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## Introduction

In recent years significant changes have been observed in household saving and consumption behavior in several transition countries including Hungary. In the second half of the 1990s the financial saving rate fell markedly and household borrowing surged. These developments are not unique to Hungary, they correspond to the experience of other emerging countries, and they can be attributed above all to financial liberalization and modernization and the improving permanent income prospects of households, with prospective EU accession playing an important role in the improving income perception.

We believe that declining saving rates and increasing indebtedness in accession countries will be important issues in the following years, even after joining the EU – as the example of less developed EU members<sup>1</sup> shows. The phenomena of declining saving rates and increasing indebtedness are, of course, not unique to EU accession countries, they were observed in other emerging countries, too – e.g. in Latin America -, but these developments have special aspects in Eastern and Central Europe. One special aspect is prospective EU accession, which is perceived to be close and certain enough to contribute to the rise in future income expectations. Another special aspect is the reaction of other sectors of the economy to deteriorating net household position. Emerging market experience shows that declining household savings were offset by increasing corporate savings in some countries and by a rise in public savings in others (often along with a temporary deterioration of the current account). As Eastern and Central European countries wish to join the EMU as soon as possible, they will do their best to meet the Maastricht criteria, which involves limits on the budget deficit and public debt. This implies an additional incentive for the public sector to be the one that does the major adjustment to the decline in household saving rates in most accession countries. In this regard, we think that our paper is not only relevant for Hungary, but it has implication for other Eastern and Central European countries as well.

The paper is organized as follows: Chapter 1 summarizes recent research on Hungarian household savings based both on macro indicators and survey data, while Chapter 2 gives a brief description of the evolution of Hungarian aggregate indicators for financial wealth, assets and liabilities. Chapter 3 analyzes data obtained from a special survey conducted in September 2000. The survey questions were supplied by the authors and were constructed to gain insight into prevailing liquidity constraints, consumer impatience, households' attitude towards indebtedness, and to separate „financially relevant” households, i.e. households with financial assets and/or liabilities, because these are the groups that are most relevant for economic policymakers. The paper also contains estimations of the propensity to borrow. Based on the survey questions, special indicators, such as income tension, consumer impatience are constructed and used – among others - as explanatory variables in the regressions.

The standard framework for analysis of household saving and consumption behavior is the life-cycle hypothesis. We do not aim to give a review of the life-cycle theory here, see Deaton (1992) or Browning and Lusardi (1996) for excellent surveys. Most empirical tests of the life-cycle hypothesis examine excess sensitivity and the significance of precautionary savings.

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<sup>1</sup> See Arvai-Menczel (2000) for a detailed analysis of household financial assets and liabilities in Portugal, Spain, Italy and Poland, as well as for several Latin American countries.

Our paper has different aims, but it still relates to the life-cycle theory in several respects when we discuss the reasons for saving, consumer impatience, and the propensity to borrow.

## **1. Household saving and consumption behavior in Hungary: empirical studies and observations**

In this chapter a brief survey is given of the several empirical studies that researched the subject of consumption and saving behavior of Hungarian households in the 1990s. First we summarize studies based on aggregate data, then the summary of research based on household surveys is presented.

### **1.1 Empirical research based on aggregate data**

Zsoldos (1997) analyzes Hungarian household saving behavior based on aggregate data from the 1980-1996 period. The originality of his approach is that he redefines the usual income and savings categories in order to obtain information which would be impossible to get from raw, untransformed data. Income and savings data are adjusted for inflation, as these are the relevant categories for rational decision makers devoid of money illusion. The most important conclusions of his study are the following: net household financial saving was basically zero during the 1980s and by the end of the decade it turned negative. He explains this phenomenon by the increasing inflation and deteriorating macroeconomic indicators which prompted households to allocate their savings in real investment goods. Real estate investment was also encouraged by long-term, low interest-rate home building loans. The flight from financial assets became most intensive in 1989-91 when the fear from total economic collapse and hyperinflation peaked. The flight to real estate led to an asset price bubble. If we think of the transfer due to low interest rates as savings, then the saving rate was 1-2 percentage points higher than the official rate during the 1980s (with the exception of the end of the decade). The so called "savings miracle" in 1991-92 was nothing else but the restoration of the equilibrium between financial and real assets after the fear of hyperinflation passed. Financial assets were steadily rising in the 1990s, but their ratio to disposable income and to GDP is far below those typical in developed countries. Zsoldos also points out the existence of liquidity constraints which he explains mostly by high nominal interest rates.

Menczel (2000) analyzes the saving and consumption behavior of Hungarian households by testing the permanent income hypothesis. He uses annual data between 1970 and 1998, and his econometric analysis broadly support the validity of the permanent income hypothesis in Hungary, though certain elements of the hypothesis cannot be proved by his investigation which he attributes to significant liquidity constraints and structural breaks in the data. The study deals with liquidity constraints explicitly and finds that 83% of household sector disposable income was in the hands of households facing liquidity constraints, which is a very high ratio.

Finally, the main conclusions of a recent study by Arvai and Menczel (2000) are reviewed. The authors found the following: The easing of liquidity constraints and the associated gradual increase in the level of household sector borrowing in Hungary are equally due to structural and business cycle factors. Robust economic growth foreshadows a gradual rise in households' real income, which will stimulate the demand for borrowing. There is also a simultaneous expansion in the banking system's supply of lending facilities to households, thanks partly to a decline in default risk and partly to business strategy. Demand for

borrowing may gain further impetus from intensifying interbank competition, which is expected to exert downward pressure on the prevailing exceptionally high real rates of interest on loans. The coming few years are likely to witness a convergence in the currently low financial assets and liabilities as a percentage of GDP towards ratios seen in advanced market economies. Thus the authors predict an upsurge in these ratios over the near term, especially as mortgage-lending becomes widespread. Increasing household sector indebtedness is a natural development, enabling households to smooth their consumption in accordance with their respective life cycles. Financial assets are likely to develop along the following lines in the future: the monetary aggregate M1 is expected to grow at a faster-than-average pace as the opportunity cost becomes lower due to disinflation. Furthermore, Hungarian individuals are using banking services to a lesser extent than what is common in the developed economies, thus stronger interbank competition for household funds could boost the number of current accounts and debit cards. Contractual saving is also expected to expand considerably due to the rising number of funded pension contributors and the use by increasingly wider sections of the population of other types of insurance services. At the same time, the proportion of time deposits is expected to fall as they are being crowded out by non-bank investments. All in all, against the backdrop of the existing relative differences in yield, non-transactions-based and non-contractual financial assets are expected to undergo further disintermediation. This implies that the M3/GDP ratio is likely to remain flat rather than increase within the current regulatory framework.

## **1.2 Empirical studies based on household survey data**

According to the empirical studies based on household survey data (Hungarian Household Panel Analysis 1994-98 and TÁRKI Household Monitor Analysis 1999), the share of Hungarian households having financial savings was 40-50% in the 1990s. The highest share was observed in 1994 (48.4%), while the lowest figures were recorded in the second half of the decade (1996: 42.8%, 1997: 41.5% and 1998:42%).

In the last decade 28-40% of households had liabilities, and the share of households with bank loans was 18-29%. It must be noted that according to 1998 data, 41% of households had no bank contact, 31% of those surveyed did not know anything about interest rates and 28% had no idea about the rate of inflation (Speder, 1996c). These low-income households live their lives without ever having contact with the banking sector, and the level of interest rates plays no part in their decisions. The largest share of households had neither savings nor debt, while 12% had both.

High-income households are the ones most able to save and they are the ones who can afford to borrow. There is a positive relationship – which was confirmed by empirical studies as well – between the existence and size of financial savings and the non-financial wealth (real estate, cars, etc.) of a household (Polonyi - Speder, 1998 and Medgyesi - Szivos, 1999c).

At the beginning of the 1990s a significant portion of households had to face two major problems: on the one hand, the total net per capita income of the household declined or its growth was lower than the inflation rate, and on the other hand, the maintenance of the previous income level became uncertain. The first development led to serious tensions in the household budget, while the second one decreased their future income expectations. The first development had an effect on consumption decisions by raising the frustration and the „consumer impatience” of households, while the second one encouraged precautionary savings due to higher future income uncertainty.

Data from the Hungarian Household Panel indicate that in the first half of the 1990s 30-35% of households faced financial difficulties and liquidity problems regularly, when they ran out of money at the end of the month (see Table 1.2.1)

Table 1.2.1  
*Financial difficulties and liquidity problems in Hungarian households in 1992-95, %*

How often did you experience financial difficulties at the end of the month in the last year?	Monthly	Every two months	Every three months	Every six months	Less frequently	Never	Total N=
1992	26,4	10,7	10,7	6,7	7,0	38,5	100 2050
1993	26,3	11,6	11,0	5,5	6,5	39,0	100 2154
1994	25,4	11,0	9,6	6,6	6,0	41,1	100 2111
1995	25,1	9,5	10,8	7,4	6,1	40,9	100 2002

Source: Speder, 1996a

At the same time it was observed that among Hungarian households „saving” was a positive value and they tried to behave accordingly. This is indicated by the result that the majority of households surveyed (more than 60% in 1995) chose the option of „one should always put some money aside regardless of their income” from several options of opposite statements. This attitude is a rational answer to uncertain situations and indicates the *precautionary motive* played an important part in household savings transactions in the 1990s.

The importance of the precautionary motive is underlined by the rank of reasons for saving in the 1990s, as both in 1995 and 1999 the option of „unexpected events” was ranked first. However, it can also be observed that between 1995 and 1999 the significance of „unexpected events” declined among the reasons for saving. The share of those mentioning *saving for downpayment* for durables also declined.

Total savings are distributed very unevenly among households, that is savings are very concentrated, and 20% of total households hold more than 60% of total household savings (Toth, 1996).

Research indicates that three factors have the largest influence on the stock and flow of savings: household income and income expectations, household position in the life-cycle and the degree of „impatience” of the household in consumption and saving decisions. The first factor is evident, though it must be noted that the flow of saving in a given year is not determined solely by that year’s income growth, rather average income growth in a longer period is what matters (Nagy - Szep, 1996).

The major implications of the life-cycle theory were observed in Hungary, too: young couples with children have lower discretionary income than older, working couples or young couples with no children. Therefore, the first group is less able to save than the later two groups. It was also found that savings are gradually consumed in old, one-person households (Toth, 1996).

In the 1990s the most frequently mentioned option to the question „What are the best forms of saving?” was real estate, followed by foreign exchange, gold, works of art, securities and time deposits, while the worst option was cash held at home. This ranking has not changed over the years. These answers, however, do not always reflect the actual choices of saving forms and changes therein. Household surveys indicate that between 1995 and 1997 the significance of cash held at home and savings in foreign exchange declined, while savings in securities increased.

Since the group of saving households is rather closed, the above mentioned changes are almost entirely due to changes in the behavior of saving households and not to changes in the composition of saving households.

**2. Main features of the aggregate financial wealth and saving patterns of Hungarian households**

We set out with an analysis of the changes in households’ net financial wealth as a proportion of GDP and disposable income (Figure 2.1). Net financial wealth as a percentage of disposable income of Hungarian households has increased by more than 20 percentage points since 1995, but the current 60% is far below the 150-300% range typical of developed countries (see Table 2.1). Slow growth of net financial wealth is expected in the future, but it will take a long time to catch up with the developed countries, especially as financial liabilities are expected to grow fast.

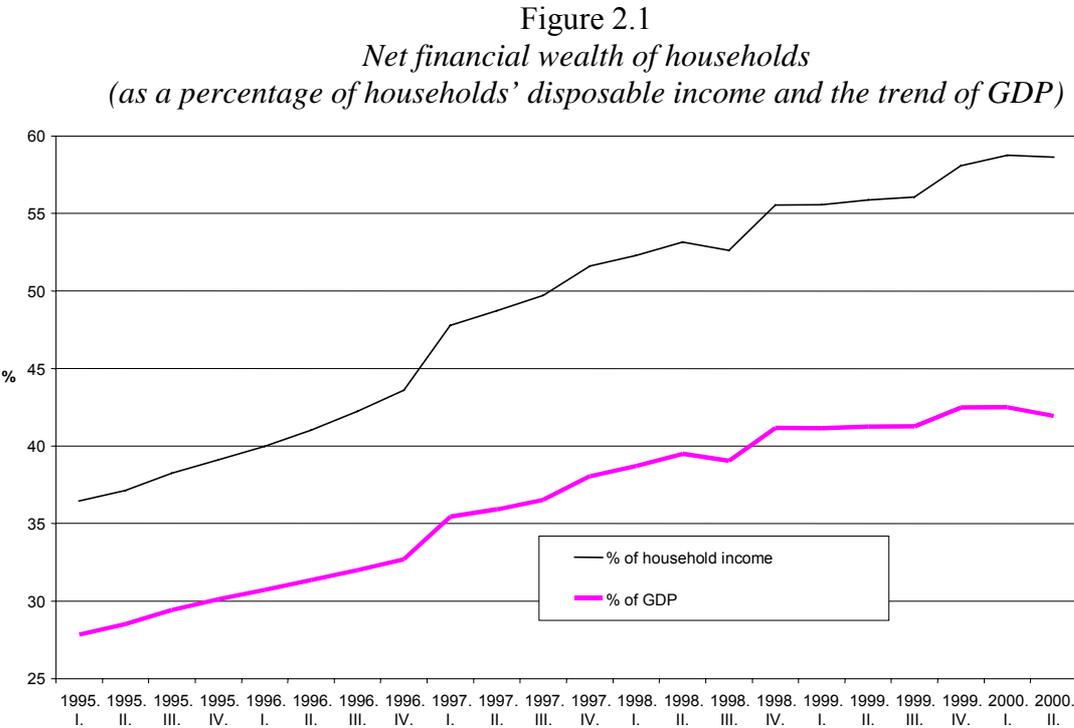


Table 2.1 illustrates the divergence between advanced market economies and Hungary in terms of capital market development, reflected in the exceptionally low income-proportional value of Hungarian households’ financial assets and liabilities, even though the figures for

Hungary refer to seven years later than the reference data. Thus, the percentages for the reviewed countries are likely to have increased since 1993, due to the buoyant capital market activity in the United States and Western Europe. As capital market activity is gathering pace in Hungary, similar upward pressure is expected on the ratio of financial assets and liabilities to household income, with special regard to lending to Hungarian households.

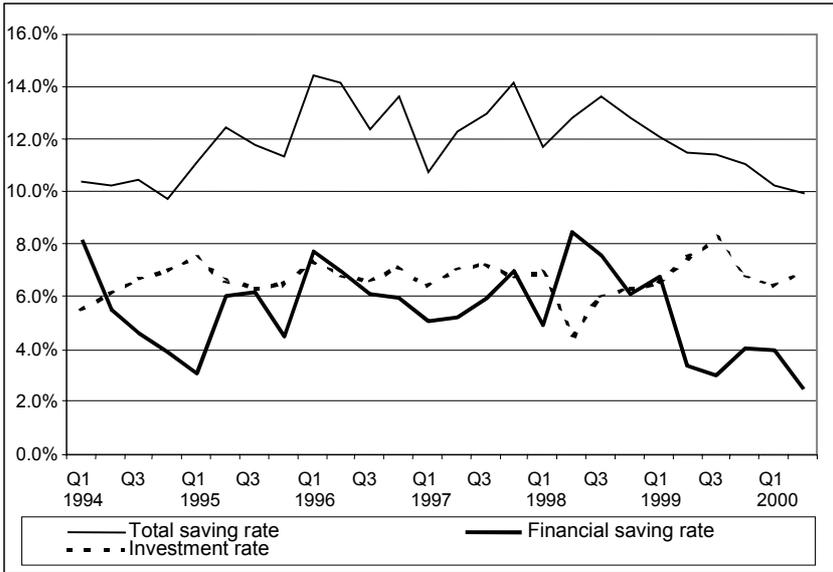
Table 2.1  
*Net household financial wealth as a percentage of disposable income<sup>2</sup>*  
*(Figures for 1993, with the exception of Hungary)*

	<b>Financial assets</b>	<b>Financial liabilities</b>	<b>Net financial wealth</b>
<b>Australia</b>	207	79	128
<b>Canada</b>	312	86	226
<b>France</b>	237	51	186
<b>Germany</b>	218	78	140
<b>Italy</b>	263	31	232
<b>Japan</b>	333	96	237
<b>Spain</b>	169	58	111
<b>Sweden</b>	158	100	58
<b>Great Britain</b>	356	102	254
<b>United States</b>	366	92	274
<b>Hungary*</b>	<b>65</b>	<b>7</b>	<b>59</b>

\*Figures for June 2000.

Figure 2.2 shows that the total saving rate is stable; its relative volatility being caused by fluctuations in financial savings. In 1999, the total saving rate fell at a slower pace than the financial saving rate as household investment picked up during this period.

Figure 2.2  
*Operational household saving rate (as a percentage of household disposable income)*

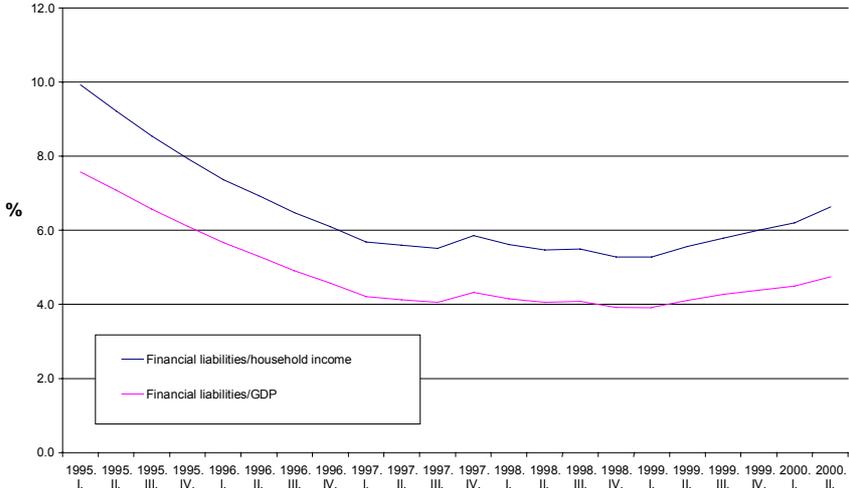


The indebtedness of Hungarian households (Figure 2.3) as a percentage of disposable income and GDP was declining in the 1990s until 1998, and the current ratio of 7% as a percentage

<sup>2</sup>Source: Financial structure and the monetary policy transmission mechanism, BIS, March 1995. p. 10.

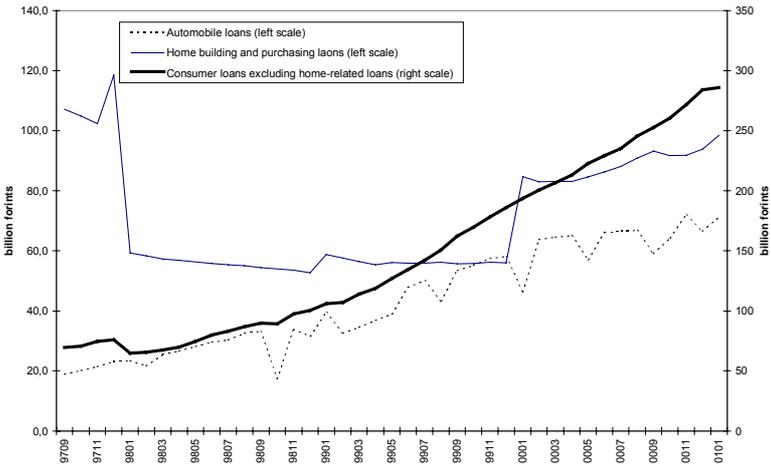
of disposable income is very low compared to the 50-100% figure typical of developed countries (see Table 2.1). The decline was above all due to the repayment of home building loans. In the second half of the 1990s, however, along with the pick up of economic growth, other consumer loan extension started to increase dramatically, and in 1999 the trend of the indebtedness ratio turned around.

Figure 2.3  
*Indebtedness of Hungarian households*



A more detailed break-down of the stock of household credit (Figure 2.4) shows that while the stock of consumer loans including automobile loans has been more or less continuously growing in the last four years, the previously declining as well as stagnating stock of home building and purchasing loans started increase only in the second quarter of 2000<sup>3</sup>.

Figure 2.4  
*The stock of household credit\**



Note: Consumer loans include automobile loans and home building and purchasing loans only include loans extended at market rates.

<sup>3</sup> This jump in home-related loans had institutional reasons, namely, the first elements of the government’s new mortgage loan system at preferential rates were introduced in March 2000, which revived the market for home building and purchasing loans at market rates as well, by putting pressure on banks to significantly reduce the interest rates also on market-rate loans.

### 3. Financial relevance and the propensity to borrow

This chapter analyzes different aspects of households saving and consumption behavior based on a household survey conducted in September, 2000. First, we introduce the definition of financially relevant households, then the reasons for saving are examined. We also construct two new indicators – consumer impatience and income tension – which will be evaluated and then used as explanatory variables in the estimation of the propensity to borrow.

#### 3.1 Major characteristics of saving and consumption behavior

##### *Definition of financially relevant households*

In the analysis of saving and consumption behavior extra information is gained if we separate the group of households which has no contact with the financial sector from the one that does, as their saving and consumption attitudes are likely to be different. What we are really interested in is the behavior of the second group – which we term as “financially relevant” households -, as these households are the ones who actually influence aggregate financial asset and liability developments which is of outmost importance for monetary policy.

To belong to the group of financially relevant households at least one of the following criteria had to be fulfilled:

- The household had loan(s) from the banking sector (current account overdraft, personal loan, loan for durables, cars, etc.)
- The household had savings
- The household expected to save some money in the following six months.

The proportion of financially relevant households was 52.6% in the sample. Table 3.1.1 shows the details.

Table 3.1.1  
*Share of savers and borrowers in the full sample and in the group of financially relevant households in September 2000, %*

Loan	Savings	Saving in the following 6 months	In the full sample	Among financially relevant households
No	No	Expected	4,6	8,7
No	Yes	Not expected	13,4	25,5
No	Yes	Expected	8,5	16,1
Yes	No	Not expected	15,7	29,1
Yes	No	Expected	2,3	4,4
Yes	Yes	Not expected	4,7	9,0
Yes	Yes	Expected	3,4	6,5
Total			52,6	100,0
Number of cases			1523	801

Financial relevance defined this way will be used later in the analysis.

##### *Reasons for saving*

Following changes in the reasons for saving can help us analyze and predict changes in the propensity to save and to consume. Therefore, we asked those households which had savings about their reasons for savings. In the September 2000 survey we offered 13 options. First, we

compared the results with responses from past surveys (which had less options) and then analyzed the most recent results by different characteristics of households.

Table 3.1.2 shows the significant changes in the reasons for saving in the second half of the 1990s. There are two major differences in the data for 1995 and 2000: first, there was a 20 percentage point decline in saving for unexpected events and for sickness, second, saving for investment increased significantly. The first observation indicates that the significance of the *precautionary motive* decreased markedly in the past five years, though this is still the most important saving motive. This phenomenon is also supported by the decline in the proportion of saving for unemployment. At the same time the *improvement motive*<sup>4</sup> (saving for housing, cars) and the *entrepreneurial motive* gained in importance, which indicates improving expectations concerning expected income and investment climate. The drop in the share of saving for *downpayment for durable consumption items*, however, is unlikely to be a sign of declining consumption propensity, it rather indicates increasing credit offers by financial institutions for durable purchases. The reasons are the same behind both major developments, namely that households have improving income expectations for the future and partly in reaction to that financial institutions are more and more willing to lend to this sector, thus its previously very high liquidity constraints are easing. Improving income expectations are due to the continuing high growth prospects of the Hungarian economy, as well as to the approaching EU accession which is expected to raise the permanent income of Hungarian households.

Table 3.1.2  
*Reasons for saving as a % of households with savings*

<i>Reasons for saving</i>	<i>1995</i>	<i>1999</i>	<i>September 2000</i>
Unexpected event	72,6	58,5	<b>51,3</b>
Sickness	65,3	54,5	<b>43,4</b>
Child-related expenses	34,1	41,5	39,2
Buy, improve, upgrade home	15,1	15,4	<b>35,5</b>
Retirement	16	25,4	<b>22,3</b>
Holiday	24,2	23,5	21,2
Unemployment	18,4	14	<b>14,3</b>
Buy durable consumption items	27,3	17,9	<b>11,9</b>
Buy a car	6,0	6,4	<b>10,4</b>
Payoff debt	-	-	9,9
Start new business enterprise	5,9	6,3	9
Other	-	-	5,5
Leave bequest	-	-	4,9

Note: Major changes between 1995 and 2000 are in bold.

The choice of an option, however, is not independent from other options. E.g., by intuition we expect that those who chose „unexpected event” are more likely to choose „sickness” or vice versa. Another example is the „buy a car” and „buy durable consumption items” pair. To analyze this interdependency, first we offer a theoretical a priori grouping, then the options are classified empirically as well.

According to our a priori assumptions<sup>5</sup>, we construct the following groups:

1. Long-term saving objectives:
  - Child-related expenses

<sup>4</sup> See Browning and Lusardi (1996) p.1797.

<sup>5</sup> We rely also on Browning and Lusardi (1996).

- Home
  - Retirement
  - Bequest
  - Pay off debt
2. Saving for higher future consumption:
    - Car
    - Holiday
    - Durable consumption items
  3. Avoid financial shocks due to unexpected events (precautionary motive):
    - Unexpected event
    - Sickness
    - Unemployment
  4. Entrepreneurial motive:
    - Start up new business enterprise
  5. Other objective:
    - Other.

Table 3.1.3 shows the shares of each class.

Table 3.1.3  
*Shares of each reason for saving class*

Reasons for saving	Shares %	N
Precautionary saving (unexpected events)	63,4	680
Long-term saving objectives	31,6	679
Saving for higher future consumption	30,3	680
Entrepreneurial motive	9,0	679
Other	5,5	670

Note: The sum of shares is higher than 100% because respondents could choose more than one option.

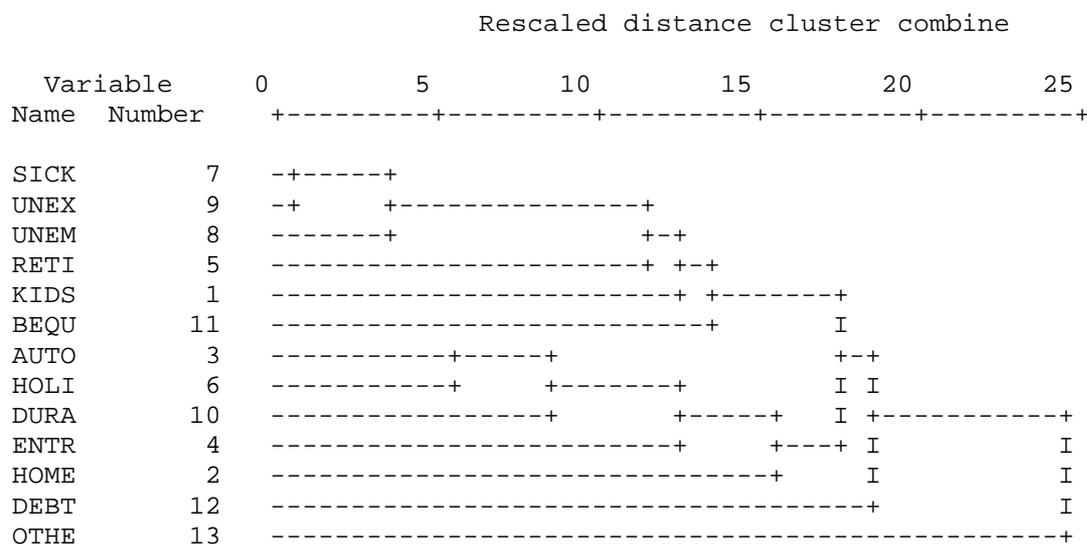
To test our assumptions we used hierarchical cluster analysis and instead of grouping similar respondents similar options are grouped together. The strongest relationship was found – as expected – between saving for the time of sickness and for unexpected events (correlation 0.392). Then comes the relationship between sickness and unemployment which gives us the first group (precautionary motive) of our a priori assumptions. More specifically, if we want to construct four major groups then we get the following:

- Saving for sickness, unexpected event, unemployment, retirement, child-related expenses, bequest.
- Saving for holiday, car, durable consumption items, enterprise, home.
- Saving for pay off debt.
- Saving for other reasons.

That is, in the saving attitude of Hungarian households the precautionary motive and related long-term saving motives can be well separated from the objectives that further higher future

consumption. The categories of „pay off debt” and „other” – which had a low share in the responses - are further apart from the above two groups.

Figure 3.1.1  
Dendrogram for the classification of saving objectives



*Variable definitions:*

- SICK: Saving for times of sickness;*
- UNEX: Unexpected events;*
- UNEM: Unemployment;*
- RETI: Retirement;*
- KIDS: Child-related expenses;*
- BEQU: Bequest;*
- AUTO: Car purchase;*
- HOLI: Holiday;*
- DURA: High-value consumer durable goods;*
- ENTR: Business enterprise;*
- HOME: Buy, improve, upgrade home;*
- DEBT: Debt repayment;*
- OTHE: other.*

Next we analyze the common characteristics of households mentioning the same reasons for saving using data from our September 2000 survey. The analysis based on the **age of the head of household** supports the main conclusions of the life-cycle theory, though certain special Hungarian phenomena can be observed as well. Households were put into four categories by the age of the head of household: less than 35 years, 35-44 years, 45-59 years and over 59 years old. Not surprisingly, in the case of the two youngest age brackets, the most dominant reasons for saving are those for housing, car, durable consumption items and debt repayment, that is the establishment of an independent home. Saving for child-related expenses is strongest in the 35-44 and 45-59 age brackets. In the first group mainly education expenses explain the dominance of this saving category, while in the 45-59 bracket intergenerational transfers related to the first home purchase for the children are an additional explanation. This type of intergenerational transfer is a sign of a seriously underdeveloped mortgage system and it can be regarded as a general phenomenon in many transition countries.

Saving for unexpected events generally increases with age, the same is true for saving for sickness. It is interesting that the share of these two reasons is higher in the 35-44 age group than in the next one, and the same phenomenon can be observed in the case of saving for unemployment as well. There is a big gap in the share of saving for retirement between the two youngest and two oldest age groups, as in the latter the proportion of households saving for retirement is twice as high as in the first two age groups. The choice of saving for starting up a business is higher in the younger age brackets, which is most likely due to the longer horizon of a new business to return the investment, as well as to the lower risk-aversion attitude of younger people.

Table 3.1.4

*The share of the different reasons for saving in each age group as a percentage of households with savings*

	34 or below	35-44 years	45-59 years	60 or above
Child-related expenses	<b>32,7</b>	<b>53,7</b>	<b>41,7</b>	<b>27,8</b>
Buy, improve or upgrade home	<b>57,7</b>	<b>41,6</b>	<b>34,6</b>	<b>17,8</b>
Buy a car	<b>14,4</b>	<b>16,8</b>	<b>10,0</b>	<b>2,8</b>
Start new business enterprise	<b>12,5</b>	<b>12,8</b>	<b>10,8</b>	<b>1,7</b>
Retirement	<b>14,4</b>	<b>28,9</b>	<b>28,0</b>	<b>14,4</b>
Holiday	<b>22,1</b>	<b>29,5</b>	<b>24,1</b>	<b>10,0</b>
Sickness	<b>27,9</b>	<b>47,7</b>	<b>40,8</b>	<b>53,3</b>
Unemployment	<b>13,5</b>	<b>26,2</b>	<b>14,2</b>	<b>5,0</b>
Unexpected event	46,2	54,4	48,5	56,7
Durable consumption goods	22,4	12,1	12,1	7,2
Leave bequest	0,0	6,7	5,8	5,0
Pay off debt	<b>14,4</b>	<b>20,1</b>	<b>7,1</b>	<b>2,8</b>
Other	<b>3,8</b>	<b>2,7</b>	<b>2,6</b>	<b>12,8</b>

\*: more than one option could be chosen

When the value of phi, the coefficient of association is significant ( $p < 0,01$ ), the values are in bold.

Next the reasons for saving are analyzed based on the **education level of the head of household**. We can make two main observations: first, the significance of the precautionary motive (saving for unexpected events, illness and unemployment) declines with the rise in the level of education, second the proportion of savers for consumption and investment purposes is higher in the more educated households. This last phenomenon is not due to the different saving attitude of the more educated in the first place, rather the explanation is the positive correlation between education and income. There is a big jump in the share of savers for home between the groups with and without a high-school degree, while in case of saving for durable consumption items, car and to pay off debt the gap is between the high school and college (or above) educated groups. Saving for holiday is mentioned by more than twice as many households with a college educated head of household than by households where the head of household had no high-school degree. Saving for high value consumption and investment items only makes sense if it doesn't require too big a sacrifice of current consumption to obtain them. Due to the lower average income of households without high-school degree, these high-value items would require an excessive restraint on current consumption, and also due to lower average income this is the group most characterized by liquidity constraints, therefore they have a limited possibility of consumption smoothing.

The other general phenomenon is the increasing significance of the precautionary motive along with the decline in the education level. In this case the three categories cannot be classified into two separate groups as above, the importance of the precautionary motive

increases rather evenly instead. This phenomenon is most likely to be attributed to the less secure labor-market position and higher income uncertainty of the less educated. While saving for unexpected events is the most important reason for saving for all three groups, the second place of saving for times of sickness is taken over by saving for child-related expenses for college-educated households, and even the option of saving for home has a higher ranking than sickness.

Table 3.1.5  
*The share of the different reasons for saving by the education level of the head of household as a percentage of households with savings*

	No high school degree	High school degree	College degree or higher
Child-related expenses	37,0	40,8	41,8
Buy, improve or upgrade home	29,7	39,0	41,1
Buy a car	<b>8,3</b>	<b>8,0</b>	<b>17,0</b>
Start new business enterprise	<b>7,6</b>	<b>6,6</b>	<b>15,1</b>
Retirement	18,2	22,5	30,4
Holiday	<b>14,9</b>	<b>22,1</b>	<b>31,4</b>
Sickness	47,9	42,7	36,1
Unemployment	15,2	14,1	12,7
Unexpected event	54,5	50,7	46,5
Durable consumption goods	11,2	8,5	17,1
Leave bequest	6,0	3,8	4,4
Pay off debt	8,9	8,9	13,2
Other	8,0	4,8	1,9

\*: more than one option could be chosen

When the value of phi, the coefficient of association is significant ( $p < 0,01$ ), the values are in bold.

Finally, the reasons for saving are analyzed by the *estimated net income of households*<sup>6</sup>. In case of most saving objectives there is a gap between the lower three and the upper two income quintiles. The behavior of the upper 40% is rather similar, while the lower income group is less homogenous. When discussing the effects of the education level we already mentioned that there is a positive correlation between the education level and income. The analysis by income also supports this hypothesis, as the behavior of the upper two income quintiles mainly corresponds to that of households with at least high school degree, while the lower three quintiles behave like households with lower than high school degree, though there are certain saving categories where the ones with high school degree behave like lower income households (enterprise, consumer durables, debt repayment).

The main differences are the following: saving for child-related expenses<sup>7</sup>, home, car purchase, enterprise, retirement, consumer durables and debt repayment are significantly more dominant in the upper two income quintiles, than in the lower three, while in the latter saving for unexpected events, times of sickness and other reasons are relatively more important. This corresponds to our intuition, as in low income households even the financing of current consumption may cause problems, and high-value consumer durables and investment items are so far beyond their reach that it is not even worth saving for them. The significance of precautionary saving can be explained by higher income uncertainty.

<sup>6</sup> The method of estimation is available from the authors upon request.

<sup>7</sup> In case of child-related expenses the gap is between the lower two and upper three income quintiles.

It is noteworthy that the saving for times of unemployment does not correspond to the above described relationship between income and education. While the significance of saving for unemployment declines with a rise in the education level (though by a small extent), its importance is bigger in the upper three income categories than in the lower two.

The evaluation of the bequest motive is difficult, as we could not find a unambiguous relationship between this motive and the age and education level of the head of household as well as the income of the household. The bequest motive is likely to be related to factors independent of the above mentioned ones and to unobserved cultural factors. It is even harder to assess the saving category as only very few – 5% of respondents – households chose this option.

Table 3.1.6  
*The share of the different reasons for saving by the total net income of household as a percentage of households with savings*

	1. quintile	2. quintile	3. quintile	4. quintile	5. quintile
Child-related expenses	<b>18,4</b>	<b>32,2</b>	<b>45,4</b>	<b>43,8</b>	<b>43,6</b>
Buy, improve or upgrade	<b>11,8</b>	<b>28,9</b>	<b>32,8</b>	<b>38,9</b>	<b>46,4</b>
Buy a car	<b>0,0</b>	<b>4,4</b>	<b>5,9</b>	<b>12,3</b>	<b>16,0</b>
Start new business enterprise	<b>1,3</b>	<b>3,3</b>	<b>4,2</b>	<b>11,2</b>	<b>13,7</b>
Retirement	<b>6,7</b>	<b>10,0</b>	<b>9,2</b>	<b>30,2</b>	<b>34,1</b>
Holiday	<b>7,9</b>	<b>4,4</b>	<b>9,2</b>	<b>24,7</b>	<b>36,3</b>
Sickness	53,9	48,9	47,1	40,7	38,4
Unemployment	<b>5,3</b>	<b>3,3</b>	<b>11,8</b>	<b>16,7</b>	<b>21,3</b>
Unexpected event	57,9	55,6	57,1	48,1	48,6
Durable consumption goods	<b>7,9</b>	<b>4,4</b>	<b>9,2</b>	<b>14,2</b>	<b>16,1</b>
Leave bequest	9,2	5,6	2,5	6,2	3,8
Pay off debt	1,3	7,8	8,4	11,7	12,7
Other	<b>18,4</b>	<b>11,2</b>	<b>5,1</b>	<b>1,2</b>	<b>2,4</b>

*Note: the 1. quintile is the lowest, while the 5. quintile is the highest income group.*

*When the value of phi, the coefficient of association is significant ( $p < 0,01$ ), the values are in bold.*

### *Consumer impatience*

We indicated earlier that the consumption decisions of households are influenced mostly by the income growth related to the business cycle, the increasing credit supply due to financial liberalization and deepening and by the life-cycle position of the household. There is an additional important factor in transition countries: consumer impatience resulting from the deferment of purchases due to high liquidity constraints and unfavorable income expectations in the past. This accumulated tension is eased by the improvement of income expectations and declining liquidity constraints. Ceteris paribus the propensity to consume can be higher in transition countries due to consumer impatience than in developed economies. Therefore, the next two variables are intended to measure *consumer impatience*.

To measure consumer impatience (CONSIMP1) first we analyzed reactions to hypothetical windfall gains. The empirical analysis of windfall gains in the literature mainly focuses on testing Friedman's permanent income hypothesis, that is on whether recipients of these revenues treated them as transitory or permanent income (see e.g., Reid (1962), Jones (1960) and Bodkin (1959)). Our analysis has somewhat different aims, we define several categories

within the option of spending the windfall gain, and establish different degrees of impatience based on the use of this money.

"Let's suppose that you receive 1 million forints<sup>8</sup> unexpectedly (e.g., from inheritance or the lottery). What would you spend this money on? You can choose from the following options:

- Pay off debt
- Buy food, clothing or other non-durable consumption items
- Buy lower value durable consumption items (electronic equipment, household appliances)
- Buy higher value durable consumption items (e.g. car)
- Buy, improve, upgrade home
- Holiday
- Invest in business enterprise
- Save it".

The respondent first chose from the above options (respondents were allowed to choose more than one option), then ranked them by how much money she or he would spend on the options. We constructed two variables from the responses. The first one helps us estimate the weight of each option in the use of the windfall gain for the total of households, while the second one measures consumer impatience on a scale of  $-1$  to  $+1$ , where  $-1$  means that the household is absolutely not impatient and  $+1$  is the sign of extreme impatience in consumption decisions<sup>9</sup>.

The results show that most households would spend the unexpected revenue on buying, improving or upgrading home. This is followed by the weight of those who would save the unexpected revenue (37.5%). Spending it on holiday was chosen by the smallest number of respondents (11%). (See Table 3.1.6)

The estimated weights for the use of the windfall gain indicate two interesting results: first, households would spend 35.2% on buying, improving, upgrading home, while the share of saving, paying off debt and invest in business (that is no consumption categories) is also high, it is 42% combined. This is a sign that the major concern of Hungarian households is that they are not satisfied with their living conditions. Second, the share of households intending to save or invest the windfall gain is rather high, which in the framework of the permanent income hypothesis supports the assumption that households consider this income transitory.

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<sup>8</sup> Approx. 3760 euros.

<sup>9</sup> More details of the method to construct this indicator are available from the authors upon request.

Table 3.1.7  
*Probabilities and estimated weights of the use of a 1 million forint windfall gain by  
Hungarian households in September 2000*

	Share of those choosing a certain option* (%)	Average share of a certain option in the use of the windfall gain (thousand forints)
Pay off debt	17,4	100
Buy food, clothing or other non-durable consumption items	15,5	62
Buy lower value durable consumption items (e.g. electronic equipment, household appliances)	16,9	61
Buy higher value durable consumption items (e.g. car)	12,4	64
Buy, improve upgrade home	53,4	352
Holiday	11,0	39
Invest it in business enterprise	12,7	81
Save it	37,5	237
Total		1000

\*: *more than one option could be chosen, so the sum of percentages is higher than 100%*

The other variable (CONSIMP2) measuring consumer impatience was constructed from responses to another hypothetical situation. If the respondent was employed, then the following question was asked:

"Let's suppose you have a secure job from tomorrow, where your starting wage is the same as now, but your pay-raise in the next three years significantly exceeds (by 30%) the raises of the last three years. I would like to know whether you would change your consumption behavior. Please tell me whether you would spend the same or more in the six month following your job change than now.

- I would spend approx. the same as now;
- I would spend more than now, but I would consume a lower share of my income than currently;
- I would spend more than now, and I would consume approx. the same share of my income as currently;
- I would spend more than now, and I would consume a higher share of my income than currently.
- (I don't know)"

The real growth of per capita wages in 1997-99 was 4.9%, 3.6% and 3.8%, respectively. The number of responses was 624 (out of the 645 people employed). The majority (56.95%) would not change their consumption spending, 18.8% would increase it but by a lower extent than their wage increase, 17.5% would increase their consumption but they would consume approx. the same share of their income as currently, and only 6.9% would increase the share of consumption in their income.

The two indicators measuring consumer impatience give consistent results, there is a significant but weak positive relationship between the two (Gamma = 0,136, approx. t = 2,591).

### *Income tension*

It is important to know how “frustrated” the household is when it is making its consumption and saving decisions, that is what is the difference between its adequate and actual income. The bigger this difference, the larger income tension is, that is the stronger the feeling of the household that its actual income is not sufficient to achieve an “adequate living standard”. Therefore, we constructed income tension as our third important variable (after financial relevance and consumer impatience):

$$\text{Income tension (INTENS)} = (\text{adequate income} - \text{actual income}) / \text{actual income} * 100$$

This gives us an indicator that shows by how many percent should the given household’s income be raised to obtain the income level that provides the “adequate living standard”<sup>10</sup>. This income tension can be zero or negative, if the respondent considers their actual income higher than what he or she regards adequate for his/her family.

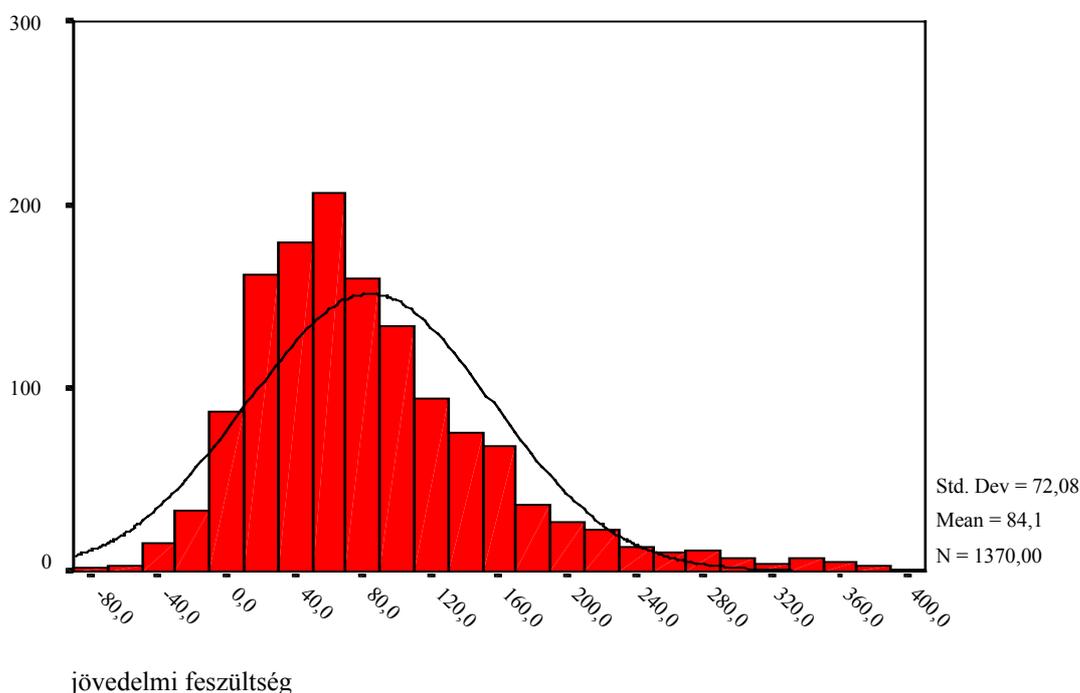
The results show that a large proportion of Hungarian households is characterized by extremely high income tension currently (see Figure 3.1.2 and Table 3.1.8). In case of nearly one-third of households, income tension exceeds 100%, and only 7% considers themselves relatively satisfied. For nearly 9% the income tension is lower than 20%.

Table 3.1.8  
*The distribution of households by income tension in September 2000*

Income tension (INTENS)	Households	
	Number	Share
Negative, no	91	6,5
Below 20%	120	8,6
21-40%	173	12,4
41-60%	214	15,4
61-80%	182	13,1
81-100%	155	11,1
Over 100%	459	32,9
Total	1394	100,0

<sup>10</sup>The original question was the following: "In your opinion what monthly amount would a family like yours need to maintain an adequate standard of living under current circumstances?"

Figure 3.1.2  
*The distribution of households by the extent of income tension, %  
 (INTENS < 400)*



The following three questions will be analyzed with the above described indicators:

- What are the main characteristics of financially relevant households?
- What is the propensity to borrow in the group of financially relevant households, and to what extent is this propensity explained by income tension, consumer impatience and future income expectations?
- To what extent are Hungarian households characterized by consumer impatience and to what other factors is this behavior related?

First we describe the profile of financially relevant household group then the propensity to borrow as well as consumer impatience are analyzed.

### 3.2 The main characteristics of financially relevant households

When analyzing the characteristics of financially relevant households we would like to see if there is any difference between financially relevant households and other households regarding the settlement type, wealth and income of the household, as well as life-cycle characteristics (age of the head of household, number of dependents) and education of the head of household.

**We found that financially relevant households can be characterized by the following: the head of household is employed, young or middle-aged, has a high education level and a spouse, the net monthly income of the household is high, the household has significant non-financial savings and the household lives in an urban area.**

Using the above mentioned variables (plus short-term income expectations) we also constructed an empirical model to estimate the probability of belonging to the financially relevant group by logistic regression. The results indicate that the variables for **the age and education level of the head of household, the income and short-term income expectations of the household, as well as the number of household members have significant coefficients**, and these coefficients are all positive with the exception of the age of the head of household. The strength of the short-term expectation variable is especially notable which can be explained by two things: the first one is evident, as the definition of financially relevant households included positive short-term saving expectations. Hence, the significance of this variable reflects the positive relationship between income and savings. On the other hand, the expectations of households with savings and debt are more positive than those of other households<sup>11</sup>. The negative effect of age comes out both when we include age groups and actual years of age: the average age of the head of household is 48 years for financially relevant households and it is 57 years for the rest of households (see Table 3.2.1).

*Table 3.2.1*  
*Logistic regression for the probability of belonging into the financially relevant household group*

	Dependent variable = PE (0,1)			
Variables	Model 1	Model 2	Model 3	Model 4
HFOOSZT	1,0750**	1,0718**	1,0818**	1,0812**
EHSJOVX	1,2999**	1,2839**	1,1985**	1,1877**
HSZAM	1,5678**	1,5249**	1,4290**	1,4085**
KOR1	2,2453**	n	2,1669**	n
KOR2	1,4803	n	1,3571	n
KOR3	1,1397	n	1,0624	n
KOR4 (reference)	-	n	-	n
HFOKOR	n	0,9845**	n	0,9876*
RLNVGYNX	n	n	1,1925	1,1636
VAH1	1,5394**	1,5708**	1,5640**	1,6007**
Model $\chi^2$	235,162	228,925	166,619	158,679
-2 log likelihood	1666,223	1672,460	1368,406	1376,349
Share of properly classified cases (%)	67,9	67,0	66,0	66,3
Pseudo R <sup>2</sup>	0,124	0,120	0,109	0,103
N	1376	1376	1116	1116

\*:  $p < 0.05$

\*\*  $p < 0.01$

*Notes: cells contain values of  $\exp(b)$  which shows how the odds of the dependent variable is changed by a one-unit change in the explanatory variable*

*The value of PE is 1, if the household belongs to the financially relevant category, and 0 otherwise.*

*HFOOSZT: the number of completed schoolyears of the head of household*

*EHSJOVX: total household income per capita (in ten thousand forints)*

*HSZAM: number of persons living in the households*

*KOR1: the age of the head of household is below 34*

*KOR2: the age of the head of household is between 35-44*

*KOR3: the age of the head of household is between 45-59*

*KOR4: the age of the head of household is over 59*

<sup>11</sup>There is strong positive relationship between income expectations for the following year and savings in the following six months ( $\phi = 0.309$ ). Though it is also true that the income expectations of households with savings and debt are also more favorable than the income expectations of those with neither savings nor debt: the share of those expecting an improvement is 25.1% in the first group and only 12.5% in the second one ( $\phi = 0.187$ ).

*HFOKOR*: the head of household's years of age  
*RLNVGYNX*: the effect of the estimated wealth of the household independent of its income  
*VAHI*: income expectations of the household for the following 12 months  
*n*: the variable was not included in the given model.

The strong positive effect of household size on the probability to belong to the financially relevant group might be related to the number of children<sup>12</sup> whose existence necessitates the accumulation of savings, but it also means higher consumption level in the household which makes borrowing necessary occasionally<sup>13</sup>.

The third important observation is related to the positive role of expectations. Financially relevant households are more likely to have favorable income expectations, while the other group rather has deteriorating or unchanged income expectations. This outcome indicates that similar to the results of empirical investigations for developed countries, **short-term income expectations are an important indicator for household consumption and saving behavior in Hungary as well.**

It must be noted, however, that the significant variables together achieved only a minor improvement over a naïve estimate. If households were classified into financially relevant and not relevant categories on a random basis, then 50% of households would be classified correctly. Our 66.0-66.7% correct classification rate can mean two things: on the one hand, variables not included in our model can also be good indicators of financial relevance, but it may also mean that our definition of financial relevance is not appropriate enough and intermix several household groups with different characteristics that are hard to separate.

### 3.3 The propensity to borrow

61% of those surveyed responded that they would be able to take out loans and pay the installments. The average monthly amount of installment was nearly 16 000 forints with relatively high deviation (see Table 3.3.1). Financially relevant households would take higher instalments than the full sample, which follows from the fact that financially relevant households on average have higher income and wealth.

Table 3.3.1  
*Descriptive statistics for monthly installments (TRLR), forint\**

	Total households	Financially relevant households
Mean	15643	18096
Deviation	17482	19043
Median	10000	10000
Mode	10000	10000
Minimum	430	430
Maximum	150000	150000
Number of cases	730	524

\*: only if the monthly installment did not reach the total of the household's net monthly income. The number of cases when it did was 18.

The majority of respondents chose 10 000 forints as a realistic monthly instalment amount, but there were quite a few cases over 40 000 forints as well. If we express the monthly instalment as a percentage of the household's total net monthly income, then we receive an

<sup>12</sup> Unfortunately, the survey data do not allow us to distinguish children within the household.

<sup>13</sup> The average number of household members is 3.48 for households with debt and 2.59 with no debt.

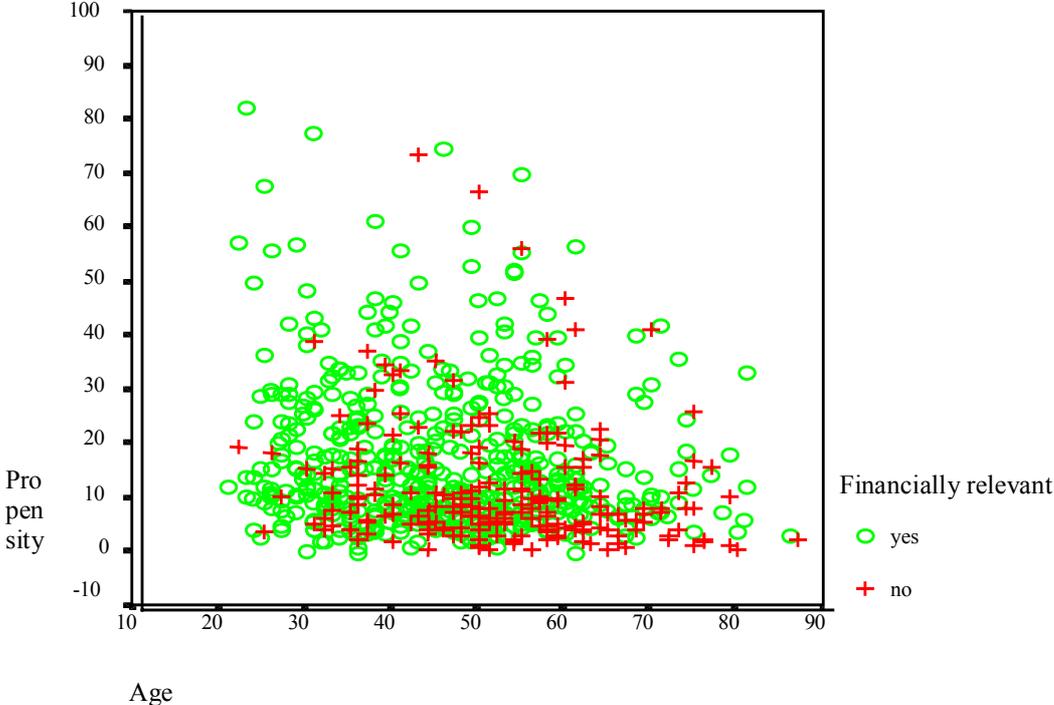
indicator which measures the given household's propensity to borrow. According to this indicator, **households that are willing to borrow would spend on average 16% of their income on instalment loans.** This ratio is higher for the financially relevant group (17.8%), and this is naturally not influenced by the effect of different income levels anymore. This difference in the propensity to borrow between the two groups is not affected by the difference in the age of household heads either. We saw earlier that the average age of the household head is lower in the case of financially relevant households, but Figure 3.3.1 shows that the propensity to borrow is higher among them.

Table 3.3.2  
*Descriptive statistics the propensity to borrow (ELADH), %\**

	Full sample	Financially relevant households
Monthly instalment as a % of the household total net monthly income		
Mean	16.27	17.80
Standard deviation	13.09	13.54
Median	11.73	13.37
Mode (lowest value)	12.50	14.29
Minimum	0.50	0.50
Maximum	83.33	83.33
Number of cases	730	515

\*: only if the monthly instalment did not reach the total of the household's net monthly income. The number of cases when it did was 18.

Figure 3.3.1  
*Propensity to borrow by the age of the head of household as well as by financial relevance in September 2000*



The explanation lies in other characteristics of the financially relevant group. First, we draw up our hypotheses concerning the factors affecting the propensity to borrow in light of the theory and the experiences of other emerging countries. Then we estimate a model for this indicator.

Our hypotheses are the following:

1. Liquidity constraints are very important in determining the borrowing decisions of households and these constraints are heavily influenced by the current income and even more by the expected income of a household. Therefore, we expect a higher propensity to borrow for households with higher current and expected income.
2. Household income expectations are influenced by the general business cycle expectation of households. If this latter is more favorable, then the propensity to consume also rises *ceteris paribus* because of the higher propensity to borrow.
3. The level of education can also affect the level of indebtedness, as it has a strong influence on the long-term labor market position and income of the person. We expect that households with more educated household heads are willing to accumulate more debt (even at the same level of income).
4. As far as consumer impatience is concerned, it is expected that households having higher consumer impatience indicators are willing to accumulate more debt *ceteris paribus* (i.e. at the same income level and having the same income expectations) than more patient households.
5. We also assume that income tension is positively related to the propensity to borrow, as borrowing is an obvious way to ease this frustration. Households with higher income tension are also more likely to seek better jobs than those that are completely satisfied. So even it is not reflected by their short-term income expectations, they may think in terms of higher income in their aspiration when they make their borrowing decisions.
6. Past borrowing may also affect the propensity to borrow. Those who have debt have some experience about paying off the debt, more specifically about what is the monthly instalment that they are able to pay. On the other hand, those who have no such experience are more likely to give a conservative estimate. Therefore, we expect that past borrowing *ceteris paribus* raises the amount of instalment. Also, past borrowers had gone through the credit evaluation procedure and they have a better idea about the amount of credit they could get, and this may make them less conservative when specifying the amount.
7. Finally, the age of the household head may also influence borrowing decisions. The aversion of the elderly towards debt is well-known, while younger households are less risk-averse (since becoming indebted usually involves some risk) in this respect, they are more willing to take the risk in order to obtain the consumption items that they desire. Therefore, we expect the age of the head of household to have a negative effect on the propensity to borrow *ceteris paribus*.

We estimated two models, both had the logarithm of the instalment/income ratio (LNELADH) as their dependent variable<sup>14</sup>. The results are summarized in Table 3.3.4. The

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<sup>14</sup> The propensity to borrow has a lognormal distribution.

first model included consumer impatience, while the second one had income tension as one of the explanatory variables. Both models were tested for the full sample and for the financially relevant group<sup>15</sup>. The first observation concerns the number of cases. There is no big difference between the financially relevant and not relevant households for those that would borrow (that is they chose a monthly instalment that is higher than 0), since in the group of households that are willing to take out loans the share of financially relevant households was around 70%.

Table 3.3.3  
*Estimation of the propensity to borrow for households (LNELADH)*

Explanatory variables	Model 1	Model 2	Model 3	Model 4
	Full sample	Financially relevant households	Full sample	Financially relevant households
CI1	0.208***	0.256***	n.	n.
CI2	-0.012	0.095	n.	n.
CI3	-0.041	-0.034	n.	n.
CI4	-0.264**	-0.079	n.	n.
CI5 (reference)	-	-	n.	n.
INTENS	n.	n.	0.001	0.000
EDUIND	0.051***	0.030**	0.042***	0.039**
HHAGE	-0.008***	-0.007**	-0.008***	-0.007**
LNEHIX	0.115**	0.175**	0.168***	0.194***
EXPINC	0.237***	0.228***	0.224***	0.196**
LOAN	0.179***	n.	0.205***	n.
Constant	2.564	2.488	2.465	2.581
Adjusted R <sup>2</sup>	0.116	0.078	0.092	0.059
F	9.91	4.99	12.40	6.88
Prob F	0.00	0.00	0.00	0.00
Ramsey RESET	1.73	1.30	0.44	0.75
Heteroscedasticity	0.61	2.78*	0.49	1.37
N	688	482	679	473
Number of omitted (outliers) cases	7	4	6	5

\*:  $p < 0,1$

\*\*.:  $p < 0,05$

\*\*\*.:  $p < 0,01$

Variables:

*Consumer impatience:*

*CI1: 1, if CI = -1, else 0 (most patient)*

*CI2: 1, if  $-0,2 > CI > -0,99$ , else 0*

*CI3: 1, if  $0,2 > CI > -0,19$ , else 0*

*CI4: 1, if  $0,99 > CI > 0,21$  else 0 (most impatient).*

*INTENS: income tension*

*EDUIND: education level independent of income*

*HHAGE: age of the head of household*

*LNEHIX: the logarithm of household income per capita (thousand Ft)*

*EXPINC: expected income of the household in the following year*

*0, if it is expected to be unchanged or worsen*

*1, if it is expected improve*

*LOAN: past borrowing experience*

<sup>15</sup> We considered as outliers and omitted those cases which belonged to the upper 1% of estimates according to Cook distance. In our case this was a more loose criterion than the generally recommended *Cook's D<sub>i</sub> > 4/n* threshold (where n is the number of cases). See Computing Resource Center (1992), Vol. 2. 310. o.

- 0, no bank loan
- 1, the household has a bank loan
- n*: the given variable is not included in the model

The results confirm several of our hypotheses, but they do not confirm our intuition concerning consumer impatience and income tension. As far as consumer impatience is concerned, the results indicate the opposite of what we expected, as the relatively “patient” households – those who would pay off debt or save or invest the windfall gain into business enterprise - would choose higher instalments, while the most “impatient” households would take out loans with significantly lower instalments. These results indicate that consumer impatience (as we defined it) may not be a major reason behind the dynamic growth of lending to households. On the other hand, it is reassuring, because the most impatient households, that is the group which would spend its windfall gain mostly on consumption items refrains from borrowing that would mean a large burden for them. Another possible explanation is that the most impatient households are also the ones with low average income and they are aware of their liquidity constraints, that is they wouldn’t get loans if they applied for them.

The estimation results indicate that the most important reason for the high growth rate of household borrowing is the significant improvement of income expectations. On the supply side, the increasing competition between banks, the decline in the interest rate level, as well as the easing of credit evaluation criteria also contributed significantly to rapidly expanding household lending.

Models with the consumer impatience indicators (Model 1 and 2) show that **the education level of the head of household, household income, future income expectations and past borrowing experience have a positive effect on the propensity to borrow**. The lack of consumer impatience also has a positive coefficient, that is – according to the model - more patient (CI1) households have a larger propensity to borrow than the most impatient ones (CI5). The other categories of consumer impatience (CI2-4) have less significant parameters.

The variable for the education level (EDUIND) is cleaned from the effect of income. The results confirm our hypothesis, **the propensity to borrow rises with the level of education**. We attribute this finding to the longer planning horizon of the more educated. Those with low education levels have more income uncertainty due to their less favorable labor market position, than more educated people. The variable for income has the expected sign: **households with higher income are more willing to borrow**, and the coefficient was significant for every version of the model.

The effect of short-term income expectation is quite strong and the coefficient has the predicted positive sign. Households with improving expectations (EXPINC = 1) have 2.9 – 3.4 ppt higher instalment/income ratio ceteris paribus than households with stable or deteriorating expectations (EXPINC = 0). **The effect of past borrowing experience is also strong and positive** (this variable is only meaningful for the full sample since one of the defining elements of financially relevant households was the existence of debt). Past borrowing (LOAN = 1) predicts a 2.5-2.7 ppt higher instalment/income ratio.

**The age of the household head has a significant negative coefficient**. A household with a 60-year old household head has a 1.3 ppt lower instalment/income ratio than one with a 25-year household head which also confirms our prior hypothesis and that of the life-cycle

hypothesis. In the last period of the life-cycle households want to spend a lower share of their income on debt repayment than in the early years.

Models 3 and 4 include income tension which has a positive coefficient in both cases but it is not significant. This result suggests that income tension does not play an important role in borrowing decisions, which may be partly due to the fact that households with low income and high income tension face higher liquidity constraints.

## 4. Conclusion

The paper has the following main conclusions:

1. The results support the relevance of the **life-cycle** hypothesis for Hungary, different age groups have different saving and consumption patterns.
2. The **indebtedness of Hungarian households** as a ratio to disposable income and GDP was declining until the end of the 1990s, and the current 7% debt/disposable income ratio is very low compared to the 50-100% ratio typical of developed countries. Based on the favorable prospects of the Hungarian economy, households have positive future income expectations, which – along with the easing of liquidity constraints and consumer impatience – projects the gradual rise of household indebtedness.
3. As far as the **reasons for saving** are concerned, the most important observation is that the role of precautionary saving declined in the second half of the 1990s (though this is still the predominant objective), while the significance of saving for home buying or upgrading increased.
4. The analysis of a **hypothetical windfall gain** of 1 million forint indicates that responding households would spend 35% of it on home buying, improving or upgrading purposes, and 42% would be used for saving, debt repayment and investment into business. This suggests that Hungarian households are rather unsatisfied with their living conditions and improving them has top priority. Besides that the share of households intending to save or invest the unexpected gain is also rather high
5. The characteristics of **financially relevant households** reveal that in these households the head of household is typically young or middle-aged, employed, educated and the household is in the higher income or wealth group.
6. Financially relevant households are more likely to have positive future income expectations, while stable or deteriorating expectations are more typical of the financially non-relevant group. The significance of **income expectations** in every model suggests that – similar to developed countries – this variable is an important indicator of households consumption and saving behavior in Hungary as well.
7. A large share of households are still characterized by extremely high **income tension**. In case of nearly one-third of responding households, desired income is the double of actual income, and only 9% reported that their desired income exceeded actual income by 20% or less.

8. Our two indicators for **consumer impatience** give consistent results and there is a weak positive relationship between the two. Both indicators suggest that the majority of households is relatively “patient”. The hypothetical windfall gain would be used for home buying or improvement and saving in the first place. According to the other indicator of consumer impatience, 56% of responding households would not increase their consumption despite the rise in their income.
9. 61% of respondents said that they would be able to take out **instalment loan**. The average monthly instalment was 16 000 Ft with a relatively large standard deviation. The average monthly instalment was higher for financially relevant households than for the full sample.
10. **Consumer impatience** has an effect on the **propensity to borrow** only at certain impatience levels. Our results indicate that - counter-intuitively - the most patient households are expected to have the highest propensity to borrow, while the most impatient ones would mostly refrain from accumulate much debt.
11. Our hypothesis that higher income tension leads to higher borrowing was not supported, according to the empirical estimations, **income tension has no effect on the propensity to borrow**.
12. **Past borrowing experience** raises the propensity to borrow. Households with a certain level of debt are willing to maintain *at least* as high a debt level as their current one. The indebtedness level of individual households is rather increasing in time (*ceteris paribus*) than decreasing.
13. The positive influence of (short- and long-term) **income expectations on the propensity to borrow** can be observed. Positive short-term expectations have a strong effect, but the education level is at least as important which signal long-term income expectations. Favorable income expectations have *ceteris paribus* a positive effect on the propensity to borrow (and to consume).
14. Our results and the findings of other studies suggest that Hungarian households are moving from an equilibrium characterized by low indebtedness to one that corresponds more to what we find in developed countries, that is to an equilibrium with higher financial liability ratios. Based on similar recent economic history of transition countries, this conclusion is likely to be true for other EU accession countries as well.

## References

**Árvai, Zsófia and Menczel, Péter** (2000), Savings of Hungarian households 1995-2000. National Bank of Hungary Working Paper 2000/8

**Bodkin, Ronald** (1959) Windfall Income and Consumption, *American Economic Review*, Sept. pp. 602-614.

**Browning, Martin és Lusardi, Annamaria** (1996), Household Saving: Micro Theories and Micro Facts, *Journal of Economic Literature*, Vol. 34, pp. 1797-1855.

**Deaton, Angus** (1992), *Understanding Consumption*, Oxford University Press.

**Jones, R.C.** (1960), Transitory Income and Expenditures on Consumption Categories, *American Economic Review, Papers and Proceedings*, May, pp. 584-92.

**Medgyesi, Márton – Szívós, Péter** (1999c): A háztartások megtakarításai. In: Szívós P. (szerk.): Fogyasztási csoportok, jövedelem, megtakarítás, Kutatási beszámoló a Magyar Nemzeti Bank számára, Budapest, November, 80-113.

**Menczel, Péter** (2000), Mit mutatnak a megtakarítások? *Bankszemle*, augusztus.

**Nagy, Ildikó – Szép, Péter** (1996): Megtakarítások és jövedelmek. In: A lakosság megtakarítói magatartásának vizsgálata a Magyar Háztartás Panel adatbázisának felhasználásával, Beszámoló a Magyar Nemzeti Bank részére. TÁRKI, február, 53-83. o.

**Polonyi, Gábor – Spéder, Zsolt** (1998): Megtakarítási dinamika 1992- és 1997 között. In: Spéder Zs. (szerk.): A lakosság megtakarítói magatartásának vizsgálata a Magyar Háztartás Panel adatbázisának felhasználásával (Az I-VI. hullám adatai alapján), Beszámoló a Magyar Nemzeti Bank részére, TÁRKI, december, 48-68. o.

**Reid, Margaret G.** (1962), Consumption, Savings and Windfall Gains, *American Economic Review*, Sept. pp.728-737.

**Spéder, Zsolt** (1996a): Fogyasztási válságok a háztartás gazdálkodásában. In: Sik E. - Tóth I. Gy.: Társadalmi páternoszter 1992-1995, Magyar Háztartás Panel Műhelytanulmányok 7. Budapest, január 61-73. o.

**Spéder, Zsolt** (1996c): A megtakarítási habitus 1995-ben. In: A lakosság megtakarítói magatartásának vizsgálata a Magyar Háztartás Panel adatbázisának felhasználásával, Beszámoló a Magyar Nemzeti Bank részére. TÁRKI, február, 33-52. o.

**Tóth, I. János** (1996): Megtakarítás és fogyasztás 1994-1995. In: A lakosság megtakarítói magatartásának vizsgálata a Magyar Háztartás Panel adatbázisának felhasználásával, Beszámoló a Magyar Nemzeti Bank részére. TÁRKI, február, 84-112. o.

**Zsoldos, István** (1997), A lakosság megtakarítási és portfólió döntései Magyarországon 1980-1996, NBH Working Paper 1997/4.

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