-developed financial system also means it is easier to borrow, which may reduce the need to build up saving to purchase real estate and major durable goods.

Other factors include the size of capital inflows (which may reduce domestic saving), tax policies (VAT "taxes consumption", so may increase saving, and tax on returns from capital decreases income, so may decrease saving), political instability (generally negative for both domestic and foreign saving, but can increase precautionary saving), and income distribution (greater income inequality could increases aggregate saving).

All of these factors were, in principle, the subject of empirical testing. Deeper detail as to the statistical measurement of these factors, and their various influences, is provided for interested readers after the following review of the major results of the empirical testing.

In addition, no statistically significant relation as to corporate saving emerged from our econometric testing. Accordingly, the analysis of the private saving in Serbia was focused to the household sector.

2.2. Details on hypothesis used for the econometric testing

This section provides further detailed hypotheses that have been tested, breakdown and detail on the specific independent variables that will be used in the empirical analysis, how they will be measured, their expected impact on the saving rate, and some background as to their empirical testing in the economic literature. A detailed review of the testing procedure and specific statistical results is located in Annex 3.

a) The income level of the household, i.e. *per capita* income. It is assumed that the bigger *per capita* income results in the higher saving rate, as there is both theoretical and empirical support to the increasing marginal propensity to save with increase of income. The richer household/society *ceteris paribus*, the higher saving rate can be expected. Since economic growth results in increased *per capita* income, it is reasonable to assume that growth itself increases saving rate. That means that there is strong virtuous circle: dynamic growth increases private saving rate and increased saving rate, via funding investments and increasing investment rate (rate of investments to GDP) speeds up economic growth. From the other viewpoint, stagnant economy cannot generate saving rate high enough, i.e. there is not enough saving to fund investments and to spur economic growth. Such a deadlock ("poverty trap", being effectively "saving trap") can be broken only outside the system. Accordingly, policy measures for increasing the saving rate must be policy measures to facilitate economic growth or to independently incentivize saving. As to the indicators of income, measurement of household income, *per capita* income and economic growth is not a problem with reliable data available

from the official statistics, including HBS (Household Budget Survey), making this hypothesis relatively easy to be tested empirically.

b) The life-cycle hypothesis (LCH) basically predicts a time distribution of consumption within the lifespan of an individual. Accordingly, the highest saving rate should be the rate of the mid-aged, economically active person, while the lowest saving rate, as well as net negative saving rate should be of the young inactive, early active, and old inactive people. Very important preconditions for the LCH results are related to the character of financial system in a country, character of the pension and schooling finance system, the housing finance system etc. It is, within that framework, country demographics that determine the saving rate through this mechanism, since the share of active population in total is crucial. There is no short term policy that can influence demographics. However, analyzing this factor may influence saving-promotion policies, particularly in the area of financial system. The measurement of the share of active population is easy with available demographic statistics.

c) Permanent income hypothesis (PIH) is a mirror image of the life cycle theory as the individual behaves according to his/her permanent income not current one. Accordingly, an expectation that the permanent income will increase raises consumption in the present and decreases household's saving rate. Economic growth is the main source of expectations on increase of permanent income; hence this is the mechanism by which economic growth can *ceteris paribus* decrease household's saving rate. This means that economic growth can have countervailing effects to the saving rates. On the one hand, as explained in (1) above, economic growth increases per capita income and due to the increasing marginal propensity to save, increases households' saving rate. On the other hand, according to the PIH, economic growth raises expectation regarding future (permanent) income and thereby increases present consumption, hence reducing households' saving and saving rate. The PIH can be verified only empirically. If the PIH is rejected in Serbia, or even if the evidence supporting PIH are not valid or as strong enough as the evidence supporting increasing marginal propensity to save, it is safe to conclude that economic growth increases households' saving rate.

d) Precautionary saving is based on risk aversion and uncertainties in the future either regarding the income or consumption – it is basically a kind of household's insurance policy. Income volatility is the main source of precautionary saving on the income side. Agricultural income, for example, is more volatile than non-agricultural, hence it can be expected that rural household saving rates are higher than urban. Well structured questions in the HBS enable good empirical analysis of the volatility of income in Serbia and testing hypothesis on influence of income volatility to households' saving rate. The main risk on the expenditure side is health protection as well as income of people older than the active age; hence good health and pension insurance provides strong incentive for decreasing precautionary saving. Although many countries have *de jure* wide coverage of the population with compulsory public health insurance, it is always

important to analyze whether there this insurance is effective, i.e. whether there are out of pocket payments for health services. The same goes to various schemes of compulsory pension insurance and the expectation regarding the magnitude and certainty of the pension income. Crop insurance in agriculture provides incentive to decrease precautionary saving of rural population. Nonetheless, part of the paid premium for property insurance (everything above the operational costs of the insurer) can be treated as saving. It is reasonable to assume that decrease in precautionary saving due to crop insurance would be bigger than the amount of premium less operational costs. If there is a regular government bailout of farmers after natural disasters, they do not have incentive neither to buy insurance nor to save – typical moral hazard. Finally, non-agricultural property insurance probably has little influence on precautionary saving, so in this case the excess of premiums over insurer costs is likely to create a net increase in saving.

e) Possession of durables can influence saving rate in such a way that larger stock of durables decreases saving rate. This is particularly relevant for countries with borrowing constraints, where durables have been purchasing out of households' saving, not loans, like transitional economies of Central and Eastern Europe. Actually, this hypothesis has been empirically confirmed in the case of transition countries. There is ample data on possession of durables in the HBS in Serbia that can enable formulation of appropriate explanatory variable and testing this hypothesis.

f) Real interest rate is doubtless one of the most important factors of households' saving rate. One mechanism of its influence is (intertemporal) substitution effect in which an increase in interest rate increases the relative utility of future consumption, hence decreases present consumption and increases present saving. This mechanism works independently of the fact whether an individual consumer is net borrower or not. The other is income effects in which increase of interest rate decreases households' income and saving rate (due to the increasing marginal propensity to save) and saving of net borrowers and increases income and both saving and saving rate of net depositors. Accordingly, substitution and income effects have different direction of influence in the case of net borrowers and the same in the case of net depositors. Empirical research found evidence of identified ambiguity, as no statistically significant relations between the interest rate and saving rate was recorded in some cases – the countervailing effects were of the equal strength. If it exists, theoretically speaking it can go both ways. The dilemma of empirical research is which of the interest rates to include as explanatory variable in the regression model and it is usually solved by introducing both active (borrowing) interest rate and passive (deposit) interest rate.[7]

[7] Links between borrowing interest rate (cost of capital for borrower) and deposit interest rate (cost of capital for lender) in a country can be blurred by foreign sources of capital for the banks.

g) The depth of financial system, i.e. level of development of the financial system should be considered in two ways. One is as an opportunity for financial investment of the saving. The increased opportunity for accepting various return-risk combinations and building of well balanced (diversified) portfolio of financial assets increases incentives to save. The more developed financial system, the bigger opportunity for risk adjusted returns and higher saving rate. The depth of the financial system can be measured in terms of the quantity with measures like the share of contract intensive money (CIM = M2-M1/M2) or the ratio of credit to private sector to GDP. In the terms of quality, crucial is institutional development, i.e. which institutions exists (like the stock exchange, second and/or third pillar of the pension insurance, deposit insurance) and what is their institutional quality. Quality of the governance indicator can be also indicators of the quality of financial institutions. The higher institutional quantity and quality, the higher saving rate. Governmental policies of the improving quality of the institutions are crucial for improvements in this area and they have side effect to economic growth irrespectively of influencing saving rate.

h) The other mechanism by which the level of development of the financial system influences households' saving rate is based on borrowing constrains which are barriers for overcoming liquidity constrains and increasing consumption. The bigger borrowing constrains (the smaller credit availability), the higher saving rate of households. The more developed financial system, the smaller are borrowing constrains, the bigger is consumption, and the lower is households' saving rate. This means that there are two mechanisms by which level of development of financial system influences the saving rate, with countervailing effects. Accordingly, the dominant effect can be identified only by empirical analysis.

i) Borrowing constraint, i.e. credit availability issue can also be addressed on the international level. The more foreign saving is available to the country and its households, the weaker incentives exist for them to save. That brings the issue of foreign saving substituting domestic saving. It is reasonable to assume that time of "easy credit" in Serbia and other SEE definitely contributed to the low households' saving. For empirical testing of this hypothesis, the issue is the indicator that will be used for measuring availability of foreign saving via loans – the proxy of foreign (cross-border) credit availability. Such a proxy indicator could be CA BoP deficit, i.e. its size compared to the GDP. Although CA BoP deficit is associated with the low domestic saving and the transfer of the foreign saving to the country, but itself is not the factor of low domestic saving. From the policy prospective, the total availability of cross-border credits is not something government could influence, although by altering mandatory requirements central bank can influence credit supply on the domestic market. Nonetheless, expectation should be managed, particularly taking into account EZ crises and early introduction of Basel III capital requirements as the international credit availability will not be as big as it was in the previous year. Accordingly, EZ crises could, by strengthening domestic (Serbian) borrowing constraints, produce incentives for higher domestic saving rate.

j) The issue of tax policies is also a controversial one. Increasing of the rate of VAT (consumption tax) for example *prima facie* increases incentives to save as it makes consumption more "expensive" – a typical substitution effect. It works even in the situation when there is no increase in VAT rate, but only expectation of that increase, though in other direction – saving is substituted with consumption due to the expectations that consumption will be more expensive in the future. Nonetheless, the increase in the VAT increases the share of disposable income that goes to consumption (consumption is more expensive) and decreases household's saving – a typical income effect. Dominance of one effect over the other depends on the price elastically of demand. The more inelastic, the relative strength of the income effect is bigger. All income taxation decreases disposable income and therefore decreases household saving, because of the increasing marginal propensity to save. Nonetheless, taxation of the income from capital, for example, taxation of the interest income of the deposit interest or taxation of the dividends, decreases effective rates of return, decreasing incentives for households to save, decreasing households' saving rate. The data on tax policies (for example marginal tax rate) can easily be included as explanatory variable in the regressions and used in empirical analysis.

k) Political instability is identified as a factor of households' saving, although there are two mechanisms with opposite direction. On the one hand, political instability lowers institutional quality and uncertainty of the future of deposits and other long-term financial investments and that drives households' saving down. Although some of the stocks of the saving will be moved from deposits or other financial investments to the mattresses, the lower expected returns, i.e. returns adjusted for risk will generate lower level of total saving of households and households' saving rate. On the other hand, increased political instability increases incentives for specific "precautionary" saving, so increase saving rate can be expected. Furthermore, increased political instability increases incentives for households to save by increasing borrowing constraints due to the increased country risk and smaller opportunities for cross-border borrowing. Again, countervailing effects can be expected. As for empirical testing of this hypothesis, there are some international comparable composite indicators of political instability of the country that can be used for the analysis. As to the policy level, political instability decisively depends on the public policies adopted and implemented by the government.

l) Income distribution is another factor of saving that is linked to the efficient financial sector, i.e. financial intermediation. Basic theory or conventional wisdom is that for given level of income *per capita* increased inequality, due to the increasing marginal propensity to save, increases total saving (hence the saving rate), as the increase of the saving of the rich more than offsets the decrease if the saving of the poor. The efficiency of the financial mediation enables mobilization of these (increased) saving into the most productive investment programs. Accordingly, public policies aimed at decreasing economic inequalities, particularly those programs based on the compulsory

redistribution of income lower the overall households' saving rate. As to the empirical analysis, data on income inequality in Serbia are available from the national statistical office.

Hypothesis regarding the corporate saving cannot be as well developed as regarding households' saving, because there is no well developed theory of the corporate saving. It is linked to the decisions in the investment process of the corporation, as the corporate sector saving is basically reinvesting the profit. The crucial factor of corporate saving is relative costs of capital, as these costs are the ground for alternative decisions about investment funding: whether the profit will be reinvested or distributed via dividends, or whether the investment will be funded by launching the shares (increasing equity capital of the firm) or by borrowing of the capital (increasing financial leverage of the firm). The problem of the empirical analysis of the corporate saving is that all these costs are specific for a single firm and they are not public information. The only general rule is the relation between the tax rates on dividends compared with the tax on capital increase, because that will influence behavior of the shareholders. Accordingly, the empirical research should be focused to the differences of the character of the company (multinational, domestic private big, domestic private SME, size of the company etc.) as this could be a proxy for the access to finances and relative costs of capital.

Review of theoretical hypothesis on both household's and corporate saving demonstrates that in many cases, i.e. cases of many drivers of the saving, although causality is firmly established the direction of the change cannot be predicted. This happens in all the cases in which substitution and income effect have different direction. This makes empirical research of drivers of saving in Serbia even more important.

Annex 1: definition of key terms, notions and relations

There is a big difference between an economist's view and the educated layperson's view of economic concepts of ***saving*** (flow) and ***savings*** (stock). Similar problem arises with the concept of **investment,** which also has two different meanings – one in finance and the other one in economic theory and macroeconomics.

Saving means "not spending" and represents a **flow concept**[8] and is usually defined as a process of setting aside a share of current income for future use. If consumption exceeds the value of income, then saving is negative and economic agents (households, firms or a nation) are said to be dissaving.

In measures of national income and output, "gross saving" (represented by the variable *S*) is a component of gross domestic product (*GDP*), given in the formula $GDP = C + S + T$ where *C* is consumption, ***S is gross saving***, and *T* stands for taxes. Thus saving is everything that remains of disposable income (*GDP-T*) after consumption.

Gross domestic saving (S) has two parts. One is public sector saving (*T-G*), and the other one is private sector. The largest segment of private sector is the household sector. Another segment of the private sector is the private corporate sector. The relation of these components is shown in Figure 1 above. The figure shows the components of Gross Domestic Saving, indicating that

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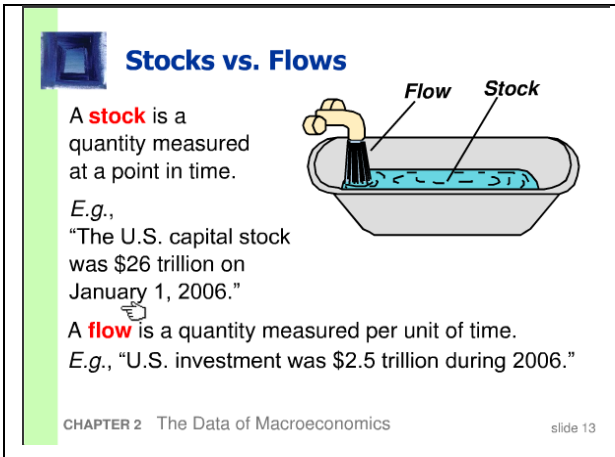


Source: N.G. Mankiw, Macroeconomic 4e (2000)

Stock and flow variables differ in their units of measurement. A *stock* variable is measured at one specific time, and represents a quantity existing at that point in time (say, December 31, 2011), which may have accumulated in the past. A *flow* variable is measured over an interval of time, see http://en.wikipedia.org/wiki/Stock_and_flow

Stocks vs. Flows - examples

stock	*flow*
a person's wealth	a person's annual saving
# of people with college degrees	# of new college graduates this year
the govt debt	the govt budget deficit

households may keep financial assets with them or the physical assets such as gold and other valuables.

The assets collected during the period of measurement (month, quarter or a year) represent current saving (flow) and also are part of next year's savings (stock), as depicted in the Figure in the footnote.

A difference between the ***concepts of gross domestic and gross national saving*** comes from the difference between GDP (Gross Domestic Product) and Gross national income (GNI).[9]

As opposed to saving, savings is a stock concept and may take the form of bank deposits, cash holdings or securities. How much individuals save is affected by their preferences for future over present consumption and their expectations of future income.

Investment in economic theory or in macroeconomics is the annual (quarterly, etc) amount of goods which are not to be consumed but shall to be used for future production (i.e. capital). In measures of national income and output, "gross investment" (represented by the variable *I*) is a component of gross domestic product (*GDP*).

$GDP = C + I + G + NX$, where C is consumption, G is government spending, and NX is net exports. Thus investment is everything that remains of total expenditure after consumption, government spending, and net exports are subtracted (i.e. $I = GDP - C - G - NX$).

In addition, the terms "net investment" and "net saving" are obtained after subtracting ***depreciation*** (i.e. consumption of fixed capital) from gross investment and saving.

While actual saving and actual investment are equal ex post, they are unlikely to be ex ante. Investors' plans to invest and savers' plans to save are usually not equal, but economic variables (incomes, interest rates, exchange rates, inventories, etc.) change to bring them into equality (again with a little help from inventories) after the fact.

In finance, investment is the commitment of funds through collateralized lending, or making a deposit into a secured institution.[10]

[9] ***GDP*** stands for the total market value of all final goods and services produced in a country in a given year, equal to total consumer, investment and government spending, plus the value of exports, minus the value of imports. **GNP** is the total value of *GDP*, plus income earned by its citizens (including income of those located abroad), minus income of non-residents located in that country, i.e. GNP= *GDP*+*NFP* (net factor payments). The difference is that ***GDP*** defines its scope according to location, while **GNP** defines its scope according to **ownership**.

[10] In contrast to investment, phrases like the terms dollar cost averaging, market timing, and diversification are associated with speculation. See: http://en.wikipedia.org/wiki/Investment

From Saving to Growth: Growth models

Neoclassical growth model

The Solow (1956) neoclassical growth model defines output (*y*) as a linear homogeneous and concave production function of capital per head (*k*)

$$y=f(k), \quad (1)$$

where population grows by an exogenous rate, *n*, and the saving rate, *s,* is fixed. The saving-investment identity takes the form:

$$\frac{dK}{dt} = \dot{k} = sy - (n + \delta)k \quad (2)$$

Where δ stands for the rate of depreciation of the physical capital. Thus output grows by the steady state growth rate, *n*, and output per head increases only through technical progress. Technically, in the absence of technical progress any rise in saving raises the capital/output ratio, but leaves the overall growth rate unaffected.[11] Technical progress γ is usually introduced by allowing output per actual unit of labor to grow at rate γ, since labor force now grows at *n+* γ.

A corollary of the Solow growth model is *that saving does not cause growth,* but that an increase in the saving rate would *temporarily* increase the growth rate until a new point of equilibrium is reached.[12] The increase in new equilibrium, however, occurs due to the coefficient α, the elasticity of output per head with respect to its level at k_0.

$$k = k_0 + \theta exp[-(1-\alpha)(n+\delta)t], \quad (3)$$

When α approaches one, technology takes the *AK* form of *Y=AK*, where we see the end of a tendency of restoring the old equilibrium. Thus, depending on the saving rate (here presented by different initial capital per head and their preferences) countries will conditionally converge, but the process would be slow (see Mankiw, Romer and Weil, 1992).

Recent works was partly focused on investigating whether the Solow model can explain differences in growth rates across countries. If transitions are short (meaning that countries are mostly near equilibrium), then "the Solow model is an unpromising candidate for explaining what we see, since, in equilibrium, all countries that have access to international technology but have different tastes, i.e. different saving ratios, should have approximately the same rate of per capita economic growth."[13] But if transitions are long and take many years, international

[11] The capital output ratio $v = \frac{k}{y} = \frac{s}{n+\delta}$

[12] Schmidt-Hebbel and Serven (1999)

[13] Ibid, pp 37.

differences in growth rates *can be* attributed to the differences in saving rates by countries. Researches on the speed of convergence by Barro (1991), Barro and Sala-i-Martin (1992), Makiw and Weil (1992), McQuinn and Whelan (2006), etc. show that the transition path is mostly sluggish and that saving rates do seem to induce higher economic growth.

Exogenous growth

The main obstacle to permanent growth in the Solow model (diminishing returns to scale) has been successfully overcome by augmenting production function to contain human capital or stocks of knowledge in addition to capital and labor, which enables growth rates to permanently increase in societies where both physical and human capital are permanently increased. Growth was now due to indefinite investment in human capital which significantly reduces diminishing returns to capital accumulation.

Starting from the first version of endogenous growth theory, the AK theory, Frankel (1962) postulated that the aggregate production function can have constant or even increasing marginal returns on capital, since a fraction of increased saving (and capital) will be the human capital, i.e. intellectual capital that *creates* technological progress, which in turn will offset the tendency for the marginal product of capital to diminish.

$$Y=AK \tag{4}$$

Thus the saving-investment identity takes the form

$$\frac{dK}{dt} = \dot{k} = sy - (n+\delta)k \tag{5}$$

Along with (4) implies that the growth rate is

$$g \equiv \frac{1}{Y}\frac{dY}{dt} =\equiv \frac{1}{K}\frac{dK}{dt} = sA - (n+\delta) \tag{6}$$

Instead of the fixed saving rate postulated by Frankel (1962), Romer (1986) introduced the assumption that saving is generated by intertemporal utility maximization. Like Uzawa (1965),

Lucas (1988) explicitly assumed that human capital and technological knowledge were one and the same.

The second wave of endogenous growth theories (known as 'innovation-based' growth theory) aimed at introducing the new variable, the intellectual capital, which is *distinct* from physical and human capital, grows through innovation, rather than through saving and education, i.e. schooling.[14]

Endogenous growth theory has been challenged on empirical grounds.[15] Nowadays numerous researches postulate that endogenous growth theory can be useful for understanding growth in world knowledge over time, but has not proved to be useful for understanding why some countries remain poor, and others do not.[16] Instead, despite enormous effort, exogenous growth theory still seems to be much more useful for this purpose.

Standard Models of Saving – The Permanent Income and Life Cycle Hypothesis

A substantial part of the effort spent on studying consumption and saving pattern has been directed toward the analysis and verification of the relative income hypothesis (Dusenberry, 1949). Milton Friedman's (1957) Permanent Income Hypothesis (PIH) and Modigliani's Life-Cycle

[14] One version of innovation-based theory was initiated by Romer (1990), postulated that productivity growth comes as a consequence of new (not necessarily improved) varieties of products. Thus output is produced by labor and a continuum of intermediate products. The other version of is the 'Schumpeterian' theory developed by Aghion and Howitt (1992) and Grossman and Helpman (1991, followed by Jones (1995), Segerstrom (1998), and Young (1998), etc. Schumpeterian theory focuses on quality-improving innovations that render old products obsolete, through the process that Schumpeter (1942) called 'creative destruction.

[15] Numerous modifications were made in order to make the theory consistent with the critics' evidence. Mankiw, Romer and Weil (1992), Barro and Sala-i-Martin (1992) and Evans (1996) showed, using data from the second half of the 20th century, that most countries seem to contradict the endogenous growth theory which postulates that owing to different policies and institutions, countries should have different long-run growth rates, and the evidence is that most countries seem to be converging to roughly similar long-run growth rates. Also, early versions of innovation-based growth theory implied, counter to much evidence, that growth would be adversely affected by stronger competition laws. Aghion *et al.* (2001) showed that an increasing competition will tend to reduce profit of a successful innovator, but would nevertheless reduce profits of unsuccessful innovators by even more, etc.

[16] Parente (2001), *The Failure of Endogenous Growth* (Online at the University of Illinois at Urbana-Champaign), (Published in Knowledge Technology & Policy Volume XIII, Number 4.)

Hypothesis (1963).[17] Although all three stem from microeconomic theory of consumers choice, the latter two, despite different in scope and formulation, have strong connections.

The basic assumption of the permanent income hypothesis is that optimal consumption will be flat over time, and thus saving will depend on income dynamics. If earnings remain flat, there will be no need to save at all; if earnings are growing, the consumer will save (and borrow) and repay later. In the most probable case where earnings are expected to fall because of retirement, the consumer must save in youth and mature life in order to hold consumption constant after the anticipated drop in income emerges.

The model most often used for studying macroeconomic fluctuations and the short-run dynamics between consumption, saving and income is the permanent income hypothesis (PIH) model. Its modern version (Flavin, 1981) takes the form

$$c_t = \frac{r}{1+r}\left(A_t \sum_0^\infty E_t \frac{y_{t+k}}{(1+r)^k}\right) \qquad (7)$$

where r is the constant real interest rate, c_t is real consumption in period t, y_{t+k} is real labor income in year $t+k$ whose expectation depends on information at time t is $E_t y_{t+k}$, and A_t stands for the real values of the single asset whose return is r.[18]

The disposable income is defined as $y_t + rA_t\left(\frac{r}{1+r}\right)$, and saving s_t is defined as a difference between disposable income and consumption:

$$s_t = y_t + rA_t\left(\frac{r}{1+r}\right) - \frac{r}{1+r}\left(A_t \sum_0^\infty E_t \frac{y_{t+k}}{(1+r)^k}\right) =$$

$$= -A_t \sum_0^\infty E_t \frac{\Delta y_{t+k}}{(1+r)^k} \qquad (8)$$

I.e. saving is represented by discounted present value of expected future ***falls*** in earnings.[19]

[17] Balvir Singh, Helmar Drost and Ramesh C. Kumar, 1978, An Empirical Evaluation of the Relative, the Permanent Income, and the Life-Cycle Hypotheses, *Economic Development and Cultural Change,* Vol. 26, No. 2 (Jan., 1978), pp. 281-305

[18] Schmidt-Hebbel and Serven (1999), pp. 39.

The Life-Cycle Hypothesis

Unlike PIH, the central and most important prediction of LCH is a positive relation between growth and saving. But we have also noted the *similarity* between PIH and LCH. The opposite conclusions stem from the assumption of how the growth works. In LCH, growth in earnings is assumed to take place across generations, but not within them. When growth rate of earnings shifts up, people do not anticipate further growth during their lifetime, so no change occurs in the slope of the lines on Figure 1. Thus households tend to borrow at the beginning of the career, save in the middle and run down accumulated assets after retirement, but the consumption line is no more flat as it usually is in elementary textbooks. The change then occurs when we measure the age of the "savers" it becomes obvious that the average age of the saved dollars is less than the age of the dissaved dollars. With young generations being richer than the old, growth will redistribute resources towards the younger cohorts, since people anticipate further growth in income to occur in each new generation.

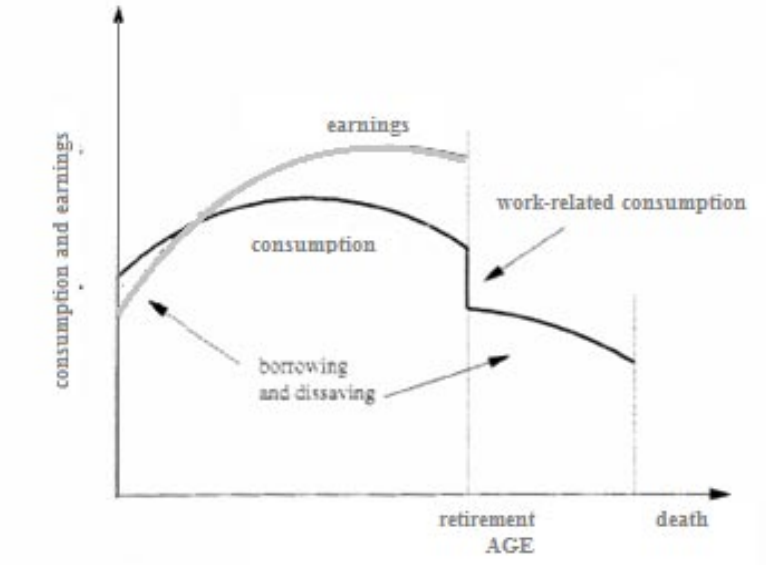


Figure 1. Schematic life-cycle profiles of earnings and consumption

When we consider the effects of cross-sectional profiles of saving, we observe that net saving occurs only at growth rates greater than zero, otherwise saving during the prime age years just finances borrowing in youth and retirement. When g>0, the midlife saving of the younger generation exceeds the retirement dissaving of their elders. Although there is a theoretical possibility that at very high growth rates dissaving of the youngest households could fall below the age of saving,[20] once the assumption is made that younger households cannot borrow for

[19] But the negative relation between savings and growth is largely eliminated by adding the fact that the marginal propensity to consume out of financial wealth shall be larger than out of ''human wealth'', i.e. the present discounted value of future labor income. Thus larger income signals a riskier stream of future labor income, inducing a higher precautionary saving. Also, retirement can explain why people save even when the expect their earnings to grow until retirement. Young consumers will react to an increase in labor income by increasing consumption more than consumers nearing retirement. Neng Wang, 2006, "Generalizing the permanent-income hypothesis: Revisiting Friedman's conjecture on consumption", Journal of Monetary Economics Journal of Monetary Economics 53 (2006) 737–752

[20] Schmidt-Hebbel and Serven (1999), pp. 43.

consumption we obtain the model which can show that higher growth will produce more saving.

Precautionary saving

Modern theories slightly move away from PIH and LCU models toward a richer class of models (but remain within the general framework of intertemporal choice under uncertainty). Marginal utility of consumption is assumed to be nonlinear, usually convex. This gives precautionary motives for saving.

Thus expected utility (EU) is thus maximized by

$$EU = E_t \sum_0^{T-1} (1+\delta)^{-k} v(c_{t+k}) \quad (9)$$

where δ is the rate of time preference[21] and $v(c)$ is a subutility function. EU is maximized subject to the intertemporal budget constraint

$$A_{t+1} = (1+r)*(A_t + y_t - c_t) \quad (10)$$

where A_t stands for real value of a single asset and *r* is the (constant) interest rate, *y* standing for *earnings*, i.e. labor (not total) income. Thus the solution in the special case when $r = \delta$ becomes the same as in equation (7).

Although earlier works (i.e. Caroll, 1997) denied that precautionary saving is positively correlated with income risk, later studies (Meng, 2003, Wang (2005) confirmed the presence of precautionary motive within PIH.[22]

Liquidity constraints and buffer stock models

Buffer stock saving can be generated either by precautionary saving or by liquidity constraints. Trying to make models more realistic, the assumption is made which allows the consumers to borrow only up to a certain limit, or does not allow them to borrow at all. The basic model is the same as in precautionary saving, with addition of the borrowing constraint

$$A_t \geq 0 \quad (11)$$

[21] Time preference (or "discounting") indicates consumer's preference of spending in present over more remote enjoyment.

[22] Meng, X. 2003. "Unemployment, consumption smoothing, and precautionary saving in urban China," Research School of Pacific and Asian Studies, Australian National University, Wang, N. 2005. " Generalizing the permanent-income hypothesis: Revisiting Friedman's conjecture on consumption," Columbia Business School, 3022 Broadway

which now stands for a borrowing limit. The larger are borrowing constraints, the higher is saving. Thus consumers will save if $\delta < r$, and otherwise, if the interest rate is lower then their rate of time preference, they will be binded by borrowing constraints.

Consumers can be divided in two groups, savers and nonsavers. One criterion for division will certainly be borrowing constraints. But the expected rate of growth of earnings will also move citizens from savers' to non-savers' group, and so will interest rates, if they become too low.

The buffers stock model has enriched our understanding of saving behavior, and offered a formal justification for phenomena that many households accumulate nothing in the long run, posses few or no financial assets at all

The number of savers will also increase in cases of high interest rates, poor growth prospective, uncertainty regarding future income, etc.

Liquidity constraints: housing, bequests and habits

Saving for house purchase is in essence analogous to saving for retirement, except for different timing in the life cycle. But this difference will decrease the age at which saving begins, as LCH model predicts. Thus saving for house purchase would increase the effect of growth on saving.

Opposite views exist on the issue – whether capital restrictions generate less or more saving. On the one hand, setting a minimum down payments ratio saving will increase both saving and the sensitivity of saving to growth. (Japanelli, Pagano, 1994, Benito, Mumtaz, 2006). On the other hand, this is exectly opposite of the financial repression view (McKinnon. 1973 and 1991, Conway, 2003).

Evidences are that higher the minimum down payment ratio goes along with the higher the saving rate. But quite apart from the (crucial) causality issue, the intensity of this phenomenon does not appear to be particularly strong.

Bequests as a saving incentive come from the evidential data which show that old people save, or at least do not dissave, as required by the simple LCH. With no bequests, the present value of lifetime consumption is equal to the present value of lifetime resources. If a (fixed) share of resources is set aside as bequests, there will be no change in elasticity of consumption to permanent income. But if bequests are treated as a luxury good (when the elasticity of consumption vs. income will be less than unity) then the saving rates will be higher in richer countries, and a robust relationship should exist between the level of national income and saving rates.

The evidences are (in older literature, especially) that elasticity of consumption to permanent income was substantially below unity, both on time series and cross-sectional data. On the

other hand, analysis of the OECD countries show the opposite result, suggesting that housing is a luxury good only at low or medium income levels, but stop being so at higher income levels.

Habits

Habit models are also consistent with a link between saving and growth, showing that consumption takes time to catch up with rising income, especially if there is an element of surprise in income growth. Thus saving should be transitory by nature, but transition seems to be slow and long lived.

Formally, this model comes in the simplest form of utility function, where St is the stock of habits, defined as a distributed lag on past levels of consumption.

$u = v(\alpha c_t - \beta S_t)$

The idea is that when a consumer gets used to a certain level of consumption, she needs more in order to attain the same level of utility. Depending on defining consumer as nonmyopic (being aware of the impact of current decisions on future stocks), different specifications can be made. In case of non-myopic consumers, younger generations should save more. But the effect is also associated with liquidity constraints in earlier age, which may make it difficult to make the difference between the two.

Real exchange rate, saving and growth

In search of the appropriate links between the real exchange rate and saving (and growth), Montiel and Servén (2008) found a strong empirical evidence that a higher saving rate is strongly associated with a more *appreciated* real exchange rate – which is the opposite of the theoretical postulates, as well as it is opposite of recent results (Bernanke, 2005, Dooley, Folkerts-Landau and Garber, 2004, Levy-Yeyati and Sturzenegger, 2007, etc). Still, the authors conclude that simple correlations of the type they used only provide limited evidence about the empirical relevance of the postulated theoretical link between the real exchange rate and the saving rate, which runs in the opposite direction.

In fact, they stipulate that the postulated theoretical relationship between the real exchange rate and the saving rate might be hidden in the unconditional correlations of the type they used in the analysis. This result, the authors claim, at least partially reflects the positive association of both variables with the level of per capita income. Controlling for this factor changes the picture, revealing a negative correlation between saving rates and the real exchange rate, although the correlation is very small and statistically significant only at the higher 10-year frequency.

Their general results show that the mechanism through which the exchange rate affects growth is very unlikely to be found in its effect on saving. On theoretical grounds, the authors' conclusion follows the Bernanke (2005) in conclusion that domestic saving only increases as a response to a devaluation of the real exchange rate, if the depreciation generates a temporary increase in real income.

The model of Paulo Gala and Marcos Rocha (2010) gives opposite results, showing a linear and positive trend between the relative real exchange depreciation and domestic saving. Therefore, the authors indicate that the more depreciated the exchange rate, the greater will be the saving rate. The model they use is as follows.

In the goods market equilibrium total saving plus import *M* must equal total investments plus exports *E,* the model shows that macroeconomic equilibrium may be written as:

$$y = C + I + E - M = C(\theta) + I\,(h(\theta), z) + E(\theta) + M(\theta, z) \tag{15}$$

In terms of saving equilibrium:

$$S + M - E = I \tag{16}$$

$$sh(\theta)z + M(\theta, z) - E(\theta) = I\,(h(\theta), z) \tag{17}$$

where $h = R/Y$, the capitalists' income as a percentage of total income, $z = Y/Y^*$ is the level of installed capacity utilization, potential output being $Y^* = 1$.

The theory behind these equations says that domestic and foreign savings' dynamics depends on the real exchange rate, which affects all of above variables. A devaluation of the exchange rate that affects growth may do so by means of its beneficial effects on the domestic saving rate.

The results of the estimations indicate a robust and significant positive relation between the currency competitiveness index and domestic saving-to-GDP ratios. The currency competitiveness is measured by Rodrik's (2008) misalignment index.[23]

[23] Rodrik defines misalignment (undervaluation) as a deviation of the actual real exchange rate from its purchasing-power-party (PPP) value, where the real exchange rate is measured as a ratio of the actual exchange rate to the PPP conversion factor.

Annex 2: Determinants of saving

In analyzing the determinants of saving and how to increase it, there are several considerations that may be counterintuitive.

1. Foreign direct investment, under some conditions, may not add to domestic saving

Numerous studies show that the inflow of foreign direct investment may not boost domestic saving.[24] This either may occur because of the underdevelopment of the local financial markets, or because rapid capital inflows lead to real appreciation of the currency, which further reduces the profitability of investment. In an underdeveloped financial system foreign capital may easily be channeled to non-tradable investments (such as real estate) rather than to potentially growth-boosting investment in the tradable manufacturing sector. Empirical studies confirm the argument that in presence of exchange rate appreciation, in general, the use of foreign saving is connected to the decrease in domestic saving and to the increase in the aggregate level of consumption. The crucial prerequisite is that the marginal propensity to consume within the country falls enough so that the additional income originated from foreign capital flows can be used for investment rather than for consumption. Only in this special case, the rate of substitution of foreign for domestic saving tend to be small and foreign saving will contribute positively to growth.

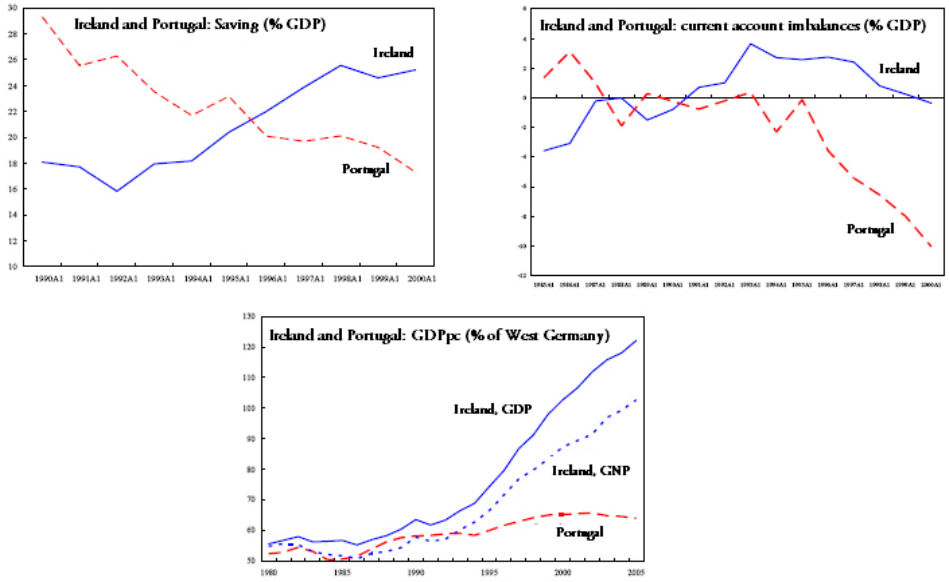
An example of Ireland and Portugal offers an interesting contrast concerning their success in attracting FDI in manufacturing, i.e. tradable sector.[25] Between the mid-1980s and euro adoption in 2002, Ireland attracted FDIs and started to boost, while Portugal started to revert. The main difference was in the wage policy and the use of the capital inflows. In Ireland wages lagged total-factor productivity growth and government saving increased as well. Thus the investment boom did not worsen the current account, saving increased faster than investment, and the current account balance moved into surplus. In Portugal, large capital inflows—in the non-tradable sector rather than manufacturing—fed a domestic demand boom which led to a surge in imports. Since wage growth exceeded total-factor productivity, profit margins in the export sector were squeezed, stimulating a decline of the tradables sector. No improvement in

[24] Aizenman, Pinto, Radziwill (2004), Prasad, Rajan, Subramanian (2007), etc.

[25] Sorsa, Bakker, Duenwald,. Maechler, Tiffin (2007).

the government balance was made and total saving declined, widening the current account deficit.

Chart 1: Different saving patterns and growth in Ireland and Portugal



Source: Sorsa *et al.* (2007)

This result was vastly confirmed. In the case when a country creates the environment attractive enough for FDIs, the marginal propensity to consume can fall enough to additional income originated from foreign capital flows will be used for investment rather than for consumption. In this case, the rate of substitution of foreign for domestic saving tend to be small and foreign saving will contribute positively to growth.[26]

2. Increased financial intermediation does not necessarily increase the saving rate.

Two schools of economic thought emphasize the role of financial factors as determinants of saving. Their proponents are popularly known as "activists" and "structuralists". The basic proposition of the activists is that the key influence of financial reform on saving will come from the changes in the interest rate.[27] But no unambiguous answer can be given as to the effect of

[26] Pereira, Gala (2007).

[27] Financial reform typically consists of several key steps which are often implemented in a longer period of time. This reform involves the liberalization of the interest rates, credit allocation, bank ownership, prudential regulation,

changes of the real interest rate on saving. Activists claim that the positive substitution effect will dominate over the negative income effect[28], thus lifting ceilings on interest rates can be conductive to increasing saving in developing countries. On the other hand, financial structuralists emphasize the role of endogenous growth and claim that financial intermediation affects saving directly and positively - quite apart of the effects of the interest rates, through reforms that strengthen creditor rights and contract enforcement which then boosts financial development and accelerate economic growth[29]

Recent literature postulates that financial liberalization is a multidimensional and phased process, which sometimes involves reversals, and cannot offer support for the hypothesis that financial liberalization necessarily increases saving. On the contrary, liberalization (particularly relaxation of liquidity constraints) may be associated with a fall in saving. As financial liberalization involves not only a change in interest rates, but also increases household access to consumer credit or housing finance, it can also reduce private saving.[30]

3. Pension policies may not improve saving

Both theoretically and empirically the question of the effect of mandatory pension saving on household saving remains ambiguous.[31] In the case of a pay-as-you go pension scheme (since there are no assets set aside to meet pension obligations) the life cycle theory postulates that this scheme would lower household saving simply because any mandatory pension contributions reduce voluntary saving by the same amount. Nonetheless, depending on the magnitudes of income and substitution effects of pension contributions, development of the capital market and myopic behaviors of individuals (Feldstein, 1974, 1995), ambiguities may rise. If the income effect of mandatory pension contribution offsets the substitution effect, then pensions can increase aggregate saving. However, if we allow imperfect substitutability of mandatory and voluntary contributions, different conclusions arise. Then a rise in mandatory

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security markets, and the issue of the openness of the capital account – all of them affect interest rate. The sequencing of these measures is frequently debated. These reforms have not been a monotonic process, and in some cases, setbacks have involved temporary policy reversals (Bandiera, Caprio, Honohan, Schiantarelli (2000)).

[28] The substitution effect postulates that consumers save more when interest rates are higher, given that it will result to higher future consumption. The income effect gives the opposite explanation. Depending on their relative strengths, the final outcome can go either way.

[29] Gupta (1987).

[30] Muell- bauer and Murphy (1990), Jappelli and Pagano (1994), Bandiera, Caprio, Honohan, Schiantarelli (2000), Beck (2006).

[31] Cagan, P. (1965), Kotlikoff, L. (1996), Karunarathne, Abeysinghe (2005).

pension contributions does not translate into an equivalent decrease in voluntary saving[32]. These effects further vary depending "on the extent to which the individuals are aware of the amount of benefits or the increase in their retirement wealth that pension saving bring to them, the extent to which they wish to compensate for that increase by reducing voluntary saving, and the ability of individuals to do so (Feldstein, 1988)".[33]

Due to the underdevelopment of the financial market, households in less developed countries accumulate assets mainly for smoothing their consumption during working life and not predominantly for retirement. As a result, households may react strongly to reductions in disposable income resulting from higher mandatory pension contributions and reduce saving. When faced with higher mandatory contribution households (being already constrained by low incomes) have to lower voluntary saving and, if necessary, i.e. if decreases in voluntary saving is not sufficient, to depend on borrowings to maintain their consumption expenditure.[34]

4. Corruption reduces saving

It is well known that many of the key determinants of saving are correlated with the incidence of corruption. The theory postulates that corruption reduces the steady state capital *per capita* and leads to an increase in the marginal product of capital ceteris paribus and consequently the real rate of interest. Empirical results also confirm that corruption adversely affects the gross national saving rate by encouraging capital flight. The corruption affects saving through its influence on the level of income, the growth rate of real per capita income and on the tax–GDP ratio.[35]

As for the indirect effect of corruption on saving, the analysis shows that most of the key determinants of saving are significantly correlated with corruption. First of all, corruption lowers the growth of per capita income and increases income inequality.[36]Furthermore, inflation variability affects saving by rising uncertainty.

Swaleheen (2007) finds evidence for a direct effect of corruption on the gross national saving rate: on average, reduction in corruption by one standard deviation increases the gross national saving rate by 6.1%. Evidence of a direct effect of corruption is traced only when using gross national saving rate, since it captures capital flight. In the case of the gross domestic saving rate, author postulates that the effects of a decrease in corruption are transmitted mostly through

[32] Kotlikoff, (1979; Morling & Subbaraman, (1995); Munnell, (1976); Venti & Wise, (1990, Venti & Wise, 1993)
[33] Karunarathne, Abeysinghe (2005), pp. 831.
[34] Karunarathne, Abeysinghe (2005).
[35] Swaleheen (2007).
[36] Mauro (1995).

higher level of income, higher rate of growth of income, lower real rate of interest and better tax collection, and therefore cannot be traced directly.

5. Real exchange rate change can affect saving

Another aspect of saving behavior that has appeared in the literature is the possible relationship between the terms of trade (relative prices of export and import) and saving – the Harberger-Laursen-Metzler effect.[37] A basic hypothesis is that deterioration in the terms of trade, that is effective real depreciation of the national currency, leads to an increase in saving and deterioration in the trade balance.

The modern literature stresses the distinction between transitory and permanent changes in the terms of trade, indicating that transitory improvement should lead to higher saving rather than to higher consumption, thus confirming the Harberger-Laursen-Metzler effect.[38] But permanent shocks can have ambiguous effects that should be small in magnitude. The empirical literature tends to confirm a positive correlation between transitory terms-of-trade shocks and saving.[39]

In search of the appropriate links between the real exchange rate and domestic saving, Montiel and Servén (2008) find a strong empirical evidence that a higher saving rate is strongly associated with a more *appreciated* real exchange rate – which is the opposite of the theoretical postulates, as well as it is opposite of recent empirical results (Bernanke, 2005, Dooley, Folkerts-Landau and Garber, 2004, Levy-Yeyati and Sturzenegger, 2007, Gara and Rocga, 2010, etc).

The model of Paulo Gala and Marcos Rocha (2010) offers opposite results, showing a linear and positive trend between the relative real exchange depreciation and domestic saving. Therefore, the authors indicate that the more depreciated the exchange rate, the greater will be the saving rate (see Appendix).

[37] Harberger-Laursen-Metzler effect is the conjecture or result that a terms of trade deterioration (real depreciation) will cause a decrease in savings due to the decrease in real income of the households, and hence an increase in real expenditure. Accordingly, this would cause an improvement of the current account. The theory was offered by Harberger (1950) and Laursen and Metzler (1950).
[38] Obstfeld (1982) and Svensson and Razin (1983).
[39] Ostry, Reinhart (1992).

6. Demographics: Age structure may significantly influence saving

Following the results of the life-cycle hypothesis (explained in details in Annex 1.), extensive literature attempted to prove the importance of the age structure of the population, following this line of reasoning: a high proportion of the working age population would lead to a high rate of private saving, since workers save for their retirement. After reaching retirement age this population either dissaves or consumes a greater share of income which leads to a decline in the aggregate saving rate.

An extensive literature found no consistent answer to confirm or reject this theoretical postulate. What more, macroeconomic results (including cross country studies) conflict with studies using micro data. Some authors even find argue that age-consumption profiles do not differ enough to explain why consumption should be affected by demographic factors.[40] However, confirmation came from the theory of bequests (see Annex 1). Bequests can indeed lower the saving of the young, and hence lower the aggregate saving, even if the elderly do not themselves dissave.

In addition, (Loayza *et al*., 2004) empirically demonstrates that the urbanization ratio and the age structure of population (old and young dependency ratios) have a significant effect on the saving rate. The theoretical underpinnings of this belief are based on the life cycle hypothesis. The argument goes as follows. Economic agents dissave when young with little or no income, positive saving during their productive years and again dissave when they are old and retired (Modigliani, 1970). As children constitute a burden for parents and do not contribute to production, an increase in their proportion in the population is expected to reduce the private saving rate.

Similarly, an increase in the proportion of elderly in the population is also expected to hamper the aggregate saving rate since the retired depend on the working population, thus they are assumed to dissave. On the other hand, increase in the dependency ratio may put significant upward pressure on government spending on health and education needed to improve the quality of life. This could involve a reduction in public saving if fiscal policies remained unchanged. Hence the age structure of the population has a special role in explaining the overall national saving rates.

Other possible explanatory factors include inflation and wealth, as well as the quality of the health service (Kochar, 2003). Inflation may affect saving in several ways: inflation raises nominal interest rates and hence increases household saving (and income). However, higher inflation may also lower saving by increasing uncertainty. In a life-cycle model, financial wealth

[40] Kennickell (1990) and Carroll and Summers (1991).

should negatively affect saving, since it augments resources available for consumption. Taxation effects on saving are considered as the taxation influence both available income (particularly specific returns from saving) and prices, i.e. effective income of the households.

As demonstrated there are many factors that determines saving of the private sector. There are two specific problems of the theory of the saving. The first one is already identified: a large number of factors that determines saving and saving rate of the private sector. The other one is that in the case of many of these factors the sign of influence is theoretically ambiguous. It is not possible to get a theoretically unambiguous prediction whether an increase of some of the determinants of saving (rate) leads to increase or decrease of the saving and saving rate of the private sector. Eventually, the character of the relationship between determinants and the saving, i.e. the direction of the change, is to be specified in the empirical studies. These studies can offer an answer to the crucial questions. Unfortunately, in many cases these answers are also ambiguous. Table 1 summarized the findings of the most important empirical studies of the kind.

Table 1. *Summary*

Determinants of the Ratio of Private Saving to Income in Panel Studies

Variable category	***Specific variable***	***Sign predicted by theory***	***Empirical findings***
Income	Income level		
	Actual	0 or +	+ (5) 0(2)
	Temporary/permanent	+ / 0 or +	0 (7)
	Terms of trade		
	Actual	0 or +	+ (4)
	Temporary/permanent	+ / 0 or +	+ (7)
	Growth rate: actual	Ambiguous	+ (3) 0 (3)
Rates of return	Real interest rate	Ambiguous	–(1) 0 (4) + (2)
Uncertainty	Variance of innovations to saving determinants	+	–(1) 0 (4), + (1)
	Inflation or other measures of macroeconomic instability	+	
	Measures of political instability	+	
Domestic borrowing constraints	Private credit flows	–	+ (1) – (1)
	Broad money flows	–	
	Income	–	
Foreign borrowing constraints	Foreign lending	–	– (4)
	Current account deficit	–	
Financial depth	Private or domestic credit stocks	Ambiguous	– (1)
	Money stocks	Ambiguous	+ (1) 0 (1)
Fiscal policy	Public saving	–	– (3)
	Public surplus	–	– (3) 0 (1)
	Public consumption	Ambiguous	– (2)
Pension system	Pay-as-you-go pension transfers	0 or –	– (3)
	Mandatory fully funded pension contributions	0 or +	+ (1)
	Fully funded pension assets	Ambiguous	0 / + (1)
Demographics	Old- and/or young-age dependency	–	– (4) 0 (2)
	Urbanization	Ambiguous	– (2)
Distribution of income	Income concentration	Ambiguous	0 (3)

7. Regularities in household saving dynamics

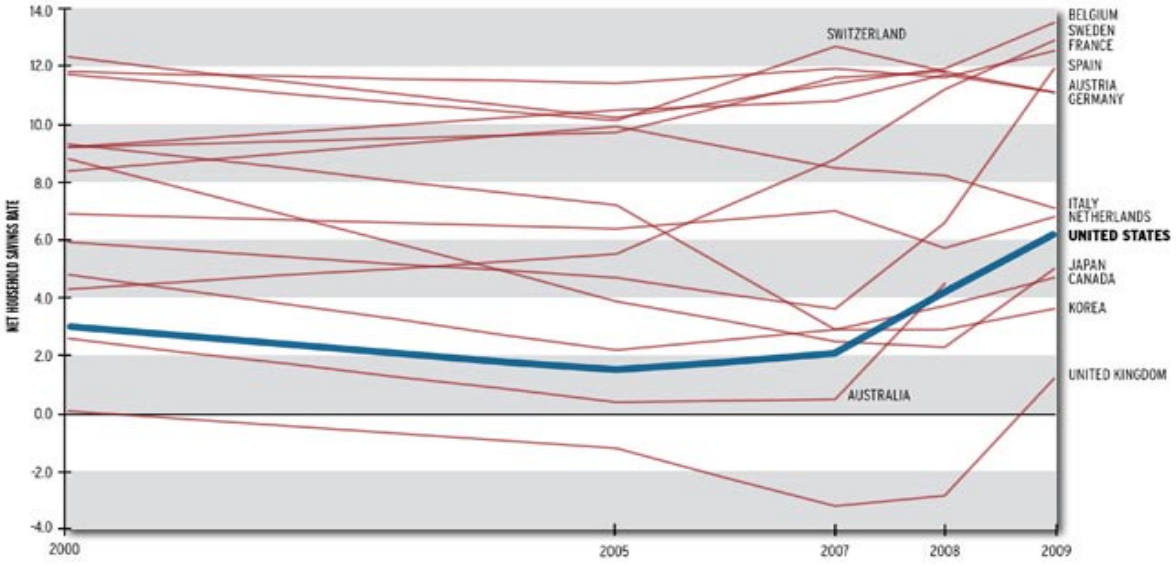
Most studies in a vast literature on household saving behavior use the permanent income or life-cycle hypothesis. Accordingly, household saving should be influenced by:

- current real income (richer households tend to save more),
- demographic effects (older cohorts are expected to save less or even dissave)

- and the real rate of return (which changes the opportunity costs of current consumption(see Table 2).

The basic assumption on the theory how households smooth their consumption over time is the one on the perfect capital markets. That assumption was relaxed in several.[41] It was demonstrated that the impact of uncertainty on household saving was measured by the rate of inflation (since it may raise uncertainty of the future income growth). Other variables include the type and design of public pension plans.[42] Other studies investigated the influence of the tax and transfer system, health and age, income inequality, the exchange rate and labor productivity, and wealth effects.[43]

Chart 2: Net Household Saving Rates For Selected OECD Countries, 2000-2009 (Percent of Disposable Household Income)



Source: Sheldon Garon, *Beyond Our Means: Why America Spends So Much While The World Saves*

Again, from a theoretical viewpoint, the sign of many of these variables is ambiguous. For example, income growth may raise or lower (due to the permanent income hypothesis (PIH), see Annex 1 for details) the households' saving rate; the influence of the real interest rates will depend on whether the behavior of lending households offsets the one of the borrowers, or vice versa. Accordingly, financial reforms will both enhance returns on saving and improve access to credit and the net effects on saving would remain unclear. As a consequence, the size

[41] The state of financial liberalisation is often proxied by the extent of loans outstanding (*e.g.* Sarantis and Stewart, 2001; Smith, 2001; Loyaza *et al.*, 2000; Callen and Thimann, 1997).
[42] Disney (2006), Brugiavini, Padula (2003), Attanasio, Paiella, (2003).
[43] Callen, Thimann (1997), Bloom *et al*. (2003) Smith (2001).

and direction of the economic impact of these variables on household saving behavior remains to a large extent an empirical issue.

A recent comprehensive overview (Hufner, Koske, 2010) indicates evidences that the government's fiscal stance, demography, the real interest rate, GDP as well as *per capita* income growth, exchange rate and inflation significantly affect saving rates. Hondroyiannis (2006) obtained similar results for a panel of 13 European countries, the main difference being a negative coefficient on the government deficit to GDP ratio for highly indebted countries. The financial reform is found to reduce the saving rate (Bandiera *et al,* 2000). Evidences were also found for ("less-than-perfect") Ricardian equivalence as well as for a positive influence of inflation and real interest rates. Age has a positive influence and dependency rates have negative influence on household saving rates (Li *et al,* 2007). The results obtained by De Mello *et al*. (2004) suggest that fiscal variables are the key determinants of private saving rates, along with changes in the exchange rate.

8. Household saving in transition economies

Although a number of studies[44] have examined the behavior of aggregate saving in transition economies, there have been very few attempts to study the determinants of private saving. Early works on household saving in transition economies (Denizer *et al*., 2000) explored household saving patterns in Bulgaria, Hungary, and Poland, finding four main results:

(1) except for the age profile, the effects of standard determinants on saving are comparable for transition and market economies; (2) no support was found for a precautionary saving motive; (3) the evidence on consumption smoothing is mixed; (4) education of the head of the household, but not employment characteristics, are linked robustly to saving; (5) durables ownership is negatively correlated with saving, consistent with the presence of anticipatory saving.

Chowdhury (2004) reports that empirical work on the transition economies suffers from at least two drawbacks. First, the transition itself is a process of a structural change and the dynamics of change vary by country. What more, the sample period is short. As a result, many of the studies on the transition economies have opted for panel approach instead of using only cross-sectional estimators. Nevertheless, most results obtained in the empirical analysis of developed economies apply to the transition economies as well.

[44] Borensztein and Montiel (1991), Conway (1995), Chowdhury (2001), and Denizer and Wolf (2000)

Table 2. Determinants of household saving rates in panel studies

	Income or GDP	Real interest rate	Infla-tion	Depen-dency ratio	Budget balance	Credit to GDP	Terms of trade	Other variables
Ferrucci and Miralles (2007)	+		+	–	–	–	+	Govt. cons.(–)
Li et al. (2007)	+			–			+	Fertility (–) Life expectancy (+) School (–) Labor part. (n.s.) Mortality rate (n.s.)
Hondroyiannis (2006)	+	+	+	+	+	–		
De Mello et al. (2004)	n.s.	–	n.s.	–	–		+	M2 (n.s./–) House prices (–) Equity prices (–)
de Serres & Pelgrin (2003)		–	n.s.	–	–		+	Labour productivity (+)
Sarantis & Stewart (2001)	+	+		–	–	–		
Loayza et al. (2000)	+	n.s.	+	n.s.	–	–	+	Urbanization (n.s.) M2/GNP (+)
Bandiera et al. (2000)	+	+	+		–			Index of financial liberalisation (–)
Haque et al. (1999)	n.s.	n.s.	n.s.	n.s.	–		+	Govt. curr. exp. (–) Govt. invest. (n.s.) Wealth (n.s.)
Masson et al. (1998)	+	+	+	–	–		+	Wealth (+) Govt. curr. exp. (–) Govt. invest. (–)
Callen & Thimann (1997)	+	+	+	–	–	–		Direct taxes (–) Indirect taxes (n.s.) Transfers (–) Corp. saving (–)

Notes: + and – indicate the sign of the estimated coefficient, n.s. indicates that the variable is not significant.
Source:

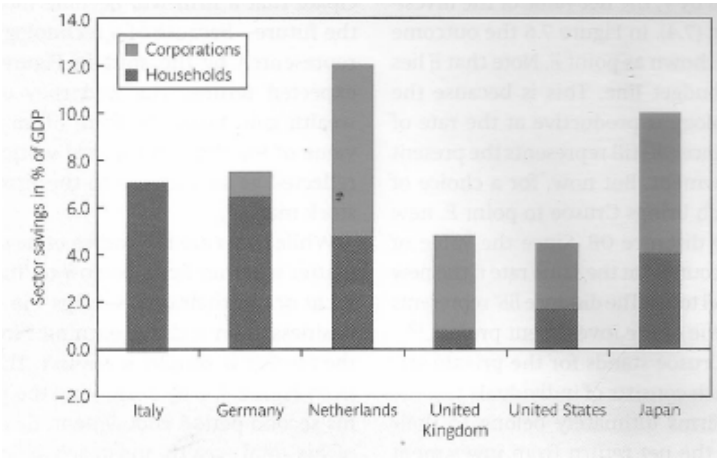
9. Corporate saving

Corporate saving can be broadly described as the after-tax profits that are not distributed to shareholders, i.e. retained earnings, and can be used to fund investment or purchase assets.

Available data show that corporate saving rates significantly differ across countries, but its structure of the total private saving differs even more, primarily owing to differences in tax

treatment of income from saving.[45] When the capital gains associated with retained earnings are taxed less heavily than dividend income, shareholders are better off when firms save on their behalf and corporate saving rises. As depicted in Chart 8, in Germany and Italy, households contribute most to private saving while firms perform this function in the UK and the USA. In the Netherlands and Japan, both sectors are important contributors to net saving. Thus cross-country comparisons can hardly bring any sensible conclusion, both because of the different size of the private saving rate (Chart 9), but also because of its frequent changes (Chart 10).

Chart 3: Corporate and Household Net Saving, 1997-2007.



Source: Wyplosz, Burda (2011)

The literature offers three reasons for broadly neglecting this subject (two of them being of a theoretical nature). First, following Modigliani-Miller theorem, households are the owners of corporations; hence the analysis *should* focus on the whole private sector, since corporations just pierce the corporate veil. Secondly, long run corporate economic profits will tend to be zero, i.e. corporate profits will only cover the cost of capital (dividends that must be paid to the owner of equity capital – consequently corporate saving will be negligible. Finally, since national saving is calculated as a residual, it must be recognized that data availability does not allow to properly discriminate between the personal and corporate elements of private saving.

[45] Wyplosz, Burda (2011)

However, saving decisions of corporation, i.e. decisions to retain earnings, can be significantly altered by number of factors.

(1) Financial constraints. When information barriers and/or transaction costs are high, firms usually raise saving. Since the work of Fazzari *et al.* (1988), it has been recognized corporate saving goes up when firms are unable to substitute retained earnings with the more expensive (or even unavailable) external funds. In this case an increase in corporate saving may be less than fully offset by a decrease in household saving.

(2) Scarce investment opportunities. Firms with large profits who do not see good opportunities for real or financial investment may be tempted to increase dividends. This situation implies that shareholders get a higher return than the firm, thus elevating permanent income and consequently current consumption at the expense of saving and investment.

(3) Personal factors. Liquidity constraints and/or myopia may well respond to a change in dividend policy by curbing the corporate saving rate,[46] simply because in these cases individuals relate their consumption to current rather than permanent income. If liquidity constraints are more severe for consumers than for firms, higher dividends would have a positive effect on current consumption, thus lowering corporate saving rate. Risk aversion may also give rise to consumption, because the postponed dividends are penalized with a high discount rate.

On the other hand, since capital gains are usually taxed at a lower rate than dividends, higher dividends may imply a higher permanent income, partially reverting the previous result.

[46] Campbell and Mankiw (1990) and Shea (1996).

Anex 3: The methodology and results of econometric research

1. Methodology of the empirical research

The empirical research of saving rate in Serbia is an econometric research via formulation and estimation of regression models based on the available data for Serbia for recent years. The period of observation started in 2006 and concludes with 2011 meaning that at least data for some years before the 2008 financial crisis have been included in the analysis improving the representativeness of the sample.

The household's data on saving and all other relevant variables (including some explanatory variables) are drained from the HBS (Household's Budget Survey) and some of the explanatory variables data have been published either by the Serbian Statistical Office or by the National Bank of Serbia.

The data for corporate saving econometric analysis is gathered through a random sample of 1,000 firms in Serbia and the public data from their income statement and balance sheet and statistical annex (features of the firm). All the data are for the 2008-2011 period, providing, theoretically an opportunity for 4,000 observation panel data. Nonetheless, crucial dependent variable (corporate saving) is formulated as an increment of the stock of unallocated profit from the end of one to the end of consecutive year, reducing the panel data to 3,000 observations.

Regression models have been estimated by the OLS (Ordinary Least Squares) method. No econometric problem that would make the OLS method inefficient and biased was identified.

2. Results of the econometric analysis of the households' saving rate

Regression analysis of the factors of the private households' saving rate has been done using a HBS (Households' Budget Survey) data for 28.000 Serbian households in the period from 2006 including 2011. The surveys are done continually, twice a month (since the survey itself takes two weeks time to be completed) thought the year. The sample is representative and has been formulated by the Serbian Statistics Office.

The data gathered by the HBS are used to formulate the dependent variable of the econometric analysis, i.e. regression model households' saving rate (SAVINGRATE) and it is specified as:

$$SAVINGRATE = \frac{DISPOSIBLE\ INCOME - CONSUMPTION}{DISPOSIBLE\ INCOME}$$

Both disposable income (DISINCOME) and total consumption (CONSUMPTION) data for each household for all the years of the sample are available from the HBS. Since the amount of saving is specified as the difference between disposable income and total consumption, the concept of net saving rate is applied, i.e. household's saving rate can be negative. Testing of the dependent variable proved to be successful with the weighted average households' saving rate in Serbia of about 8%. That is completely consistent with the macroeconomic data on aggregate saving rate for Serbia in the observed period.

Alternative formulation of the indicators for households' saving and saving rate has also been tested. Promising, at least *prima facie*, was the answer to the HBS question about the amount of money that is added to the saving stock of the household in last three months. Nonetheless, the answers to this question could be inaccurate due to the bounded rationality of the respondents and imperfect information they have. Test of the indicator of household's saving and saving rate based on the answer to the question about the change of the saving stock proved to be unsuccessful. The weighted average saving rate was only 0.1%, far away from the macroeconomic data on saving rate in Serbia. Obviously, the estimate of the saving rate of the households is substantially biased downward – this indicator of the households' saving rate is flawed and was removed from the analysis.

The available data on households gathered and provided by the HBS have been used to formulate various explanatory variables of the regression model. The mechanisms by which some of them influence saving rate are well founded in economic theory and based on the theoretical hypotheses that are formulated in the first section of this chapter. The influences of the others have not been strictly founded in economic theory, i.e. in the theoretical hypotheses that have been formulated, but were tested anyway, with possible challenges to explain statistically significant relation. The list of the explanatory variables follows.

DEVELOP

DEVELOP is a nominal variable that with the range of 1 to 4 that describes the level of economic development of the municipalities of Serbia (168 municipalities altogether). The level of the economic development expressed in this way can influence households' saving rate in two ways. The more developed municipality it is expected that there are more opportunity for consumption in terms of department stores, shopping malls etc., i.e. in terms of bigger supply that is provided. That will increase propensity to consume and decrease saving rate. On the other hand, the more developed municipality it is expected that there is bigger supply of

financial services, both in terms of various deposits and more combination of returns-risk options, but also in terms of bigger credit availability, or less liquidity constraints. The first aspect of the financial services provides more incentives for saving, while the second one provide more incentives for consumption (especially durables), reducing the saving rate. Accordingly it is theoretically impossible to determine the character of the relations between level of development of the municipality and saving rate of its households – both positive and negative parameters can be expected.

NUMBER

NUMBER is a number of the members of households, i.e. the size of the households. It can influence the saving rate of the household in two ways. Since there are some indivisibilities in consumption, it can be expected that increase in numbers of members of household for given income to increase consumption and to decrease saving rate. On the other hand, increase of the number of members of household, taking into account that such an increase means an increase in number of dependent members of the household, means greater uncertainty, providing incentives for precautionary saving, thus increasing saving rate. Again, there is no room for unambiguous theoretical hypothesis regarding the character of the causality link between number of household members and saving rate of the household – both positive and negative parameters can be expected depending of the relative strength of countervailing effects.

GENDER

Gender of the head of household is recorded in the database, but there is no theoretical ground for any hypothesis on the causality and on whether the change of the gender from man to women increases or decreases household's saving rate. Eventually, this relation has been empirically tested with GENDER as a nominal value (male – 1; female – 2).

AGEHEAD and AGEGEAD^2

The age of the head of the household is important variable because it is the ground for empirical test of Life-cycle hypothesis (LCH). According to this hypothesis both earnings the consumption of the individual/household reaches maximum at the mid age of the person, though in the mid age the positive difference between earnings and consumption is the biggest. In the early age consumption is bigger than income resulting in borrowing. In the old age, after retirement there are no earnings from activities hence consumption is funded by dissaving. Accordingly, the increase of age should bring the increase saving rate of the individual au to the mid age point of the maximum saving rate after which there is a decrease of the saving rate with increase of the age. Accordingly, the age of the head of the household is used in a quadratic function form with expected positive sign of parameter with the linear variable (AGEHEAD) and expected negative sign with the squared variable (AGEHEAD^2).

AGEAVG

Additional variable that can shed some light to the testing of the Life-cycle hypothesis (LEH) is average age of the household (AGEAVG). Since it is reasonable to assume that the bigger number of the members of the household are of the age that is below the age of the maximum saving rate according to the hypothesis, it should be assumed that an increase in the average age of the household increases its saving rate, providing that there is empirical evidence to support the Life-cycle hypothesis in Serbia. Accordingly it should be expected that the sign of the parameter of the average age of the household if the estimates of the parameters of the AGEHEAD and $AGEHEAD^2$ have theoretically expected signs.

MARSTAT

There is no theoretical ground for causality from marital status of the head of the households with the household's saving rate. Nonetheless, this relation should be empirically tested with MARSTAT nominal variable with six different statuses. Increasing number indicated more lose marital status.

EDUHEAD

Education of the head of the household (EDUHEAD, measured is nominal variable with value 1 if the individual has no school of all or 11 if he/she has a PhD), i.e. household decision maker can influence saving rate in two ways. On the one hand, the more educated the head of household, the more informed is about supply of loans, he/she understands more relevant issues regarding borrowing money (getting a loan) and is in position to understand and mitigate various financial risks, hence the bigger probability for that households to borrow money, i.e. to finance purchasing of durables by loans. Accordingly, the higher education of the head of the household, the lower saving rate can be expected. On the other hand, higher education also means better information and understanding about possibilities of financial investments and understanding various return-risk combinations. Accordingly, one should expect that propensity to invest increases with the level of education, so an increase in education of the head of the household lead to increase in household's saving rate. Again, there are countervailing effects of the explanatory variable to saving rate.

EDUMED

Additional explanatory variable linked to the education is median education of the household members (EDUMED, also a nominal value with the same range as the previous one). The more educated household members, the more they can influence the decisions of the head of the

household, with the outcome that can amplify the effects of the education of the head of the household whatever is the effect that education is generating. Accordingly, there is no theoretical ground to expect either positive or negative sign of the parameter of EDUMED.

ADDINCNO

Four situations regarding additional income of the households have been recorded. ADDINCNO (dummy variable with 1 or 0 options) is the situation in which household has no additional income. One can assume that the situation with no additional income creates incentives for precautionary saving, as no additional income can be earls in case of adversity of any kind. Accordingly, reasonable theoretical hypothesis is the households with no additional income have higher saving rate: one can expect positive sign of the parameter of the dummy variable associated with no additional income of the household.

ADDINCEMP

ADDINCNO (dummy variable with 1 or 0 options) is the situation in which household has additional income though additional employment of the head of the household and its members. One can assume that situation is reversal comparing with no additional income. Due to weak incentives for precautionary saving, reasonable theoretical hypothesis is the households with additional income form have lower saving rate: one can expect negative sign of the parameter of the dummy variable associated with additional income of the household from employment.

ADDINCENTP

ADDINCENTP (dummy variable with 1 or 0 options) is the situation in which household has additional income though additional entrepreneurial activities of the head of the household and its members. One can assume that situation is reversal comparing with no additional income. Due to weak incentives for precautionary saving, reasonable theoretical hypothesis is the households with additional income form have lower saving rate: one can expect negative sign of the parameter of the dummy variable associated with additional income of the household from employment.

ADDINCREST

ADDINCREST (dummy variable with 1 or 0 options) is the situation in which household has additional income though the character of the additional income and the character of the activity on which that additional income is based is not specified. Accordingly, there is no theoretical ground to specify character of causality between the additional income and saving

rate. Nonetheless, this variable has been included in the regression model, as it provides more information on the character of income of the household.

INCPUB

Apart from the character of the additional income, the character, i.e. the source the basic income is relevant for the saving rate. INCPUB (dummy variable with 1 or 0 options) is the situation in which household basic income is from the public sector. With public sector being darling of the Serbian authorities in terms of the certainty of the employment and income stream, it is reasonable to assume that dominance of such income decreases incentives for precautionary saving. Accordingly, it should be expected that the sign of parameter of this variable is negative.

INCPRIV

INCPRIV (dummy variable with 1 or 0 options) is the situation in which household basic income is from the private sector. With private sector in Serbia being fully exposed to the volatility of the market and being under constant market pressure for adjustments, it is very uncertain in terms of the employment and income stream, it is reasonable to assume that dominance of such income increases incentives for precautionary saving. Accordingly, it should be expected that the sign of parameter of this variable is positive.

INCAGR

INCAGR (dummy variable with 1 or 0 options) is the situation in which household basic income is from the agriculture activities. With agriculture be an industry not only fully exposed to the volatility of the market, but also exposed to the volatility of natural conditions, this industry is very uncertain in terms of the employment and income stream, it is reasonable to assume that dominance of such income increases incentives for precautionary saving. Accordingly, it should be expected that the sign of parameter of this variable is positive.

INCENT

INCENT (dummy variable with 1 or 0 options) is the situation in which household basic income is from the entrepreneurial activities. These activities are like the private sector in Serbia in general being fully exposed to the volatility of the market and being under constant market pressure for adjustments, it is very uncertain in terms of the employment and income stream, it is reasonable to assume that dominance of such income increases incentives for precautionary saving. Accordingly, it should be expected that the sign of parameter of this variable is positive.

INCTRAN

INCTRN (dummy variable with 1 or 0 options) is the situation in which household basic income are transfers from the public sector, including pensions. For political economy reasons these incomes being very stabile throughout the period, generating substantial certainty of the income. Hence it is reasonable to assume that dominance of such income decreases incentives for precautionary saving - it should be expected that the sign of parameter of this variable is negative.

INCREST

INCREST (dummy variable with 1 or 0 options) is the situation in which household basic income is none of the mentioned. Since the character of the income is vague in this situation, there is no theoretical ground to specify character of causality between the additional income and saving rate. Nonetheless, this variable has been included in the regression model, as it provides more information on the character of income of the household.

EXPECTS

EXPECTS (nominal variable, from 1 for best to 5 for worst) is the answer to the question to the head of the household whether household dispensable income now is better or worse comparing with the situation one year ago. Although the question is about historical trends, the answer provides information about expectations regarding future income. Accordingly, this variable can be used to test Permanent income hypothesis. If the household expected income to growth than the current consumption will be adjusted for the future (permanent) income that is higher than the present one, hence saving rate is lower. The higher expected income, the lower saving rate. Accordingly, it should be expected that the sign of parameter of this variable is positive.

HOUSEOWN

HOUSEOWN (dummy variable with 1 or 0 options) is variable with information whether the head of the household owns the housing unit (apartment or family house) he/she lives in. Owning of the real property decreases uncertainty regarding the rent payment and other aspects of rented housing, decreasing incentives for precautionary saving. Furthermore, if the housing real property is valuable, than it can be sold on the market, with purchasing housing unit of the smaller value, creating one off but substantial cash stream, decreasing incentives for precautionary saving and decreasing household's saving rate. Accordingly, it should be expected that the sign of parameter of this variable is negative.

HOUSEQUA

HOUSEQUA (nominal variable from 1 for the least equipped to 6 for the most equipped) is variable with information about the facilities that the housing unit used by the household is equipped. The more equipment of the household unit, the more valuable unit can be expected. Accordingly, this variable is a proxy for the value of household unit (apartment or family house), i.e. its market price. Following the argumentation from the previous paragraph, the bigger value of the real property, the weaker are incentives for precautionary saving and lower saving rate of the household. Accordingly, it should be expected that the sign of parameter of this variable is negative.

INCOMVOL

INCOMVOL is a variable with range from 1 to 0 describing the share of the volatile incomes of the family. HBS records 25 different sources of income of the household and all them can be divided to volatile and nonvolatile. The higher share of the volatile income, there are stronger incentives for precautionary saving and consequently lower saving rate of the household. Accordingly, it should be expected that the sign of parameter of this variable is negative.

DURABLES

DURABLES is the number of durable goods that the household posses with the maximum number of 30. HBS records all the durables that the households posses. The number and/or the value of durables influences saving rate by two mechanisms. First, as the some durable has already been purchased, there is no need for saving for purchasing that durable, as the saving is the only way to purchase durables if the liquidity constraint is substantial, i.e. in the conditions of not well developed financial system. Accordingly, more durables possessed, the lower saving rate can be expected. XXX (2005) demonstrated that is exactly the case in transitional economies. Second, possession of durables means that they can be converted (on the second hand market) to cash inflow if necessary decreasing incentives for precautionary saving. Accordingly, it should be expected that the sign of parameter of this variable is negative.

INTACT

INCAT is interest rate by which the interest is paid by the customer to the bank (weighted average interest rate). Basically, this is the price of the loan and since it influences the conditions for loan financing of the consumption it inevitably influences households saving and saving rates. There are two effects by which the interest rate, i.e. the price of the loan affects saving and consumption. One is substitution effect. Since there is a change of a price of consumption, there is a change of relative prices between consumption and saving and the saving and saving rate is changed. The increased interest rate, for example, increases the price of consumption and makes consumption more costly, providing incentives for households to save more. Accordingly, substitution effects of the increase of the interest rate of loans

increases saving rate of the households. The other is income effects. Interest rate influences the amount of income that must be used for servicing the loan, changing effective disposable income and its fractions used for consumption or saved. The increased interest rate, for example, increases the amount of money that is used for servicing the debt, hence decreasing effective disposable income and due to increasing marginal propensity to save, decreasing the saving and saving rate of the household. Obviously, substitution effect and income effect have countervailing impact to the saving and saving rate, so there is no theoretical ground to specify the character of the resulting relations. It can be only empirically found which of the two effects is stronger. Accordingly, it should be expected that the sign of parameter of this variable is either negative or positive, or that is statistically not significant (if the two countervailing effect have the same strength).

INTPAS

INTPAS is the interest rate that banks are paying for the deposits (all deposits included). Taking into account that most of the deposits of the households (above 75% at the end of the sample period), this is basically savings based i.e. deposit based income of the households. Basically the change of this interest rate has also two effects: substitution and income. Only in this case both effects have the same direction. For example, in the case of increasing interest rate the substitution effect make saving rate to increase since there is a substitution from consumption to saving. Furthermore, the income effect has the same direction of influence, as the increased interest rate increases income of the households and due to the increasing propensity to save increases saving and the saving rate of the household. Accordingly, it should be expected that the sign of parameter of this variable is positive.

CIM

CIM is a shortage for Contract Intensive Money which is an indicator of the level of development ("depth") of financial system of a country. CIM is the following relation: (M2-M1)/M2. Since M2 is basically contract intensive money its share to the total money supply is a good and reliable proxy for the level of development of financial system. The higher CIM, the more developed financial system. The issue is how the level of development of financial system influences saving and saving rate of the household. On the one hand, the higher level of development of financial system decreases liquidity constraints of the household, i.e. enabling increased consumption (predominantly of durables) without prior increased saving. Obviously in this sense, the higher level of development of financial system, the weaker incentives for households' saving and lower savings rate can be expected. On the other hand, the higher level of development of financial system, the more opportunities for financial investments. The wider range of investment products with more return-risk combination (bank deposits, life insurance, voluntary funded pension insurance, stock exchange, mutual funds, hedge funds, etc.), the stronger

incentives for households' saving and higher saving rate can be expected. Accordingly, the change of the level of development of financial system has countervailing effects. There is no theory that can predict which of the two countervailing effects will be stronger. Accordingly, there is no consistent theoretical hypothesis on the direction of the change of saving rate with the change of the level of financial system. For example, whether the increase of the level of development of the financial system will induce the increase or decrease in households' cannot be theoretically predicted and is eventually for the finding of empirical research whether the increased level of development of the financial system brings about an increase or decrease of the household saving rate. Accordingly, it should be expected that the sign of parameter of this variable is either negative or positive, or that is statistically not significant (if the two countervailing effect have the same strength).

LOANPRIV

LONANPRIV is a rate of the value of the total loans disbursed to the private sector (both companies and individuals) and the GDP. This is alternative indicator of the level of development of financial system of a country. The higher rate of the loans to GDP, the higher level of development of financial system. Basically, all the theoretical considerations for the CIM should be applied to this indicator. Accordingly, it should be expected that the sign of parameter of this variable is either negative or positive, or that is statistically not significant (if the two countervailing effect have the same strength).

INCOME

Income is the amount of disposable income of the household measured in RSD. Basic theory of saving behavior infers increasing propensity to saving, meaning that the higher income, the higher household's saving rate can be expected. This is the consequence of the existence of subsistence consumption, the consumption that cannot be avoided. Since the subsistence consumption is fixed, i.e. is not dependent of income, increasing level of income does not increase level of subsistence consumption. That means that the share of the income that can be allocated either to consumption or saving is increased, clearing the way for increasing saving and saving rate. That is the clear theoretical ground for the hypothesis that increasing income leans to increasing household saving and saving rate. Accordingly, it should be expected that the sign of parameter of this variable is positive.

LNINCOME

LNINCOME is only logarithmic transformation of the previous indicator. It will be used to test the robustness of the causality through modifying specification of the regression model. Accordingly, it should be expected that the sign of parameter of this variable is positive.

CONSUMP

CONSUMP is the amount of total consumption of the household measured in RSD. The consumption itself is just the opposite of saving, the bigger consumption, the smaller saving; hence it is not the factor of saving. The same factors influence the household's decision to save or to consume. Nonetheless, this indicator is included in the regression model to check consistency of the data, particularly to check the saving rate calculation. Accordingly, it should be expected that the sign of parameter of this variable is negative.

LNCONSUMP

LNCONSUMP is only logarithmic transformation of the previous indicator. It will be used to test the robustness of the findings through modifying specification of the regression model. Accordingly, it should be expected that the sign of parameter of this variable is negative.

FXRATE

FXRATE is real foreign exchange rate of the RSD (measured as RSD for 1 EUR). The changes of the real exchange rate influence the household's decision regarding consumption and saving. The change of the real exchange rate is basically the change of price of foreign currency. As in the all case of price changes, there are two effects: substitution effect and income effect. The RSD real depreciation makes consumption of the imported goods more expensive, leading to the substitution of the consumption of the domestic goods and substitution of the consumption with saving. Since there are imperfect substitutes of the imported goods produced domestically, it can be expected that the bulk of the substitution is from consumption to saving, leading to the increase of saving rate. The income effect of the RSD depreciation is that there is an increase in income that is used for consumption of the imported goods. If there is no change of household's behavior of consumption (no substitution effect), all the change will be income effect inevitably increasing consumption (measured in the share of income that is used to finance it) and decrease saving and saving rate. The income and substitution effects are countervailing in this case and there is no theoretical ground to specify which one of them is stringer. Accordingly, it should be expected that the sign of parameter of this variable is either negative or positive, or that is statistically not significant (if the two countervailing effect have the same strength).

CABDEF

CABDEF is the rate of the current account of the BoP deficit to the GDP. This is a proxy for cross-border borrowing, i.e. ability to by importing foreign saving decrease domestic borrowing constraints. The higher deficit (CABDEF), the smaller domestic borrowing constraints, hence the

lower households' saving rate. Accordingly, a negative sign of the parameter of CABDEF should be expected.

GROWTH

GROWTH is annual growth rate of the GDP recorded in the previous year. This is an indicator (proxy) of the expectations of the households regarding their future (permanent) income. If there is substantial economic growth, households expect that their (permanent) income will increase and they increase their consumption. Accordingly, the higher growth rate in the previous year, the bigger consumption can be expected, and hence the smaller saving and saving rate can be expected. Accordingly, it should be expected that the sign of parameter of this variable is negative.

Some of the hypotheses formulated in the first section of this chapter have not been tested for some methodological reasons. The first candidate is the change of the deposit insurance that has been introduced in Q4 2008 in the middle of financial crises when bank run was a serious possibility. The problem with this variable (inevitably a dummy variable) is that its variability is very low and it is correlated with the financial crises. Results can be misleading and that is the reason for omitting it from the regression. The same goes for changes in taxation. These changes were negligible as the VAT rate was not changed at all during the observation period and the only change during the observed period was the change of tax on interest income that was abolished in 2009 and set to 10% in 2010 onward in comparison to the 20% rate prior to 2009. Again, the variability of these explanatory variables is so low that there is no ground for them to be included in the regression.

The other variable that was a candidate for an explanatory variable is the rate of mandatory reserves. Although the rate of mandatory reserves can influence borrowing constraints (the bigger mandatory reserves, the greater borrowing constrains, thus the higher saving rate), the variability of the mandatory reserves in the observed period was small, meaning that this variable does not deserve to be included in the regression. Two other variables have not been included in the regression are political risk and income inequality. As for the later, Gini coefficient is extremely stabile during the observed periods, virtually showing no variability at all. As to the various indicators of political risk, their variability in the observed period is also low,

Regression models have been formulated starting with all explanatory variables identified in the HBS and general public statistics. The first batch of regression model contain income and consumption expressed in RSD, assuming linear relation if the amount of income/consumption and saving rate. The regression model has been estimated by the ordinary least squares (OLS) method, because there was no reason to assume that the basic assumptions for unbiased OLS

estimators are violated. Step by step variables with statistically nonsignificant parameters have been removed apart from those variables that have a consistent theoretical explanation for such a result. Details of the estimation of the linear (in terms of income and consumption) regression models are disclosed in the Table 1.

Table 1.

Results of the linear regression model (dependent variable: saving rate)

	S1	**S2**	**S3**
Constant	1.409***	1.406***	1.284***
	(2.684)	(2.931)	(3.037)
DEVELOP	0.006	0.006	
	(1.544)	(1.546)	
NUMBER	0.036***	0.037***	0.038***
	(6.531)	(7.115)	(7.222)
GENDER	-0.019	-0.025**	-0.026**
	(-1.34)	(-2.094)	(-2.196)
AGEHEAD	-0.011***	-0.011***	-0.011***
	(-3.879)	(-4.002)	(-3.938)
$AGEHEAD^2$	0.001***	0.001***	0.001***
	(3.718)	(3.757)	(3.689)
AGEAVG	0.002***	0.003***	0.003***
	(4.017)	(4.25)	(4.295)
MARSTAT	0.009		
	(0.635)		
EDUHEAD	0.002		
	(0.601)		
EDUMED	0.02***	0.022***	0.021***
	(5.055)	(7.803)	(7.639)
ADDINCNO	0.118***	0.107***	0.087***
	(2.955)	(3.442)	(3.262)
ADDINCEMP	0.024		
	(0.377)		
ADDINCENT	0.1	0.089	
	(1.496)	(1.439)	
ADDINCREST	0.139***	0.128***	0.11***
	(3.353)	(3.88)	(3.806)
INCOPUB	0.064***	0.097**	0.066***
	(3.952)	(2.16)	(4.125)

INCOPRIV	0.033**	0.065	0.033**
	(2.077)	(1.457)	(2.187)
INCOAGR	-0.143***	-0.112**	-0.142***
	(-6.399)	(-2.315)	(-6.496)
INCOENTR	-0.033		
	(-0.71)		
INCOTRAN	-0.199***	-0.167***	-0.198***
	(-4.709)	(-2.763)	(-4.697)
INCOREST	-0.337***	-0.304***	-0.336***
	(-11.183)	(-5.817)	(-11.235)
EXPECT	-0.044***	-0.044***	-0.045***
	(-7.61)	(-7.661)	(-7.848)
CONSUMPTION	-0.001***	-0.001***	-0.001***
	(-73.311)	(-73.81)	(-74.147)
INCOME	0.001***	0.001***	0.001***
	(74.237)	(74.401)	(74.452)
HOUSEOWN	-0.065***	-0.065***	-0.068***
	(-3.788)	(-3.746)	(-3.767)
HOUSEQUA	-0.001		
	(-0.112)		
INCOMEVOL	-0.03	-0.03	-0.03
	(-1.389)	(-1.399)	(-1.369)
DURABLES	-0.005***	-0.005***	-0.005***
	(-2.701)	(-2.83)	(-2.998)
INTACT	-3.226***	-3.109***	-3.03***
	(-4.693)	(-5.397)	(-7.226)
INTPAS	7.163***	7.712***	7.523***
	(3.038)	(5.339)	(9.946)
CIM	-1.748***	-1.697***	-1.465***
	(-2.896)	(-3.006)	(-2.822)
LOANPRIV	0.062	-0.01	
	(0.217)	(-0.049)	
FXRATE	0.001	0.001	0.001*
	(1.616)	(1.594)	(1.605)
CABDEF	-0.518***	-0.499***	-0.461***
	(-3.564)	(-3.689)	(-3.727)
GROWTH	-0.022***	-0.022***	-0.019***
	(-3.507)	(-3.731)	(-4.244)

R Square	.278	.278	.277
F	282.1***	330.76***	383.48***

Testing the econometric robustness of the obtained results has been achieved by modifying the specification of the regression model by introducing logarithm of the RSD values of the income and consumption, i.e. by introducing LNINCOM and LNCONSUMPT. Theoretically speaking logarithm form of both income and consumption are more appropriate for such a regression model with saving rate (with theoretical range from 0 to 1). The same step by step procedure of elimination of explanatory variables with nonsignificant parameters is applied. Details of the estimation of the linear (in terms of income and consumption) regression models are disclosed in the Table 2.

Table 2.

Regressions 2 – LN variables

	S1	S2	S3	S4	S5
	-0.132	-5.476	-5.637	-3.568***	-4.251***
(Constant)	(-0.33)	(-0.924)	(-0.952)	(-4.272)	(-7.068)
DEVELOP	0.011***	0.018**	0.018**	0.018**	0.018**
	(3.503)	(2.172)	(2.157)	(2.098)	(2.117)
NUMBER	-0.018***	-0.074***	-0.097***	-0.097***	-0.097***
	(-3.99)	(-6.436)	(-9.816)	(-9.834)	(-9.892)
GENDER	0.009				
	(0.877)				
AGEHEAD	-0.003	-0.004			
	(-1.02)	(-0.773)			
$AGEHEAD^2$	0	-0.001			
	(0.597)	(-0.182)			
AGEAVG	-0.001	-0.002	-0.007***	-0.007***	-0.007***
	(-1.397)	(-1.24)	(-6.566)	(-6.572)	(-6.551)
MARSTAT	-0.018	-0.093***	-0.068***	-0.068***	-0.069***
	(-1.599)	(-3.631)	(-2.815)	(-2.798)	(-2.828)
EDUHEAD	-0.005*	-0.024***	-0.019**	-0.018**	-0.019**
	(-1.652)	(-2.912)	(-2.338)	(-2.328)	(-2.352)
EDUMED	-0.012***	-0.054***	-0.058***	-0.058***	-0.058***
	(-3.514)	(-6.313)	(-6.928)	(-6.921)	(-6.952)
ADDINCNO	-0.033				
	(-1.111)				
ADDINCEMP	-0.055				

	(-1.127)				
ADDINCENT	-0.031				
	(-0.595)				
ADDINCREST	-0.05				
	(-1.625)				
INCOPUB	-0.049***	0.033			
	(-3.847)	(0.406)			
INCOPRIV	-0.041***	0.105			
	(-3.347)	(1.278)			
INCOAGR	-0.088***	-0.008			
	(-5.135)	(-0.083)			
INCOENTR	-0.096***	-0.105			
	(-2.734)	(-0.884)			
INCOTRAN	-0.026				
	(-0.778)				
INCOREST	-0.146***	-0.121			
	(-6.326)	(-1.268)			
EXPECT	0.011***	0.078***	0.077***	0.075***	0.075***
	(2.725)	(6.813)	(6.705)	(6.57)	(6.617)
	-0.001				
HOUSEOWN	(-0.067)				
	0.001				
HOUSEQUA	(0.096)				
	-0.007				
INCOMEVOL	(-0.37)				
	-0.006***	-0.016***	-0.015***	-0.016***	-0.015***
DURABLES	(-3.899)	(-4.436)	(-4.247)	(-4.57)	(-4.499)
	-1.655***	-2.288*	-2.282**	-1.396	
INTACT	(-3.766)	(-1.896)	(-1.89)	(-1.294)	
	3.975***	5.65*	5.618**	2.587	
INTPAS	(3.608)	(1.868)	(1.857)	(1.217)	
	-0.78*	0.261	0.335	-1.759**	-1.114*
CIM	(-1.702)	(0.042)	(0.054)	(-2.027)	(-1.678)
	-0.445***	1.369	1.436	-1.049***	-0.823***
LOANPRIV	(-2.935)	(0.256)	(0.269)	(-5.088)	(-7.447)
	-1.307***	-1.779***	-1.782***	-1.779***	-1.778***
LNCONSUMPTION	(-129.94)	(-67.938)	(-68.422)	(-68.454)	(-68.444)
	1.39***	2.236***	2.247***	2.247***	2.248***
LNINOCOME	(158.197)	(102.792)	(105.561)	(105.666)	(105.846)

	0	-0.002	-0.002		
FXRATE	(0.05)	(-1.14)	(-1.174)		
	-0.269***	2.731	2.784		
CABDEF	(-2.563)	(0.426)	(0.434)		
	-0.003	0.019	0.02		
GROWTH	(-0.615)	(0.311)	(0.321)		

R Square	.565	.309	.309	.309	.309
F	984.1***	473.76***	645.78***	817.54***	943.21***

In some of the regressions parameter of DEVELOP (level of economic development of the municipality) proved to be statistically significant and positive (in all models of logarithm specification and in none of the linear specification). This means that the households in less developed municipality have higher saving rate, though the relation is not very robust. This finding infers that the lower level of development of municipalities in Serbia influences primarily opportunity for consumption, or rather the lack of it, rather than opportunity for saving. Furthermore, this infers that a substantial part of households' saving in Serbia is not invested at all, but it is rather cash deposited in mattresses. Since households' saving is specified as the gap between the disposable income and total consumption, it is evident that substantial part of its stock (i.e. savings) can be cash that is not invested. This result provides some indirect empirical evidence that substantial part of saving in Serbia is not financially invested. As it is not invested in that way it cannot be a part of financial intermediation, i.e. it is useless regarding funding investments in the Serbian economy, it makes problem of low saving rate in the country even graver. Not only that the saving rate in Serbia is low, but the small amount of savings accumulated via that way is not efficiently allocated to the investments, actually a part of it is not allocated at all. On the policy level, this conclusion infers that not only the policies for increasing saving and saving rate in Serbia should be considered, but also policy for improved efficiency of financial intermediation that will channel saving to the investments in Serbian economy.

Parameter of NUMBER (number of member of household) proved to be statistically significant in all regressions, though in linear specifications it was positive and in logarithm specification it was negative. On the theoretical ground there is a consistent explanation of both results, as there are mechanisms with countervailing effects. Obviously in one specification (linear) the stronger is the mechanism that makes saving rate increasing with the numbers of the household and in the other (logarithm specification) stronger mechanism is the one that that makes saving rate decreasing with the numbers of the household. One way or the other, this demographic

variable is not endogenous to the economic or any other public policy, hence it cannot be influence by a policy change.

Parameter GENDER proved not to be statistically significant in most of the cases. This is consistent with the lack of theoretical explanation for such a relation. Furthermore, such a relation would be irrelevant from the policy perspective.

Parameters of AGEHEAD and $AGEHEAD^2$ proved to be significant only in logarithm specification of the regression model. Nonetheless, it is not expected signs that have been recorded. The parameter of AGEHEAD is negative (instead of positive as expected) and the parameter of $AGEHEAD^2$ is positive (instead of negative as expected). This means that LCH (life-cycle hypothesis) can be rejected in Serbia. In the mid age, when the saving of the individual/household should be at its peak according to the LCH, it is at its minimum in Serbia. Probably the main reason for this result is widespread compulsory insurances (first of all compulsory pension insurance operating as "pay as you go") and relatively low level of development of financial system, particularly opportunities for long-term financial investments (life insurance, funded pension insurance, earmarked saving etc.). Accordingly, there is no mechanism by which LCH can materialize in Serbia. As the consequence in the life period that is most productive for an individual, when his/her income is the highest, the saving rate is the lowest, meaning that overall saving rate of the household sector is lower that it can *be ceteris paribus*. This infers that with the proper changes of the households' behavior, i.e. with alternative incentives, substantial changes though in the long run can be achieved and aggregate (domestic and national) saving rate can increase. The good news is that these incentives are endogenous, i.e. they are created by public policies that could be changed rather easily.

Parameter of AGEAVER (average age of the household) proved to be statistically significant in most of the regressions, though in linear specifications it was positive and in logarithm specification it was negative. The interpretation of this result depends on the previous one. Since LCH has been rejected for Serbia, the initial theoretical hypothesis of the positive sign should be abandoned. Since there are contradictory results depending of the regression model specification, it is evident that statistically significance of this relationship (whatever the sign is) is not robust.

Although there are some statistically parameters of MARSTAT, most of the estimates are not statistically significant, demonstrating that statistically significance of the relation is not robust. This result is not surprising, taking into account that there is no theoretical ground for explanation of such a relationship. In the cases of statistically significant parameter the estimates are negative, inferring that more lose marital status imply lower saving rate. Perhaps

this clue can be an interesting as a starting position of some specific empirical research, but it is utterly irrelevant from a policy perspective.

Parameters of EDUHEAD (education of the head of the household) proved to be statistically significant in almost all logarithm specifications of the regression model and in none of the linear specification. Parameters are negative, inferring that the higher education implies lower saving rate. This means that higher educated individuals are more skillful in borrowing money, as they better understand and mitigate financial risks associated with borrowing. Because they fund the purchase of durables via borrowing, there is weaker incentive for them to save, thus the saving rate of more educated household is lower. Though this result is not quite robust (no statistical significance in the linear specifications) it provides an interesting insight in the features of Serbian financial system. Obviously the opportunities for borrowing money in Serbia are much more developed than the opportunities for financial investments in terms of various return-risk combinations. Higher education and better understanding of financial operations is thus used to increase borrowing, rather than to increase saving through financial investments.

Parameters of EDUMED (median education of the household) proved to be statistically significant in all specifications of the regression model. Nonetheless, parameter is negative in the case of logarithm specifications of the regression model and positive in the case of the linear specifications. Since the previous parameter (EDUHEAD) has not been statistically significant, and the theoretical position that EDUMED is just amplifying the impact of EDUHEAD, the econometric results obtained in the case of the linear specification should be discarded. Negative parameters in the logarithm specifications only amplifies the impact of the education of the head of household, providing more empirical evidence the support the thesis of asymmetrical development of financial system in Serbia, with more opportunities for borrowing than for financial investment.

For situations of additional income (ADDINCNO, ADDINCENP, ADDINCENTP, ADDINCOMEREST) have been recorded but in case of two of them ADDINCENP, ADDINCENTP, no statistically significant parameters have been recorded whosoever. In the case of ADDINCNO (no additional income) and ADDINCOMEREST (additional income that does not belong to employment or entrepreneurship) very similar results have been achieved: positive statistically parameter only in the cases of linear specifications. This demonstrates that if there is no additional income or of that additional income is not from employment or entrepreneurship that creates incentive for precautionary saving. In other words, additional income from employment and entrepreneurship is considered as a kind of “insurance”.

A group of dummy variables is used to specify the character of the main income of the households. The parameter of INCPU (implying that the main income is from the public sector) is significant and positive in all of the linear specifications and significant and negative in only

one of the logarithm specifications. Positive sign is a puzzling result, as income from the public sector has been the most certain type of income in Serbia. Virtually the same results are obtained in the case INCPRIV, i.e. dummy variable for the main income from the private sector. Positive sign in this case in quite expected since income streams from the private sector employment are rather uncertain, creating incentives for precautionary saving. The most puzzling result is a negative sign of parameter of INCAGR testifying that the income from agriculture decreases incentives for saving. The theoretical expectation is that due high uncertainty of income from agriculture as the activity exposed to natural uncertainness (drought, flod, hail, storms), such an income should create incentives for precautionary saving. The econometric result that is rather robust testifies that this logic evidently cannot be applied to Serbia. Perhaps the main reason for that is a track record of the government "bailing out" farmers in case of collapse of their production and income and other types of government intervention that reduced uncertainties of the farmers. This could be at least a part of the explanation for rather puzzling results.

Parameter of INCENT proved not to be statistically significant in any specification, but parameter of INCTRAN proved to be statistically significant and negative in the linear specification, though not significant in logarithm specification. Most of the transfers are pensions and a negative sign of the parameter means that if the income comes from transfers (pensions), the saving rate of the household is lower. This finding is consistent with the fact that pensions have been one of the most regular incomes in Serbia in the recent decade (irrespectively of the size of that income), decreasing incentives for precautionary saving. Nonetheless, this result provides at least some empirical support to the LCH (Life-cycle hypothesis) that could contradict the result on signs of the age parameters. Nonetheless, taking into account that substantial number of pensioners in Serbia are early pensioners, it seems that the contradiction, if exists, is not substantial.

Although parameter of INCREST is negative and statistically significant in all linear and some logarithm specifications, since there is no additional information on the character of that income, there is no way to explain the impact of that type of income on saving rate.

The econometric result of the impact of EXPECT, i.e. expectations of the future income are contradictory. Although the parameter of this explanatory variable is statistically significant in all the specifications, in the cases of liner specification the parameters are negative, meaning that more optimistic expectations lead to increased consumption and lower saving, confirming Permanent income hypothesis in Serbia, but in the cases of logarithm specification the parameters are positive, contrary to theoretical expectations, providing some empirical evidence for rejection of Permanent income hypothesis in Serbia.

Additional way to empirically test Permanent income hypothesis in Serbia is based on the GDP growth rate in the previous period (GROWTH). There are statically significant and negative parameters of this variable in all linear specifications, that provides empirical support for Permanent income hypothesis in Serbia, but the statistical significance is completely lost if the specifications are logarithm. Obviously this relation is not robust. Even if it exists, its policy relevance is rather negligible.

Ownership of the housing unit (apartment or family house) that household is accommodated in (HOPUSEOWN) was tested and parameters of that dummy variable proved to be statistical significant and negative in all linear specifications, that provides empirical support for hypothesis that in Serbia ownership of the real property decreases incentives for precautionary saving, thus decreasing saving and saving rate of the household, but the statistical significance is completely lost if the specifications are logarithm. Obviously this relation is not robust. Furthermore, taking into account that vast majority of the housing stock in Serbia is owner occupied the policy relevance of this empirical result is rather modest.

Parameters of the HOUSEQUA are not significant in any specification, inferring that there is no causality from quality of the housing to saving rate of the household.

INCOMVOL (the share of volatile incomes in the total income) is one of the crucial explanatory variables of saving and saving rate of the household. Nonetheless, parameters of INCOMVOL are not significant in any specification, inferring that there is no causality from income volatility to saving rate of the household. In short income volatility in Serbian does not create incentives for precautionary saving. This result can be explained by very widespread compulsory insurance in Serbia, organized by public sector: health insurance, pension insurance, unemployment insurance, social insurance etc. With such a level of insurance and compulsory contribution to fund the services provided under insurance scheme, obviously there are very few incentives for precautionary saving. This is specific “moral hazard” of such widespread compulsory insurance and obviously saving rate is paying that price.

Parameters of the DURABLES (number of durable goods owned by the household) are statically significant and negative in all specification, meaning that these results are consistent and robust. Furthermore, they are consistent with theoretical prediction (explained with the explication of theoretical hypotheses), and empirical results for the transitional economies in CEE. The point is that with economic growth, i.e. growth of *per capita* income, households will purchase more and more durables, lowering their incentives for precautionary saving. According to this mechanism in Serbia long-term economic growth will bring down households’ saving rate. Nonetheless, the strength of the relationship in future (if it exists) is unknown.

Parameters of the INTACT (interest rate that is paid by the household customers to the bank) are statically significant and negative in all but one specification. That means that increase of the interest rate that households are paying for borrowing money in Serbia leads to the decrease of saving. Obviously income effect of the (active) interest rate change is Serbia is stronger that the substitution effect. That infers that addition risk of lending money, resulting in increase in risk premium and consequently in higher interest rate will decrease household's saving rate. From the policy perspective, it is important to realize that decreasing systematic risk of lending money, leading to reducing interest rate, not only that decreases liquidity constraint to households, but increases their saving rate.

Parameters of the INTPAS (interest rate paid by the bank for the customer's deposits) are statically significant and positive in all but one specification. This is consistent with the theoretical prediction that the substitution and income effect have the same direction: an increase in passive interest rate, ban making time deposits more attractive, increases saving and saving rate of the households. Accordingly, unrestricted competition of the commercial banks for the households' deposits is beneficial for increasing households' saving rate. From the policy point of view in is important to keep that competition unrestricted and to protect that competition from possible collusion among the banks.[47]

Parameters of the CIM (Contract Intensive Money – indicator of the level of development of the financial system in Serbia) are statically significant and negative in all but two specifications. This demonstrates the direction and the character of the causality from the level of development of financial system to the households' saving rate in Serbia: the more developed financial system, the lower households' saving rate. Accordingly, the development of the financial system in Serbia resulted more in decreasing in liquidity constraints of the households than development of the opportunities for financial investments and increasing number of different return-risk options. Obviously that incumbent financial system in Serbia is dominated by lending institutions and widespread opportunities for borrowing money. On the other hand, behavior of households in Serbia in last decade features two main elements. One is increasing propensity to consume, particularly durables, because consumption of durables and replacement of existing assets stalled in the last decade on the XX century due to significant drop of income and trade blockade of the country (most of the durables are of the import origin). The other one is a strong memory of the hard currency saving deposit fraud in the last decade on the XX century

[47] The policy idea of keeping passive interest rates low (whatever could be the mechanism) for implementation of such a policy could be motivated by the desire to keep active interest rates low, hoping that lower costs of finance in the financial intermediation will bring down the active interest rates and hopefully increasing investment rate. Whether this aim is attainable or not is beyond the scope of this paper. Nonetheless, whoever considers the policy of keeping passive interest rates low for whatever reason should be aware of its by-effect: lowering passive interest rates decreases households' saving rate. There will be less (domestic) capital for financial intermediation.

that created huge risk aversion for many households in Serbia for any financial investment, starting from savings deposits, let alone long-term arrangements like life insurance of private (funded) pension insurance. That asymmetrical pattern of the development of the financial system has been recorded in the literature. For the policy perspective, public policies should be focused to the development of financial investment segment of the financial system in Serbia, particularly to the development of its non-banking institutions.

Parameters of the LOANPRIV (ration of the loans to private sector and GDP, alternative indicator of the level of development of the financial system in Serbia) are statically significant and negative in the majority of the specifications. This result reinforces the finding spelled out in the previous paragraph and demonstrates that these finding are even robust to the change of the indicator.

Parameters of the INCOME and LNINCOME (the amount of household disposable income in RSD and logarithm of the amount of household disposable income in RSD) are highly statically significant and positive in all the specifications. This means that positive marginal propensity to saving of households in Serbia is identified: the higher income, the higher saving rate can be expected. In the case of LNINCOME the values of the parameters are actually coefficients of elasticity of saving rate to income. Not only that all of them are positive, all of them are very high: all but one are above 2 (one percentage change of income makes more than 2% change of the saving rate); the remaining is well above 1. This infers that saving rate is very elastic to changes of income. This is very important finding from the policy point of view, as the possibility for specific "poverty trap" to exists: low level of income *per capita* influences low level of saving (low saving rate), that influences low level of investment rate and that influences the stall: low or zero growth preserving low level of per capita income. Accordingly, there is a need to break that vicious circle but introducing foreign saving as the substantial source for funding investments that will enable economic growth and increase in *per capita* income.

Parameters of the CONSUMP and LN CONSUMP (the amount of total consumption of household disposable income in RSD and logarithm of total consumption of household in RSD) are highly statically significant and negative in all the specifications. Since total saving of the household is nothing but the difference between, this result just demonstrates robustness of the previous one reinforced the finding disclosed in the previous paragraph.

Parameters of the FXRATE (real foreign exchange of RSD) are not significant in any specification and this result can infer two conclusions. One conclusion is that there is no causality whatsoever from real foreign exchange rate of RSD to saving rate of the household in Serbia. The other conclusion is, nonetheless, that the two identified countervailing effects (substitution and income effect) are of the same intensity, wiping out each other. If the second conclusion is valid, that in time the relative strength of these two countervailing effects can change, implying that

RSD real appreciation can push the saving rate either way. Continuous empirical research is the only way to detect if there is a change regarding that and what is its direction.[48]

3. Results of the econometric analysis of the corporate saving rate

The data gathered by the balance sheet of the companies enables formulation of the dependent variable:

$$CORPORATE\ SAVING\ RATE = \frac{INCREASE\ IN\ UNALOCATED\ PROFITS}{PROFITS}$$

Total corporate saving are considered as retained and reinvested earnings and that corresponds to the accounting value of the change of the stock of unallocated profit of the company.

As no conclusive theoretical hypothesis suitable for empirical verification regarding the factors of corporate saving has been formulated, econometric testing was basically based on the number of *ad hoc* hypotheses regarding various features of the companies. The theoretically based hypothesis is that relative cost of capital (costs of borrowing and equity capital relative to the retained earnings opportunity costs) will be decisive for the rate of corporative saving. Nonetheless, since these information are specific for each firm (all these costs are form specific) it is not feasible to test the hypotheses directly. Instead the *ad hoc* hypotheses have been formulated hoping that some of the variables will be a proxy for the relative costs of capital of a firm. Accordingly, these hypotheses are based on the hint that there could be some influence to the corporate saving and saving rate.[49]

SIZE

Changes of the size of the firm can influence corporate saving. Nominal variable SIZE has values of 1 to 3, which depend on the size of the company, defined in accordance with the local Law on Accounting. This measure takes into account both the employment and revenues of the company.

[48] As the change of the real foreign exchange rate influences a wide range of economic decisions and creates strong incentives for households' decisions it is reasonable conjecture that both substitution and income of the change of the real exchange rate exists and that they are offsetting each other in Serbia in the period of this empirical research. That is much more probable conjecture that the one that there is no causal relation whatsoever.

[49] The other theoretically based hypothesis is that relative tax burden of dividends (including tax holidays for reinvesting profit) vs. capital gains influences corporate saving. In the case of relatively high dividend tax shareholders have incentives to reinvest profit and to harvest returns in the form of capital gains. Nonetheless, this hypothesis cannot be tested as there were no substantial changes of the tax rates in the observed period and the only change is associated with the financial crises and recession.

IND

Predominant industry (sector) in which the firm operates can influence corporate saving. IND stands for industries in the following groups and a dummy variable has been created for each of the industries: trade, services, industry other than food processing, food processing, construction, transportation, mining, and agriculture.

OWN

It is assumed that the type of ownership, due to different incentives to the decision makers could influence the level and the rate of retained earnings, as well as earnings themselves. Accordingly, OWN is nominal value representing different types of ownership structure of the firm.

CAPITAL

It can be assumed that the sheer size of the equity can also influence corporate saving. CAPITAL stands for the value of the firm's equity expressed in RSD value of the company's own capital in dinars.

LTLIABILITIES

The variable stands for the total long term company liabilities in RSD.

DEFFERED TAXES

This variable shows the amount of total deferred tax liabilities in RSD.

TOTALLIABILITIES

The variable stands the size of the company balance sheet and is equal to total assets in RSD, representing another measure of the company's size.

PROFIT BEFORE TAXES

This variable shows the profitability of the company in RSD, but as profits are a source of saving, it is also used for calculating the saving rate. Analogously, LOSS BEFORE TAX shows the loss of the company in specific year.

NETPROFITRATE stands for the return rate of the firm assuming that the level of profitability influences the corporate saving.

FINANCIAL LEVERAGE shows the ration of long term liabilities to equity.

Based on the ownership structure data we calculated PRIVATE CAPITAL SHARE (share of non state and no social capital in a company) and FOREIGN CAPITAL SHARE (share of foreign capital in the total company capital).

The results of the regression are given in the following table:

(Constant)	-2.4220
	(-1.375)
TRADE	0.2731
	(0.265)
SERVICES	-0.5111
	(-0.471)
OTHER INDUSTRY	0.7980
	(0.737)
FOOD PROCESSING	0.7861
	(0.573)
CONSTRUCTION	-0.5804
	(-0.419)
TRANSPORTATION	0.9470
	(0.708)
MINING	1.1088
	(0.285)
HOSPITALITY	0.8408
	(0.427)
OWN	0.7337
	(1.454)
CAPITAL	0.0000
	(0.158)
UNALOCATED PROFIT	0.0000
	(0.689)
LT LIABILITES	0.0000
	(-0.295)
DELAYED TAXES	0.0000
	(0.466)
PROFIT BEFORE TAX	0.0000
	(0.171)
LOSS BEFORE TAX	0.0000
	(0.235)
NET PROFIT	0.0000
	(-0.102)

NET LOSS	0.0000
	(-0.236)
BUS REV	0.0000
	(-0.378)
FIN REV	0.0000
	(0.036)
OTH REV	0.0000
	(-0.58)
FINANCIAL LEVERAGE	0.9966
	(1.456)
PRIVATE CAPITAL SHARE	-0.3325
	(-0.481)
FOREIGN CAPITAL SHARE	-1.0159
	(-0.95)
2009	0.0314
	(0.062)
2011	-0.4467
	(-0.885)

R squared	0.005
F	0.562

No coefficients are significant and the regression itself is also not significant.

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