

Péter Bauer, Mariann Endrész, Regina Kiss, Zsolt Kovalszky, Ádám Martonosi, Olivér Rácz and István Schindler: Excessive household debt: causes, trends and consequences*

The decade preceding the 2008 recession was marked by a rapid rise in household debt in several regions. Strong household lending prior to the recession boosted economic growth in the affected countries, but indebtedness then became one of the main sources of vulnerability of these countries with the onset of the economic crisis. Economies that saw a rapid rise in household debt were characterised by a stronger drop in domestic demand and a longer-than-average recovery time. This analysis focuses on the evolution of household debt in Hungary. As the weight of foreign currency denominated loans within total lending in Hungary was elevated, we examine in detail the spread of foreign currency lending among households and its consequences.

Viewed from an international perspective, household lending in Hungary rose sharply from the low level prevailing in the early 2000s. This expansion first appeared in HUF-denominated lending, and from 2004 this was followed by an increasing preponderance of foreign currency lending among consumer and housing loans. During the pre-crisis era, the rise of foreign currency lending was also high by regional standards. Based on our estimates, the rise in debt was a balanced process until 2006–2007, whereas after that the loan volume exceeded its long-run equilibrium level. In addition to declines in real incomes, foreign currency denominated loans also contributed substantially to this process. Since 2009 household behaviour has been shaped by strong deleveraging. Households became net loan repayers, gradually decreasing their level of debt. Due to the revaluation of foreign currency denominated loans, deleveraging is a prolonged process, and thus the high loan volume may continue to hamper a recovery in household consumption.

INTRODUCTION

Since the outbreak of the crisis household consumption spending has declined sharply in Hungary. Although households saw windfall gains several times over the past years (thanks to sharp cuts to personal income tax or the disbursement of real yields on private pension funds), at the middle of 2013 the level of household consumption was still more than 10 per cent lower than the pre-crisis level. Weak consumer demand may be closely linked to deleveraging among households and the strengthening of precautionary motives. As long as the volume of household debt exceeds the equilibrium value which is sustainable over the long term, high indebtedness may hold back growth in consumption.

This analysis presents an overview of the accumulation of household debt – in particular foreign currency loans – and the intensity of deleveraging among the Hungarian population, as well as its impact on consumption.

The first part of this analysis examines the initial period of household lending in Hungary in the late 1990s, followed by the phases of its dynamic rise from the early 2000s and the supply and demand factors that drove these processes. The second part makes regional comparisons. The third part presents stylised facts on the deleveraging that began in the wake of the crisis, and the final section attempts to estimate the presence of deleveraging and its impact on consumption using an error correlation model.

* The views expressed in this article are those of the author(s) and do not necessarily reflect the official view of the Magyar Nemzeti Bank.

THE ACCUMULATION PROCESS OF HOUSEHOLD LOANS AND UNDERLYING CAUSES BEFORE THE CRISIS

The start of lending and the spread of foreign currency loans

In the 1990s, household lending was practically non-existent due to high inflation and high nominal interest rates. On the supply side, following their privatisation banks mainly focused on the large enterprise segment, as the predominance of foreign ownership and export activity implied lower risk compared to other segments. The high barriers to entry to the household credit market, which were time-consuming and costly to overcome (e.g. underdeveloped bank branch networks), also held back lending (see Bethlendi and Bodnár, 2005).

Conditions allowing household lending developed at the end of the 1990s. Under the crawling peg exchange rate regime, the exchange rate served as a nominal anchor, and thus inflation and long-term yields fell progressively and lower nominal interest rates boosted demand. The improved income position and long-term (permanent) income expectations of households – resulting from macroeconomic stabilisation and initial progress in economic integration – also fuelled household credit demand. On the supply side, as the large enterprise sector became saturated, banks turned to household lending, which was riskier but also prospectively more profitable.

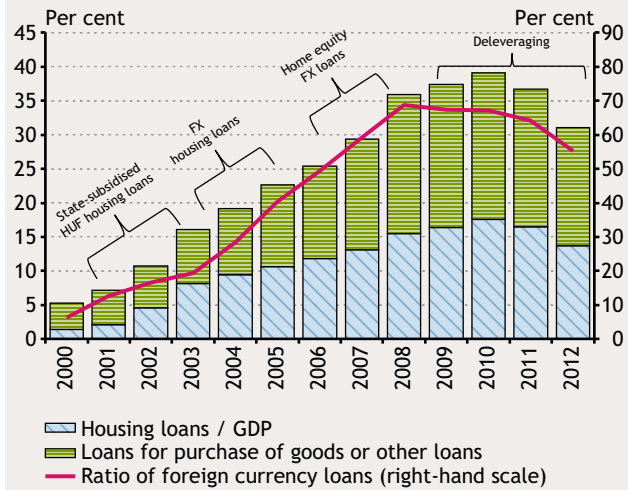
The supply of consumer loans was the first to increase, followed by a growing housing loan market with the appearance of state-subsidised loan schemes in 2001. The conditions on state-subsidised housing loans were tightened in late 2003 as budgetary expenditures due to interest subsidies rose rapidly. However, household demand for cheap credit remained high, and fierce competition between lenders facilitated the spread of foreign currency loans which were already available in the vehicle financing segment (Chart 1).

The dynamic rise in the number of foreign currency loans from 2004 – the first wave of foreign currency lending – was driven by both supply and demand factors. Households' revenue position deteriorated substantially in the wake of the fiscal adjustment announced in 2006. The hike in direct and indirect taxes, cuts to social transfers and more sluggish growth of other business revenues all contributed to a drop in real incomes. Households tried to offset the decline in consumption caused by falling real incomes by taking out loans, which in 2007–2008 triggered the second wave of foreign currency lending, characterised by lower

Chart 1

Household loan volume as a percentage of GDP and the ratio of foreign currency loans

(2000–2012)



Source: MNB.

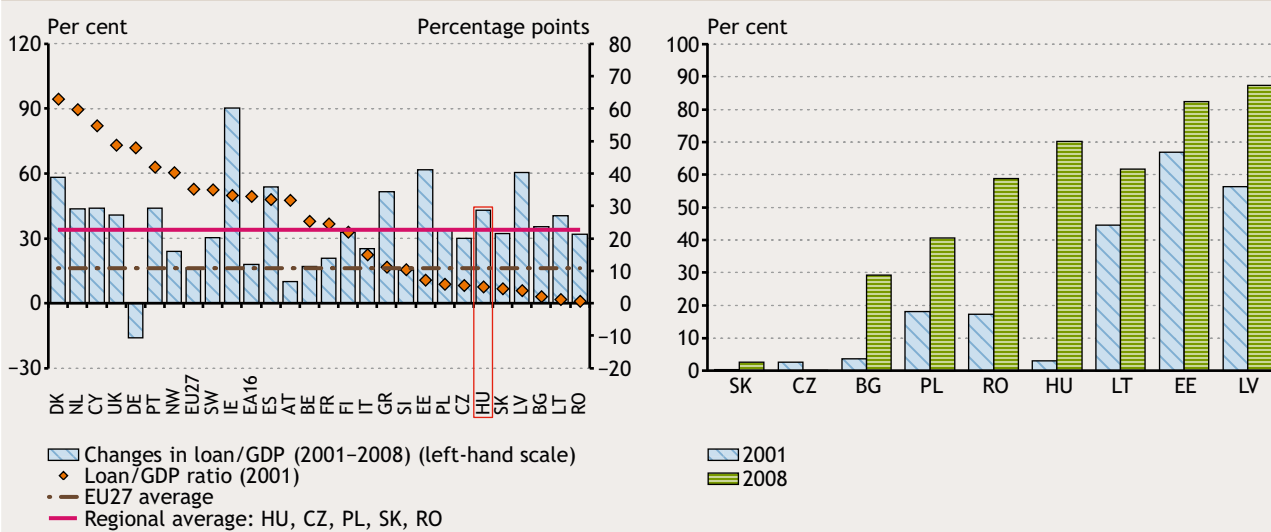
interest rates and thus lower instalments. The appearance of home equity loans – which accounted for the majority of new loans granted – also helped to smooth consumption. The expansion in lending was bolstered by the ample funding available on international financial markets.

Indebtedness of Hungarian households before the crisis in an international comparison

The pre-crisis indebtedness of households was high in an EU comparison, similarly to other new member states (Chart 2, left panel). Credit in these member states expanded rapidly in the context of convergence. It was not the level of debt per se, but rather the rate of increase that stood out in an EU comparison.

This rapid rise in lending, however, was coupled with varying popularity of foreign currency loans in the new member states (Chart 2, right panel), which can be classified into three groups based on the ratio and denomination of foreign currency loans. Foreign currency lending was already well established in the Baltic states, and their already elevated ratio increased slightly during the period under review. These foreign currency loans were essentially all denominated in euro (98 per cent in Latvia and Estonia and 97 per cent in Lithuania). The second – more heterogeneous – group consisting of Hungary, Romania, Poland and Bulgaria saw foreign currency lending spread during the period of credit expansion. Swiss franc denominated loans accounted for the lion's share of lending in Hungary and Poland (88 and 96 per cent in 2008,

Chart 2
Developments in the household loan-to-GDP ratio within the European Union and the ratio of household foreign currency loans in the region



Source: Eurostat, MNB.

respectively), in contrast to Romania and Bulgaria, where euro denominated loans proved most popular (79 and 96 per cent in 2008, respectively). The Czech Republic and Slovakia make up the third group, where foreign currency lending remained insignificant.

The spread of foreign currency lending in the period under review was also driven by the favourable global money market environment and the related low global interest rates. There was a strong influx of foreign investment into new member states which also spurred foreign currency lending, as banks had an incentive to place these foreign funds in foreign currency assets in order to avert exchange rate risk and due to the high capital requirement stemming from open foreign exchange positions.

Several empirical studies examined why foreign currency lending patterns differ across new member states despite the same external supply conditions. Some of the main findings are summarised below.

Supply effects

- Access to foreign funding contributed to the spread of foreign currency lending (Basso et al., 2007) (Chart 3, left panel), however, the impact of the ownership structure of the creditor banks (foreign or Hungarian) was not significant, as illustrated by the panel regression results of Rosenberg and Tirpák (2008).

- A strong correlation between financing structure and foreign currency lending can be identified (Rosenberg and Tirpák, 2008). In the countries where credit expansion was accompanied by a significant increase in the loan-to-deposit ratio, banks mainly used foreign funds to finance loans which they granted in foreign currency, thereby passing on the exchange rate risk to customers (e.g. Baltic states, Hungary, Romania, Bulgaria, Poland). After 2001, loosening fiscal policy drained a large chunk of private sector savings, which contributed to the bank sector using foreign funding to fuel its domestic lending (Chart 3, right panel).

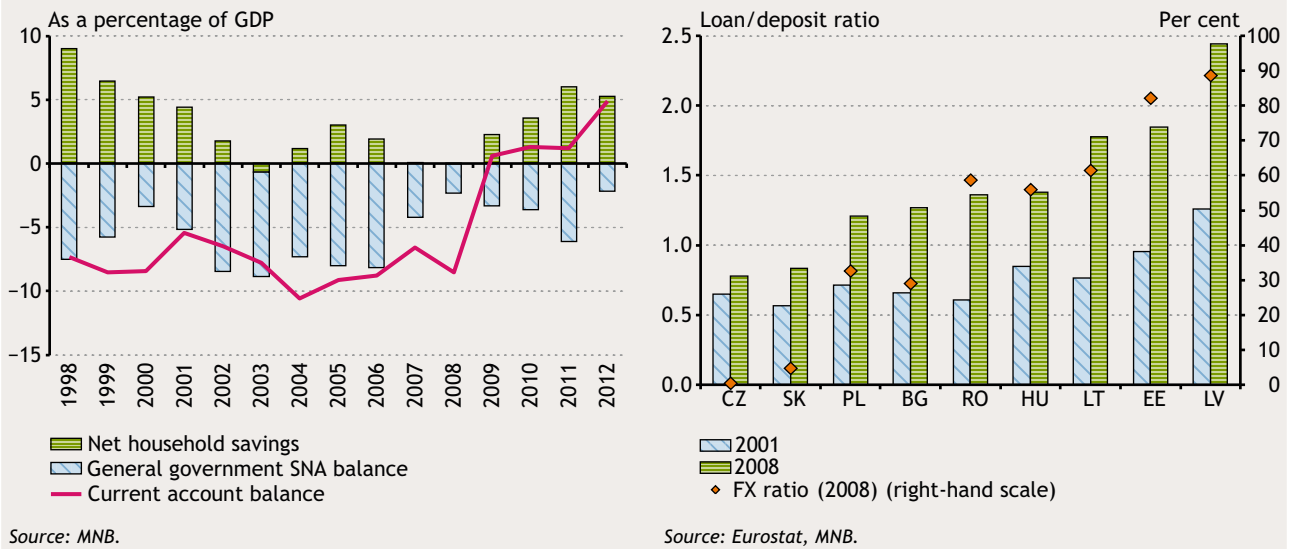
- Low international interest rates also contributed to banks opting for foreign funding (from parent banks or the market), while the optimistic global financial climate saw risk appetite increase and looser credit conditions across the board.

- Growing competition reduced margins on domestic markets, pushing banks to try to increase their loan volumes in order to maintain profitability.

Demand effects

- The difference in interest rates between the Hungarian forint and foreign currencies was a major factor driving the spread of foreign currency lending (e.g. Basso et al., 2007; Rosenberg and Tirpák, 2008; Brzoza-Brzezina et

Chart 3
Funding capacity of the general government and households, the current account balance, and the loan-to-deposit ratio in the Central and Eastern European and Baltic regions

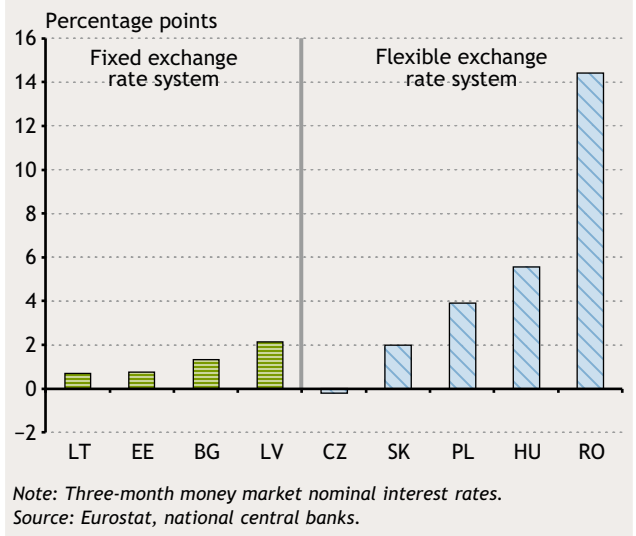


al., 2010). The interest rate differential also reflects development of the risk premium, alongside exchange rate fluctuations. As a result, the swings in economic policy (in Romania, for instance) and the loose fiscal policy (in Hungary, for instance) may have contributed to the large interest rate differential in certain countries.

- The significance of the interest rate differential may be dependent on the credibility of the exchange rate regime. A larger interest rate differential is needed in flexible exchange rate regimes to affect demand for foreign currency loans, while a small differential might be sufficient in a fixed exchange rate regime (Rosenberg-Tirpák, 2008) (Chart 4).
- Households are backward-looking in forming their exchange rate expectations, which implies that historically low volatility in exchange rates may increase demand for foreign currency loans (Cuaresma et al., 2011). A credible fixed exchange rate regime is an implicit exchange rate guarantee for the population (such as the ones prevailing in the Baltic states). If monetary policy avoids exchange rate volatility in a flexible exchange rate regime (*fear of floating*), the low exchange rate volatility coupled with the ensuing volatile domestic interest rates may fuel demand for foreign currency loans (Basso et al., 2007) (as in case of the exchange rate band applied by Hungary until 2008).

Chart 4
Interest rate difference compared to the euro

(average for 2001–2008)



- Households' medium-term income expectations improved greatly following EU accession.

Institutional setting

- The institutions of a country, the development of its financial markets, its legal system and regulatory environment all have an impact on the spread of foreign currency lending.

- Csajbók et al. (2010) stress the importance of access to long-term fixed interest rate loans denominated in domestic currency.¹ If only variable interest rate loans are available, fear of floating and the ensuing volatility of domestic interest rates may increase demand for foreign currency loans. As the availability of long-term fixed-interest loans depends on the availability of long-term domestic funds in the banking sector, this factor is approximated in their estimation by the presence of a local covered bond market.
- New member states display a variety of regulatory environments. Some countries made efforts to curb foreign currency lending even before the crisis by requiring banks to inform their customers about the risks and tightening the conditions of foreign currency lending, for instance in Poland and Latvia by late 2007, as well as by imposing larger risk weights and provisioning requirements on foreign currency

exposures, as in Latvia and Romania (Rosenberg-Tirpák, 2008).

Alongside such general aspects, country-specific factors also shaped the extent to which foreign currency lending spread in the various countries. As mentioned earlier, the abolishment of subsidised housing loans in Hungary spurred the spread of foreign currency lending as demand turned towards foreign currency loans. Poland imposed regulations that curbed the spread of home equity loans. In addition, its monetary policy did not avoid exchange rate volatility in the 2000s, so the nearly 30 per cent depreciation of its currency in 2002–2003 reinforced households' awareness of exchange rate risk and temporarily foreign currency lending (alongside unchanged household lending growth). In Romania, approximately 80 per cent of foreign currency loans were denominated in euro, for which the income remitted by the large Romanian migrant population working in the euro area provided a natural hedge.

Theoretical reasons behind the rise of foreign currency lending

Numerous studies have addressed the theoretical reasons behind the spread of foreign currency lending. Foreign currency lending can be considered as the lending-side of the phenomenon known as financial dollarization in the literature. The name originates from the fact that private sector deposits and loans in developing countries are for the most part denominated in more stable and more liquid foreign currency (typically the US dollar). The "original sin" theory proposed by Eichengreen and Hausmann (1999) states that developing countries cannot borrow abroad in their domestic currency and/or borrow over the long term even domestically. This situation stems in part from the shortcomings in a country's institutions and economic policy, and in part from imperfect global money markets. These factors also appear in later theories, which also stress demand factors alongside supply factors. In other words, they examine why firms and households opt to borrow in foreign currency. Three main branches can be distinguished within this theory that spur the spread of dollarization through the portfolio allocation of risk-averse decision-makers, domestic market failures and the quality of domestic institutions and economic policy (Yeyati, 2006).

According to the portfolio approach, risk-averse resident investors maximise the following utility function:

$$\max_{x_j} U = E(r) - \text{Var}(r) / 2, \quad (1)$$

where $r = \sum_j x_j r_j$ is the real return rate on the portfolio in which assets denominated in currency j represent a proportion of x_j . Real returns on assets denominated in local currency are shaped by changes in the inflation rate, while those on assets denominated in foreign currency are shaped by unexpected shifts in the real exchange rate. If the principle of uncovered interest rate parity is fulfilled, it can be demonstrated that the ratio of foreign currency within the optimal investment portfolio (with minimal variance) is:

$$mvp = \text{var}(\pi) / \text{cov}(\pi, e), \quad (2)$$

where π is inflation and e is the nominal exchange rate. Based on the model, if the variance of inflation is relatively greater than the fluctuations of the real exchange rate, assets denominated in local currency are riskier, which tips the balance in favour of dollarization.

The market failures theory proposes that dollarization stems from market imperfections and externalities that render foreign currency denominated loans relatively cheaper. Broda and Yeyati (2006) make two key assumptions: one is that there is a positive correlation

¹ These types of loans were available over the entire period in the Czech Republic and Slovakia, and between 2001 and 2003 in Hungary.

between the insolvency of borrowers and depreciation of the real exchange rate, and the other is that creditors are not perfectly informed about the currency composition of loans. In this case, the borrower invests in a project with a gross rate of return of p^*R (where p is the domestic price index). Exchange rate $e \in \{e^a, e^f\}$ at the end of the period (domestic currency / foreign currency), where $e^a < p(e^a) < 1 < p(e^a) < e^m$ and $\text{Prob}(e = e^a) = q$, where the actual rate is normalised to 1. In this scenario, the borrower's problem can be expressed (at real value) as follows:

$$\max_{\lambda} \pi = (q / p(e^a)) * (p(e^a)R - (1 - \lambda)r_h - \lambda e^a r_k) \quad (3)$$

where λ is the foreign currency ratio of the borrower's liabilities, r_h is the domestic currency interest rate and r_k is the foreign currency interest rate. It follows from the expression that $\pi' = (q / p(e^a))s > 0$, where s is the additional return which creditors in domestic currency demand to offset their losses on domestic currency denominated assets in the event of insolvency due to depreciation. In this case, the borrower opts to borrow in foreign currency ($\lambda=1$). Overall, debtors opt for the relatively cheaper foreign currency loans. The reason these loans are cheaper is that the creditors lending in foreign currency run the risk of a smaller loss in the event of insolvency.

According to the institutional approach, the quality of local institutions could possibly contribute to the spread of dollarization. One of the institutional factors leading to partial dollarization is that the financial markets of developing economies are not deep enough, so long-term borrowing is only feasible in foreign currency. This however, cause open FX position in the bank's and client's balance sheets, which has the potential to cause significant losses in the event of sudden depreciation. Viewed from this angle, dollarization is a collateral cost of institutional system quality.

DEVELOPMENTS IN HOUSEHOLD INDEBTEDNESS SINCE THE CRISIS

The expansion of lending in general and foreign currency lending in particular came to an end as the global financial crisis hit in 2007–2008. Demand for credit from households waned and a process called deleveraging began, caused by a rapid rise in unemployment and wage restraints by firms during the crisis, whilst government measures to quickly restore fiscal balance also reduced household incomes. Unfavourable long-term income prospects caused a shift in the borrowing behaviour of households: growing precautionary considerations generally led to greater propensity to save and consumer spending fell.

On the supply side, global liquidity shrank as deleveraging among banks began during the recession, rendering the refinancing of foreign funding more expensive and limiting funding opportunities. The sharp portfolio deterioration sparked greater risk aversion. The government decree on prudent lending effective from March 2010 helped scale back foreign currency lending, as did the act banning foreign currency denominated mortgage lending that came into force in August 2010 (Balás and Nagy, 2010).

Households became net loan repayers, mostly due to declining credit demand and, to a smaller extent, to tightening credit conditions. Adjustment was quick, with the consumption rate declining steeply in 2009 over the course of a single year and essentially stagnating ever since.

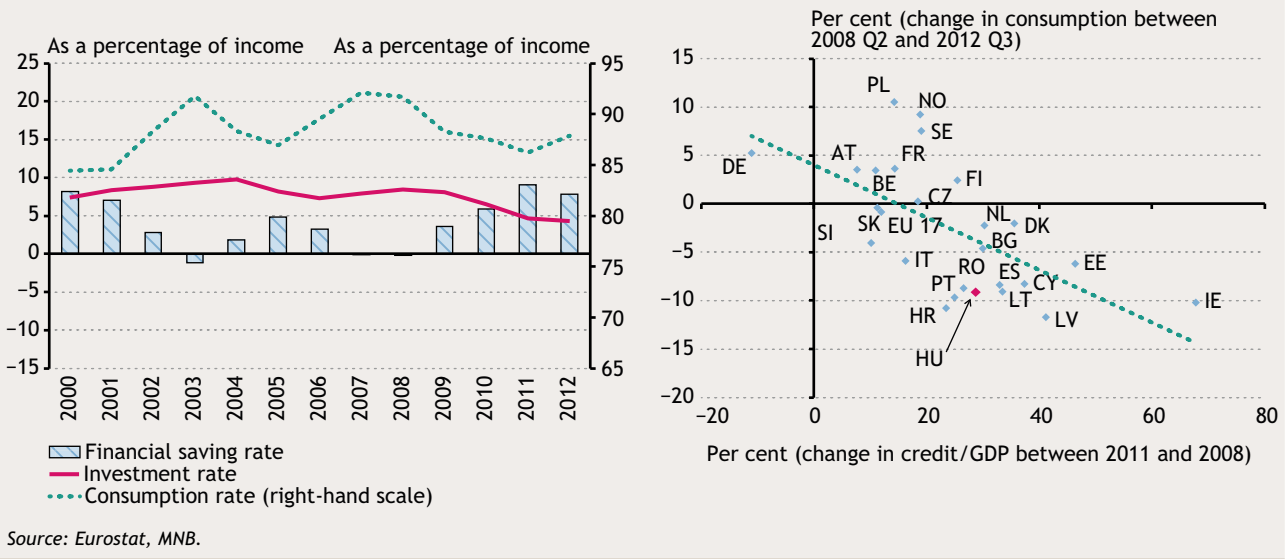
Households also adapted their investment rate, albeit more gradually compared to consumption (Chart 5, left panel). The deteriorating income position of households and greater uncertainty prompted them to delay investments to avoid having to cut back their already weak consumption in proportion to disposable income even more in the context of deleveraging, while increasing their net savings.

International examples reveal that the fall in consumer spending in the context of deleveraging is proportionate to the rate of credit expansion registered prior to the crisis. The decline in Hungarian consumption in the wake of the crisis was comparable to the Baltic states, which were also characterised by large foreign currency debt (Chart 5, right panel).

Deleveraging by deeply indebted households has continued since the crisis. The sector continues to repay more on existing loans than is taken out in new loans. The high exchange and interest rates slow down households' repayment of their debt, denominated for the most part in Swiss franc.

The deterioration in global risk appetite during and after the crisis and the debt problems affecting the euro-area periphery were typically reflected in strengthening of the Swiss franc. The further appreciation of the Swiss franc, a safe-haven currency, against the euro was halted by the Swiss central bank's September 2011 announcement that it would introduce an exchange rate floor of EUR/CHF 1.20.

Chart 5
Spending of income and deleveraging by households



The elevated exchange rates since the recession coupled with higher interest rates have also increased households' repayment burden. In the wake of the crisis, interest rates on Swiss franc denominated mortgage loans rose higher than the level warranted by the cost of funds and risk (MNB, 2010). Cuts to euro-area and Swiss base rates after the crisis were felt to a far greater extent in Central and East European countries with floating exchange rate regimes and substantial household foreign currency loan portfolios (Poland and Romania). Similar to Lithuania and Latvia, the pricing of foreign currency loans is typically pegged to

reference interest rates in Poland. In the region, Bulgaria, which had also seen the spread of variable interest rates, showed similar developments in client interest rates to Hungary. Mortgage loans in Hungary are also more expensive compared to Western Europe, which feature far lower profit margins to the total portfolio than in Hungary.

The elevated exchange and interest rates have kept the debt-to-disposable income ratio high since 2008. The debt-to-income ratio finally returned to pre-recession levels in late 2012 following the early repayment scheme, which saw

Chart 6
Developments in the debt-to-disposable income ratio and the debt-to-GDP ratio

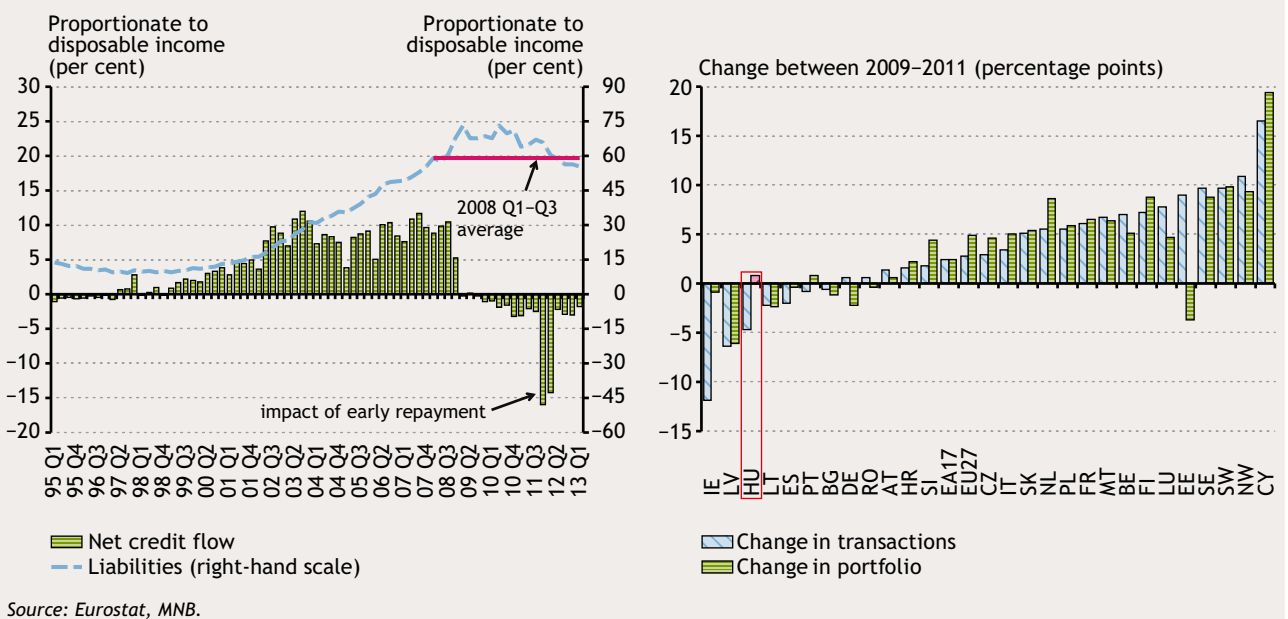
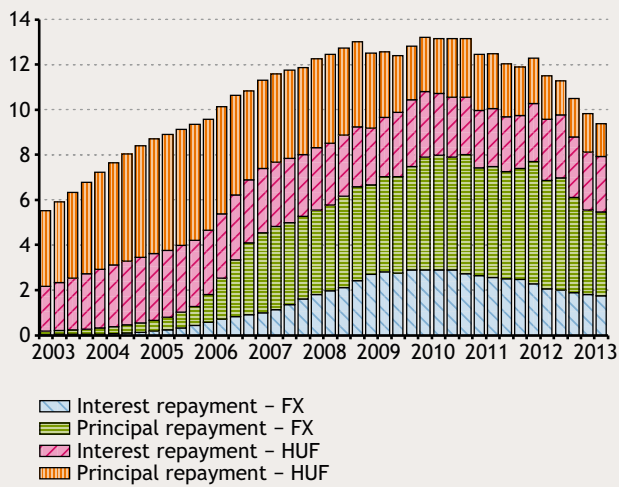


Chart 7
Aggregate repayment burden as a proportion of disposable income



the foreign currency mortgage portfolio shrink by 24.1 per cent (Chart 6, left panel). An international comparison reveals that the decline in the debt-to-GDP ratio – including revaluation – between 2009 and 2011 falls short of the level warranted by transactions (Chart 6, right panel).

The negative impact of Swiss franc appreciation and the high interest rates on loans also translated into a sustained high repayment burden-to-income ratio among households (Chart 7).

DELEVERAGING – EMPIRICAL ESTIMATE

We tested the strong deleveraging of households since the crisis empirically in the error correction model framework

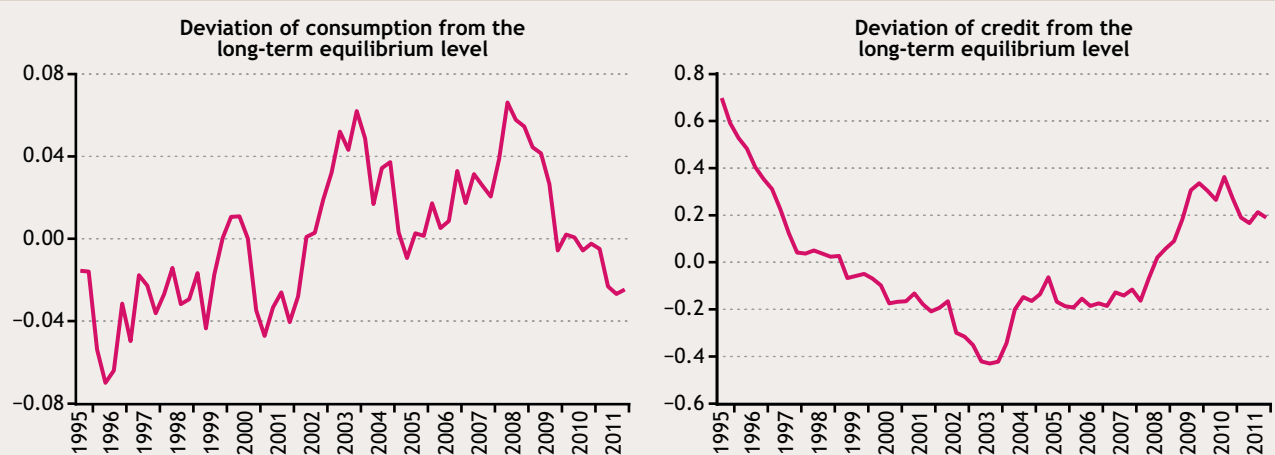
widely used in the literature. Endrész and Virág (2012) model household lending and consumption. The model allows us to examine whether credit market imbalance impacts consumption, i.e. if households become excessively indebted, do they cut back consumption and to what extent?

The estimate reveals two long-term relationships corresponding to a consumption and credit equation of customary form. In terms of short-term adjustment, in the event of a rise in either consumption or lending above the long-term equilibrium level, a decline in their level helps restore their own equilibrium. Simultaneously, excessive indebtedness decreases consumption. In other words, credit market imbalance impacts consumption, which proves the presence of balance-sheet effects.

At the onset of the crisis, households found themselves confronted with a wealth, income, exchange rate and credit shock, which pushed the level of indebtedness which had hitherto been acceptable far above the equilibrium point allowed by fundamentals (Chart 8). The gap exceeded 50 per cent during certain periods, meaning that the credit stock was 50 per cent higher than the level warranted by their income and wealth position and credit interest rates. Consumption was excessive even before the crisis. The gap only widened after the shocks. Excessive debt and consumption led to a strong adjustment from 2009, with households consuming less, saving more and cutting demand for credit.

Due to its flow-like nature, consumption reverts back to its long-term equilibrium level determined by the model fairly quickly. By late 2009, consumption had already adjusted based on the long-term consumption equation. The credit

Chart 8
Deviation of consumption and credit from the long-term equilibrium level



stock, however, is slower to adjust due to longer maturities and its stock-like nature. Overshooting on the credit market further dampens consumption and moves away from its equilibrium level – in a negative direction. Waning consumption decreases credit demand, thereby accelerating the deleveraging process to the equilibrium level. The excessive indebtedness of households has gradually improved over past years, but the debt-to-income ratio may still be higher than the equilibrium level. Until the debt level is fully adjusted, any recovery in households' consumer demand will remain weak, even alongside currently rising real incomes.

Overall, the estimate corroborates the strong deleveraging in household consumption witnessed and suspected during the crisis.

CONCLUSIONS

In this analysis, we reviewed the process that led to the accumulation of debt by Hungarian households and its main consequences. Our findings show that, by international standards, household credit in Hungary rose sharply from the low level prevailing in the early 2000s. The expansion first appeared in HUF-denominated lending, followed from 2004 by an increasing dominance of foreign currency lending among consumption and housing loans. The growth of foreign currency lending was high in a regional comparison in the pre-crisis period. Based on our estimates, the rise in debt was a balancing process until 2006–2007, at which point the credit stock exceeded the equilibrium level. Along with falling real incomes, foreign currency denominated loans also contributed substantially to this process following the onset of the crisis. Since 2009 household behaviour has been shaped by a strong deleveraging trend. Households settled into being net loan repayers, and gradually decreasing their debt. Due to the revaluation of foreign currency denominated loans, deleveraging is a protracted process, and thus the high credit stock may continue to hamper a recovery in household consumption.

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