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**Barbara Liberda**

**Household Saving in Poland**

*Warsaw, 1999*

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## **Abstracts**

### **Household Saving Rate in Poland**

The author estimates determinants of household saving in Poland in years 1994–1997. It turns out that the household saving rate depends strongly on household income. However, the household saving function from disposable income is not strictly linear. It "kinks" upwards at the point where household income is 1.5 times higher than the average income. The saving profiles of households in Poland partially resemble those that would follow from the life cycle theory.

### **Costs and Benefits of the Pension System Reform in Poland – the Impact on Savings**

The ratio of beneficiaries to contribution payers in Poland is 2.5 times higher than the ratio of population of retirement age to economically active people and 1.5 higher than the ratio of average retirement lifetime to average working lifetime. Such a situation gives rise to very high costs of the former pay-as-you-go (PAYG) system in comparison to fully funded systems. The author compares model costs of both systems over the horizon of next 30–40 years and forecasts an equalisation of the above ratios by about 2030. The impact of the pension system reform on savings will depend on many counteracting factors.

## **Part I. Household Saving Rate in Poland\***

### **I. Definitions and Macroeconomic Data**

Creation of a market economy in Poland considerably changed the saving behaviour of all economic agents. At a macro scale it meant changing the structure of national saving accumulated by major sectors of the economy: households, corporate sector and government (public sector). Structure of national saving has changed due to the differences in the growth rates of the main sectors of the economy, as well as to the differences in the saving rates of these sectors.

In the national accounts the aggregate saving is the balancing item in the disposable income account. Saving is defined as a difference between disposable income of a given sector and its consumption [1]. Thus, saving is a part of the disposable income that is designated to increase the existing stock of wealth. Saving may be positive or negative. Positive saving may either increase assets or reduce liabilities. Negative saving means that either some financial or non-financial assets must be liquidated, or the cash balance is going down, or the liabilities are rising.

Table 1 presents the structure of national domestic saving in Poland. National domestic saving rose from some 16% of GDP in 1991 to 21% of GDP in 1997. This increase has in part been caused by a more precise adjustment of the national product figures for the unofficial (grey) economy from 1994 onward. Better coverage of the grey economy in national accounts raised the national saving rate by 3 percentage points. Before the recalculating of GDP the domestic saving rate for 1996 amounted to 18% of GDP. If the national accounts for 1991–1993 were also recalculated, the saving rate in those years would probably be higher by 1–2 points. In sum, the increase of the national saving rate during the years 1991–1997 is of a 2–3 points magnitude, rather than of 5 points. It shows that the saving account, as a residual item, reflects too strongly both the errors of estimation of the GDP, and the changes in accounting methodology.

Recalculation of the GDP for 1994–1997 caused the most visible changes in the estimates of households' saving. Households' saving from the household disposable income has risen, in relation to previous calculations for 1994–1996, by 2–2.5 points. Because GDP has been re-adjusted by some 6 points in each of the years of 1994–1997 (Rachunki 1991–1997, 213), the households saving rate in proportion to GDP, as a result of the two re-

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\* I am grateful to Professor Brunon Górecki for giving me access to the households budget survey data.

[1] Consumption takes place only in households, government and non-profit institutions.

**Table 1. Saving rates in Poland in years 1991–1997 (by major sectors, in percentage)**

	1991	1992	1993	1994	1995	1996	1997
Household saving rate out of disposable income	16.3	15.0	12.5	13.7	16.0	12.9	13.2
Household saving in GDP	11.5	10.9	9.0	9.9	11.5	9.2	9.5
Corporate saving in GDP	7.2	6.8	6.9	9.4	9.0	10.1	9.7
<b>Private saving in GDP</b>	<b>18.8</b>	<b>17.7</b>	<b>15.9</b>	<b>19.3</b>	<b>20.5</b>	<b>19.3</b>	<b>19.2</b>
Government saving in GDP	-2.9	-2.3	-0.1	0.8	0.8	1.5	1.8
<b>National domestic saving in GDP</b>	<b>15.9</b>	<b>15.4</b>	<b>15.8</b>	<b>20.2</b>	<b>21.4</b>	<b>20.9</b>	<b>21.0</b>
Share of household saving in private saving	61	62	57	51	56	48	49
Share of household saving in national domestic saving	72	71	57	49	54	44	45

Source: Rachunki narodowe według sektorów instytucjonalnych 1991–1997, GUS, 1999

calculations, rose by 1.3–1.8 point in each year. It turns out that the bulk of the grey economy activities pertaining to saving has been attributed to the households sector.

In years 1991–1997 the structure of private saving changed. Share of the corporate sector in creation of private saving rose, while the share of households fell down from 60% to 50% of total private saving. The private sector has not raised its contribution to the national saving (which remained at a level of 19% of the GDP). The national domestic saving rate rose due to an increase in government (public) sector saving. The household saving made up for a decreasing share of total domestic saving (a fall from 70% to 45% in years 1991–1997).

The aggregate data on households saving tend to blur the differences in the saving rates of different groups of households. Thus, they cannot serve as a basis for economic policy geared to increase the propensity to save.

## **2. Determinants of Household Saving**

In order to specify the determinants of household saving, the households should be viewed at a micro scale and the data collected must be representative for all households. Such data are collected in Poland every year in the household surveys done by the Central

Statistical Office. Despite all the drawbacks, these data represent the richest source of information on households.

Personal saving should be observed during the whole life span of an individual. For that purpose data on saving behaviour of the subsequent generations in their respective life cycles should be examined. According to the life-cycle theory, personal consumption is smoothed out in the life cycle, and savings constitute the difference between the smoothed out consumption and the varying income. Savings are negative or very low in younger households, when incomes are below the expected life-cycle level. Savings rise with age when incomes are above the forecast life-time income level. The peak of savings, which according to the life-cycle theory are collected mainly for financing consumption after retirement, takes place in the age of 60–65. Theoretically, when a person does not obtain any income, the accumulated wealth is consumed. In reality, persons aged 65 and more (retirement age) report positive savings, too. The better a person is able to foresee her/his path of growth of a life-time income and the more stable (permanent) this income is, the lower may be the saving rate of this person.

The life-cycle savings depend mainly on demographic factors, like age, size of the family, time of arriving of the first child etc. They also depend on many factors connected with demography: education, place of living, source of income. The sum of these factors has impact on a current income of an individual and of a household [2]. These factors also influence expectations of the future income. Combination of demographic, social, and income factors is a basis of the inter-temporal choice between consumption and saving.

There exist, however, many factors that are not explicitly taken into consideration in the life-cycle theory, but which markedly influence the households' saving. The life-cycle theory assumes high certainty of expectations of future incomes and a high level of understanding and rationality of the inter-temporal choice by individuals. However, these conditions often do not hold. Uncertainty validates the precautionary motive of saving (protecting against income shocks).

The structure of the social security system (retirement plans and health care) can deform the planned profile of consumption and saving. It is mainly the case when the social security systems guaranteed by the state rise in importance [OECD, 1995; Liberda, 1999].

Bequest motive does not concern all households. In economic theory, bequest is considered a luxury good.

A growing rate of economic and professional activity of women can, paradoxically, cause the saving rate of their families to fall. There may occur, then, an increase of the

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[2] The life-cycle theory concerns an individual in her/his life-time, but the life-time income is spent also for providing for the family. Most of data, however, describe a household during the life-time of the household's head.

consumption expenditures substituting for a product made previously by women in the households. The precautionary motive is also weaker due to higher certainty of incomes. Also, the retirement insurance of employed women may lower other elements of family savings [Attanasio, Banks, 1998].

The consumption and life patterns of subsequent generations differ considerably. It makes difficult to forecast the life-time saving profiles of young generations on the basis of the profiles of their parents. For example, the baby-boom generations and even younger yuppies differ from the previous generations not only in income levels but, mainly, in size of the family and in postponing of the decisions on saving as well as on having children for the later periods of their life-cycles.

Economic policy concerning saving (income tax policy, taxing of capital gains, etc.) may also change and deform the life-time profiles of saving of individuals [Honohan, 1995].

Development of financial markets lengthens the horizon of consumption planning by removing the liquidity constraint. But it can also have a negative impact on saving (e.g. falling into a credit card trap or participating in consumption credits booms).

Still, all these factors cannot explain high saving rate of high-income persons above 65 years of age, who are not lead by bequest motive or are childless. A different pattern of saving function of the richest (as compared to the rest of the society) can be explained by a hypothesis that they treat saving as a luxury good generating a stream of special services, like power, social status, etc. [Carroll, 1998].

This paper aims at specifying the main demographic, income and social determinants of the households saving rate in Poland in the 1990s.

### **3. Microeconomic Data**

The author uses full data set of the Households Budget Surveys in Poland for the years 1994–1997 and for year 1988. On average, about 30 thousand of households were surveyed each year. The household saving is defined as net households lending (balance of savings deposits and credits taken) and households housing investment (building of apartments and real estate plus housing renovation). The household saving rate is calculated by dividing monthly savings by the household monthly disposable income.

In years 1994–1997 and in 1988 the housing investment of households constituted about 2–3% of the household disposable income. Thus, the household saving rate calculated in this paper is higher as compared to other estimates of household saving that

treat saving as net lending only. This was the rule in Polish literature, but not elsewhere [Deniszczuk, 1998, Poterba, 1994].

Table 2 presents the saving rates of households grouped according to various criteria (age, family size, sex, income group, education level etc.) in 1997. The medians of the household saving rates, as well as the values of the rates for the first and third quartiles of households in each group are given. Generally, the saving rates for the first quartile of households in each group (except for the three top income deciles) are negative. It gives the average saving rate for the bottom quartile of households of (minus) 8,8%. Then, the saving rates of the third top quartile of households are 2–3 times higher than the median for all households. In 1997, half of the households saved less than 10% of their disposable income, and the top quartile more than 27%. The following characteristics of the households' saving can be inferred from Table 2.

**Table 2. Household saving rates in 1997**

	1 quartile 0.25	Median 0.50	3 quartile 0.75	Number of observations
<b>Total</b>	<b>-0.088</b>	<b>0.101</b>	<b>0.273</b>	<b>31776</b>
<b>Sex of household head</b>				
Men	-0.073	0.114	0.286	21126
Women	-0.113	0.076	0.246	10650
<b>Household type by source of income</b>				
Employees	-0.054	0.119	0.278	13188
Employees-farmers	-0.058	0.138	0.316	3057
Farmers	-0.345	0.062	0.376	1691
Self-employed	-0.067	0.099	0.278	1978
Retirees and pensioners	-0.102	0.082	0.255	10821
Unemployed	-0.25	-0.007	0.141	1041
<b>Size of family</b>				
One person family	-0.146	0.042	0.214	4288
Two person family	-0.093	0.103	0.28	7618
Three person family	-0.07	0.112	0.284	6709
Four and more person family	-0.073	0.112	0.28	13161
<b>Income groups</b>				
1 decile	-0.459	-0.076	0.108	3177
2 decile	-0.248	-0.008	0.155	3178
3 decile	-0.17	0.039	0.2	3178
4 decile	-0.119	0.054	0.212	3177
5 decile	-0.09	0.079	0.242	3178
6 decile	-0.047	0.109	0.264	3178
7 decile	-0.031	0.134	0.283	3177
8 decile	0.008	0.168	0.311	3178
9 decile	0.048	0.201	0.353	3178
10 decile	0.11	0.293	0.479	3177

Table 2.

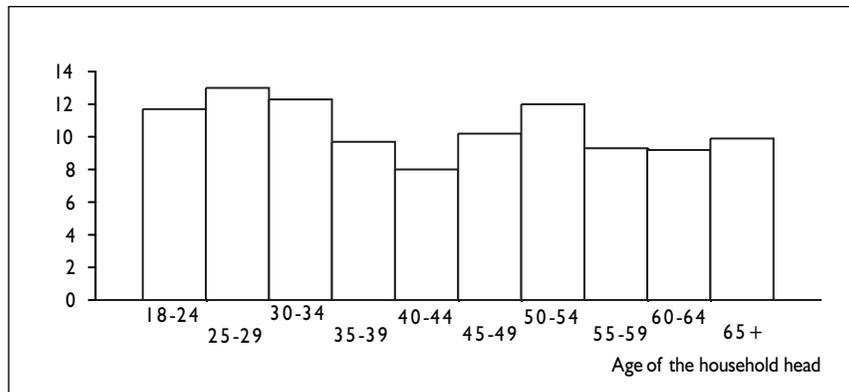
	I quartile 0.25	Median 0.50	3 quartile 0.75	Number of observations
<b>Education</b>				
Primary	-0.115	0.088	0.274	8621
Vocational	-0.079	0.105	0.276	10406
Secondary	-0.082	0.102	0.268	8956
Post-secondary	-0.097	0.099	0.253	951
Higher ( tertiary)	-0.063	0.118	0.283	3202
<b>Age</b>				
18-24	-0.648	0.117	0.308	894
25-29	-0.068	0.13	0.311	1992
30-34	-0.069	0.123	0.294	2750
35-39	-0.101	0.097	0.264	3780
40-44	-0.106	0.08	0.253	4704
45-49	-0.081	0.102	0.269	4406
50-54	-0.076	0.119	0.273	2930
55-59	-0.096	0.093	0.27	2357
60-64	-0.104	0.092	0.27	2443
65 and more	-0.089	0.099	0.276	5520
<b>Property</b>				
House	-0.119	0.11	0.301	12567
Flat	-0.062	0.101	0.266	7187
Car	-0.082	0.112	0.285	13233
Computer	-0.079	0.115	0.287	2745
<b>Place of living</b>				
Towns above 20 thousand inhabitants	-0.077	0.099	0.262	17227
Villages and towns below 20 thousand inh.	-0.106	0.103	0.246	14549

– Saving rates are the highest in households headed by young persons (aged 18–34) and in the group aged 50–54 (Fig. 1).

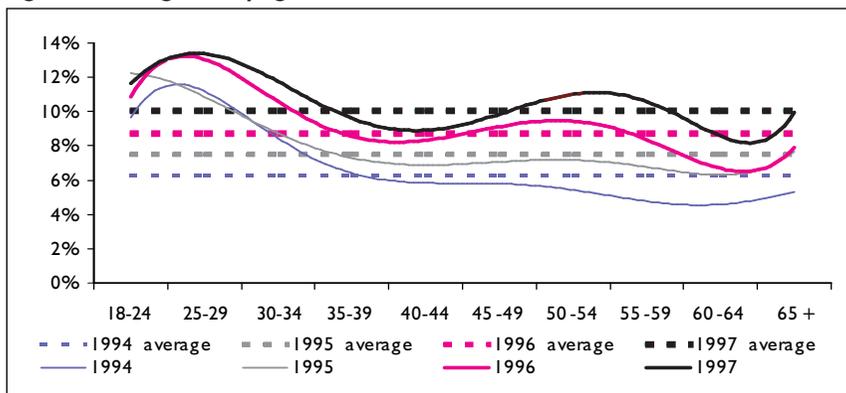
– Saving function by age has got two peaks instead of one, which, according to the life-cycle theory, takes place generally in the age soon before retirement. Thus, the age profile of the saving function in Poland is not in accord with the life-cycle theory for the younger age groups. In the years 1994–1997 the age saving function has become better fit to the model for the older age groups (Fig. 2a). The age saving function for 1988 is even less matched with the model for the younger age groups. For the older age groups it shows falling of the saving rates after retirement, which is in accord with the simplified version of the life-cycle model (Fig. 2b).

– A peak of saving before retirement takes place in Poland about 10 years earlier than in other economies. It is probably connected with the lower effective age of retirement

**Figure 1. Median saving rates by age groups in 1997**



**Figure 2a. Saving rates by age in 1994–1997**



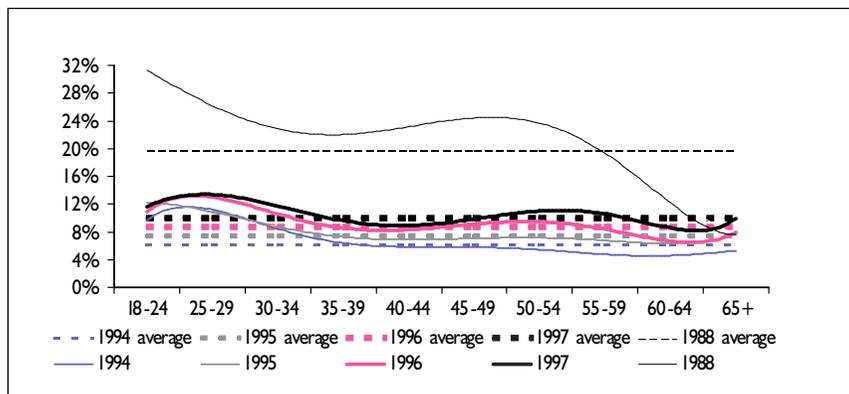
in Poland, which, on average, is 57 years (55 for women and 59 for men) [Liberda, 1999].

– Saving rates are positively correlated with the number of persons in a family. This trend is similar to the features of the less developed economies and differs from the more developed economies [Schmidt-Hebbel, Webb, Corsetti, 1992; Poterba, 1994].

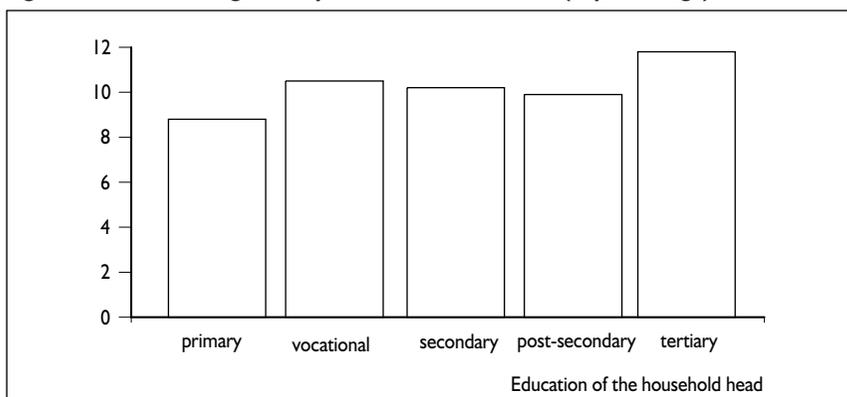
– Persons with higher (tertiary) education save the highest percentage of their incomes. In the second place there are persons with vocational education (Fig. 3).

– The saving rates of households headed by women are lower by one third than the

**Figure 2b. Saving rates by age in: 1988 and 1994–1997**



**Figure 3. Median saving rates by education level in 1997 (in percentage)**

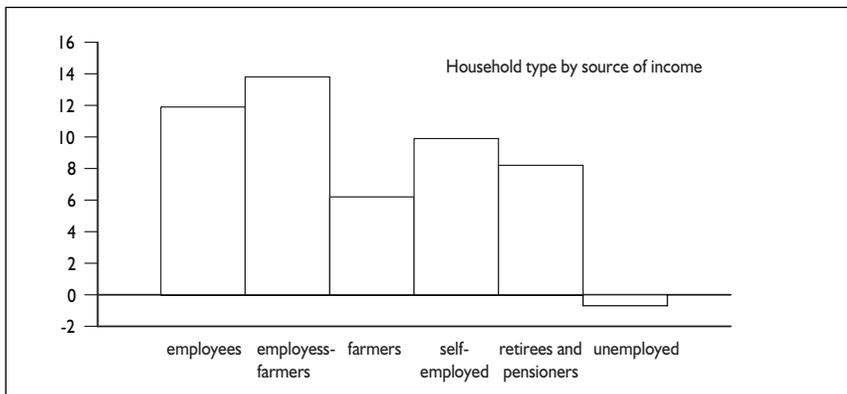


saving rate for household headed by men. In Poland, women are the main income provider in one third of households.

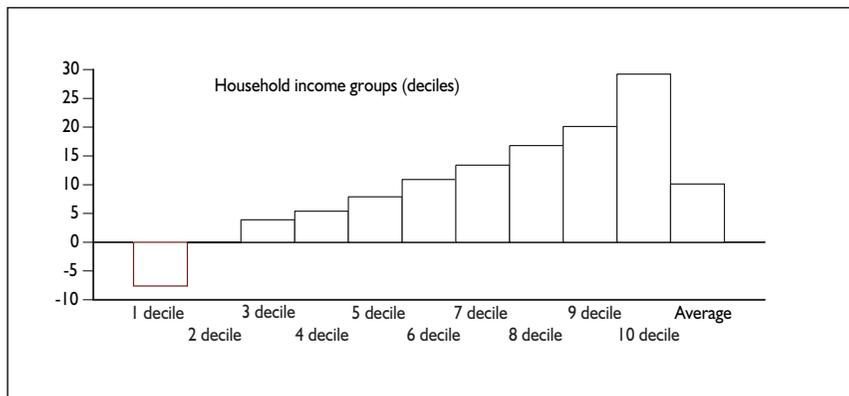
– Saving rates are highest in households of employees and in households with mixed sources of income (employment and farming). Farmers have the lowest rate, while the self-employed save at the average rate (Fig. 4).

– The household saving rate in Poland is strongly dependent on income (Fig. 5). More than three thirds of gross household saving is created by two top deciles of households.

**Figure 4. Median saving rates by source of income in 1997 (in percentage)**



**Figure 5. Median saving rates by income groups (deciles) in 1997**



The 9th decile collects of 18% positive savings and the 10th decile makes 59% of all savings. The top 5% of the households create 45% and the top 1% of households accumulate 24% of all household savings.

#### 4. Saving Function of Households in Poland

The saving function from disposable income has been estimated on a basis of data for 100 income groups of households. Each group consist then of 1% of all households.

The linear trend of saving from disposable income for all households is very steep (marginal propensity to save from disposable income was 0.44 in 1997) (Fig. 6a).

Because of the big difference between the saving rates of two groups of households: the bottom one (consisting of 7/8 of all households with incomes below 1.5 of average income) and the upper one (consisting of 1/8 of all households with incomes above 1.5 of average income) the saving function has been approximated as a kinked-function (Fig. 6b).

The following function has been estimated:

$$y = b_0 + b_{1D}(x - x_0)\xi + b_{1G}(x - x_0)(1 - \xi)$$

where:

$x$  - household income in zł

$y$  - household saving in zł

$x_0$  - the border income dividing 7/8 and 1/8 of households

$$\xi = \begin{cases} 1 & \text{for } x < x_0 \\ 0 & \text{for } x > x_0 \end{cases}$$

$b_0, b_{1D}, b_{1G}$  - structural parameters of estimation

In 1997, the marginal propensity to save (MPS) of the bottom group was 0.27 and MPS of the upper group was 0.59. In 1994–1997 the MPS of the lower group was growing (from 0.21 do 0.27) and the MPS of the upper group oscillated around 0.60 (Fig. 7).

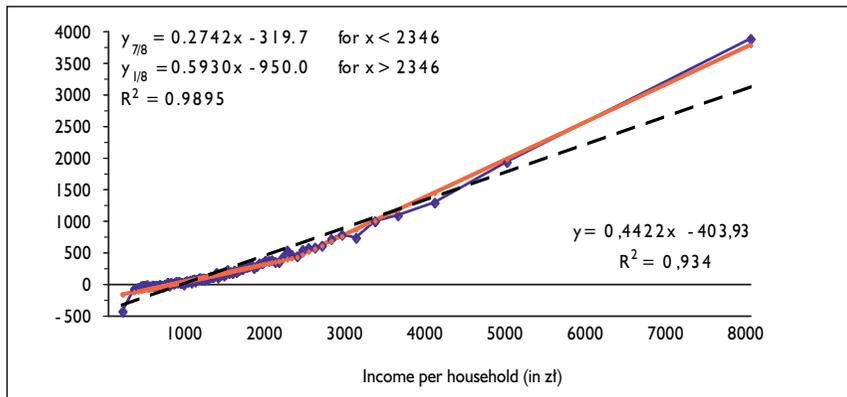
The saving function for 1988 is steeper in both stretches of the "kinked" function. These very high marginal propensities to save for both groups of households in 1988 probably reflect the scale of forced savings in the economy of shortage [3]. It is interesting that the share of housing investment in household income in 1988 (about 2%) was not different from values for 1994–1997 (2–3% of household incomes). A boom of buying flats at prices very much lowered by inflation was to come only in the years 1989–1991.

High saving rate of young households in 1988 was determined by high savings of farmer households, as well as mixed households (farmers and employees). They saved more than 35% of income. It was a sign of shortages on the market of agricultural

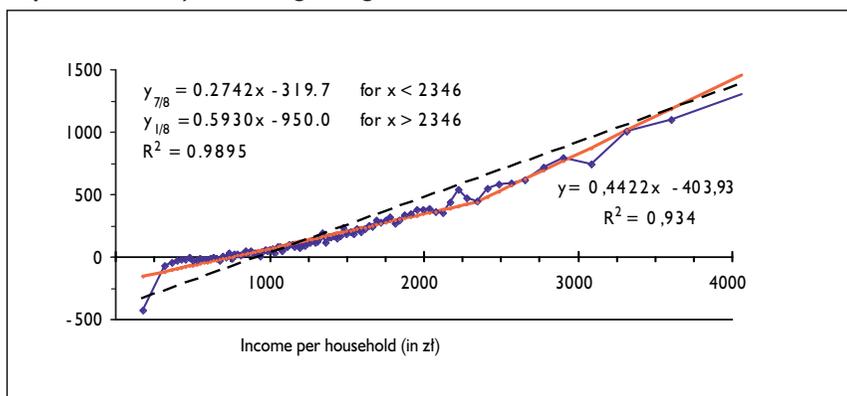
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[3] Not fully comparable with the above is the estimation of a propensity to save for the employee households for 1973 by Topińska (1986). The marginal propensity to save in a bank (except cash held at home) from disposable income was 0.15 in 1973. But the beginning of the 1970s was characterised by a relative decrease of shortages on the consumer goods market made possible by imports.

**Figure 6a. Linear trend and the "kinked" saving function in 1997 (savings out of household disposable income)**



**Figure 6b. Linear trend and the "kinked" saving function in 1997 (savings out of household disposable income) – an enlarged fragment**



producer goods. Those high savings of farmers were caused by the difficulties to invest in agricultural production.

The distribution of household savings is very uneven. In years 1994–1997 about one fourth of households with incomes below half of the average income reported negative savings (Fig.8).

In years 1994–1997 the median saving rate rose from 6.25% to 10.1%, and the mean saving rate for households rose from 8.0% to 12.7%. The difference between median and the mean is the next sign of uneven distribution of savings. This discrepancy did not

Figure 7. Household saving functions out of disposable income; years 1988 and 1994–1997

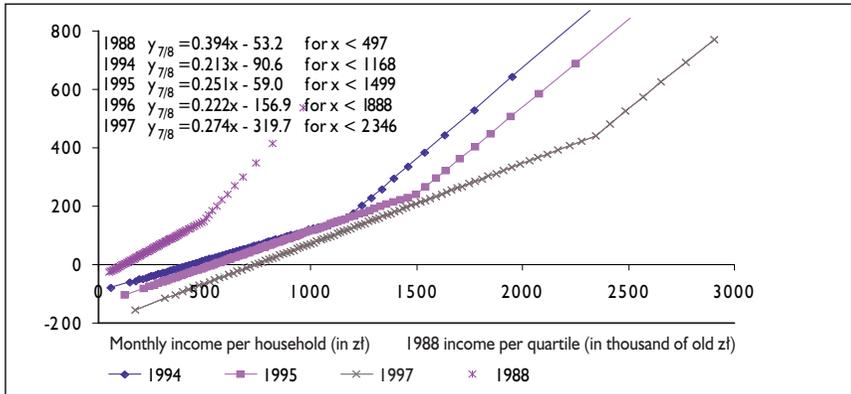
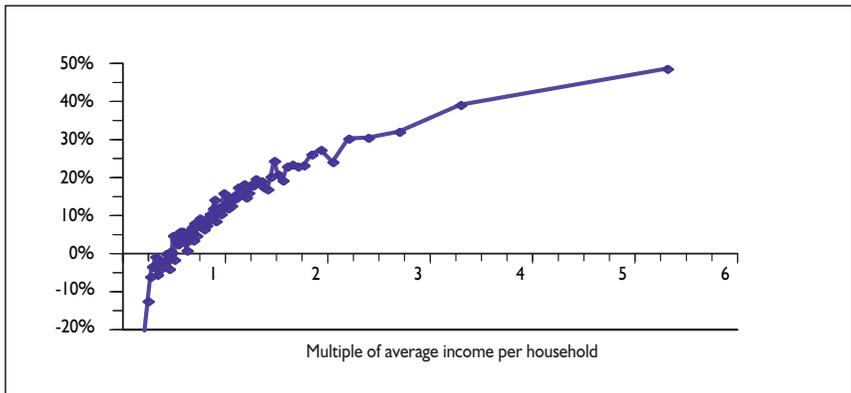


Figure 8. Median saving rates of households in 1997



change during the whole period under investigation and it was about one fourth. This means that the inequalities in saving distribution did not change. Because the saving rate depends strongly on income it may also mean that the income inequalities did not change in years 1994–1997. The income inequalities increased in the earlier period, i.e. in years 1992–1995 [Górecki, Wiśniewski, 1997].

The average saving rates start rising considerably above the level of 1.5 of the average income (in 1997 the average monthly household income was 1500 zł). A sharp increase

**Table 3. Results of linear regression. Household savings (in thousand zł)**

<b>Multiple R</b>	<b>0.36408</b>				
<b>R Square</b>	<b>0.13256</b>				
<b>Adjusted R Square</b>	<b>0.13179</b>				
<b>Standard Error</b>	<b>1.09337</b>				
<b>Variables</b>	<b>B</b>	<b>SE B</b>	<b>Beta</b>	<b>T</b>	<b>Sig T</b>
Four and more person families	-0.05763	0.008213	-0.05344	-7.017	0
Women households	0.011855	0.014541	0.004771	0.815	0.4149
Income tax rate	-0.60996	0.120339	-0.03232	-5.069	0
Households of employees-farmers	0.014361	0.024945	0.003612	0.576	0.5648
Households of farmers	0.18939	0.033577	0.035756	5.64	0
Households of self-employed	-0.09397	0.029919	-0.01935	-3.141	0.0017
Households of retirees and pensioners	0.016157	0.023703	0.006529	0.682	0.4955
Households of unemployed	-0.0398	0.037731	-0.00601	-1.055	0.2916
Decile 1	-0.37559	0.024289	-0.09518	-15.463	0
Decile 2	-0.26498	0.022144	-0.06782	-11.966	0
Decile 9	0.410654	0.021675	0.105098	18.946	0
Decile 10	1.392571	0.022736	0.356349	61.25	0
Age 30-34	-0.012	0.02934	-0.00288	-0.409	0.6825
Age 35-39	-0.07865	0.027402	-0.02169	-2.87	0.0041
Age 40-44	-0.10618	0.026225	-0.03211	-4.049	0.0001
Age 45-49	-0.10573	0.026578	-0.03114	-3.978	0.0001
Age 50-54	-0.08097	0.029662	-0.01997	-2.73	0.0063
Age 55-59	-0.10561	0.033769	-0.02357	-3.127	0.0018
Age 60-64	-0.09541	0.036722	-0.02167	-2.598	0.0094
Age 65+	-0.07397	0.034777	-0.0239	-2.127	0.0334
Primary education	0.114747	0.02615	0.043469	4.388	0
Vocational education	0.119092	0.024338	0.047626	4.893	0
Secondary and post-secondary education	0.078974	0.023137	0.030861	3.413	0.0006
Villages and towns below 20 thousand inhabitants	0.032818	0.01543	0.013933	2.127	0.0334
Ownership of a computer	-0.10158	0.023182	-0.02477	-4.382	0
Ownership of a car	-0.104	0.013703	-0.04702	-7.59	0
Ownership of a house	-0.00931	0.01749	-0.00388	-0.532	0.5945
Ownership of a flat	0.001635	0.016776	5.83E-04	0.097	0.9224
(Constant)	0.33252	0.042915		7.748	0

of the saving rates takes place when income exceeds the level of two times the average income. Saving rates become then 3–5 times the average rate for all households (which was 10% in 1977). The increase of the saving rates in the upper income groups of households in Poland is higher than in the USA. The maximum saving rate of 40% in the USA was observed for incomes 10 times higher than average [Huggett, Ventura, 1998]. In Poland the rate of 40% was recorded for incomes 3.3 times higher than average.

Other, except the disposable income, determinants of the households' saving have been estimated by the linear regression using some groups of dummy variables for the household source of income, family size, sex of family head, decile income group, education, age, place of living, and the characteristics of possessing of a house, an apartment, a car and a computer. The dummy equal 1 for: households run by women; households of employees; a group of 3 to 8 deciles of households; education of the household head; age group of 18–29 years, household living in villages and small towns below 20 thousand of inhabitants; and possession of a house, flat, car and a computer. Table 3 presents the regression results of savings for a full set of households in 1997 (31,776 observations).

The statistical fit of the regression function is in typical range for the cross-sectional studies of household surveys (adjusted  $R^2$  equals 0.13). The results of estimation show the negative correlation of the age above 30 with saving, as compared to the age below 30. This negative correlation is weaker for the age group 50–54 and above 65.

The income inequalities are strongly correlated with saving. Moving up the income groups raises savings, most strongly in the 10th decile.

The effective income tax rate is negatively correlated with household savings [4].

Variables explaining the household sources of incomes were not statistically significant for the mixed households (employees-farmers) and for the households of retirees, as their patterns are very similar to those of employee households. The analysis showed that changing activity from hired employment into self-employment lowers household savings [5]. This result can reflect either the underestimation of income (and savings) of self-employed households, or it may show the growing indebtedness of households that is related to financing own future firms.

The elasticity of saving in respect to education is against expectations. Positive correlation of savings with the primary and vocational education, relative to the higher education differs from tendencies for the developed countries. It also shows low importance of persons with higher education in the total population in Poland (about 10%).

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[4] Only taxes paid during the year of the survey were taken into account. Income was not recalculated when taxes overpaid had been reimbursed.

[5] Similar results were obtained in household budget surveys conducted in Poland by the World Bank in 1993 on 16 thousands of households [Denizer, 1998].

The regression analysis shows positive elasticity of savings on living in villages and small towns. However, the statistical differences in the saving rates between the country and big towns are very small.

Sex of the family head proved to be statistically insignificant for the saving behaviour.

Savings are negatively correlated with the number of persons in a family of four and more. However, average saving rates rise when a family grows from 1 to 3 persons (Table 2). It means that an additional adult person in the family increases savings, while additional children rather lower household savings.

Factors describing ownership of a house and a flat proved not statistically significant for household savings. It may be caused by the fact that the ownership of houses is a common feature in villages and small towns, while in big towns the ownership of flats prevails. Thus, the ownership of a house and a flat does not differentiate the households. The lack of wealth effect in case of houses and flats in Poland shows that these assets are not yet treated as a possible source of income.

It is also important how this ownership has been acquired. In villages most of houses were built without credit, and inheritance of houses goes together with the ownership of a farm. The ownership of apartments in towns came into being to a large extent by taking over the flats built and financed earlier from public funds. Flats were bought out at prices generally lower than the market value. It was very often a single act, thus, it did not require earlier saving for this purpose (except for pre-paying for flats in the housing communities, to the extent of 10 or 20% of a house value). Also, lack of mortgage registers for most of flats breaks the relation between ownership of a house and saving.

Negative elasticity of saving in respect to possessing durable goods (a car and a computer) is a sort of approximation of a negative wealth effect. The negative wealth effect means that ownership of a house, and household's saturation with durables lower propensity (and necessity) to save. The wealth effect can deepen with development of a market for consumption credit. On the other hand, development of mortgage credit market, which facilitates financing of a house with long-term credit, may have positive impact on saving. The mortgage instalments for housing investment force saving in equal amount. Moreover, investment in housing very often generates extra savings that are higher than the original mortgage credit.

## **5. Conclusions**

Statistical analysis of household savings in Poland in years 1994–1997, based on microeconomic data, revealed the following determinants of saving:

– Household saving is very strongly connected with the household's disposable income. This is in accord with Keynesian theory of consumption and is similar to trends observed in the less developed countries.

– The saving function from disposable income is not strictly linear, but parabolic. Because a visible rise in saving takes place when income surpasses 1.5 times the average income, the saving function has been estimated as a "kinked" function.

– The marginal saving rates of the upper income groups of households (1/8 of all) are 2.5 times higher than the marginal saving rates of bottom income groups of households (7/8 of all households).

– The distribution of savings is more uneven than distribution of income. The average saving rates double faster than income (Fig. 8).

– According to the household budget surveys in years 1994–1997 the household saving rates rose by half. Yet, the inequalities in saving distribution did not change during that period.

– The household savings in the in 1990s reflect actual budget constraint of the Polish economy and do not contain forced savings that characterised the previous system of the centrally planned economy. The household saving rates in Poland do not differ much from the average for the OECD countries [Liberda, Tokarski, 1999, Poterba, 1994].

– The saving profiles of households in Poland according to demographic features resemble only partially the profiles which should follow from the life-cycle theory. The high saving rates of young households (up to the age of 30–35) do not follow the model. However, the relatively high saving rates (close to the average saving rate) of persons above 65 years are in accord with trends observed in richer countries.

– Systemic transformation in Poland seems to favour young persons and those, who were 55–60 years old in the threshold years (1989–1990). Adjustment to the new saving rules under the new system was the poorest in the group of people who were then in the age of 35–40 (in the surveys' time they were 40–45 years old). The reason must have been the highest cost of upbringing children in this group. Moving of the now young households with high incomes to the middle of the life cycle should increase the saving ratios of the age group of 40–50.

– The analysis did not prove the expectation of higher saving rates of self-employed households. But, in this case the inaccuracy of data may affect the results strongly.

– The differences of households saving rates between the different sources of income are rather small. The average is determined to a large extent by the households of employees and mixed households (employees-farmers).

– Statistical analysis showed non-existence of a visible wealth effect regarding saving. Wealth effect does not exist as yet for ownership of houses and flats. But, with rising incomes, increasing housing investments, and with development of financial market, one

can expect the deepening of the negative wealth effect for saving (in case of not possessing a home it means an increase of saving).

– The results of analysis that are different from what was expected and which differ from trends for developed economies are: positive elasticity of saving in respect to primary and vocational education; positive correlation of saving with living in villages and very small towns (below 20 thousands of inhabitants); lack of visible decrease of saving rates in big families consisting of four and more persons.

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