Zsuzsanna Hosszú: Pre-crisis household consumption behaviour and its heterogeneity according to income, on the basis of micro statistics*,[1]

Following the crisis, since mid-2009 domestic GDP has been growing slowly, but steadily. In 2011, there may have already been a material increase in real incomes as well, although a slight decline in consumption has been observed recently. In spite of more cautious consumption behaviour with greater emphasis on saving and debt repayment, the ratio of non-performing loans within banks' outstanding household loans continued to increase in the aforementioned period. The underlying reason for this phenomenon is that households accumulated considerable debt prior to the crisis. As a result, a protracted balance sheet adjustment process may currently be hindering an increase in consumption. These developments are reflected in the macro statistics as well, but the measure of indebtedness can vary significantly across the different income groups of households. An exploration of this heterogeneity may facilitate a more thorough understanding of consumer behaviour and enable more precise identification of the extent of the indebtedness of different income groups. For this examination, in my analysis I have used the Household Budget Survey compiled by the CSO as a database and reviewed changes in real incomes in the various income deciles prior to the crisis (until 2008), as well as typical consumption patterns and the borrowing behaviour stemming from them. According to the data, prior to the crisis it was mainly the low- and medium-income social strata, in which households adopted a consumption path that departed from actual income while their real income was declining. For the low-income strata, due to the high instalments compared to their income, even a slight strengthening in the exchange rate of the Swiss franc may have resulted in debt repayment problems, whereas in the case of the medium-income strata the increase in the ratio of non-performing loans may have primarily been caused by loss of employment and been exacerbated by the depreciation of the Hungarian forint against the Swiss franc.

INTRODUCTION

In the period since the crisis, following the trough in 2009, household disposable income started to increase continuously, partly as a result of the changes that took place in the personal income tax system and partly as a result of the slow increase in employment since early 2010. However, consumption, which fell considerably during the crisis, continues to be restrained (Chart 1).[2] The adjustment that took place as a result of the crisis caused a 5 per cent decline in the consumption rate in 2009 H1, compared to 2008. No growth trend began from 2009 H2, and consumption has remained low, compared to the pre-crisis level.

In the following I examine the role played by changes in households' real income situations, as well as consumption and borrowing decisions typical of the pre-crisis period in the aforementioned, seemingly contradictory changes. It is possible to analyse this problem with macro data as well, but the disadvantage of such a time series is that the heterogeneity behind the changes cannot be examined. For this reason, it is impossible to identify the social strata to

[2] Changes in personal income tax affected various households differently. Therefore, the heterogeneity of changes in income according to income levels may have a significant effect on consumption in this respect as well. These changes resulted in a considerable increase in income, primarily in the higher-income strata. These households are usually characterised by a lower consumption rate, so consumption may have expanded to a lesser extent. In the database I used, data were only available up to 2008, so the above could not be taken into account.
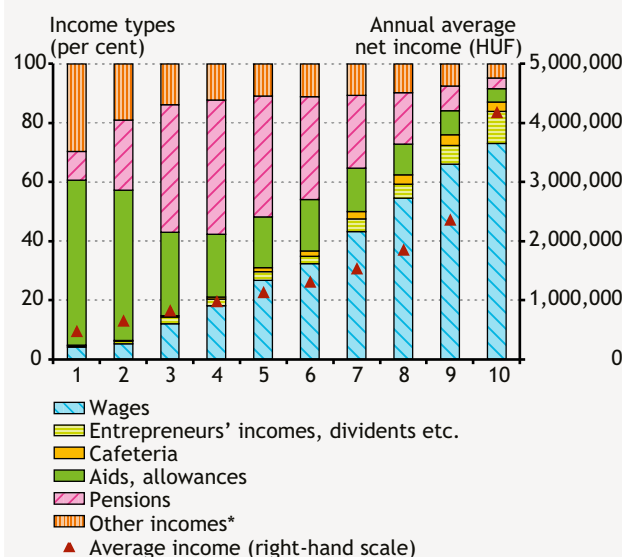
Chart 1

Current household consumption, disposable income and consumption rate

(seasonally adjusted level data)
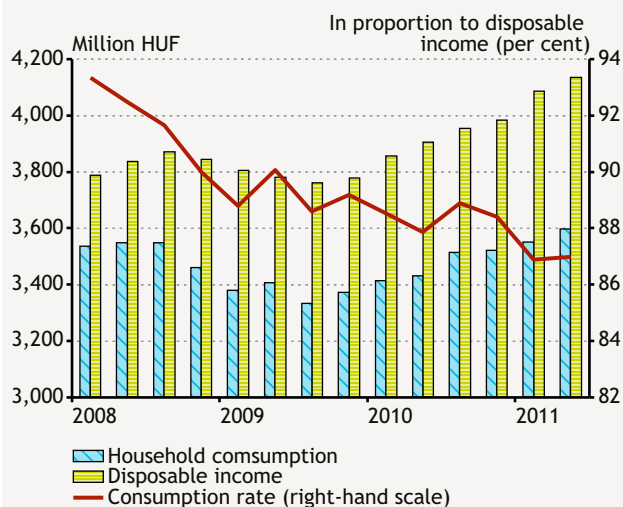
Sources: MNB and CSO national accounts.

Chart 2

Income structure according to income deciles in 2008[4]

* Note: other income: incomes from abroad, orphan allowance, sums received from insurance company, in-kind income, housing maintenance allowance, value of consumption originating from own production, total income of a child below the age of 16, child support received, casual work, tip, other income.
Source: HBS.

which the problem is primarily related. As a means of examining this issue, I use the Household Budget Survey[3] (hereinafter HBS) database compiled by the CSO. On the basis of the HBS, I examine in the various income deciles the pre-crisis changes in real incomes, consumption patterns, and typical borrowing behaviour stemming from them. I also analyse the changes in real income situations belonging to the various strata of households, comparing them with one another in the period preceding the crisis.

COMPOSITION OF AND CHANGES IN HOUSEHOLD INCOMES

Considering the total population (based on 2008 data in Chart 2), the most important sources of income are as follows: wages account for the highest portion (48 per cent of total income), followed by pensions (19 per cent). Aid and allowances (15 per cent) also represent a significant share (entrepreneurs' incomes and dividends account for a considerable portion of the remaining part). However, their distribution according to income deciles reflects significant differences. Aid and allowances, as well as income from

casual work and other sources, are typical sources of income for the poorest strata (i.e. households with the lowest income). The middle strata have higher income, with pensions and wage type incomes representing a larger proportion, while the aforementioned sources of income are less important. Finally, in the case of the highest-income strata, incomes from wages dominate and the proportion of transfers received from the state declines. This is in line with an organisation of society according to activity: the poorest strata are comprised of people who are of active age but are permanently unemployed; as income increases, in the middle strata, the ratio of pensioners becomes significant, along with an increase in the number of employed. In the upper deciles, active wage-earners primarily dominate.

As far as changes in nominal incomes are concerned, a considerable increase was observed in the total population from 2004 until 2006, but the growth rate then slowed

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[3] The HBS is prepared according to primary social characteristics, based on sampling. Every year, 8,000-9,000 households keep detailed diaries of their monthly incomes and expenditures. In addition to these data, important characteristics of the given households and some borrowing-related questions are also included in the database. It consists of two parts, personal and household. This survey has been conducted since 1993; the latest one is from 2008. Its disadvantage is that it is not representative of some important criteria, nor is it representative of income distribution (because those who record the responses are unable to access the poorest and the richest strata). The HBS has been used as a database by other analyses in order to analyse household decisions (for example, Gáspár and Varga, 2011 or Benczúr et al., 2011).

[4] Persons are classified into one of the deciles according to income in the first chart, and households are shown in the other charts. 1 indicates the lowest-income, while 10 indicates the highest-income decile.

Table 1
Growth rate of nominal wages by deciles, in per cent

	1	2	3	4	5	6	7	8	9	10	1 and 10 compared*	2 and 9 compared
2004–2006	22.1	26.5	22.5	21.1	19.8	18.9	17.5	15.9	15.7	6.5	805% (2004)–738% (2006)	349%–319%
2006–2008	7.1	–2.8	–1.7	3.0	–0.1	0.5	2.3	3.2	1.5	5.7	738% (2006)–693% (2008)	319%–334%

* The numbers in the column before the last show how much the income of the highest decile was at the beginning and at the end of the period if the income of the lowest decile is 100 per cent. The last column can be interpreted in a similar manner.
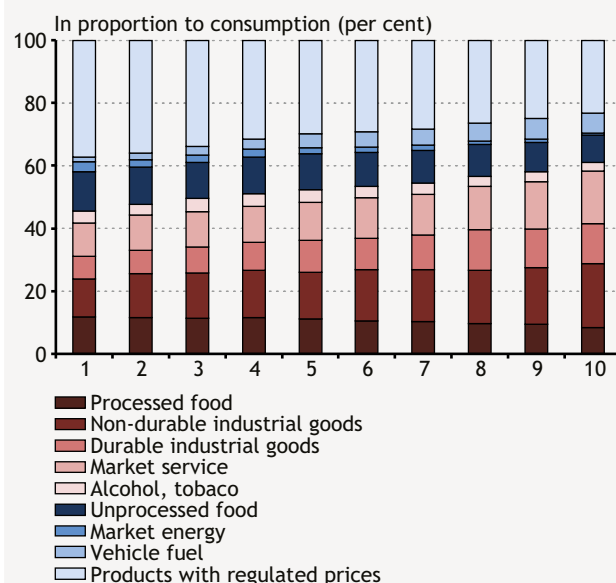*Source: HBS.*

during the following two years. In addition to changes in the economic environment, this is mainly attributable to the effects of fiscal policy. Beginning in 2002 (especially 2002 and 2003), expansive fiscal measures and a favourable economic situation contributed to a significant increase in incomes. The restrictive steps that became necessary due to fiscal imbalances resulting from the previous years were then constrained the increase in incomes in 2007 and 2008. In terms of the direction of the change, an examination by deciles shows a result that is similar to that seen at the level of the national economy. Taking into account the magnitude of the increase, the picture is much more heterogeneous (Table 1). In general, in the first two years of the period under review, the income of those in the lower deciles increased faster than those of the upper deciles. In 2007 and 2008, a decline was observed in the income of several lower-income strata, while a slight increase occurred in the upper deciles.

The relative income situations of the various strata of the population and their changes compared to one another are usually measured on the basis of the size of the difference between the lowest and the uppermost deciles. During HBS data collection, the data of the two extreme deciles were the most imprecise, due to the difficulties of measuring the poorest and the richest strata. For this reason, it is more prudent to compare the second and the ninth deciles. Based on the above, in the period under review a general convergence was observed in the income situations of various strata when compared to one another (especially in 2005 and 2006). This process did not continue in the subsequent two years; smaller changes occurred in incomes, and thus differences remained at nearly the same levels. A more refined picture of the changes in income differences becomes clear if real incomes are examined instead of nominal ones, also taking into account that the structure of consumption varies across deciles. Thus, different inflation rates may be experienced by consumers with different incomes.

INFLATION EXPERIENCED BY HOUSEHOLDS

In the HBS statistics, consumption expenditures are sufficiently detailed to allow a breakdown of total consumption into categories usually used to measure inflation (processed and unprocessed food, durable and non-durable industrial goods, market services, market energy, alcohol and tobacco, vehicle fuel, products with regulated prices). This product classification corresponds to that of the HICP (harmonised index of consumer prices) applied by Eurostat. Based on the pattern of consumption reflected in the HBS (Chart 3), the proportion of core inflation items is smaller in the lower-income strata; thus, price fluctuations that are typical in the case of the other

Chart 3
Consumption structure by deciles in 2008*

In proportion to consumption (per cent)

Legend:
- Processed food
- Non-durable industrial goods
- Durable industrial goods
- Market service
- Alcohol, tobaco
- Unprocessed food
- Market energy
- Vehicle fuel
- Products with regulated prices

* Note: in the chart, burgundy indicates core inflation, whereas blue indicates other items.
Source: HBS.

items have a stronger effect on the poorer strata. The greater weight of items outside core inflation in the lower deciles is caused by the higher consumption of unprocessed food and products with regulated prices. This phenomenon is attributable to the fact that the poorer strata consume a higher proportion of sustenance goods, which primarily belong to the aforementioned type of products.

In recent years, major price shocks were observed in such items as food, products with regulated prices and vehicle fuel. Following patterns of consumption by deciles, households in the lowest decile spend a negligible proportion of their incomes on petrol; with growth in income, this proportion becomes increasingly greater, while the share of the other two product groups declines. Accordingly, an increase in the price of petrol primarily affects those with higher income, whereas food price increases have a greater effect on the situation of the poorer strata.

It has been a generally observed phenomenon in recent years that the price increase of items outside core inflation exceeded core inflation not only in volatility but also in terms of magnitude (which is partially attributable to considerable shocks in commodity prices and partially to the inflationary effects of government measures on regulated prices). Therefore, following the consumption patterns discussed above (i.e. the proportion of core inflation items is smaller in poorer households), lower-income households faced higher inflation. This correlation was consistent across strata: the higher the decile in question, the lower the observed increase in the consumer price index. The difference between the inflations of the two extreme deciles was significant; the lowest decile experienced 20–40 per cent (1–3.5 percentage point) higher inflation than the top decile (Chart 4). This confirms that the poorest strata are more afflicted by higher inflation. Moreover, differences in inflation between the deciles are larger as inflation grows. In the case of lower inflation, the difference between the two extreme deciles was only 1–1.5 percentage points, whereas this indicator reached 2–3.5 percentage points in high inflation years.

Following this examination of inflation, it is worth returning to changes in real incomes and their differences. Here, the definition of real income is as follows: nominal income is deflated with the inflation typical of the decile, as this method allows calculation of typical consumption patterns as well (Chart 5).

The dynamics of the resulting real incomes are similar to those of the nominal time series, but heterogeneity is lower. There was an increase in all deciles (except for the highest one) in 2005 and 2006, but real incomes declined across all

Chart 4
Examination of inflation by deciles
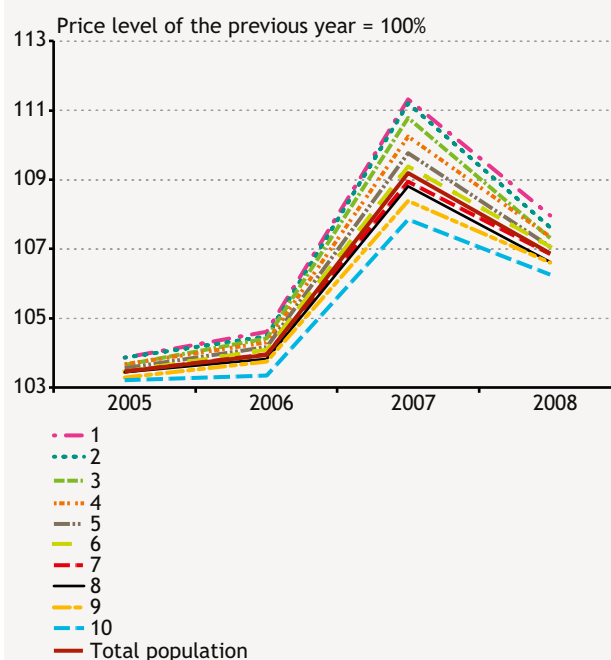
Consumption data in the detail needed to conduct calculations have been available in the HBS statistics since 2005.
Source: HBS.

Chart 5
Real income by deciles, deflated by experienced inflation
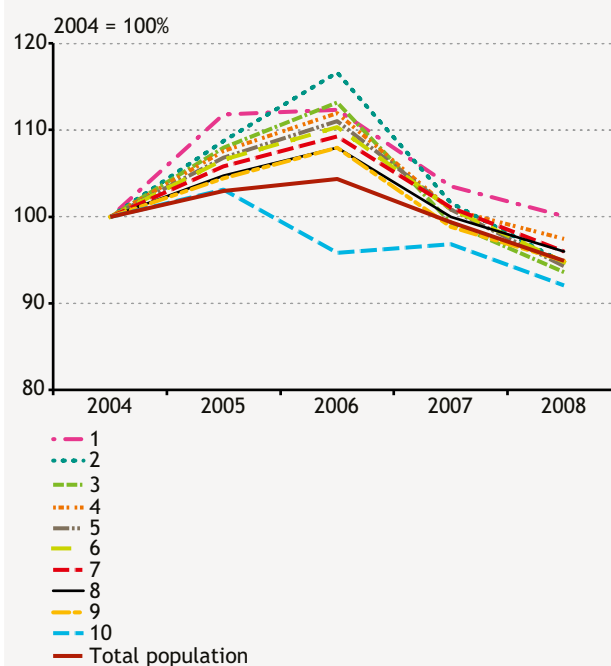
Source: HBS.

deciles in the last two years. Examination of changes across the deciles shows significant differences compared to

nominal incomes; in the first two years, a less pronounced convergence was visible, compared to the original calculation. This process came to a sudden end in 2007; as a result, stabilisation of the differences was typical of only 2008.

However, the decline in real incomes typical of 2007 and 2008 did not entail a similar decline in consumption. The result of these two processes was reflected in changes in the macroeconomic consumption rate as well. Starting in 2005, this rate was usually characterised by a slight increase every year. It is worth having a closer look at consumption rates by income levels as well (Chart 6). In general, the higher the income decile, the lower the consumption rate. Overall, households consume approximately 90 per cent of their expenditures. It is remarkable that every year the expenditures of the lowest decile were higher than its income,[5] a pattern that is unsustainable over the long term. In addition, growth that appears in the consumption rate at an aggregate level was not generally typical for each decile; it was primarily a result of growth that occurred in the low- and medium-income strata, while the higher deciles were instead characterised by stagnation or even decline. In the case of the low- and medium-income strata, therefore, changes in consumption were not tied with changes in income; consumption expenditures slightly increased as real incomes declined.
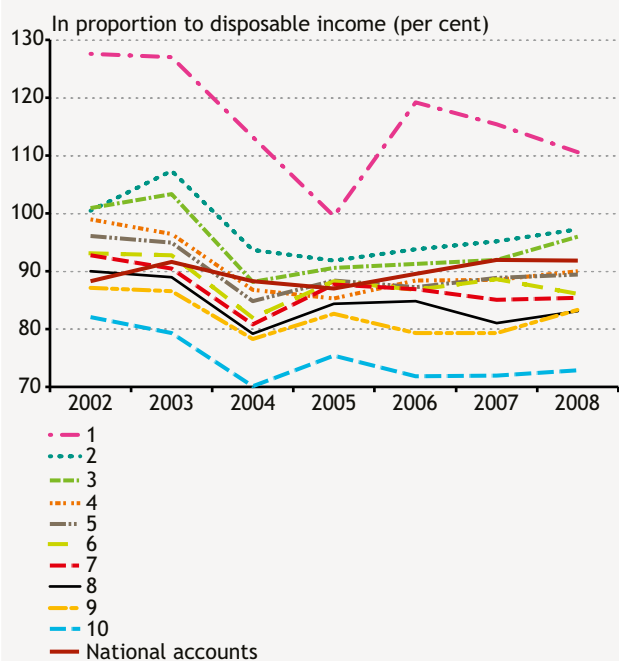
Summarising the above, significant heterogeneity is observed across the various income deciles both in terms of income composition and changes. Real incomes increased in the first two years of the period under review and then generally declined. As a result of this different extent of changes, income differences lessened in this period. However, due to different consumption patterns, those belonging to the lower deciles experienced higher inflation, and therefore, welfare differences declined to a lesser extent compared to nominal incomes. Households did not limit consumption in line with their decline in real income, leading to an increase in the consumption rate. This increase was especially typical of the low and medium deciles.

In parallel with the decline in real incomes, a significant portion of households financed their increasing consumption with borrowing. Similar to consumption rates, significant heterogeneity is experienced in the lending and indebtedness indicators as well as in the less aggregated data.
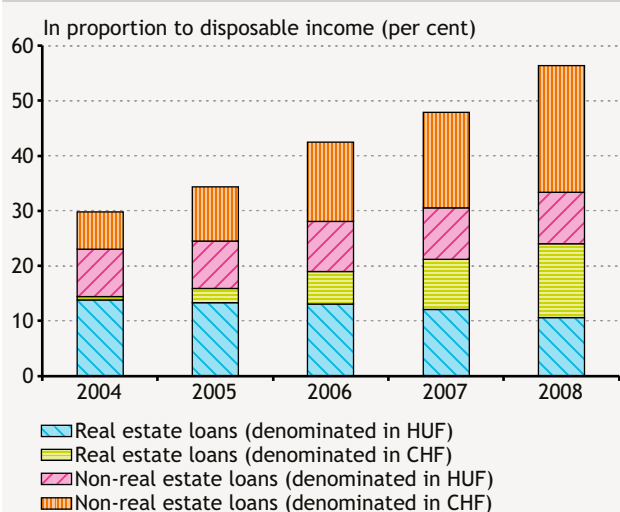
LENDING AND INDEBTEDNESS

The increase in loans outstanding and their ratio to household income was clearly observable on the basis of macro data in the period under review. As a proportion of household disposable income, total loans to households amounted to some 30 per cent in 2004. This ratio nearly doubled by 2008. With the increase in total loans outstanding, both real estate and other types of outstanding loans expanded, but the increase in the latter type was more significant. During HBS data collection, questions were asked only in connection with housing loans. Therefore, the calculations presented here exclude other types of loans, and the data covers only approximately 40-50 per cent of total household loans outstanding (Chart 7). Accordingly, the analysis can reflect changes typical of total loans outstanding if we assume that the behaviour of households as regards non-real estate loans was similar to their behaviour with real estate loans. The HBS also does not contain data regarding the foreign exchange/forint ratio within loans. Macro statistics reveal that the increase in total loans outstanding is mainly attributable to foreign exchange loans, the share of which in total loans increased to 65 per cent by the end of the period.

The results calculated on the basis of the HBS data show that the measure of indebtedness increased in each decile, particularly in 2007 and 2008 (Chart 8). However, with the consumption rates discussed above, borrowing and thus

Chart 6
Consumption rate by income deciles

In proportion to disposable income (per cent)

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- National accounts

Sources: HBS and MNB.

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[5] Sampling problems may play an important role in these data. First, those with the lowest income are underrepresented in the HBS statistics. Consequently, data related to them are more uncertain. Secondly, hidden (black) incomes are significant in this decile. This is not reported by households in the HBS surveys either.

Chart 7

Ratio of real estate and other types of loans to disposable income

In proportion to disposable income (per cent)

Real estate loans (denominated in HUF)
Real estate loans (denominated in CHF)
Non-real estate loans (denominated in HUF)
Non-real estate loans (denominated in CHF)

Source: MNB, financial accounts.

indebtedness compared to income increased, being higher in the lower-income deciles.

The increase in total loans outstanding in this period may have been facilitated by factors on both the demand and supply side. On the demand side, as a result of the decline in real incomes, households may have attempted to finance

Chart 8

Housing loan received/income by deciles

Loan received in proportion to debtors' income by deciles

1
2
3
4
5
6
7
8
9
10
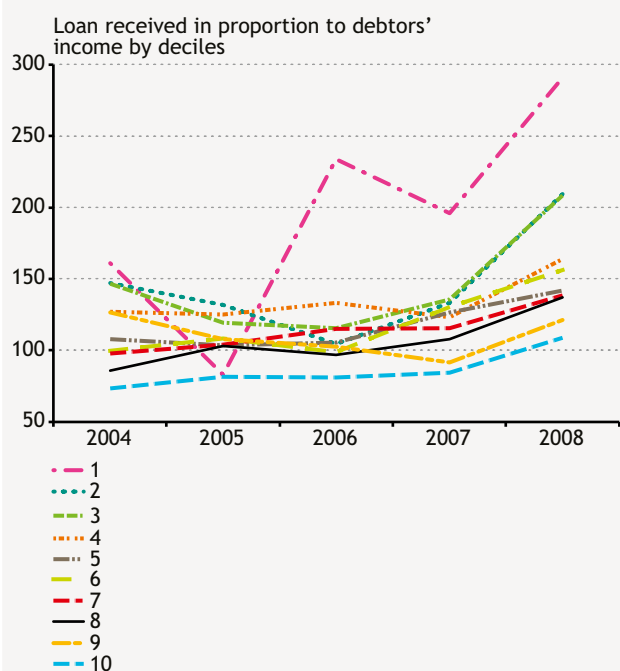
Source: HBS.

their consumption by borrowing. On the supply side, increasing competition led to an easing in lending conditions. As a result, households that had earlier been considered too risky and that consequently had liquidity constraints also gained access to loans (Chart 9).

Although the loan received/income ratio is higher in the lower deciles, these strata account for a smaller share in total loans outstanding. Within the population classified into deciles, the proportion of debtors is very low in the lowest deciles. This proportion increases steadily with an increase in income. The changes in instalments as a proportion of income are similar to those of the loan received/income indicator, except that instalments as a proportion of income are lower in the higher-income deciles (Chart 10). Taking the two extreme deciles into account, a significant difference is experienced in this respect: instalments as a proportion of income in the lowest decile are three times higher than what is seen in the top decile.

In the case of households that struggle with loan repayment difficulties, there may be three main sources of problems that resulted in limited consumption and the increasing NPL ratio: from the outset, the household undertook an instalment that was too high compared to its income; increased exchange rates; and/or loss of employment. Determining what is considered to be too high of an instalment as a proportion of income raises many questions, and it is difficult to give a standard definition. A still acceptable, maximum level may be estimated on the basis of consumption expenditures, but this may vary significantly by types of households. No concrete figure for this is specified here. This kind of problem typically arises in the case of the three lowest deciles, where the average instalment of housing loans as a proportion of income already exceeds 20 per cent. In these deciles, however, there are fewer household that have borrowed. Therefore, within the total population, the proportion of households that became non-performing due to this reason, which already happened as a result of a relatively minor strengthening of the exchange rate, may be low. Employment fell considerably during the crisis, although in terms of qualifications it affected employees in different ways. The decline was very low among those engaged in white-collar occupations, and the level of decline is almost completely attributable to those doing physical work (whose educational level is typically lower) (Chart 11). According to the HBS, the proportion of employees with a lower educational level within the total population of the given decile is most significant in the medium-income strata; therefore, the instalment payment problems stemming from loss of employment may be the most typical in these deciles, and these problems may be exacerbated by the increasing trend

Chart 9

Changes in demand for and supply conditions of housing loans*

Changes in demand of real estate loans

Changes of demand in proportion to all respondent (per cent)

Changes in conditions of the supply side (real estate loans)

Changes of conditions in proportion to all respondent (per cent)

* Note: In the chart on the left, the responses of banks were weighted according to market share; the weights were multiplied by –1 if a decline in demand was experienced, by 0 in the case of unchanged demand and by +1 if an increase was observed. The chart on the right was created similarly to the previous one; the positive direction means a tightening of lending conditions.
*Source: MNB lending survey.*

of the exchange rate of the Swiss franc. These households already represent a more significant number, as the proportion of debtors in this stratum is already much higher. The top three deciles are probably only slightly or not even affected by the aforementioned problems. For these, instalment as a proportion of income is sufficiently low, and many of those employed have a high level of education. In addition, the restructuring of the personal income tax system in 2011 generated the most additional

income for them. They account for the largest proportion of those who borrowed.

Overall, in the case of housing loans, excessive borrowing and indebtedness may have primarily been typical of the lower- and medium-income strata. The lending problem of instalments being too high as a proportion of income
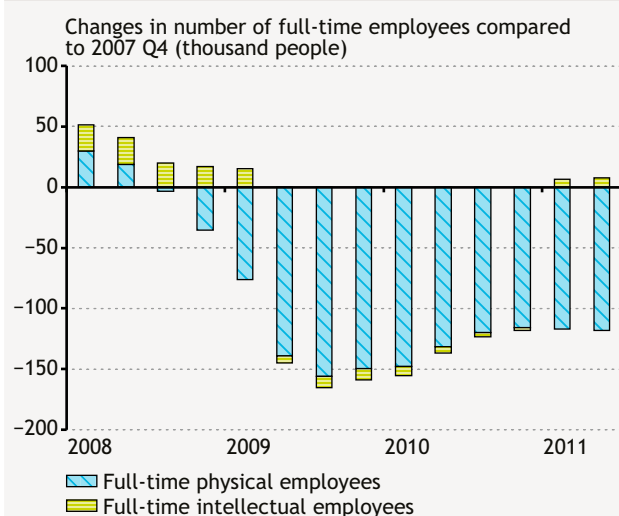
Chart 10

Average instalment as a proportion of income and the proportion of debtors by deciles in 2008

Per cent

Instalment of a proportion of income
The proportion of debtors by deciles
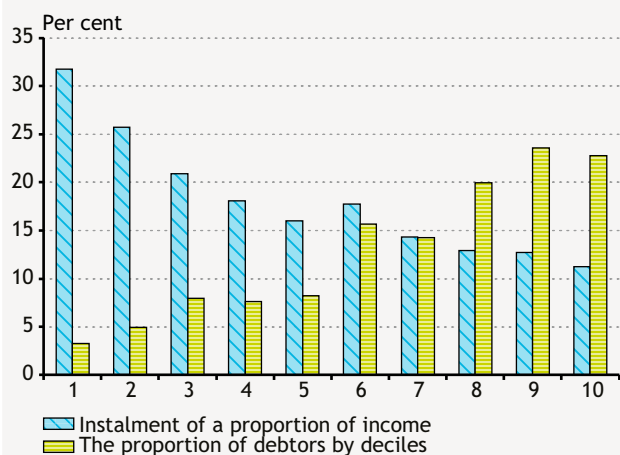
Source: HBS.

Chart 11

The number of full-time physical and intellectual employees in the competitive sector

(seasonally adjusted data)

Changes in number of full-time employees compared to 2007 Q4 (thousand people)

Full-time physical employees
Full-time intellectual employees

Source: CSO institutional statistics.

already at the time of borrowing was mostly observed in the three lowest deciles, although their number is relatively insignificant compared to the number of all indebted households. Problems due to loss of employment may have mainly affected the medium deciles, where one finds a higher proportion of employees with a lower level of education that are seriously affected by the crisis. These households represent a sizable proportion of borrowers. Most debtors belong to the upper deciles, where the extent of payment problems may be lesser, presumably due to their having sufficiently low instalments as a proportion of income.

SUMMARY

In recent quarters, the significant increase in net earnings has not entailed substantial growth in consumption, while the NPL rate of household loans followed an increasing trend. My analysis sought an answer to the question of what role the income situation of households, their consumption decisions, borrowings and indebtedness level may have played in the above developments in the pre-crisis period. I examined all of this on the basis of the HBS, whose micro database allows for an exploration of the heterogeneity hidden behind the macro data.

In the pre-crisis period between 2004 and 2006, nominal wages increased significantly. Affected by the economic environment and fiscal policy, they increased in a more restrained manner over the following two years. The differences in nominal income among the various strata of the society declined. Meanwhile, 2007 and 2008 were characterised by a general decline in real incomes. Due to the increase in inflation, convergence in the income situation was less pronounced.

In terms of consumption brackets, significant differences exist across strata with various incomes. Differences are also reflected in the level of inflation experienced by households. Generally, the lower the income of a household, the higher inflation it experiences, and the higher the increase in consumer prices, the greater the difference in inflation experienced by households with different incomes. In the period under review, in spite of the decline in real incomes in 2007 and 2008, households did not adjust their consumption expenditures, as shown by the general increase in consumption rates during this period. This phenomenon is especially typical of the lower and middle deciles.

With declining incomes, households financed consumption partly from loans, which resulted in a considerable increase in the borrowing and indebtedness of households in this period. With increases in income, the share of households

with loans within individual social strata also increased, while instalments as a proportion of income dropped. Instalments that were already too high at the time of borrowing were presumably typical of the lower third of the population, according to income distribution; in their case, even a slight strengthening of the exchange rate of the Swiss franc may have led to non-performance. However, the number of households with this scenario is relatively low. During the crisis, the increase in unemployment primarily affected blue-collar employees, whose educational level is typically low and who proportionally have the closest to average income. Therefore, repayment problems due to loss of employment may be the most typical in their case, exacerbated by changes in the exchange rate of the Swiss franc). They represent a major share of indebted households. Accordingly, it is possible to conclude that the loan repayment problems that have arisen to date may have mostly been caused by the increase in unemployment and only to a lesser extent by the strengthening of the exchange rate of the Swiss franc.

Presumably, the current restraint in consumption growth is mainly attributable to the pre-crisis indebtedness of households and subsequent balance sheet adjustments. The micro database also reveals that the repayment of earlier loans causes problems mainly in households that belong to the lower- and middle-income strata; consequently, it probably restrains the consumption expenditures of these households.

REFERENCES

BENCZÚR, PÉTER, GÁBOR KÁTAY, ÁRON KISS, BALÁZS REIZER and MIHÁLY SZOBOSZLAI (2011), 'Analysis of changes in the tax and transfer system with a behavioural microsimulation model', *MNB Bulletin,* October.

CSERES-GERGELY ZSOMBOR and MOLNÁR GYÖRGY (2008), 'Háztartási fogyasztói magatartás és jólét Magyarországon a rendszerváltás után', [Household consumer behaviour and welfare in Hungary since the change of system], *Közgazdasági Szemle,* 55. évf. február, pp. 107–135.

GÁSPÁR KATALIN and VARGA ZSUZSA (2011), 'A bajban lévő lakáshitelesek elemzése mikroszimulációs modellezéssel', [Analysis of housing-loan borrowers in difficulty, using micro-simulation modelling], *Közgazdasági Szemle,* 58. évf. június, pp. 529–542.

YOUNG, GARRY and MERXE TUDELA (2005), 'The determinants of household debt and balance sheets in the United Kingdom', *Working Paper,* 266, Bank of England.