



OECD Economics Department Working Papers No. 786

Enhancing Financial
Stability Through Better
Regulation in Hungary

Margit Molnar

<https://dx.doi.org/10.1787/5kmd41chjg34-en>

Unclassified

ECO/WKP(2010)42

Organisation de Coopération et de Développement Économiques
Organisation for Economic Co-operation and Development

17-Jun-2010

English - Or. English

ECONOMICS DEPARTMENT

Cancels & replaces the same document of 11 June 2010

ENHANCING FINANCIAL STABILITY THROUGH BETTER REGULATION IN HUNGARY

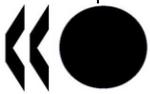
ECONOMICS DEPARTMENT WORKING PAPER No. 786

By Margit Molnar

All Economics Department Working Papers are available through OECD's internet website at
<http://www.oecd.org/eco/Workingpapers>.

JT03285814

Document complet disponible sur OLIS dans son format d'origine
Complete document available on OLIS in its original format



ECO/WKP(2010)42
Unclassified

English - Or. English

ABSTRACT/RÉSUMÉ

Enhancing financial stability through better regulation in Hungary

The global crisis exposed weaknesses in the Hungarian financial system that pose risks to financial stability. Excessive risk-taking by banks and households had been masked by relatively stable exchange rates, the expected early adoption of the euro and unusually lax credit conditions in international markets. With credit becoming scarcer and dearer, the domestic economy was hit through multiple channels. The steep depreciation of the forint boosted households' debt burden, while banks were hit by the drying up of liquidity, including in swap markets for Swiss francs. A major lesson learnt from the crisis is that the approach to household lending needs to change: a stronger protection for borrowers should be combined with a tighter regulation of lenders. Enhancing competition in the banking market would also impose discipline on lending behaviour. Financial supervision should be strengthened by enhancing the powers of the financial supervisor to avoid abusive practices and excessive risk taking. A better early-warning system needs to be created for the monitoring and assessment of systemic risks, in which a more formal Financial Stability Council should play a prominent role. This Working Paper relates to the 2010 OECD Economic Survey of Hungary (www.oecd.org/eco/surveys/hungary).

JEL: G01, G21, G18, E44.

Keywords: financial crisis; banks; government policy and regulation; financial markets and the macroeconomy; Hungary.

Renforcer la stabilité financière en améliorant la réglementation en Hongrie

La crise mondiale a révélé des faiblesses du système financier hongrois qui mettent en péril la stabilité financière. Les risques excessifs pris par les banques et les ménages avaient été masqués par la relative stabilité du taux de change, les anticipations d'adoption rapide de l'euro, et la détente inhabituelle des conditions de crédit sur les marchés internationaux. Quand le crédit est devenu plus rare et plus cher, l'économie hongroise a été touchée de multiples façons. La forte dépréciation du forint a beaucoup alourdi l'endettement des ménages, tandis que les banques ont souffert de l'assèchement de la liquidité, notamment sur le marché des contrats d'échange de forints contre francs suisses. Une des principales leçons de la crise est qu'il est nécessaire de modifier les modalités des prêts aux ménages : il faut conjuguer une plus grande protection des emprunteurs et l'application d'une réglementation plus rigoureuse aux prêteurs. Un renforcement de la concurrence sur le marché bancaire disciplinerait aussi le comportement des prêteurs. Il convient de renforcer la surveillance financière en donnant davantage de pouvoirs à l'autorité de régulation financière pour empêcher les pratiques abusives et la prise de risques excessifs. Il faut aussi créer un meilleur système d'alerte précoce pour le suivi et l'évaluation des risques systémiques, dans le cadre duquel un Conseil de stabilité financière ayant un caractère plus formel devrait jouer un rôle prédominant. Ce document de travail est lié à l'Étude économique de l'OCDE sur la Hongrie de 2010 (www.oecd.org/eco/etudes/hongrie).

Codes JEL : G01, G21, G18, E44.

Mots-clés : crise financière ; banques ; réglementation et politiques publiques ; marchés de capitaux et macroéconomie ; Hongrie.

Copyright OECD, 2010

Application for permission to reproduce or translate all, or part of, this material should be made to: Head of Publications Service, OECD, 2 rue André Pascal, 75775 Paris Cedex 16, France.

TABLE OF CONTENTS

ENHANCING FINANCIAL STABILITY THROUGH BETTER REGULATION IN HUNGARY	5
The corporate sector has been hit by scarcer and dearer credit and ailing demand	5
Many households borrowed beyond their means and in foreign currency	7
Foreign exchange loans remain competitive vis-à-vis forint-denominated ones, even with subsidies	8
Banks have so far been weathering the crisis relatively well.....	12
Maturity mismatches have been mitigated by reliance on mortgage bonds.....	13
Negligible interest and exchange rate risk and limited credit risk	14
Market structure and concentration intensity differ by segment	17
Prudential regulation has been superior to the OECD average in some areas	19
Reshaping regulatory approaches	20
Pent-up demand for mortgage loans made households assume excessive risks.....	21
Shielding borrowers from abusive practices and limiting their risk taking.....	23
Reducing risks in the system.....	24
The regulator needs to become more pro-active	26
Annex A Estimation of banking efficiency	32

Boxes

1. The housing loan subsidy programme.....	10
2. Mortgage banks and mortgage bonds in Hungary	14
3. The Code of Conduct for banks.....	25
4. Financial regulation and supervision in Hungary	27
5. Policy recommendations to enhance stability in financial markets	28

Figures

1. Corporate debt in foreign currency, in particular direct borrowing from abroad, has been soaring...6	6
2. SME and micro financing has suffered	6
3. Housing price developments do not show clear sign of a bubble.....	8
4. The household debt stock is moderate but the debt service burden is increasing.....	9
5. Increasing foreign currency borrowing implies heavier burden for households	10
6. Foreign currency borrowing is a cheap alternative to paying high interest rates on forint loans	11
7. Most foreign currency loans have been denominated in Swiss francs	12
8. Deposits have to a decreasing extent been matching soaring loan demand	13
9. Residential loans and mortgage bonds	14
10. Payment arrears on household loans have increased	17
11. Mortgage interest rates are higher in Hungary than in other countries.....	18
12. Prudential regulation is robust in most areas.....	20

ENHANCING FINANCIAL STABILITY THROUGH BETTER REGULATION IN HUNGARY

by
Margit Molnar¹

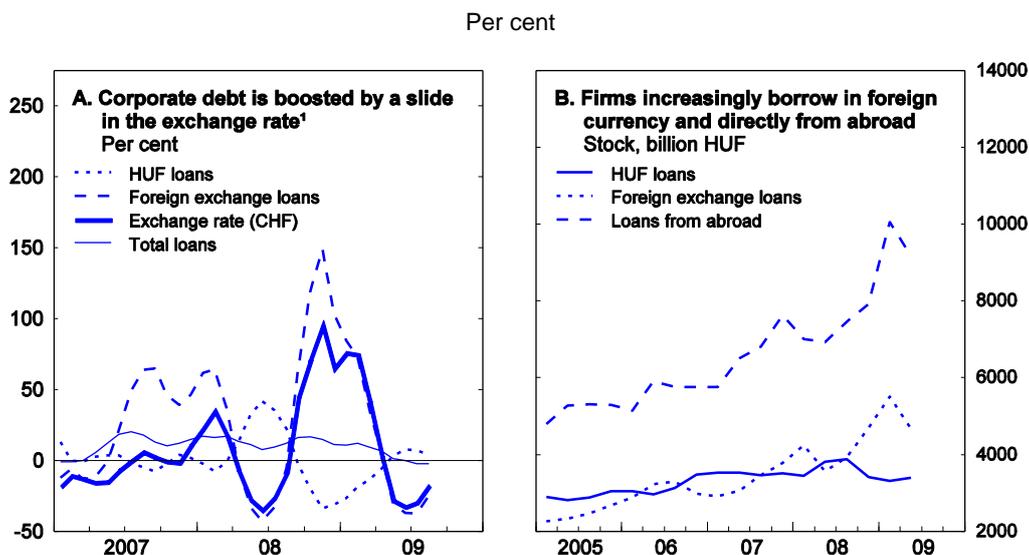
The global downturn combined with a high-risk perception of Hungary triggered a domestic crisis hitting all sectors of the economy. The drying up of liquidity in international markets raised financing costs significantly and caused refinancing difficulties for banks. Reduced liquidity in foreign exchange swap markets aggravated the situation, as many banks have substantial foreign currency net assets, which caused temporary difficulties in hedging open positions. Households, highly indebted in foreign currency, have experienced the adverse effects of currency depreciation in the form of escalating debt service requirements. Given the prominent role of household lending in the crisis, after a snapshot of corporate lending practices, this paper will focus on the drivers of the household lending boom and its circumstances, including regulatory stances and lending practices and their consequences. The paper will also provide suggestions as to how to enhance financial stability and make market players assume the costs of their risk taking.

The corporate sector has been hit by scarcer and dearer credit and ailing demand

Corporate lending growth has been decelerating since the outbreak of the global crisis as a result of tighter credit conditions and faltering domestic and foreign demand. The slide of the forint in the autumn of 2008 boosted the share of foreign exchange loans as expressed in domestic currency to two-thirds from about a half of total domestic borrowing before the crisis (Figure 1, Panel A). In contrast to households, the ballooning foreign exchange debt of corporations is a less acute problem as most have foreign currency revenue or hedged against foreign exchange risk. As a result of larger margins for foreign currency lending rates in Hungary than in other countries, those firms that have access, prefer to borrow from financial institutions in neighbouring countries. The share of direct borrowing from abroad has reached over 40% (Figure 1, Panel B). With the tightened liquidity in foreign lending markets, the widening of the margins for foreign exchange loans and the series of domestic interest rate cuts since July 2009, lending in forints is likely to expand more rapidly.

1. OECD Economics Department. This Working Paper incorporates Chapter 3 of the OECD's 2010 Survey of Hungary which was prepared under the responsibility of the Economic and Development Review Committee. The author is grateful for the valuable comments received on earlier drafts of this text from Andrew Dean, Bob Ford, Pierre Beynet and other colleagues in the Economics Department, as well as for discussions with officials from the Hungarian government. Special thanks go to Desney Erb of the OECD Economics Department for statistical assistance.

Figure 1. Corporate debt in foreign currency, in particular direct borrowing from abroad, has been soaring



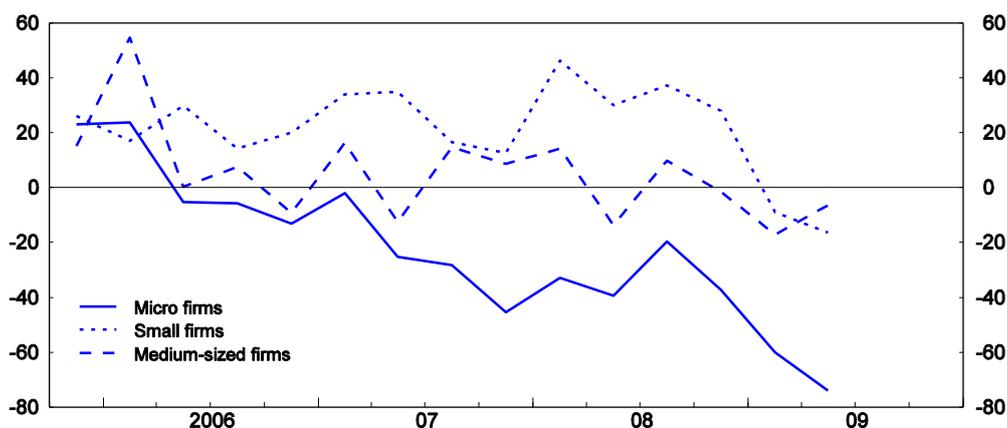
1. Loans (total outstanding, HUF and foreign exchange, not adjusted for exchange rate effects) are expressed in 3-month moving average seasonally adjusted annual rates. The exchange rate is expressed as forints per Swiss franc in 3-month moving average annualised rates.

Source: MNB (2009), "Financial Accounts", *Statistical Time Series*, Magyar Nemzeti Bank, September.

Following the onset of the financial crisis, bank lending to the private sector weakened substantially. On the demand side, many small and medium-sized firms (SMEs) have postponed their investments and are trying to reduce their costs to cope with the crisis. On the supply side, banks became increasingly reluctant to meet credit needs owing to the tightening of their financing conditions and the increase in non-performing loans. Credit supplies thus became increasingly insensitive to interest rates. As a result, many SMEs found it increasingly difficult to get access to credit funds even for purposes of financing working capital (Figure 2). SME credits account for 55% of banks' corporate loans.

Figure 2. SME and micro financing has suffered¹

Percentage growth, seasonally adjusted annual rate



1. SME: small and medium-sized enterprises.

Source: HFSA (2009), *Time series of sectors supervised by HFSA*, Hungarian Financial Supervisory Authority, October.

Some sectors, such as agriculture, food processing, retail and wholesale trade were particularly hard hit by the credit squeeze. The government has introduced guarantee programmes, direct lending through the development bank, interest subsidies and participation in venture companies to address the need for stable financing amid deteriorating credit market conditions. Participation in such programmes, however, has been limited notwithstanding sizeable allocations from EU funds and the budget for such schemes. This is to a large extent related to stringent access conditions. Firms which meet such criteria can borrow in the market and need not pay for government and bank guarantees (2% and 0.5-6.3% of the loan, respectively) in addition to double-digit interest rates. In contrast, firms that fail to meet the criteria for guarantees or direct loans or that cannot afford high financing costs have no choice but to exit from the market.

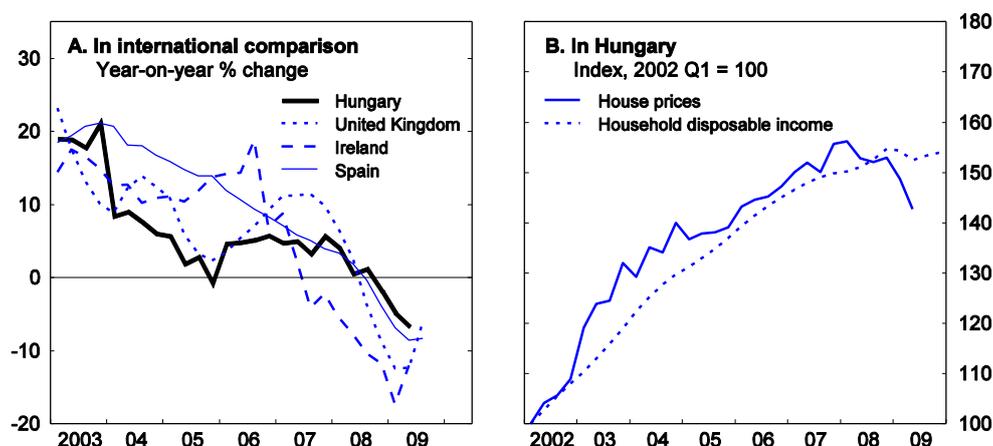
Many households borrowed beyond their means and in foreign currency

The availability of relatively cheaper funds and the relaxation of lending practice in the few years preceding the crisis led to rapid credit growth and as a result also to lending to subprime borrowers. Thus the deterioration of household credit quality in Hungary had its origins in household borrowing, which was for many beyond repayment ability and excessive risk taking coupled with the failure of authorities to restrain such behaviour. Barrell *et al.* (2009) show evidence of excessive debt growth in some economies including Hungary, where household debt kept increasing despite moderating house prices. This is largely due to the withdrawal of housing wealth with the purpose of smoothing consumption. Barrell *et al.* (2009) also show that debt is a superior good as indebtedness rises with higher per capita incomes. It also rises with real house prices and declines with real interest rate increases. They further find that the debt-to-income ratio in the new EU member states has largely evolved in line with their fundamentals – *i.e.* GDP per capita, the real interest rate and house prices. That is, the rapid growth in indebtedness is mostly explained by rising incomes, falling real interest rates and strengthening house prices. An earlier study (Kiss, 2006) did not detect excessive lending to the household sector between 1995 and 2005. Égert *et al.* (2006) and Zumer *et al.* (2009) show that credit levels have reached their equilibrium levels in Hungary, though these studies do not distinguish between corporate and household debt.

In contrast to many other countries with rising household debt, in Hungary no bubble was observed in house prices (Figure 3, Panel A); house prices have not been moving out of line with household income (Figure 3, Panel B). Consequently, the mortgage loan boom was not fuelled by expectations of rising house prices as in some other countries and the average loan-to-value ratio in Hungary was well below 100%. The pent-up demand for mortgage loans was instead a result of the low initial level of household indebtedness, rapid accumulation of housing wealth that can be easily withdrawn and the introduction of relatively cheap foreign currency-denominated loans.² The new opportunity to become a home-owner under seemingly affordable conditions spurred demand for foreign currency loans and many households did not realise the risk they were facing by taking housing or mortgage-backed consumption loans in foreign currency and with variable interest rates. There were no regulations in place that would have prevented banks from letting households over-borrow in foreign currency. As a result of foreign exchange borrowing, households are exposed to exchange-rate risk and, because of their excessive borrowing relative to income, also to solvency risk.

2. These “foreign exchange loans” are in fact extended and serviced in the domestic currency, but the principal of the loan is determined in foreign exchange and thus, the repayment is dependent on the exchange rate. Instalments also vary with foreign interest rates as fixed-rate loans are rare except for very short-term loans.

Figure 3. Housing price developments do not show clear sign of a bubble



Source: Földhítel és Jelzálogbank; Girouard, N. *et al.* (2006), "Recent House Price Developments: The Role of Fundamentals", *OECD Economics Department Working Papers*, No. 475; and OECD (2009), *OECD Economic Outlook: Statistics and Projections* (database), October.

Household debt as a percentage of GDP of nearly 40% in 2009 (Figure 4, Panel A) may not be particularly high in an international comparison, but most of it (over 65% in mid-2009) is in foreign currency. Indebtedness relative to disposable incomes at around 60% is not high, either, in international comparison (Figure 4, Panel B) but households are spending an increasing portion of their incomes on servicing debt with the average reaching 13% in the first quarter of 2009 (Figure 4, Panel C). Aggregate data on the breakdown of debt to examine the burden of servicing mortgage debt is not available, but household survey data³ show that in 2007, households with mortgage loans spent over 13% of their net annual income on servicing the debt. With the depreciation of the currency and deteriorating earnings outcomes in 2009, this figure should be substantially higher, some estimates put it at 20%. This high ratio of debt servicing to net income is partly a result of overly optimistic expectations with regard to future incomes and the movement of forint exchange rates, and partly due to lax lending practice that put too little emphasis on borrowers' repaying ability. The global crisis has eroded the debt servicing capacity of over-borrowed households through higher costs. This reflects the scarcity of funds and the depreciation of the forint, as well as the fall in disposable incomes related in particular to job losses. Slightly above half of household debt comprises housing loans. As in the case of total household debt, residential mortgage debt as a percentage of GDP, at 15% in 2008, is also not high by developed-country standards, and is in line with the ratios of other central European transition economies (Figure 4, Panel D).

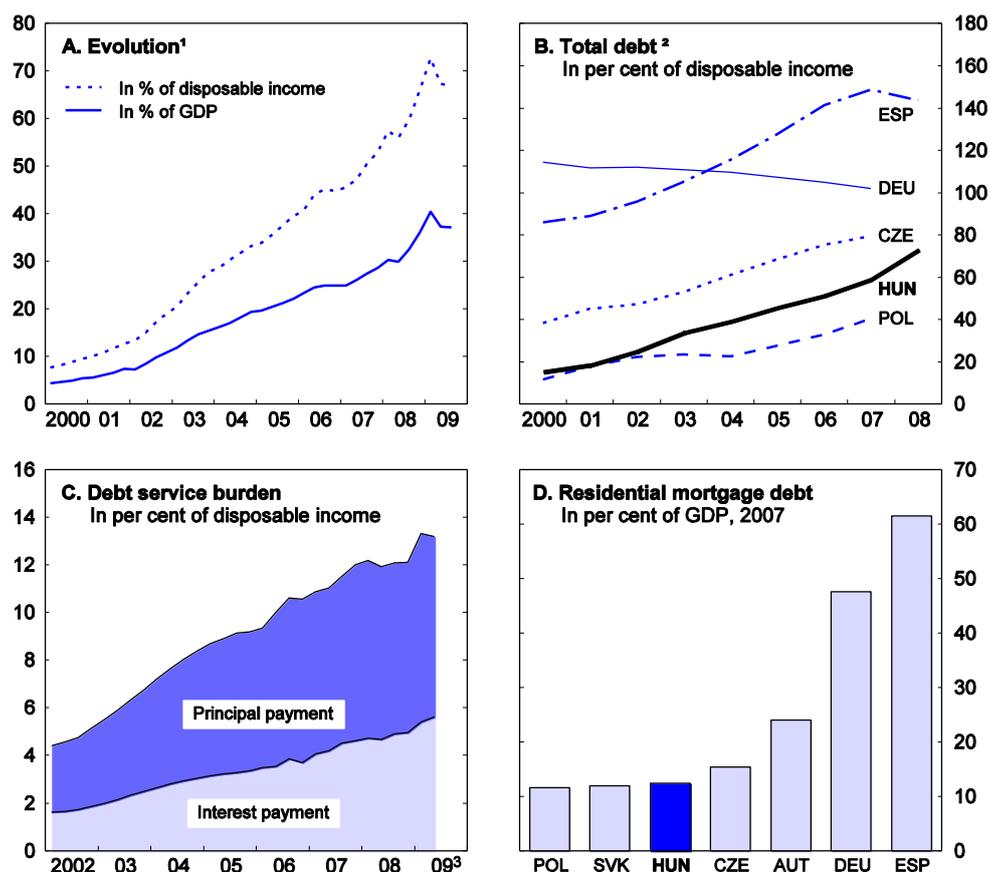
Foreign exchange loans remain competitive vis-à-vis forint-denominated ones, even with subsidies

By 2009, the share of foreign currency borrowing in total household borrowing (including housing and consumption loans) reached nearly 60%, equivalent of nearly 35% of annual household disposable income (Figure 5, Panel A). At such a high level, even a 10-20% depreciation of the currency can have a sizeable adverse impact on household spending. The proliferation of foreign-currency loans in Hungary is to a large extent related to high domestic interest rates, stable exchange rates, overly optimistic expectations with regard to convergence and euro adoption and to the tightening of conditions for housing loan subsidies as of 2004 (Box 1), in addition to the funding gap, *i.e.* the extent to which banks finance their loans from wholesale borrowing as opposed to deposit taking (which is discussed in the section on banks). Interest rates on loans – both for housing and for consumption purposes – denominated in major foreign currencies have remained well below those on forint-based loans (Figure 6), thereby attracting an

3. EU-SILC 2008, over-indebtedness and financial exclusion module.

increasing number of borrowers. After their emergence in 2003, foreign currency loans have been effectively crowding out not only common forint loans but even subsidised ones. This resulted in a ten-fold increase in outstanding foreign currency loans between 2004-07 reaching the size of subsidised housing loans by 2007 (Figure 5, Panel B). The winding back of home-loan subsidies (that only apply to forint mortgages) in at the end of 2003 increased the spread between effective nominal interest rates on subsidised forint loans and interest rates on foreign currency loans. This change in policy thus spurred the introduction of foreign exchange loans as a new product to meet the still large appetite for housing loans.

Figure 4. The household debt stock is moderate but the debt service burden is increasing

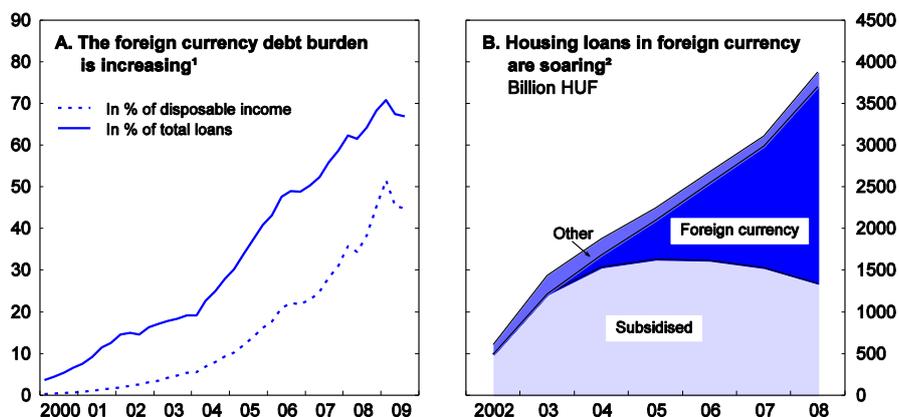


1. Housing, consumer and other loans from other monetary institutions and financial intermediaries, in local and foreign currency.
2. Total liabilities of the household sector including non-profit institutions serving households, non-consolidated stock.
3. Preliminary data.

Source: MNB (2008), *Financial Stability Report – November* and MNB (2009), “Financial Accounts”, *Statistical Time Series*, Magyar Nemzeti Bank, December; OECD (2009), *OECD Economic Outlook: Statistics and Projections* and *OECD National Accounts Statistics* (databases), December; EMF (2009), *Quarterly Review of European Mortgage Markets – Q1 2009*, European Mortgage Federation; and Eurostat (2009), “Economy and Finance”, *Eurostat database*, September.

Borrowing in foreign currency seems a cheap alternative to loans in domestic currency, but the exchange rate risk is significant at high levels of unhedged borrowing. The experience of emerging Latin-American and some industrialised European countries suggests that “dollarisation” or “euroisation” may lead to painful balance sheet effects in case of a sharp depreciation of the domestic currency. Notwithstanding such lessons, several European emerging economies, similarly cursed by the “original sin” of no access to borrowing in their own currency (Eichengreen and Hausmann, 1999), have borrowed heavily in euros and Swiss francs in the past decade or so.

Figure 5. Increasing foreign currency borrowing implies heavier burden for households



1. Foreign currency loans for housing, consumer and other purposes from other monetary institutions, financial intermediaries and rest of the world. Disposable income is estimated from 2008 onwards. Preliminary loan data for the second quarter of 2009.
2. Stock of housing credits.

Source: MNB (2009), "Financial Accounts", *Statistical Time Series*, Magyar Nemzeti Bank, December; HCSO (2009), "Dwellings, public utilities", *Stadat Tables*, Hungarian Central Statistical Office, December; and OECD (2009), *OECD Economic Outlook: Statistics and Projections* (database), December.

Box 1. The housing loan subsidy programme

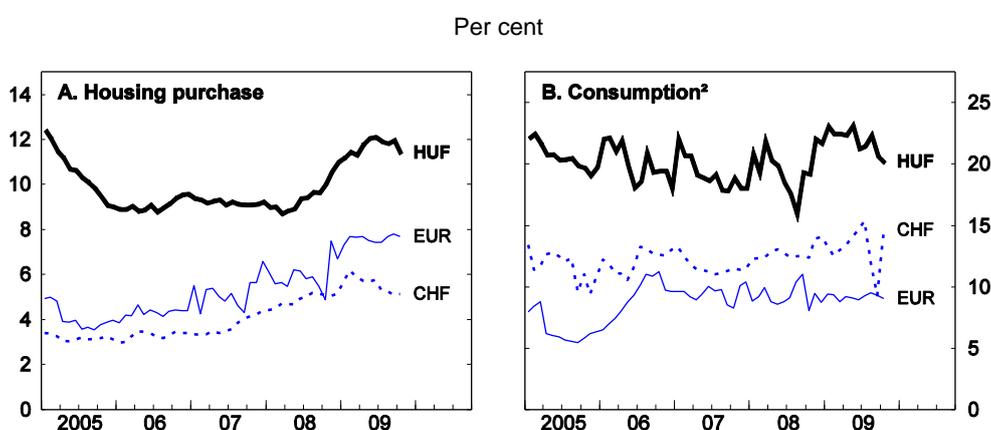
The state subsidy programme for housing loans started in 2000 with the purpose to improve the quality and increase the size of the housing stock but without any specific figures with regards to the resources to be used and the objectives to be attained (Állami Számvevőszék, 2009). In the absence of such basic parameters, it is difficult to judge how efficiently the HUF 1.5 trillion was used over the period 2000-08. It is also hard to figure out how large a percentage of the increase of the housing stock of 240 000 during the period was related to home-loan subsidies (the number of approved subsidised home loans was 404 000 during this period). In any case, the programme imposed a sizeable burden on the budget: interest subsidies reached 0.7% of GDP in 2008, a large increase from the 0.1% of GDP in 2000.

Regulations governing home-loan subsidies were modified 25 times during 2000-08, largely reducing the predictability of the programme. The modifications concerned beneficiaries of the programme, its conditions and the types of subsidies. A major component of subsidies was the interest subsidy provided through the financial institution issuing mortgage bonds and exclusively for funding through mortgage bond issuance. An additional interest subsidy was made available for couples or people raising children to build or buy new apartments. In 2003 conditions were tightened and the extent of interest subsidy was tied to the reference treasury bond yield. Owing to this benchmarking, interest to be paid became higher than that for foreign-currency loans (not accounting for exchange rate risk) from 2004, and thus the home-loan subsidy programme lost its attractiveness. The other major modification is the introduction of the homeowner programme (so-called *Fészekrakó*) for lower-income earners in 2005 that substantially lowered the down-payment ratio (to 10%). In addition, the government offered guarantees of up to 40% of the loan. While originally planned for young people without savings but with future earning potential, the programme in fact attracted many poor people without any savings or even income. By faking income certificates, such people became home owners, thereby initiating one of the largest scandals related to housing subsidies in Miskolc, the third largest city of Hungary. Another anecdotal evidence of the misuse of housing subsidies is the scene of house structures without windows and doors, which were recycled for several "new" homes. In addition to interest subsidies, a lump-sum cash grant for first-time home ownership has also stimulated housing demand.

The housing subsidy programme resulted in several adverse consequences: *i)* on the supply side, it led to market distortions; *ii)* on the demand side it encouraged over-borrowing and moral hazard; and *iii)* the high level of home ownership as a result of subsidies has hampered the development of a rental market. By linking interest subsidies to mortgage bond funding, mortgage banks and their related commercial banks were granted privileges in the lending market that severely hurt competition. Interest subsidies though had a maximum lifetime of 20 years and a maximum mortgage loan size and rate. Nevertheless, in addition to encouraging borrowing up to the ceiling, they implied long-term commitments for the budget. In particular, the costs of guarantees initially reside off balance, but by increasing defaults they may become actual expenditure. The reduction of down-payments, and allowing the child subsidies to be used to service debt, increased moral hazard as people incur only limited costs in case of default. In a country like Hungary, where labour mobility is very low, high home ownership rates further impede the development of a rental market.

In addition to the interest differential, Rosenberg and Tirpák (2008) empirically confirm the importance of low domestic deposits relative to demand for loans in driving foreign currency borrowing. Backé and Wójcik (2007) emphasise the consumption smoothing purpose of borrowing partially funded by foreign funds during transition. Further, Rosenberg and Tirpák (2008) show that it is irrelevant from the point of view of demand for foreign exchange loans, whether they are channelled through domestic banks borrowing abroad or foreign subsidiaries borrowing from their parent banks. For Hungary most of these findings seem to apply: there is a large funding gap, thus deposits are low and loan demand needs to be financed by wholesale borrowing from abroad. Households are more apt to borrow in foreign currency if the interest rate differential is sufficiently large and perceived risks are low. Consumption smoothing was an important driver of borrowing as part of the new mortgage loans by households were taken for consumption purposes. Foreign exchange loans were extended by all major banks in Hungary irrespective of whether they are foreign owned.

Figure 6. Foreign currency borrowing is a cheap alternative to paying high interest rates on forint loans ¹

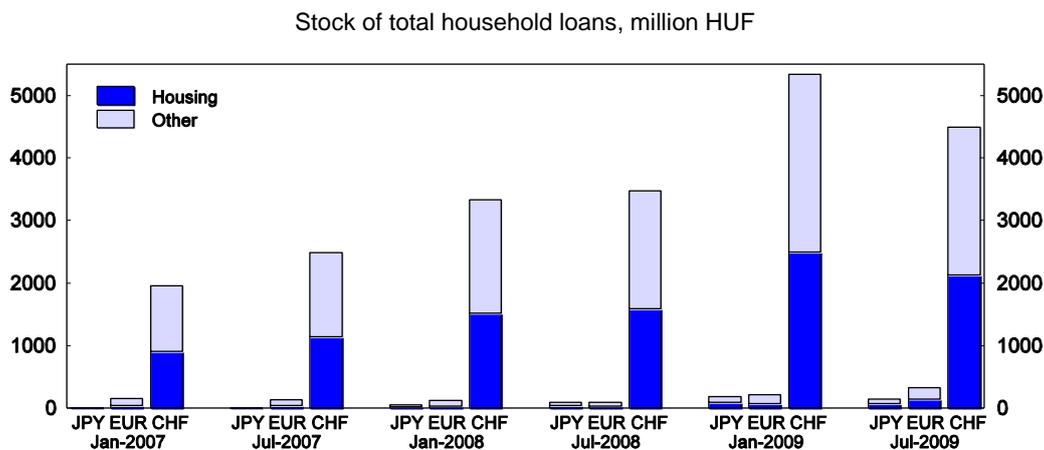


1. Loans with floating interest rates or with up to one year initial rate fixation.
2. Personal loans for Swiss francs.

Source: MNB (2009), "Monetary and Capital Markets", *Statistical Time Series*, Magyar Nemzeti Bank, December.

The Swiss franc used to be the favoured currency

Due to the very low interest rates and the clear appreciating trend of the forint *vis-à-vis* the Swiss franc in the early 2000s, most households chose the Swiss franc as the basis for their loans (Figure 7). Euro-based loans were less favoured owing to somewhat higher interest rates. Interest rates on yen-based loans appeared to be even more attractive, resulting in a short boom in yen-based loans that was halted as a result of the recommendation by the regulator not to extend further loans in that currency due to its high volatility. As banks applied a higher down-payment requirement to yen-based loans that was affordable only for the more well-to-do, customers borrowing in this currency appear to be the most reliable according to banks. This approach was reinforced by the sharp appreciation of the yen against the forint in the second half of 2008.

Figure 7. **Most foreign currency loans have been denominated in Swiss francs**¹

1. Euro includes other currencies.

Source: Magyar Nemzeti Bank.

Banks have so far been weathering the crisis relatively well

The major adverse effect of the global crisis is related to the drying up of funds in international markets as the Hungarian banking sector is not exposed to toxic assets or in general structured instruments, owing to relatively conservative asset management policies of banks and robust lending in the past years. The deterioration of economic conditions in the country increased defaults by corporate and household borrowers, cutting into banks' profits. After several years of robust growth in profits in the banking sector, profitability has been declining since 2007 and 2009 is expected to be gloomier, though the first and second quarter results are still unusually good for many banks, only one big bank out of ten experienced deteriorating performance. As most of bank profits stem from household lending (with higher interest margins than for firms), notwithstanding difficulties households face in their debt servicing, the highest profits have been registered by the largest retail lenders. In particular, the biggest bank, OTP (Országos Takarékpénztár), which in terms of assets has about a 20% market share, registered half of the sector's profit.

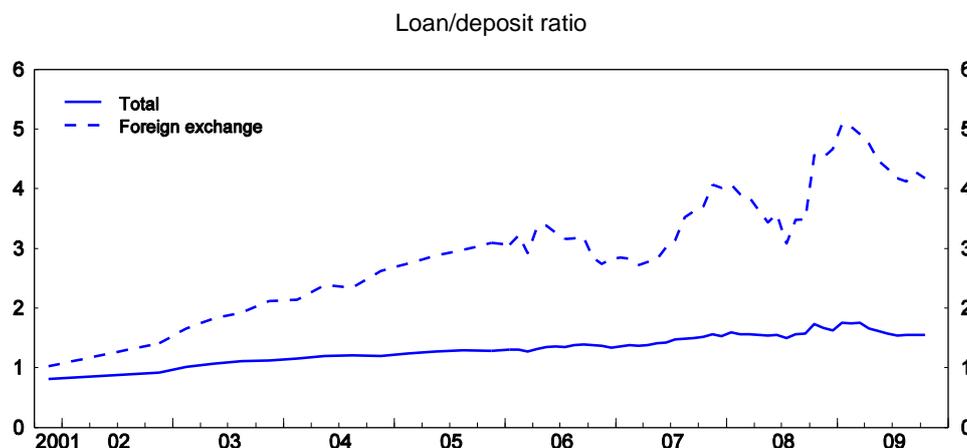
Only three banks needed government support due to crisis-related difficulties. The Hungarian development bank (Magyar Fejlesztési Bank, MFB) got a HUF 170 billion loan, a part of which was forwarded to the Export-Import Bank and the remaining part was used to finance or refinance corporate loans. OTP Bank and Földhitel és Jelzálogbank (FHB) have also been provided with government loans of HUF 400 billion and HUF 120 billion, respectively. These loans were extended by the government on an unsubsidised basis, with the explicit aim of fostering lending to non-financial enterprises by the beneficiary banks. OTP committed to increase its corporate loan portfolio, while FHB committed to not decrease its total portfolio. FHB also got a capital injection of HUF 30 billion, increasing the government share to over 43% in the bank and giving it a preferential share. All banks are adequately capitalised so that, without the immediate need for write-offs, capitalisation will not be an issue in the very near term. According to stress tests, mortgage lending will not be a big risk factor. Even under an extreme scenario, where GDP would fall by 10% and the forint depreciate to HUF 340 to the euro, non-performing loans would only increase to 6% of the mortgage loan portfolio of end-2008 (Holló, 2009). However, banks may face an increasing flow of non-performing loans in their corporate lending portfolios, boosting their need for fresh capital. Most foreign banks committed not to withdraw funds from the Hungarian market, but with the unfolding of the crisis some of the subsidiaries of foreign banks are shrinking their lending in Hungary in an attempt to repair their worldwide balance sheets. There is some evidence that competition for deposits is increasing as banks seek to reduce reliance on foreign borrowing.

Maturity mismatches have been mitigated by reliance on mortgage bonds

Maturity mismatches arising from the long-term nature of housing loans and relatively short terms of deposits on the liability side have been mitigated by increased reliance on long-term mortgage bonds. Commercial banks, by law, cannot issue mortgage bonds, but can refinance their mortgage loans with specialised mortgage banks. Conversely, mortgage banks cannot collect deposits but can finance their own mortgage lending or refinance commercial banks' mortgage loans by issuing mortgage bonds. As of end-2007, mortgage banks held 38% of residential mortgage loans, while commercial banks held 57% and savings cooperatives 5% (EMF, 2008). Securitisation through mortgage bonds is considered a relatively safe way owing to the direct lien to the underlying assets that makes it attractive to risk-averse investors. Mortgage bond refinancing also gained importance due to the decreasing ability of commercial banks to finance their lending from deposits. The major risk related to securitisation through mortgage bonds is a lack of liquidity in mortgage bond markets, as was the case in early 2009.

With a lack of sufficient deposits, the banking sector increasingly financed its lending from wholesale funds. The loan-to-deposit ratio of banks reached an average of around 1.6 in 2008 from a ratio below 1 in 2002 (Figure 8), though it declined sharply thereafter as a result of plummeting lending activities. The increase in the foreign exchange loan-to-deposit ratio to over 4 from a similarly low ratio in 2001 has been even more dramatic. An additional boost to the mortgage bond market was the tying of interest subsidies on housing loans to mortgage bond financing. The exclusive rights of mortgage banks to issue mortgage bonds thus granted advantages to commercial banks that have their own mortgage bank (Box 2). With the significant shrinking of the home-loan subsidy programme in a number of steps since 2004, the playing field is expected to become more even.

Figure 8. **Deposits have to a decreasing extent been matching soaring loan demand**¹



1. Credit institutions operating as joint stock companies.

Source: HFSA (2009), *Credit Institutions' Data*, Hungarian Financial Supervisory Authority, December.

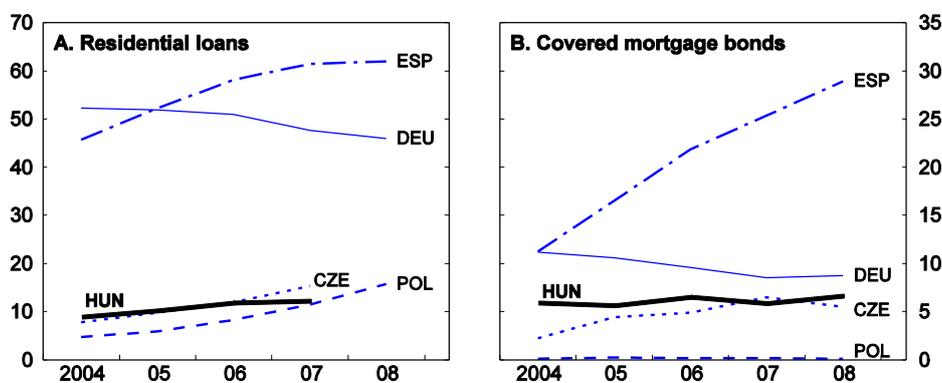
Box 2. Mortgage banks and mortgage bonds in Hungary

Hungary applies the specialist bank principle, *i.e.* the roles and rights of commercial and other special banks such as mortgage banks are distinct. Mortgage banks are subject to strict control and supervision but have access to special privileges. The most important privilege is the access to the state interest subsidy, which is linked to mortgage bond financing. Mortgage banks have legally anchored preferential rights to the property in case of default, enjoy an accelerated land registration process and can access the central property database. They have, however, strict restrictions on their portfolios: the maximum loan-to-value ratio is 70% for the total loan portfolio and at least 80% of loans outstanding must have a maturity of minimum five years. If they buy mortgage loans from commercial banks, those loans must not be substandard (this must be confirmed by an auditor). In addition, the credit risk remains with the originating bank and in case of bankruptcy of the originating bank, the mortgage loans are repaid to the mortgage bank.

There are three mortgage banks, two (OTP Jelzálogbank and Unicredit Jelzálogbank) are owned by commercial banks, and the third (Földhitel és Jelzálogbank, FHB) was set up by the government for mortgage financing. OTP Jelzálogbank refinances only its parent bank's mortgage loans, while the other two mortgage banks also buy mortgage loans from other commercial banks. The FHB was the first mortgage bank in 2001 that worked out the refinancing conditions based on the purchase of independent lien, which enabled the bank to sign contracts with the major commercial banks in Hungary. Thanks to these agreements there are more than 800 banking outlets, where the preferential mortgage loan products became available. Beside traditional housing loans, the range of products offered by the bank was broadened in 2001 by the extension of mortgage loans for real estate purchases, loan replacement and general-purpose mortgage loans. With the establishment of OTP Jelzálogbank, the market share of FHB shrank to 25-30%, while that of OTP Jelzálogbank rose to nearly two-thirds. Unicredit Jelzálogbank's share is relatively small. In an international comparison, the stock of residential mortgage loans is relatively low, but the size of the covered (mortgage) bond market is significant (Figure 9).

Figure 9. Residential loans and mortgage bonds

Outstanding loans and bonds, in per cent of GDP¹



1. Provisional data for 2008.

Source: European Mortgage Federation; European Covered Bond Council and Eurostat (2009), "Economy and Finance", *Eurostat database*, December.

Negligible interest and exchange rate risk and limited credit risk

The legal and institutional arrangements prevailing in the past years offered little protection to households and allowed banks to pass off a large part of the risk of their loans. Most loans, in particular long-term loans, have variable interest rates. Fixed interest rates are seen only in short-term consumption or working capital lending. Moreover, instalments vary not only with official interest rates of the chosen currency for the loan and more upwards than downwards, but the fee component of regular instalments also varies in a largely unpredictable way at the time of signing the loan contract. In addition to interest

rate risk, exchange rate risk is also passed on to households as most lending, at least until recently, had been in foreign currency. Foreign exchange lending increased credit risk borne by banks significantly. To hedge the exchange and interest rate risks related to financing foreign exchange lending from forint funds (as foreign exchange deposits are not sufficient for this purpose) and to generate forint liquidity for lending purposes, banks sign foreign exchange (FX) swap agreements with foreigners in need of forint liquidity to buy Hungarian government securities. FX swap transactions are also used to hedge exchange rate risk arising from the foreign currency assets matched with forint liability until the maturity of the FX swap (Mák and Páles, 2009).⁴ As loans tend to be of longer maturity than swaps, banks also face a renewal risk of FX swap transactions that can be mitigated through foreign exchange liquidity provision by the parent banks. Indeed, when the FX swap market underwent functional disorders in the autumn of 2008, as a result of reduced risk tolerance and hence reduced demand for forints by international investors to buy government securities, the share of swap transactions with parents increased, contributing to enhancing financial stability. In addition, the central bank also introduced FX swap instruments to facilitate the recovery of the market. By the same token, the Hungarian central bank signed such agreements with the Swiss central bank. With the shrinking supply on the Swiss franc swap market, Swiss franc lending has virtually dried up since late 2008.

The major motivation for banks to set harsh lending conditions is to minimise credit risk. Given that there has not been a bubble forming in the housing market, sufficiently low loan-to-value (LTV) ratios would serve that purpose. Collateral values, on average, were 80% of the market value of the property. Banks applied different ratios depending on marketability such as geographical location, type and size of the property. While the LTV ratio for new loans increased with the saturation of the market, the average ratio relative to loans outstanding remained at around 65% at end-2008 (MNB, 2009).

In addition to minimising credit risk, it was important to create the legal conditions for an efficient handling of defaults, which was done by requiring the client to sign the loan contract at a notary. In Hungary, mortgage deed is not executory by nature and signing the loan contract at a notary exempts the bank from its obligation to prove that the borrower owes it the repayment. All housing loan contracts in Hungary were signed at a notary. In the contract, the banks often reserved the right to evaluate the property and disclose it in case of default on the loan, *i.e.* without going through independent evaluation or public disclosure or without providing the borrower with sufficient time to find replacement options or sell the property. This in practice implies that the banks have no incentives to sell the property at a price above the remaining part of the loan.

In spite of all the harsh conditions, banks often did not adequately inquire about the customer's income or health and his/her age was also irrelevant when determining the conditions of the loan. This was in particular the case after the mid-2000s when loan growth was particularly strong with the gradual saturation of the market, also "subprime" borrowers were obtaining loans. The lack of interest by banks in the borrower's income is largely related to a sizeable informal economy and hence sizeable unregistered incomes in Hungary. Nevertheless, by not linking the amount of loan to monthly incomes, this allowed the grey economy to foster.

The risk of pre-payment, which hurts bank returns, is also reduced by penalising advance service of debt. Prepayment costs can reach 3-5% for consumption and housing loans. Such penalties for advance payment limit possibilities for households to refinance their loans with other banks at better terms or to prepay their debt with rising risk awareness. Capping prepayment costs at 0.5-2.5% depending on the type

4. If the bank provides the foreign currency liquidity by a simple spot conversion, then the exchange rate risk is not mitigated (Mák and Páles, 2009).

and the term of the loan⁵ as in the recently passed law (to be effective from March 2010) is substantially higher than the originally proposed 1% for mortgage loans.⁶ Nevertheless it is a welcome step as it is expected to boost competition through refinancing at better terms, while leaving ample room for banks to manage maturity mismatches. In addition to costly prepayment, most banks did not make it possible to service debt in the underlying currency of the loan contract. While for most households, servicing their loan in Swiss francs was not a choice, it could have eased repayment difficulties for some after the slide of the forint.

The possibility to pass off the risk of the loans boosted the supply of bank credit and encouraged banks to lend to households without or with little regular income. Similarly to most other countries, banks in Hungary did not factor in macroeconomic risks into their strategies. By minimising credit risk, counting on government bailout and ensuring fast debt workout for the case of default, they have, however, effectively reduced their exposure to systemic risks.

The government assumes part of the credit risk through bailout programmes

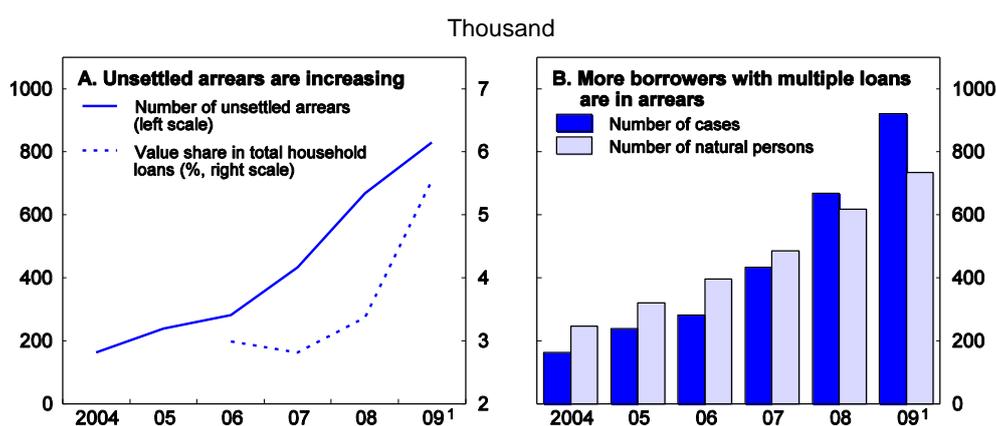
Banks not only managed to minimise most types of risks related to foreign exchange lending such as exchange rate risk or interest rate risk, but now can also pass off part of the credit risk owing to the government announcement of bailout plans for individuals with payment difficulties as a result of the crisis. The conditions of the recently accepted bailout proposal reward past profligacy by extending the programme to those who initially had up to 60% debt service-to-income ratios. The scheme originally included people that lost their jobs as a result of the crisis, but the final version also includes those who face repayment difficulties stemming from increased debt service requirement. In the present version, the borrower cannot have an initial debt service-to-income ratio of more than 40%. According to the scheme, the government guarantees the debt of borrowers who meet the above criteria and commit to service HUF 10 000 (around EUR 40) of the debt monthly for two years and the remaining part of the unpaid debt in the following eight years. These conditions appeared restrictive and the number of participants has been limited. In fact, the major reason for the very low participation in the programme (218 granted cases as of October 2009, according to the Bank Association) is the low initial ceiling of the debt service-to-income ratio at 40% at the time of taking out the loan as a condition for participation. Recent proposals would relax this condition by raising the ratio to 60%, further increasing the number of potential beneficiaries among excessive risk takers. Banks' own schemes also compete with the government programme.

Banks try to avoid foreclosures if possible, partly because mass foreclosures would drive down house prices and hence their expected revenue from selling the foreclosed properties and partly because they would then lose the client. It would also be harmful for the reputation of a bank if it became infamous for its mass foreclosures. The most common form of renegotiation of the contract is lengthening of the term, as in Hungary there is ample room for that given that the average terms are relatively short, about 15 years at end-2008. Other available options are reduced repayments or complete relief from debt servicing obligation for a determined period. As a result of joint efforts by banks and borrowers, the number of renegotiated contracts (including prepayments) reached about 50 000 in October 2009, while the number of real estate foreclosures has been under 4 000. There have been over 921 889 unsettled arrears by individuals affecting 734 535 borrowers in the list of Központi Hitelinformációs Rendszer⁷ (KHR, Central

-
5. Prepayment cost of 0.5% for consumption loans of maturity below 1 year, 1% for above 1 year, 2% for mortgage loans in general and 2.5% for mortgage loans financed by mortgage bonds and if the prepayment falls in a period between interest rate changes.
 6. Prepayment cost of 1.5% for loans refinanced by mortgage bonds and prepaid in between interest rate changes.
 7. Only people with payment arrears over 90 days and larger than the minimum wage are put in the list.

Credit Information System) as of September 2009 making up almost 10% of outstanding household loans; most arrears are on consumption loans (Figure 10, Panel A). Such loans are often unsecured cash loans and personal loans and people with several loans and payment difficulties tend to default on their credit card and consumption loans first but keep servicing their housing loans. As a result of such a tendency, and of successful renegotiations of most problematic contracts, only 5.3% of mortgage loans owed by households to banks were non-performing in September 2009. The faster increase in the number of unsettled arrears than the number of natural persons involved in 2008 suggests that the crisis hit substantially more people with multiple loans (Figure 10, Panel B).

Figure 10. Payment arrears on household loans have increased



1. Data for end June panel A, end September for panel B.

Source: Hungarian Financial Supervisory Authority and BISZ Központi Hitelinformációs Zrt.

Market structure and concentration intensity differ by segment

Concentration is very high in some market segments such as retail lending...

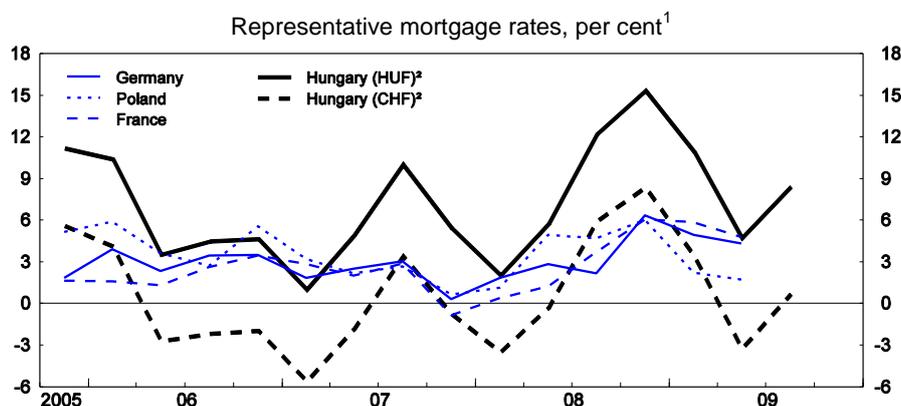
The Hungarian banking market does not appear to be concentrated at first sight and the market structure with over half a dozen similar-size players suggests competitive conditions. By asset size, the first five players command a share of nearly 60% with the largest player having a 20% share and the four others each having shares of close to 10%. The eight largest banks by asset size (the so-called large banks) own three-quarters of banking assets. Twenty other banks share the remaining 25% of the market. The value of the Hirschman-Herfindahl index calculated on total assets is 1 149, far from the threshold of a highly concentrated market at 1 800.

Concentration measures in terms of total assets, however, mask the differences in market segments. Differences are large in terms of concentration between loan and deposit as well as between retail and corporate markets and their sub-segments. In retail deposits, for instance, the largest player OTP commands a market share of roughly 32%, largely owing to its country-wide branch network. Together with its mortgage bank, OTP Jelzálogbank, its share in the mortgage loan market is similar, at above 30%. OTP (with its mortgage bank) is also market leader in consumption loans (over 10% share) and the other loans category (over 20%) which comprises freely disposable retail loans. In contrast to the retail market, the corporate market appears to be less concentrated and OTP ranks much lower. In corporate deposits, CIB is the market leader with a share well over 10% followed by OTP, K&H, Raiffeisen, Unicredit and MKB, each with a share of slightly over 10%. CIB is also leader in corporate lending with a market share of over 15% closely followed by MKB, then Raiffeisen and K&H with 10% each. As interest margins on retail lending tend to be well above those on commercial lending, not surprisingly, concentration in profits is also significant with OTP recording 50% of after-tax profits of the entire banking sector in mid-2009.

... and competition intensity is much lower in retail markets

Due to different degrees of information asymmetries (Diamond, 1984; Rajan, 1998 and Bolton and Freixas, 2000) and other market-specific characteristics including mainly the sharp competition for the financing of large domestic companies between domestic and international credit markets, interest margins prevailing in wholesale and retail markets in Hungary are different. While interest margins on corporate loans are relatively low, the high margins on household lending in Hungary compared to other countries suggest little competitive pressure in this market (Figure 11). Price-cost margins are a superior measure of competition than concentration ratios as competition may stem from other sources than just the number of players, such as demanding customers. Molnár *et al.* (2007) estimate price-cost margins for different retail market segments and find that competition is low in the overdraft, higher purchase loans, personal loan, demand deposit and short-term deposit markets, while the long-term deposit market is more competitive. Stiffer competition in the long-term deposit market is not surprising given the decreasing share of lending funded by deposits. Weak price competition in retail markets is also manifest in the stickiness and lagged reaction of interest rates on consumption loans and short-term deposits to money market rates (Horváth *et al.*, 2004).

Figure 11. **Mortgage interest rates are higher in Hungary than in other countries**



1. Nominal rates deflated by the consumer price index.
2. Average annualised percentage rate of charge of housing loans to households weighted by the amount of new business.

Source: EMF (2009), *Quarterly Review of European Mortgage Markets – Q2 2009*, European Mortgage Federation and MNB (2009), "Monetary and Capital Markets", *Statistical Time Series*, Magyar Nemzeti Bank, December.

Although there is no evidence of collusion among banks to set interest rates and conditions for household loans, there are only limited signs of price competition which is manifest in a moderation of the effective net interest margin earned by banks from 4.2% in 2002 to 3.7% in 2006 and 2.6% in 2008. The virtual lack of price competition and the still substantially higher interest margins than in the EU prompted the Competition Authority to initiate an investigation in the mortgage lending market in 2005. While the investigation did not find abusive behaviour or market power, it called for strengthening consumer protection, more transparency and information about products and a clearer definition of banking fees (GVH, 2005). In addition to a larger degree of information asymmetry in the retail lending market, the lack of price competition can, to a large extent, be attributed to switching costs, which comprise direct costs such as the fees of opening and closing an account and indirect costs such as the time costs of switching. Switching costs explain a low price elasticity of retail loans, limited price competition and the persistence of profits (Dermine, 2005; Degryse and Ongena, 2008). Entry barriers in the form of costs to establish branch networks necessary for retail lending also contribute to higher margins. Cross-border competition in the retail lending market may also be limited owing to prudential regulatory differences such as repayment regimes, ceilings on loan-to-value ratios and credit risk appraisal (Dermine, 2005).

There has been some competition at the margin: Austrian banks not present in Hungary extend cross-border loans to households in the west of the country at more favourable rates. Given the higher borrowing costs that banks in Hungary face due to higher country risk, cross-border lending could potentially provide effective competition in the domestic lending market. Cross-border lending is in particular competitive in the segment of long-term lending as higher fixed costs related to contract and translation fees may make short-term borrowing less attractive. Cross-border borrowers, however, also face some inconveniences such as the need to pay the monthly instalments either in Austria or by costly bank transfers and the payment obligation is in euros. Owing to such constraints, this scheme best fits people working in Austria or at least living in the proximity of the border and earning foreign currency. These contracts are typically signed at a Hungarian notary and the lenders have access to the same procedures for redress as banks with subsidiaries/branches in the country. Geographical proximity also helps reducing information asymmetry that can be important in retail lending. Local knowledge that can reduce information asymmetry between lenders and borrowers is more important in retail lending where products tend to be more customised. Notwithstanding the unexploited interest differential, the share of cross-border household lending remains low at below 1% of outstanding household loans.

More intense competition, in particular in the retail lending market, would enhance market efficiency without necessarily endangering stability. Contrary to common perception, there is no empirical evidence on the trade-off between competition and stability in the banking sector. Empirical studies such as Beck *et al.* (2003) find that higher concentration is positively associated with banking crisis probability while entry restrictions have a negative association. This, however, may only show that concentration may not be the best measure of competition. Claessens (2009) confirms that market-structure-based measures of competition may not be the best, though they are used widely in the literature. A review of existing literature by Claessens (2009) concludes that competition has lowered the costs of financial intermediation, spurred product differentiation and enhanced stability. Competition has been driven by making markets more open and contestable and by internationalisation of financial services.

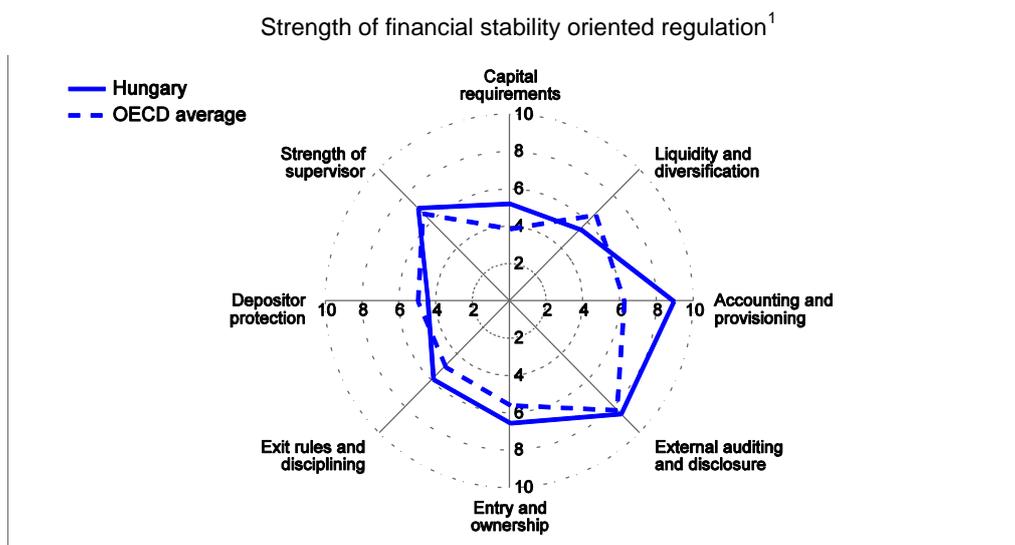
Banks are not very efficient

A common way to compare bank efficiency with that in other countries is to estimate an efficiency frontier and calculate the distance from it. Following the methodology of Holló and Nagy (2006), such analyses show that efficiency of Hungarian banks, though increased over the past years, still lags behind not only some of the best performers such as the United Kingdom, but also other CEEC countries such as Slovenia. Molnár *et al.* (2010) provides details on the estimates and methodology. To obtain efficiency, first a cost function is estimated, which is assumed to take the Fourier-flexible form (see Annex A). In the analyses, the intermediation approach is applied, *i.e.* the focus of interest is how efficiently banks can intermediate deposits and other borrowed funds - using labour and capital as well as inputs and taking into account the cost of inputs – into loans, other earning assets and non-interest income. The relative position of Hungarian banks did not change substantially in 2004-2008 compared to 1999-2003 as published in Holló and Nagy (2006).

Prudential regulation has been superior to the OECD average in some areas

Internationally used indicators would mask any prudential regulatory insufficiency as major problems in the Hungarian regulatory system lie beyond the areas covered by such indicators. The recently constructed OECD indicators on prudential regulation, for instance, suggest that regulation in most areas is at least as stringent as that of the OECD average with particularly strong requirements in accounting and provisioning (Figure 12). Moreover, Hungary is not among the countries with lighter regulatory stances in any of the eight areas covered by the indicator. Hungary is close to the OECD average in terms of the strength of the regulator, but within this area, political interference appears high, and on-site examinations are few as is experienced staff to conduct them.

Figure 12. Prudential regulation is robust in most areas



1. Score comprised between 0 (the regulation is bad from a prudential point of view) and 10 (the regulation is good from a prudential point of view). The figure reflects the state of regulation in 2006-07 and recent changes in depositor protection in Hungary would imply more stringent regulations in this area relative to the OECD average.

Source: Ahrend, R., J. Arnold and F. Murtin (2009), "Prudential Regulation and Competition in Financial Markets", *OECD Economics Department Working Papers*, No. 735.

The only area where Hungary lags slightly behind the OECD average is liquidity and diversification requirements, where some limitation on sectoral concentration of bank lending could contribute to risk diversification. In addition, currency mismatches in banks' balance sheets could be mitigated by allowing banks to hold reserves in foreign currencies or foreign-currency denominated instruments as in many other OECD countries. Holding foreign currency on balance sheets would also help avoid liquidity problems in foreign currency. In Hungary, neither this possibility nor disincentives to lend in foreign currency had been introduced (until recently, as discussed under the section on limiting borrowers' risk taking).

Reshaping regulatory approaches

A major lesson learnt from the crisis is that the approach towards household lending needs to change: stronger protection for borrowers needs to be combined with tighter regulation of lenders. In both directions the right balance needs to be struck, as neither the overprotection of households nor the overregulation of banks is a desirable outcome. The former can lead to moral hazard and boost the pool of "subprime" borrowers, while the latter can hurt the efficient functioning of the financial system and hence of the whole economy. Furthermore, to minimise the use of taxpayers' money, agents should be held accountable for their risk taking. In particular, households' borrowing should be determined by their repayment ability and banks should share the risks related to foreign exchange lending which is perceived as riskier and which can pose a threat to financial stability if its share is large. Furthermore, it is also essential to curb business practices that boost uncertainty and unnecessarily raise borrowing costs such as the unilateral change of lending contracts by banks.

Pent-up demand for mortgage loans made households assume excessive risks

In about a decade, over three quarters of Hungarian households became owners of their dwellings.⁸ After the emergence of foreign currency loans in 2003, borrowers preferred loans in foreign currency and seemed to believe that it was risk free – a phenomenon described as “information cascade” by Bikhchandani *et al.* (1992) where other people’s actions are valued over one’s own judgment. Many people did not appear to realise the risk, or ignored it, counting on government bailout in case of inability to service the debt. Risk awareness significantly increased in 2008-09 when people experienced the slide of the domestic currency and hence soaring monthly repayments. Moreover, until very recently, there had not been sufficient types of mortgage insurance available for households to hedge for other potential risks such as unemployment, sickness or death. The possibility to buy insurance for the event of loss of repaying ability due to unemployment has recently emerged, though life insurance had been widely used as collateral for household loans.

With 87% of households owning their dwellings, an increasing number of owners started to use their housing wealth for consumption purposes. Home equity withdrawal data are not readily available, but the large stock of mortgage loans for other than housing purposes, the so-called free-purpose mortgage loans, (about 50% at end-2008 according to Központi Statisztikai Hivatal) suggests that housing wealth may have played an important role in fuelling the consumption boom in recent years. Indeed, in contrast to the early 2000s, when most new loans were taken for housing purchase, in the years preceding the global crisis, new consumption loans (most backed by mortgages) exceeded the amount of new housing loans. A part of these free-purpose loans may have been used though for investment purposes. Defaults on free-purpose mortgage loans imply not only loss of wealth but also loss of housing as a result of foreclosures, given that most of such properties are occupied by the owner. Mass foreclosures, therefore, could raise social issues. To avoid such problems, purchasing of the foreclosed properties by local governments for the purpose of rental was introduced.

People with low level of financial literacy or high risk appetite have become borrowers

The robust lending growth and relaxation of lending conditions in the second half of the 2000s have largely contributed to the increase of “subprime borrowers”, people, who otherwise would not have borrowed. To get around the problem of low repaying ability of such borrowers, banks packaged loans in an innovative way so that initial payments would be low for the first few years, before raising monthly instalments sharply (similar to adjustable rate mortgages elsewhere). In some cases, borrowers only paid interest in the initial years before starting to service the principal. People with low levels of financial literacy were easily talked into taking a loan as long as they could service it initially. In relation to exchange rate risk, people were often informed only about past movements of the currency in which the loan is taken but in most cases no simulations were run (until the unfolding of the crisis) to see whether they could withstand an unfavourable movement. Overly optimistic expectations to join the euro area soon, fuelled by politicians and government agencies, also diminished the perceived potential currency risk; moreover, the euro has been less volatile *vis-à-vis* the Swiss franc than the forint. Similarly, households did not realise that interest rates could have possibly moved upwards as well, as again they based their expectations on historical data. Households also accepted all the different fees and charges that were part of the debt service without questioning their reasonableness.

Excessive risk taking by households is not only a problem of financial literacy but also of moral hazard. Some borrowers who had known they would not be able to service their debt in the long run, nevertheless took housing and consumption loans. These people typically had no other assets and counted

8. As of mid-2009, about 87% of Hungarian households own their dwelling and by this indicator the country ranks fourth in the European Union.

on government bailout in case of inability to pay on the grounds of the right to a living place. Unreasonably high initial debt service-to-income ratios may be a clear indication of excessive risk taking, and thus should not be rewarded by bailout programmes.

The proliferation of bank agents across all segments of society largely contributed to the increase of subprime borrowers. In Hungary, there are two types of agents: those who were just luring in customers, where no prior qualification or license was required until December 2009, and those who were authorised to act on behalf of the bank and were licensed. These latter types of agents are now required to be registered with the supervisory authority. Although agents could work with several banks, as they were paid by the bank (without disclosing the amount of remuneration and even the fact that they receive a commission to the client), they had incentives to sell the least favourable loan, *i.e.* the largest one, to the customer. Anecdotal evidence shows that, with the saturation of the housing loan market, agents were taking the same customer to a bank to finance a house purchase first then to another bank to refinance it a few months later. Agency work was very lucrative and lightly regulated. On average, the remuneration of the agent bringing a new customer to the bank was 2.5% of the loan taken by the customer. In mid-2009, banks have virtually suspended agency work. This will boost bank profits as they can economise on the agent fees since competitive pressures to force banks to transfer these lower costs in the form of cheaper loans are lacking (on competitive pressure in the banking market see more above). Another reason for banks to reduce the use of agents was that the loans intermediated by them are in general worse performing than those extended through the branch network. In the case of some banks, the share of non-performing loans intermediated by independent agents is double those extended through the branch network.

Independent agents could possibly work on behalf of customers instead of chasing financially illiterate people and abusing their position. Agents could change hats and boost banking market efficiency by making banks compete for prime customers. For this to happen, it is necessary to prohibit independent agents from receiving commission from banks (as is done by the amendments to the law passed in December 2009) and to require them to offer multiple choices. By presenting offers from several banks to the customer, excessive bank margins on housing loans could fall. In this case, the fees agents charge should be a fixed amount to avoid adverse incentives. Agents working for or on behalf of banks should be required to disclose the nature and amount of their remuneration to the customer.

Soaring demand and weak consumer protection allowed excessively harsh conditions in loan contracts

Banks exploited the opportunities offered by the unsaturated market (in Hungary 40% of housing is subject to mortgage obligations) and pent-up demand for retail loans. At the beginning, only a few banks offered foreign currency loans and the first-comers reaped high profits. Even with the increase of competitors in the housing loan market, margins remained high and the market had not matured enough to incite competition before the crisis started. This situation, coupled with lax regulation, created an environment where banks could dictate the conditions. Refinancing of loans by other banks offering more favourable conditions had been rare at the beginning of the mortgage lending boom, but started to become more common in the second half of the 2000s. The extent to which competition developed through refinancing had been limited owing to the lack of portability of housing loan subsidies. GVH (Gazdasági Versenyhivatal, Hungarian Competition Authority) had called for portability of housing loan subsidies and this recommendation had support among related authorities, but no steps have been taken as yet towards it. By making home loan subsidies portable across banks, competition through refinancing would increase and by making subsidies portable across properties with the condition that the new property is also eligible for the subsidy, also labour market mobility could be boosted.

On the top of robust demand for mortgage loans, the legal framework for consumer protection has also been weak, leaving little recourse to customers facing unfair conditions. A striking example is the right of a bank to change the lending contract unilaterally. Although the conditions for such unilateral changes were set in the law, the broad definition of cases justifying unilateral change in lending contracts

by banks limited the legal ground to attack sudden jumps in the monthly instalment. There have been myriads of reasons for such unilateral increases of fees such as introduction of new information technology systems, increasing labour costs or other operational costs. Unilateral changes and the resulting jumps in the debt service were tolerated until 2006, when investigations started about the conditions and the prevalence of such changes. The Expert Committee on Retail Financial Services established by a prime ministerial decree in 2006 called for the reconsideration of the legal framework governing unilateral changes to contracts as such changes create substantial market power (The Expert Committee on Retail Financial Services, Lakossági Pénzügyi Szolgáltatásokat Vizsgáló Szakértői Bizottság, 2006), which, coupled with high switching costs and lack of transparency, results in market segmentation. But the issue of unilateral changes of contracts had not been treated seriously until borrowers experienced 60-70% jumps in the monthly instalments, although the depreciation of the currency was far less and interest rate hikes would not have justified the extent of the increase either. Given the lack of legal remedy, the role of civil consumer protection organisations has become increasingly important in providing advice to customers. Some civil organisations have achieved eviction moratorium with major financial institutions on behalf of borrowers that own only one dwelling and whose debt servicing is severely affected by either the crisis (*e.g.* job loss) or by unilateral change of contracts. They have published a black list of institutions that did not join the moratorium.

Abusive lending practices by nonbanks

Excessive protection of lenders and lack of protection of borrowers gave rise to lending activities by finance/credit companies aiming at seizing properties with defaulted mortgage loans at fire-sale prices to resell them at market rates. Foreclosure is never costless and lengthy foreclosure procedures often drive up borrowing costs. This is not the case in Hungary, which has one of the most efficient foreclosure procedures in terms of time needed and material costs involved in the European Union (European Commission, 2006). The low costs and short time required to foreclose properties – that are *per se* desirable properties of the legal system surrounding bank lending – have been coupled with weak protection of borrowers and hence led to foreclosure-seeking behaviour by some financial institutions. These institutions focused on subprime borrowers turned down by banks, even people on the delinquent borrower list and on marketable properties. As long as the costs of foreclosure are below the price difference between the foreclosed price and the market price, they can make profits. By mid-2009 several thousand people had lost their housing as a result of these abusive contracts, which typically include a buy option for the lender in case of non-payment. Given that the clients are subprime borrowers, many of such loans are expected to turn sour. As of mid-2009, about 20% of loans extended by finance/credit companies are non-performing (HVG, 2009) although their share, according to the latest data, is relatively small at 3.7% of total mortgage loans in 2007. Profits by financial institutions should not, however, be made from foreclosure but from lending (and other financial-market related) activities, therefore many of such institutions are now under investigation. In such cases, prevention should be given priority over cure, *i.e.* contracts with unfair conditions should be revised to prevent further evictions. In addition, such abusive practices should be made deterrent by publicising the names of institutions involved. The revision of the law in December 2009 makes impossible to include buy option clauses for the lender in new contracts if the borrower is the occupant of the mortgaged property. For existing contracts with buy options, however, the 70% minimum purchase price of the market value does not provide much protection for borrowers due to lack of independent evaluation and country-wide property registry.

Shielding borrowers from abusive practices and limiting their risk taking

Greater shielding of households from abusive business practices and more severe restrictions on their risk taking are among the major reforms to carry out to enhance stability of financial markets. A stronger legal framework for consumer protection, broader consumer education and tighter regulation on borrowing limits would spare costly renegotiations of contracts, foreclosures, evictions and related social crises. Once the legal framework is made more consumer-friendly, a strong consumer protection agency can play a

prominent role in shielding individuals from abusive practices such as unilateral change of contract. Changing a contract unilaterally should not be a way to transfer higher operating costs to the borrower. Unfair conditions, unilateral changes of contract and other abusive practices in the recent past call for vigilant consumer protection. Related clauses in lending contracts should be condemned and declared non-binding or, as a second-best option, lenders abusing their rights (facilitated by the vague legal framework) should engage in restructuring of loans taken by borrowers that defaulted as a result of a unilateral contract change. Buy options at a price designated by the lender for the mortgaged property in case of non-payment are similarly unfair conditions and therefore should be prohibited in mortgage contracts. By adopting the law on unfair commercial practices that is in line with the EU directive in September 2008, the legal framework now allows for making (future) contracts invalid if they contain unfair clauses. Recent changes to consumer protection rules also define how financial institutions should treat clients' complaints and how disputes should be resolved out of court.

The emphasis, however, should always be on prevention, which can best be done through financial education and transparency with regards to the features of financial products. Consumer education in Hungary is well anchored in formal education curricula, but access to education at all life stages needs to be strengthened and targeted programmes for vulnerable groups such as the elderly or the less educated need to be introduced (OECD, 2009). Changes in the lending process to result from the adoption of the code of conduct by banks include making prices of and conditions for financial products more comparable. Such practices would raise borrowers' awareness of risks and through mitigating solvency risks it would contribute to enhancing financial stability. Improved consumer protection, at the same time, would make borrowers more demanding, thereby exerting competitive pressure in the lending market and boosting efficiency.

Even in the absence of abusive business practices, households may take excessive risks either because they cannot gauge the size of the risk or because they only face upside risks, *i.e.* have nothing to lose by taking excessive risks. A straightforward way to restrict both types of potential over-borrowers is to link the debt service to the borrower's income with this ratio determined by the supervisor. A recent attempt by the central bank to encourage banks to limit the monthly repayments to 30-40% of the salary received strong opposition by banks. As a result, recent changes in regulations require banks to set their own limits on debt service for forint loans. While the limiting of monthly instalments is necessary to reduce default risk, there could be differentiation across customers with a progressive limit on monthly repayments as a percentage of income, which should be documented, for example by using tax declarations and/or pay slips. To reflect foreign exchange risks and potential increases in the instalments as a result of currency depreciation, a lower share *i.e.* 80% for loans denominated in euro and 60% for those in other currencies relative to the debt-service limit on forint-denominated loans is allowed. Such a ceiling on total borrowing would deprive banks of their customers employed in the grey market or those earning tips and other undeclared income, but would be an important step towards a further whitening of the economy. In addition to the existing life insurance requirement by some banks to obtain a loan, mortgage insurance in the case of, for instance, unemployment and sickness could be offered as option to mitigate credit risk. By offering higher LTV ratios to better-hedged people with better debt-servicing ability, banks could reach untapped market segments such as young professionals without taking excessive risks.

Reducing risks in the system

Excessive risk taking could be curbed by making lenders assume higher costs for risky lending in the form of higher capital requirements or buffers and by prohibiting business practices that expose borrowers to unnecessary uncertainty. In Hungary major sources of risk have been foreign currency lending and high debt service ratio. The European Commission is aiming in its draft proposal to curb foreign exchange lending through raising capital requirements. Higher capital requirements should apply when the LTV ratio is above 50%. For LTV ratios above 100%, there would have to be one-to-one capital backing on the

lender's side. Although LTVs in Hungary are well below 100%, increased capital requirements would apply to foreign exchange loans with LTVs above 50% should this EU proposal be passed.

With soaring debt service in excess of the extent of exchange rate depreciation as a result of unilateral raising of fees by banks, it became evident that the situation needs to change. The Prime Minister chose to ask the banking industry to come up with voluntary restrictions of abusive behaviour to be worked out together with the regulator. The recently adopted Code of Conduct by banks, the government and the regulator curbs banks' rights to change contracts unilaterally, but still leaves some room for manoeuvring by banks (Box 3). The code is a watered-down version of what was supposed to halt the abusive practice of unilateral changes to lending contracts by banks; as a complete ban on unilateral changes only applies for loans with maturity of up to one year. For loans with longer maturities, banks can still change contracts unilaterally, but under more restricted conditions. Banks can now raise fees only once a year and up to the inflation rate. The other major achievement of the code is that defaulted borrowers can have 115 days to sell their apartment before it is foreclosed. This is a very important change relative to the present practice where banks can foreclose and sell such apartments at a fraction of their value as they have no incentives to set a higher price than the underlying loan value.

As a result of the adoption of the code, from December 2009, the bank lending process has become more transparent, more rule based and the change of fees more symmetric. Customers will have easier access to information on the conditions of the loan, the lending process will follow the rules and bank charges will also fall if interest rates and fees decrease. The code is not a regulation and only signatories need to observe it and are subject to possible fines by the regulator for non-compliance. The financial regulator will advertise non-signatory banks on its website. Although the 13 biggest banks that cover nearly 90% of the household lending market have already signed the code, some banks are reluctant. This practically implies that these banks reserve the rights to change contracts erratically and to directly foreclose the property of defaulted borrowers. While the restrictions on the unilateral change of contracts by the code are expected to boost efficiency in the household lending market, as banks will no longer be able to transfer all cost increases to customers, competition from non-signatory banks may become predatory should they engage in intensive advertising campaigns. In the short run, these banks (or credit companies) could cream skim the household lending market by aggressive advertising, and once customers are locked in long-term loan contracts, change the conditions. The law on household lending aims at eliminating this opportunity, as it includes some of the major elements of the Code of Conduct.

Box 3. The Code of Conduct for banks

The signature of the Code of Conduct by thirteen banks, the regulator and Prime Minister on 16 September 2009 was a significant milestone. Following payment difficulties, renegotiations of contracts and, to a lesser extent, foreclosures and evictions related to unilateral change of contracts by banks, a change in bank lending practices seemed inevitable. Instead of direct regulation, the government and the regulator chose the path of negotiation of a code of ethics with banks represented by the Banking Association. In July, banks agreed not to raise interest rates until the code becomes effective and clients can switch banks free of charge should the unilateral change of fees by their banks be unacceptable. In December 2009 the code became effective and banks are obliged to inform their clients on whether they have signed the Code or not and to make the text of the code available to them. Clients will also learn about changes in instalments in advance.

The code covers five main areas: the *first* deals with general norms of responsible lending. The *second* addresses the general principles before the signing of contracts, or providing information to clients. The *third* chapter deals with guidelines on unilateral changes to contracts during the duration of the loan. The *fourth* governs the management of problematic loans and the *fifth* gives banks guidelines on how to proceed before and during foreclosures. The code mainly contains general principles and practices that have already constituted part of banks' internal regulation or have been recommended by the regulatory agency.

From the point of view of financial stability, the code should also apply to non-bank financial institutions. Particular attention needs to be paid to finance/credit companies that deal with riskier borrowers and accumulated larger shares of non-performing loans. Large-scale defaults of borrowers at such institutions can impose a burden on the commercial banking sector as such financial institutions finance their lending by borrowing from commercial banks. The law on household lending also extends the coverage of the Code of Conduct to bank subsidiaries and makes the license conditional on signing the code.

Comprehensive credit registry is crucial to raise efficiency of the home loan market

To assess systemic risk and to mitigate moral hazard, information sharing about borrowers is crucial. Credit registries also help reducing information asymmetry between lenders and retail borrowers through information sharing (Padilla and Pagano, 1997). In addition, information sharing through credit bureaux can foster competition in the banking market, thereby increasing efficiency. Sharing information about clients at the same time diminishes the comparative advantage of the bank already present in the market and therefore may reduce incentives to provide such information. In the long run, however, information sharing is the tool against adverse selection. In Hungary, so far only a negative list of borrowers exists, *i.e.* only information about people in arrears for at least 90 days for the amount of at least the minimum wage. A positive debtor list including all borrowers irrespective of their debt servicing behaviour would enhance banks' risk evaluation ability. The current proposal to introduce a positive list on a voluntary basis falls short of this.

The regulator needs to become more pro-active

A fundamental principle in the design of the new regulatory approach is that capital and other regulatory requirements should ensure the stability of the system, not just the solvency of individual institutions. The regulator, as the authority in charge of micro-prudential regulation (Box 4), needs to be more forward looking in its assessment of potential risks such as risks implied by the behaviour of a financial institution to its prudent operation or to the stability of financial markets. In particular, unhedged household loans in foreign currency should carry a higher capital charge reflecting higher systemic risks. In fact, the regulatory authority recommended additional capital charges of 50-100% on yen-denominated loans, which only make up a tiny fraction of household credit. No such regulations were considered for unhedged loans denominated in Swiss francs. With the drying up of liquidity in Swiss francs as a result of the crisis, the importance of lending in this currency has sharply decreased in favour of the euro. Lending in euro should be less risky in the long term, especially once Hungary adopts the euro when exchange rate risk will disappear. Nevertheless, in the short/medium term, exchange rate volatility is a potential source of risk. Alternatively, the regulator could impose a currency risk buffer on the loan-to-value ratio or on the income-to-repayment ratio. With the publishing of EU guidelines, the adoption of such regulations should become easier. Another factor that may deter the regulator from taking a tougher stance on excessive risk takers is its liability for damages its actions may cause to a bank. This regulation prevents the regulator from fining banks proportionately to their behaviour even with the increased power to impose fines of deterring levels. This deviates from best international practice, where the regulator cannot be held liable for such damages.

Box 4. Financial regulation and supervision in Hungary

Financial regulation and supervision of banks, non-bank financial institutions, insurance and securities companies and pension funds is concentrated at the Hungarian Financial Supervisory Authority (Pénzügyi Szervezetek Állami Felügyelete, PSZÁF). It was formed in 2000 by merging the Bank Supervisory Board with the state insurance and pension supervisory agencies. While the supervisor enjoys budgetary independence by financing itself from fees, the level of which is set by the government, it is at present not an autonomous body like its counterparts in other countries. It belongs to the Ministry of Finance and it has no power to formulate regulations. To circumvent this deficiency, it has been issuing guidelines or recommendations. Hungary's financial regulations are broadly conforming to EU standards and fine-tuning of lower-level regulations to harmonise them with EU guidelines is being undertaken.

The supervisor needs to co-operate effectively with other institutions in charge of financial stability...

The crisis has exposed some of the weaknesses in the cooperation of institutions overseeing financial stability. The financial regulatory authority in Hungary is solely responsible for micro-prudential regulation, while the central bank is in charge of macro-prudential regulation. The Ministry of Finance is the third institution related to stability issues as it formulates the legislation to be discussed and passed by Parliament. As in many other countries hit by the crisis, in Hungary there was a gap between macro and micro prudential regulation. The regulator did a good job in ensuring the solvency of individual banks, but could have been better prepared for systemic risk events through closer cooperation with the central bank. By the same token, the central bank could have recommended taking prompt action in the wake of increasing vulnerability. Learning from past mistakes, a more appropriate early warning system is needed based on the assessment of systemic risk. The more formal Financial Stability Council (established by recent changes to the HFSA law), which incorporates representatives of all the three institutions in charge of financial stability issues, should play a more prominent role in assessing macro-prudential risks and issuing recommendations against excessive risk taking in the future.

Stronger international cooperation in crisis prevention and assessment of systemic risk is also needed. The setting up of an EU-level supervisor is an important step in this direction, given the interwoven nature of bank branching networks and the high degree of financial market integration. Supervision at the EU level would, *inter alia*, help reduce risks related to foreign currency borrowing as foreign currency exposures could be addressed at the regional level instead of adopting regulatory measures by host-country authorities that could be theoretically avoided by direct lending from abroad. Recent regional initiatives with the involvement of home and host country supervisors and some major international banks in the region have already identified the systemic nature of risks arising from the proliferation of foreign-exchange household lending and put measures in place to limit further growth. A further desirable step would be to link national credit registries so that cross-border activities can increase competitive pressure in domestic markets.

... with more powers...

While there had been several policy options at the disposal of the regulatory authority, undoubtedly with more power it could have been more effective in curbing risky lending and abusive practices. Until the passing of the law on unfair commercial practices, it was not authorised to deal with such complaints. Until recently, the financial supervisory authority had not been in charge of consumer protection either, and its main task pertained to ensuring that banks' behaviour did not violate the rules. From September 2009, it can investigate cases based on customer complaint and can charge up to HUF 2 billion in fines. Unlike in countries that have a fully autonomous regulator, in Hungary the regulator cannot formulate regulations applicable for the entire sector and its sphere of authority is limited to regulating individual banks and to defining what assets are risky. More recently, the possibility of giving power to the regulator to formulate regulations, an amendment requiring a two-thirds majority vote, has been voted

down by Parliament. In terms of their ranking, these regulations would have been below those formulated by the Ministry of Finance and would have pertained to issues such as licensing of agents, data construction, liquidity management, etc. Such powers would undoubtedly boost the role of the regulator, but it should be ensured that spheres of authority do not overlap with those of the central bank.

... and greater independence

Higher fines may be more deterring and more powers may make the regulator faster to act, but an additional necessary condition for its effective functioning is greater independence from both the sector it regulates and the government. Greater independence from banks is necessary to avoid regulatory capture and one way it can be achieved is by offering salaries competitive to those in the banking sector. In Hungary the draining effect of the banking sector appears particularly high, as the share of experienced regulatory staff is low in international comparison. Banks' rights to hold the regulator liable for damages that may be caused by regulatory action also tend to keep the regulator cautious in its actions. Greater independence from the government is equally important to avoid the politicisation of regulatory activity. Making the financial supervisor an autonomous body independent from the Ministry of Finance and responsible to Parliament as well as strengthening its governance structure (*i.e.* the President of the HFSA is now appointed by the President of the Republic) are welcome steps in this direction. The possibility of removing the head of the supervisor by simple majority in parliament through, for instance, amendments to the governance structure of the supervisory institution, and the experience of making use of such possibility during past changes of government, suggest that the regulatory body's activities are highly influenced by the government. The difficulties with the retention of senior staff may also be related to uncertainty about long-term career opportunities influenced by the instability of government attitude towards the regulator including reorganisations, changes of top management and earlier plans to scrap the agency and merge it into the central bank.

Box 5. Policy recommendations to enhance stability in financial markets

Limit risk taking by borrowers

- Debt servicing should be capped as a share of income determined by the supervisory authority. This cap should progressively increase with higher incomes. When issuing loans, banks should be required to document the borrower's income, for example by using tax declarations and/or pay slips.
- To mitigate solvency risks for households, the array of mortgage insurances should be widened.
- Abusive clauses in lending contracts should be prohibited; or, as a second-best option, lenders abusing their rights (facilitated by the vague legal framework) should engage in restructuring of loans taken by borrowers that defaulted as a result of a unilateral contract change.
- Abusive practices should be made deterrent by publishing the names of foreclosure-seeking non-banks.
- Financial education should be bolstered at all life stages and targeted programmes for vulnerable groups such as the elderly and the less educated should be introduced.

Contain financial market risk

- Banks should be subject to higher costs for risky lending in the form of higher capital requirements.
- Dynamic provisioning should be introduced to provide a buffer for banks during economic downturns.
- Consumer protection, in particular the legal framework, should be further strengthened.
- Liquidity conditions in foreign currency should be more closely followed and foreign currency denominated assets could be linked to liabilities in those currencies. One way of boosting foreign currency liquidity is to allow for holding part of the reserves in those currencies or in assets denominated in those currencies.

Foster competition to enhance efficiency in the banking market

- A comprehensive credit registry should be established to enhance efficiency in the household lending market.
- Financial products should be made more transparent and comparable. Contract conditions should be made available to the borrower before signing the contract.
- Independent agents should receive fees only from the customer and a fixed amount per type of transaction. They should be required to present several options to the customer. Those agents who work for or on behalf of banks should disclose the nature and the amount of their remuneration to the customer.
- Portability for housing loan subsidies across properties (as long as the new property is eligible) and across banks should be introduced.

Strengthen the supervisory framework

- The regulator should make sure that regulations ensure the stability of the entire system not just the solvency of individual institutions. To better identify and assess systemic risks, closer cooperation with the central bank and other institutions in charge of financial stability is needed. The more formal Financial Stability Council should play a prominent role in detecting risks and make recommendations to mitigate them.
- The supervisor should not be held liable for the damages its regulations may cause to regulated institutions.
- More attractive salaries, sure career paths and effective independence are needed to retain experienced staff.
- The supervisor's authority should be extended to issue regulations.

Bibliography

- Állami Számvevőszék (2009), *Jelentés a lakástámogatási rendszer hatékonyságának ellenőrzéséről* (Report on the Auditing of the Efficiency of the Housing Subsidy Programme), Állami Számvevőszék.
- Andritzky, J. *et al.* (2009), "Policies to Mitigate Procyclicality", *IMF Staff Position Note*, No. SPN/09/09, International Monetary Fund, Washington, DC.
- Backé, P. and C. Wójcik (2007), "Credit Booms, Monetary Integration and the New Neoclassical Synthesis", *Journal of Banking and Finance*, Vol. 32, No. 3, Elsevier.
- Barrell, R. *et al.* (2009), "Household Debt and Foreign Currency Borrowing in New Member States of the EU", *Working Paper Series*, No. 09-23, Department of Economics and Finance, Brunel University West London.
- Beck, T., A. Demirguc-Kunt and R.E. Levine (2003), "Bank Concentration and Crises", *NBER Working Paper*, No. 9921, National Bureau of Economic Research, Cambridge, MA.
- Bikhchandani, S., D. Hirshleifer and I. Welch (1992), "A Theory of Fads, Fashion, Custom, and Cultural Change in Information Cascades", *Journal of Political Economy*, Vol. 100, No. 5, University of Chicago Press, Chicago.

- Bolton, P. and X. Freixas (2000), “Equity, Bonds and Bank Debt: Capital Structure and Financial Market Equilibrium under Asymmetric Information”, *Journal of Political Economy*, Vol. 108, No. 2, University of Chicago Press, Chicago.
- Claessens, S. (2009), “Competition in the Financial Sector: Overview of Competition Policies”, *IMF Working Paper*, No. 09/45, International Monetary Fund, Washington, DC.
- Degryse, H. and S. Ongena (2008), “Competition and Regulation in the Banking Sector: A Review of the Empirical Evidence on the Sources of Bank Rents”, in A. Thakor and A. Boot (eds.), *Handbook of Financial Intermediation and Banking*, Elsevier.
- Dermine, J. (2005), “European Banking Integration: Don’t Put the Cart before the Horse”, *INSEAD Working Papers*, No. 2005/66/FIN, INSEAD, European Institute of Business Administration.
- Diamond, D.W. (1984), “Financial Intermediation and Delegated Monitoring”, *Review of Economic Studies*, Vol. 51, No. 3, Blackwell Publishing.
- Égert, B., P. Backé and T. Zumer (2006), “Credit Growth in Central and Eastern Europe: New (Over)shooting Stars?”, *Working Paper Series*, No. 687, European Central Bank, Frankfurt am Main.
- Eichengreen, B. and R. Hausmann (1999), “Exchange Rates and Financial Fragility”, *NBER Working Paper*, No. 7418, National Bureau of Economic Research, Cambridge, MA.
- EMF (2008), *Hypostat 2007: A Review of Europe’s Mortgage and Housing Markets*, European Mortgage Federation, Brussels.
- European Commission (2006), “Report of the Mortgage Funding Expert Group”, Internal Market and Services DG, European Commission, Brussels, December.
- GVH (2005), *Jelentés a Jelzáloghitelezés Tárgyában Folytatott Ágazati Vizsgálatról* (Report on the Sectoral Investigation Related to Mortgage Lending), Gazdasági Versenyhivatal, Budapest.
- Holló, D. (2009), “Risk Developments on the Retail Mortgage Loan Market”, *MNB Bulletin*, Magyar Nemzeti Bank, Budapest, October.
- Holló, D. and M. Nagy (2006), “Bank Efficiency in the Enlarged European Union”, *MNB Working Papers*, No. 2006/3, Magyar Nemzeti Bank, Budapest.
- Horváth, C., J. Krekó and A. Naszódi (2004), “Interest Rate Pass-through in Hungary”, *MNB Working Papers*, No. 2004/8, Magyar Nemzeti Bank, Budapest.
- HVG (2009), “Állókép-Jelzálogházak hitel nélkül” (Still Picture – Mortgage Companies Without Credit), *Heti Világgazdaság*, 27 August.
- Kiss, G. (2006), “Fast Credit Growth: Equilibrium Convergence or Risky Indebtedness?”, *MNB Bulletin*, Magyar Nemzeti Bank, Budapest, June.
- Lakossági Pénzügyi Szolgáltatásokat Vizsgáló Szakértői Bizottság (2006), “Javaslatok a Lakossági Bankszolgáltatások Problémáinak Kezelésére” (Recommendations to address Problems of Retail Banking Services), Retail Financial Services Committee of Experts, available at: http://misc.meh.hu/letoltheto/Jelentes_bankibizottsag.pdf accessed on 16 October 2009.

- Mák, I. and J. Páles (2009), “The Roles of the FX Swap Market in the Hungarian Financial System”, *MNB Bulletin*, Magyar Nemzeti Bank, Budapest, May.
- MNB (2009), *Report on Financial Stability*, Magyar Nemzeti Bank, Budapest, April.
- Molnár, J., M. Nagy and C. Horváth (2007), “A Structural Empirical Analysis of Retail Banking Competition: the Case of Hungary”, *MNB Working Papers*, No. 2007/1, Magyar Nemzeti Bank, Budapest.
- Molnár, M., D. Holló and M. Nagy (2010), “How Efficient are Banks in Hungary?”, *OECD Economics Department Working Paper*, OECD Publishing, forthcoming.
- OECD (2009), *Promoting Consumer Education: Trends, Policies and Good Practices*, OECD Publishing, Paris.
- Padilla, A.J. and M. Pagano (1997), “Endogenous Communication among Lenders and Entrepreneurial Incentives”, *Review of Financial Studies*, Vol. 10, No. 1, Society for Financial Studies, Oxford University Press.
- Rajan, R.G. (1998), “The Past and Future of Commercial Banking Viewed through an Incomplete Contract Lens”, *Journal of Money, Credit and Banking*, Vol. 30, No. 3, Blackwell Publishing.
- Rosenberg, C.B. and M. Tirpák (2008), “Determinants of Foreign Currency Borrowing in the New Member States of the EU”, *IMF Working Paper*, No. 2008/173, International Monetary Fund, Washington, DC.
- Zumer, T., B. Égert and P. Backé (2009), “Credit Developments in CEE: From Boom to Bust or Back to Balance?”, *Journal of Money and Banking (Bančni Vestnik)*, Vol. 58, No. 11, The Bank Association of Slovenia – Economic Interest Grouping, Ljubljana.

Annex A

Estimation of banking efficiency

To measure banks' efficiency, first of all a certain relationship between operational costs, input prices and output quantities needs to be assumed. The form of the cost function is:

$$\ln TC_i = C(y_i, w_i; \beta) + \varepsilon_i \quad (1)$$

where TC_i is total cost of bank i , y_i is the output in logarithmic form, w_i is input prices in logarithmic form and β is the unknown parameter vector to be estimated. In contrast to many other studies estimating efficiency, here the Fourier-flexible functional form is used, not the translog functional form. The main disadvantage of the translog functional form, as McAllister and McManus (1993) pointed out, is that the high level of sample heterogeneity may cause White-type bias. Furthermore, multi-collinearity between independent variables limits the accuracy of parameter estimates. Conversely, the Fourier-flexible form allows for adjustment for distortions arising from heterogeneity. The equation estimated to obtain efficiency scores is as follows:

$$\begin{aligned} \ln TC = & \beta_o + \sum_m \alpha_m y_m + \sum_n \beta_n w_n + \frac{1}{2} \sum_m \sum_p \alpha_{mp} y_m y_p + \frac{1}{2} \sum_n \sum_r \beta_{nr} w_n w_r \\ & + \sum_n \sum_m \gamma_{nm} w_n y_m + \sum_m [\delta_m \cos z_m + \theta_m \sin z_m] + \sum_m \sum_p [\delta_{mp} \cos(z_m + z_p) + \theta_{mp} \sin(z_m + z_p)] + \varepsilon \end{aligned} \quad (2)$$

where TC is total cost, y_m is the m th output ($m = 1,2,3$), w_n is the n th input price ($n = 1,2,3$), p and r are equal to 1,2,3 according to the number of outputs and inputs and ε is the error term. Bank subscripts are subsumed for the sake of simplicity. Here three outputs (loans, other earning assets and non-interest income) and three inputs (labour, capital and borrowed funds) are assumed. Symmetry and linear homogeneity require the following parameter restrictions:

$$\alpha_{mp} = \alpha_{pm}, \beta_{nr} = \beta_{rn}, \sum_{n=1}^3 \beta_n = 1, \sum_{r=1}^3 \beta_{nr} = 0, \sum_{n=1}^3 \gamma_{nm} = 0 \quad (3)$$

The use of Fourier-flexible form implies the necessity of scaling the data as in Holló and Nagy (2006):

$$z_m = 0.2\pi + (1.6\pi) \frac{y_m - y_{m,\min}}{y_{m,\max} - y_{m,\min}} \quad (4)$$

The efficiency scores are derived from the error term of equation 2 using the stochastic frontier approach.

Bibliography

Holló, D. and M. Nagy (2006), "Bank Efficiency in the Enlarged European Union", *MNB Working Papers*, No. 2006/3, Magyar Nemzeti Bank, Budapest.

McAllister, P.H. and D. McManus (1993), "Resolving the Scale Efficiency Puzzle in Banking", *Journal of Banking and Finance*, Vol, 17, No. 2-3, Elsevier BV.

WORKING PAPERS

The full series of Economics Department Working Papers can be consulted at www.oecd.org/eco/workingpapers/

785. *Chile: Boosting productivity growth by strengthening competition, entrepreneurship and innovation*
(June 2010) by Cyrille Schweltnus
784. *Chile: Climbing on giants' shoulders: better schools for all Chilean children*
(June 2010) by Nicola Brandt
783. *Israel: Monetary and fiscal policy*
(June 2010) by Charlotte Moeser
782. *Policy options for reducing poverty and raising employment rates in Israel*
(June 2010) by Philip Hemmings
781. *Israeli education policy: How to move ahead in reform*
(June 2010) by Philip Hemmings
780. *Germany's growth potential, structural reforms and global imbalances*
(June 2010) by Isabell Koske and Andreas Wörgötter
779. *Energy policy and the transition to a low-carbon economy*
(June 2010) by Jeremy Lawson
778. *Making the Luxembourg labour market work better*
(June 2010) by Jeremy Lawson
777. *Coping with the job crisis and preparing for ageing: the case of Finland*
(June 2010) by Henrik Braconier
776. *The political economy of fiscal consolidation*
(June 2010) by Robert Price
775. *Structural and cyclical factors behind current-account balances*
(May 2010) by Calista Cheung, Davide Furceri and Elena Rusticelli
774. *A framework for assessing green growth policies*
(May 2010) by Alain de Serres, Fabrice Murin and Giuseppe Nicoletti
773. *Modeling institutions, start-ups and productivity during the transition*
(May 2010) by Zuzana Brixiova and Balázs Égert
772. *Can emerging asset price bubbles be detected?*
(June 2010) by Jesús Crespo Cuaresma

771. *The nature of financial and real business cycles*
(2010) by Balázs Égert
770. *The effects of fiscal policy on output: A DSGE analysis*
(May 2010) by Davide Furceri and Annabelle Mourougane
769. *Health care systems: efficiency and institutions*
(May 2010) by Isabelle Joumard, Christophe André and Chantal Nicq
768. *The OECD's new global model*
(May 2010) by Karine Hervé, Nigel Pain, Pete Richardson, Franck Sédillot and Pierre-Olivier Beffy
767. *Assessing the impact of the financial crisis on structural unemployment in OECD countries*
(May 2010) by Stéphanie Guichard and Elena Rusticelli
766. *After the crisis: bringing German public finances back to a sustainable path*
(April 2010) by Isabell Koske
765. *Optimal monetary and fiscal stabilisation policies*
(May 2010) by Klaus Adam
764. *Asset prices and real economic activity*
(May 2010) by E. Philip Davis
763. *Fiscal policy reaction to the cycle in the OECD: Pro- or counter-cyclical?*
(May 2010) by Balázs Égert
762. *New evidence on the private savings offset and Ricardian equivalence*
(May 2010) by Oliver Röhn
761. *Monetary policy reaction functions in the OECD*
(May 2010) by Douglas Sutherland
760. *Counter-cyclical economic policy*
(May 2010) by Douglas Sutherland, Peter Hoeller, Balázs Égert and Oliver Röhn
759. *Exports and property prices in France: are they connected?*
(April 2010) by Balázs Égert and Rafał Kierzenkowski
758. *Further Advancing Pro-Growth Tax and Benefit Reform in the Czech Republic*
(April 2010) by Zdeněk Hrdlička, Margaret Morgan, David Prušvic, William Tompson and Laura Vartia.
757. *Advancing structural reforms in OECD countries: Lessons from twenty case studies*
(April 2010) by William Tompson and Thai-Thanh Dang
756. *Labour markets and the crisis*
(April 2010)