

1

FINANCIAL AND ECONOMIC REVIEW

March 2015
Vol. 14. Issue 1.

Bad product development results in systemic market failure – Foreign currency mortgage loans to Hungarian households

András Bethlendi

Diverging financial regulation after the crisis? A comparison of the EU's and the United States' responses

Zsuzsánna Biedermann – Ágnes Orosz

International Trends in Student Lending

Máté Vona

The role of household portfolio restructuring in financing of the general government

Zsuzsa Kékesi – Balázs Kóczyán – Balázs Sisak

The safety trap – the financial market and macro-economic consequences of the scarcity of low-risk assets

Dániel Horváth – Róbert Szini

The most important steps of BUBOR reforms led by the Central Bank of Hungary in an international comparison

Szilárd Erhart – Róbert Mátrai

Four hours is actually how many hours? – The actual time required for intraday transfers

Péter Császár

Financial and Economic Review

Scientific journal of the Magyar Nemzeti Bank

Chairman of the Editorial Board:

ÁDÁM BALOG

Editorial Board:

TIBOR BÁNFI, ÁKOS BOD PÉTER, ÉVA HEGEDŰS, ZSOLT KATONA, GYÖRGY KOCZISZKY,
LEVENTE KOVÁCS, CSABA LENTNER, KOPPÁNY NAGY, GÁBOR P. KISS, DÁNIEL PALOTAI,
ANETT PANDURICS, MIHÁLY PATAI, TAMÁS SCHENK, RÓBERT SZEGEDI

Editor-in-Chief: GÁBOR P. KISS

Editor-in-Charge: SZABOLCS PÁSZTOR

Editor: HELGA PENCZ

Copy Editor: KATALIN KIRÁLY

Publisher: Magyar Nemzeti Bank

Publisher in Charge: ESZTER HERGÁR

H-1054 Budapest, Szabadság tér 9.

www hitelintezetiszemle.hu

ISSN 2415–9271 (Print)

ISSN 2415–928X (Online)

Cover design: MARIANNA IZSÓNÉ BIGAI

© Copyright: Magyar Nemzeti Bank

The papers in this issue contain the opinion of the authors which is not necessarily in line with that of the Magyar Nemzeti Bank.

1

FINANCIAL AND
ECONOMIC REVIEW

March 2015
Vol. 14. Issue 1.

FINANCIAL AND ECONOMIC REVIEW

The address of the Editorial Office: H-1054 Budapest, Szabadság tér 9.

Phone: (36) 06-1-428-2600

Fax: (36) 06-1-429-8000

Homepage: www.hitelintezetiszemle.hu

E-mail: szemle@hitelintezetiszemle.hu

Editorial Staff:

Gábor P. Kiss Editor-in-Chief, E-mail: kissg@mnb.hu

Szabolcs Pásztor Editor-in-Charge, E-mail: pasztorsz@mnb.hu

Helga Pencz Editor, E-mail: penczh@mnb.hu

Published regularly in every three months.

HU ISSN 2415–9271 (Print)

HU ISSN 2415–928X (Online)

Page setting and printing:
Prospektus – SPL konzorcium
H-8200 Veszprém, Tartu u. 6.

Printed by Prospektus – SPL konzorcium

Contents

Vol. 14. Issue 1., March 2015

STUDIES

- András Bethlendi:** Bad product development results in systemic market failure – Foreign currency mortgage loans to Hungarian households 5
- Zsuzsánna Biedermann – Ágnes Orosz:** Diverging financial regulation after the crisis? A comparison of the EU’s and the United States’ responses 31
- Máté Vona:** International Trends in Student Lending 56
- Zsuzsa Kékesi – Balázs Kóczyán – Balázs Sisak:** The role of household portfolio restructuring in financing of the general government 79
- Dániel Horváth – Róbert Szini:** The safety trap – the financial market and macro-economic consequences of the scarcity of low-risk assets 111
- Szilárd Erhart – Róbert Mátrai:** The most important steps of BUBOR reforms led by the Central Bank of Hungary in an international comparison 139
- Péter Császár:** Four hours is actually how many hours? – The actual time required for intraday transfers. 166

DISCUSSION

- András Simonovits:** A brief commentary on József Banyár’s OLG-paper 193

BOOK REVIEW

- Mária Bábosik:** A Europe unifying in the midsts of 21st entury challenges (Anthony Giddens: Turbulent and Mighty Continent – What Future for Europe?) . . . 198
- Sára Farkas:** Banking regulation Fine Tuned (Anat Admati – Martin Hellwig: The Bankers’ New Clothes). 202
- Dániel Felcser:** East Asian Development: Foundations and Strategies (Dwight H. Perkins: East Asian Development: Foundations and Strategies) 205
- Júlia Gutpintér:** Inequalities Reloaded (Thomas Piketty: Capital in the Twenty-First Century). 208

Zoltán Horváth: The Crisis of Our Institutions of Our Time (Niall Ferguson: The Great Degeneration – How Institutions Decay and Economies Die)	211
Renő Huszti: Foreign currency loan dependency and consolidation (Csaba Lenter (Ed.): Devizahitelezés nagy kézikönyve)	214
Dániel Módos: When the music is over (Alan S. Blinder: After the music stopped: The Financial Crisis, the Response and the Work Ahead)	219
Róbert Rékási: The human decision-making processes (C. Thomas Howard: Behavioral Portfolio Management)	222
Tamás Rózsás: For-profit education in developing countries (James Tooley: The Beautiful Tree: A Personal Journey Into How the World’s Poorest People are Educating Themselves)	225
Orsolya Vida: Earthmoving migration (Paul Collier: Exodus – How Migration is Changing Our World)	228

CONFERENCE REPORT

István Ábel: New narrative for Europe (A report on the Lamfalussy Conference)	232
Katalin Lencsés: What lies ahead for insurance companies? (Review of the V. International Insurance Conference of the Association of Hungarian Insurance Companies (MABISZ))	236

Bad product development results in systemic market failure – Foreign currency mortgage loans to Hungarian households

András Bethlendi

This article focuses on the supply side of household foreign currency mortgage loans in Hungary, on the relevant business policy aspects as well as on product development and management in a wider sense. It presents how the various risk types of this risky, long-term loan product were shifted to consumers by credit institutions. The long-term success of shifting these risks was actually prevented by its systemic aspect. The major long-term business policy mistakes are classified according to ten main features. Foreign currency lending to households in Hungary is a case study presenting that the completely laissez faire, laissez passer approach to household lending from both consumer protection and prudential points of view can lead to a systemic failure; market self-regulation does not work perfectly in the credit markets. It is difficult and time-consuming to subsequently remedy a systemic risk problem. Remedying the past problems and establishing the overall conditions for new fair lending is expected to be completed in 2015.

Journal of Economic Literature (JEL) Classification: G010, G21, G28, G32

Keywords: household indebtedness, foreign currency lending, credit supply, systemic risk, regulation, market failure

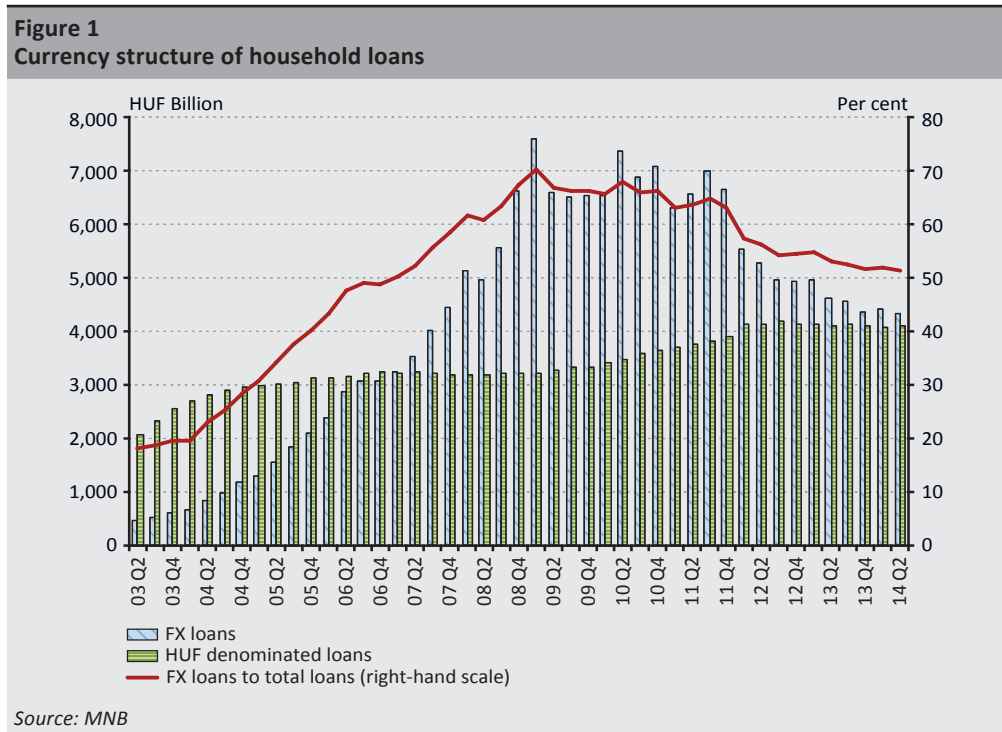
Bethlendi András director, Special Credit Unit project manager at MKB Bank Zrt.
E-mail: bethlendi.andras@gmail.com.

This article was written as an extension and follow-up to the consumer protection part of Bethlendi et al. (2014).

1 Introduction

The anomalies of foreign currency lending in respect of consumer protection and its macroprudential consequences are presented through the features of the foreign currency mortgage loan, which is the most complex product among household FX loan products.¹ This gives a clearer explanation why household over-indebtedness² – mainly in foreign currency – became a major social problem after 2008. In mid-2014, in spite of earlier government measures, more than 50% of Hungarian household loans (HUF 4,300 billion, approx. EUR 14 billion) was still denominated in foreign currency. More than three quarters of FX loans were mortgage loans. The slow decline in these portfolios is attributable to the exchange rate effect, the slow pick-up in new forint lending as well as the high base effect.

Previous analyses have already presented the domestic and international factors of the evolution of this phenomenon (See, for example: *Bethlendi, 2011; Csajbók et al., 2010; Bethlendi et al., 2005*).



- 1 We do not make a distinction between FX loans and FX-denominated loans, because from a consumer’s point of view they often seem to be the same. FX loans mean all loans kept on record in foreign exchange.
- 2 It is deemed “over-indebtedness” due to its following characteristics (Bethlendi, 2009a). Firstly, households’ repayment burden was considered high in international comparison already prior to the outbreak of the crisis. Banks extended loans even with high payment-to-income ratios, if they took this indicator into account at all, as described later. Secondly, unlike in developed countries, a significant portion of households did not have any financial savings at all.

This article focuses on the business policy aspects of the supply side as well as on product development and management in a wider sense. It presents how the risk of this long-term loan product was shifted to consumers by credit institutions. The long-term success of shifting these risks was actually prevented by the increased credit risks stemming from the shifting itself and its systemic risk. In view of the extremely wide negative social effects of foreign currency lending, which resulted in a strong deterioration of the confidence in the financial intermediary system, economic policy also forced back a considerable portion of the costs of the risks into the banking sector. In the period when foreign currency household lending was expanding, decision-makers at regulatory and supervisory authorities were characterised by a completely *laissez faire, laissez passer* approach. Unlike in other countries of the region, practically no steps – neither from a prudential, nor from a consumer protection aspect – were taken to mitigate this phenomenon.³ (For more details regarding the institutional deficiencies leading to this phenomenon and the regional comparison, see *Bethlendi et al., 2014* and *Bethlendi, 2011*.) Consequently, creditors enjoyed practically complete freedom in their product development and business policy. At the same time, our objective is to present the major long-term business policy mistakes, classified according to ten main features. However, the consequences reveal that foreign currency lending to households in Hungary can also be considered a case study demonstrating that household lending may result in a systemic failure and market self-regulation does not work.

2 Exclusively volume based, fast growth business plans

Significant structural changes have been observed in the household credit market in the past two decades. In Hungary, following the political transformation, until the end of the 1990s, banks considered lending to large companies as their main market. The household credit market was characterised by weak credit supply and a very low level of competition. From a very low base, household credit supply and thus the relevant portfolio started to grow in the 1998–1999 period. One of the underlying reasons was that with the saturation of the large corporations market and a decline in the available profitability, banks turned to household services, which were riskier and required more capital, but at the same time were expected to provide higher profitability. Due to the higher infrastructural costs of lending to households (branch network, IT, personnel, etc.), banks were under a kind of compulsion to increase volumes in order to attain proper returns, which entailed rapid

³ This is also interesting because the credit institution sector is traditionally a strongly regulated industry. In the specific Hungarian case, prudential regulation failed to take account of the additional risks of foreign currency denominated mortgage loans stemming from the increase in loans outstanding. It deemed these loans low-risk ones, similarly to subsidised loans denominated in Hungarian currency. Moreover, there was also no consumer protection rule in place to limit this phenomenon.

strengthening in supply competition. The compulsion to increase volumes was very high in Hungary, as lending started from a very low base, and the achievement of a proper level of economies of scale required significant expansion. Simultaneously with that, a considerable expansion in household lending took place in developed countries (in the markets of parent banks) as well, serving as a kind of benchmark for the expansion of affiliate banks. EU accession also triggered some euphoria; money almost did not matter in foreign investors' investments in the CEE financial sector. Financial institutions were priced with very high growth prospects, and local management subsequently had to comply with.

One of the main problems was that only the short-term volume growth targets were included in bank managers' bonus schemes; risk aspects (risk costs) of products were neglected (Feature 1).

The performance of bank managers was usually compared to competitors. As a result, the wide spreading of loose lending conditions was enhanced by the rational, so-called 'rational herding effect' observed in the financial sector. If a bank manager was more prudent, he fell behind the competition for market share, losing his job already in the short run, and thus he was not interested in taking account of longer-term risk aspects.⁴ As the incentive systems for top managers were trade secrets in the period when foreign currency lending was picking up, they cannot be publicly documented, but this phenomenon was still known in the market. Short-term incentives were typical, and they could basically be only volume-based, as risks appear only after several years. It should also be noted that this was not a unique Hungarian speciality. It was typical for the banking sector of the European Union as a whole that there were only short-term, volume-based performance requirements for top managers. New regulatory requirements enhancing longer-term incentives were introduced at EU level precisely as a result of the crisis.

The appearance and fast spread of state-subsidised schemes accelerated the development of the housing loan market considerably. Following the tightening of the state subsidy in 2003, banks were able to maintain their compulsion to increase volumes by the creation and strong supply of foreign currency denominated mortgage loans.⁵

Product innovations all served the increase in volume, which – following international trends – took place through the means described below in Hungary as well (*Bethlendi, 2006*). Compared to household indebtedness in developed countries, it was the foreign currency lending that made the domestic indebtedness specific.⁶

4 As a result, due to losing their market shares, banks in domestic ownership were quickly compelled to launch FX-denominated products.

5 As mentioned in the introduction, the whole article focuses on the supply side, i.e. the product development in a wider sense. Naturally, other factors – macroeconomic situation, monetary policy – and the demand side also played an important role in the surge in (FX) lending.

6 Of the developed countries, Austria was the only exception where foreign currency lending to households also appeared, as mentioned later. However, as a result of the measures taken by the authorities, they succeeded in limiting the spreading of the phenomenon in Austria.

*Creditors eased households' liquidity constraints by all means, which at the same time meant considerable subprime⁷ lending as well (Feature 2). (i) Specific to CEE: low-interest rate FX loans were able to ease households' liquidity constraints to a significant extent; banks were able to lend much larger amounts to more clients. (ii) Reaching clients with lower financial savings through high loan-to-value products (LTV, the ratio of the loan to the value of the real estate used as collateral). (iii) Dissolving the income constraint of the client: by extending the maturity of the loan (to 30–35 years), by granting more flexible repayment options or by less strict checking of income, or by completely refraining from checking income (*purely collateral-based lending*). Using these credit features, clients with lower or more volatile income may also receive relatively larger amounts of credit. (iv) Sales also became increasingly aggressive over the years. *Sales by agents (third-party sales channel) soared at the peak of the upswing in lending.*⁸*

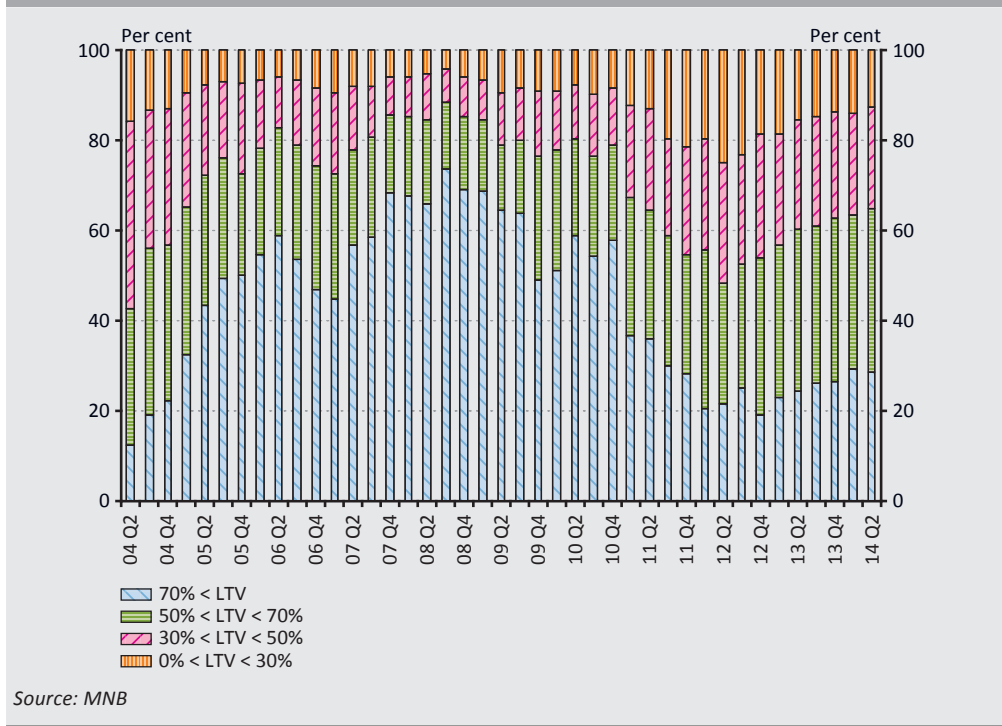
The above resulted in strongly risk-based competition, practically with *lending to a clientele, a significant portion of which* (being subprime due to solving the income constraints) *probably could not even have received forint loans (due to the much higher interest rates) or only smaller amounts of such.* Thus in Hungary, *foreign currency lending simultaneously became a subprime crisis as well.* Prior to 2008, the strengthening of risk competition is clearly shown by the increase in LTV ratios in the case of new loans. At the peak of the excessive lending – during 2007 and 2008 – the initial LTV ratio exceeded 70% for nearly two thirds of new loans, already indicating very strong subprime lending. In the period of the appreciation of the Swiss franc, the result of these loans was that the net housing wealth of debtors became negative, i.e. in many cases their loan debt significantly exceeds the value of the real estate that serves as collateral (higher than 100% LTV).

The subprime nature of foreign currency lending (in terms of product characteristics and also at the client level) is well illustrated by the difference in risks that materialised in credit default between the forint and foreign exchange schemes. It played an important role in the favourable risk features of subsidised forint-denominated housing loans that the state-subsidised scheme was provided with tight credit conditions (e.g. lower maximum LTV ratio) and with a conservative loan purpose (home purchase). Credit conditions of FX housing loans were looser, although the loan purpose could still be considered conservative. However, a significant portion of general purpose loans (also called “American” mortgages) already had completely subprime features (high LTV, only collateral-based lending, etc.).

7 A term used in the United States; a credit granted to subprime, i.e. second-class – less creditworthy – debtors; it does not have a precise definition or limit. Subprime mortgage loans are characterised by high payment-to-income ratios and lending with a high LTV ratio. The probability of default in the case of these loans is significantly higher than in the case of normal mortgage loans.

8 Sales by agents played a determining role in the case of the large players of FX lending. Later, even the banks that basically relied on sales in branches joined this phenomenon. In the case of almost all credit institutions, the portfolios collected by agents entailed significantly higher loan losses compared to the sales in branches. Loans through intermediaries and FX loans are two features that result in higher probability of default compared to direct bank loans denominated in forints (Balás et al., 2015).

Figure 2
Breakdown of new housing loans to households by LTV



The MNB’s Reports on Financial Stability and some authors (e.g. Király et al., 2008) also called attention to the strengthening of the risk-based competition and the subprime nature of lending.

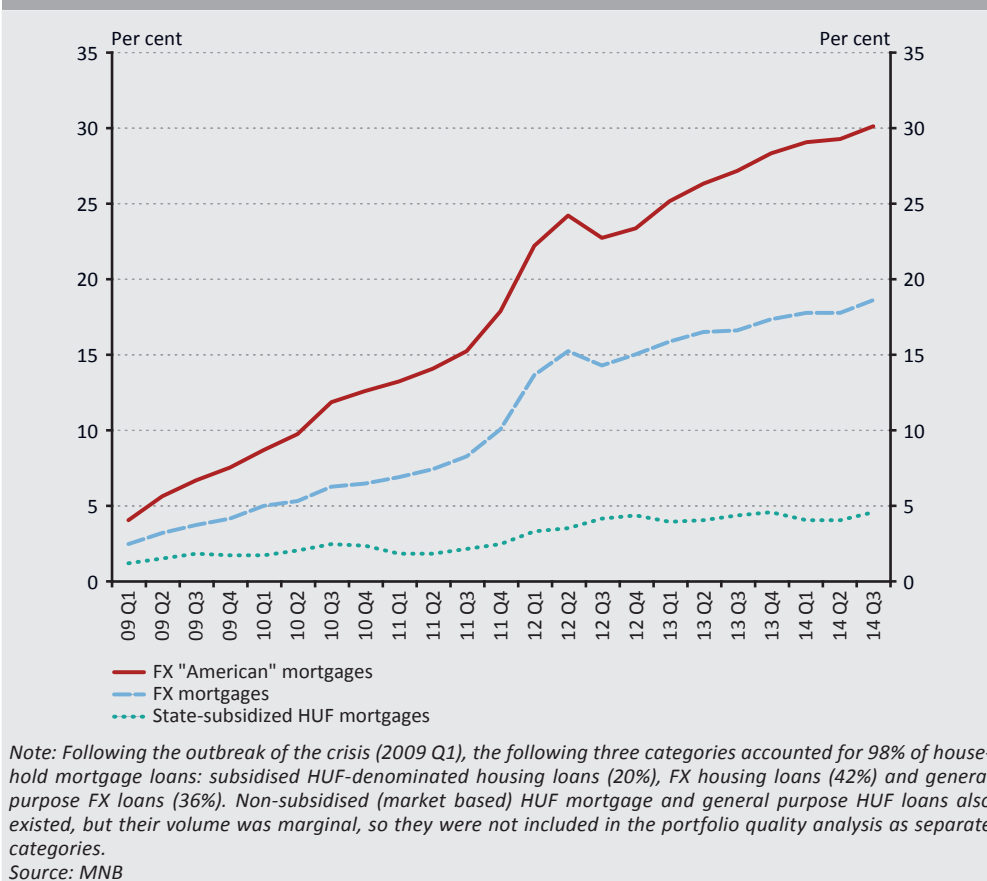
Broad expansion of loan purposes also aimed to increase the portfolio (Feature 3).

In addition to the classical mortgage loan purposes (building and purchasing homes), the product developments created new purposes, such as real estate purchase for investment purposes, mortgage combined with savings schemes (see the so-called combined loans below) and consumer credit granted against real estate as collateral. The later were collectively called general purpose mortgage loans (also: “American” mortgages), which, after a while, were the driving force behind the growth in loans outstanding.

Shifting the additional risks to clients can be successful only over the short run; in the long run it entails a significant increase in credit risks (Feature 4).

The easing of credit constraints and the broadening of loan purposes all resulted in increasing risks. However, creditors no longer took responsibility for these risks. In product

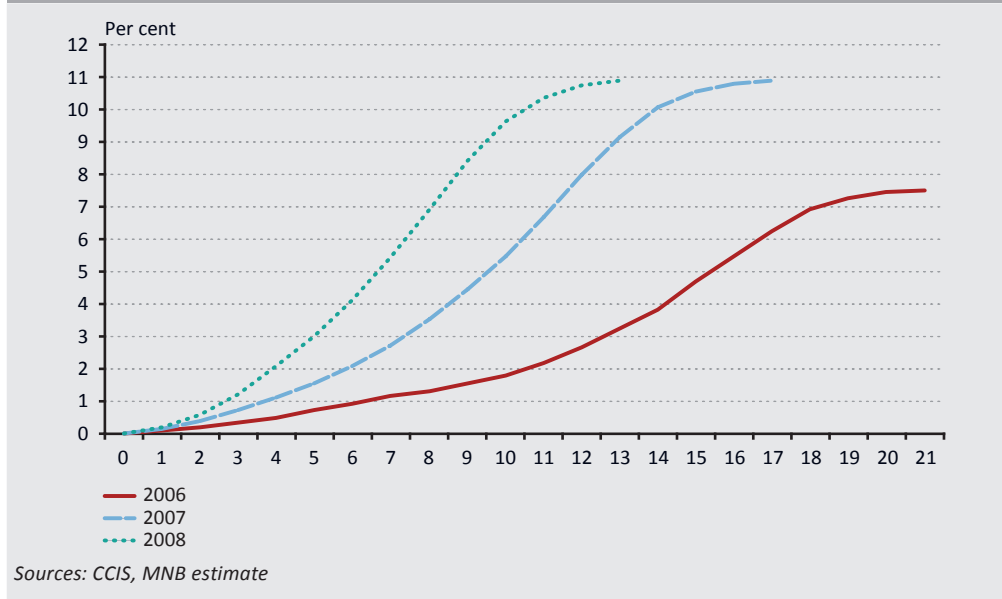
Figure 3
Ratios of non-performing household loans by main product groups



development and selecting the way of refinancing, they strived to shift their risks mainly to their clients. This issue is discussed in more detail in the next section.

FX-denominated mortgage loans were extremely varied. Banks introduced many changes to product characteristics over the years. Consequently, there are significant differences in risks not only between banks, but also between the years of disbursement within the same bank. *As a result of the risk competition, the risk characteristics of individual lending years deteriorated steadily.* At the same time, the significant changes in product characteristics over time made the subsequent solution to the FX lending problem much more difficult and complicated.

Figure 4
Share of non-performing loans within households' FX mortgage loans disbursed in different years



3 Shifting of product risks to clients

The most typical foreign currency mortgage loan product was Swiss franc-denominated, with variable interest rate, which the bank could change unilaterally based on the broad discretion power of the lender. Most of the loans were annuity type ones, and their maximum maturity exceeded 20 years.

The pricing – interest rate – of a loan product consists of the following elements. The uncertainty about their future value also means a risk type (components of the interest rate risk): (i) the funding (refinancing) cost of raising for the bank; (ii) the credit risk cost: intended to cover the bank’s loan losses; (iii) the operating cost part, which captures the costs of the operation of the bank; (iv) the profit margin, which may also be understood as some kind of residue.

Since in the case of the product under review the exchange rate risk is borne completely by the client, it does not appear in the pricing of the product.

The above four elements determine the interest rate of the transaction.⁹ These factors are difficult to estimate in the case of a long-term transaction; the uncertainty surrounding their expected value (the risk) is high. In the case of FX loans this uncertainty was further increased by the refinancing techniques applied by banks and the steadily easing credit standards.

3.1 Exchange rate risk

The exchange rate risk of FX loans is completely borne by the borrower. Upon designing the products, the aim was to select a currency that entailed the lowest short-term interest rate, and thus resulted in the smallest initial instalment for a given amount of loan. Therefore, it was suitable for lending to a very wide scope of households (including subprime ones). CHF-denominated lending started from Austria and first appeared in Hungary through Austrian banks. In the aforementioned intensifying market competition environment, it was quickly introduced by other market players as well (*Bethlendi, 2011*).

In spite of the interest rate, which was advantageous in the short run, use of the Swiss franc proved to be much more risky compared to euro-denominated loans (Feature 5).

(i) The exchange rate policy of the forint is tied to the euro and has no influence on the EUR/CHF cross rate; (ii) The Swiss franc is a well-known safe haven currency, i.e. on the basis of the experience of the previous decades one can expect its appreciation in the case of an international economic crisis; (iii) In the carry trade¹⁰ literature, it is clearly described that high-interest currencies often go through long periods of appreciation, which are interrupted by sudden, massive depreciations. In the case of a long-term loan, it means that the person who becomes indebted in a low-interest 'hard' currency will, in all probability, suffer an exchange loss that will offset all his gain on interest earned before (*Kisgergely, 2010*).

Euro loans also appeared, but Swiss franc products played a prominent role in the choice of credit institutions. Banks offered two partial solutions for managing the exchange rate risk to their clients, but they were related only to a small portion of disbursements. One of the methods was that the effect of the change in the exchange rate did not appear in the monthly instalment, but in an amendment of the remaining maturity of the loan. The other one was that against the exchange rate risk the bank undertook – usually for the first two years only – that if the exchange rate leaves a pre-determined band, the bank would apply the exchange rate at the edge of the band for the calculation of the instalment.

⁹ Some of the costs and fees may appear only upon disbursement or as a fixed monthly amount. At the same time, they may be expressed as interest, which is a way of approaching the APR calculation.

¹⁰ Carry trade means a well-defined FX market trading strategy: the investor borrows in low-interest currencies and invests in high-interest currencies.

In 2007, further strengthening of the risk competition and overheatedness of lending were indicated by the appearance of Japanese yen-denominated loans or loans that could be converted to yen. Their exchange rate risk was even higher than that of CHF, but their interest rate was lower (and thus the initial instalment was also lower).¹¹ Finally, JPY products appeared in the product choice of only three large banks, although they reached as much as 10% of new loans in this period. In contrast to the CHF loans, in this case (as a result of strong pressure from the MNB) the Supervisory Authority already took steps, and significantly raised the capital requirement of yen-denominated loans as of May 2008.¹² As a result of the combined impact of the supervisory measures and the crisis, banks stopped selling JPY-denominated products in 2008.

However, as mentioned in the introduction, no major steps were taken by the regulatory or other authorities against CHF loans, which accounted for most of the lending to households. As a result of the division among various authorities and institutional deficiencies, all that was done was the documenting of the perception of risks, which was also mostly done only by the MNB (*Bethlendi et al., 2014*). Meanwhile the business side – see for example the relevant communication by the Hungarian Banking Association entitled ‘No need to be afraid of FX-denominated schemes’ (*MTI, 2006*) – communicated the moderate nature of the exchange rate risk.¹³

In order to stop FX lending completely, the new Government set up in 2010 applied administrative measure. Based on an amendment to the Civil Code,¹⁴ as of August 2010 it forbade the establishment of a mortgage on private individuals’ real estate as collateral for foreign currency denominated credit agreements. Although this regulation was repealed in July 2011 with the introduction of the exchange rate cap scheme and the forced sale quotas,¹⁵ FX-denominated mortgage lending did not restart. While the exchange rate cap scheme¹⁶ serves the purpose of maintaining the solvency of FX mortgage debtors who

11 The emergence of JPY-denominated lending was unequivocally attributable to the lower nominal interest rate, which allowed lower instalments to be paid by clients, while the interest rate margin that banks earned did not decline. Earlier, CHF-denominated loans succeeded in replacing EUR loans for the same reason. The exchange rate of the JPY against HUF has been much more volatile compared to the Swiss franc or the euro. The reason for this is that the fundamentals of the Japanese and the European economies are not closely related and that JPY has been one of the major currencies used for financing so-called carry trade transactions based on FX interest margins (MNB, 2008).

12 The size of the required additional capital is 50–100% of the capital requirement under Pillar 1 of the portfolio concerned.

13 Their communication of January 2006 said: ‘in the opinion of the Hungarian Banking Association, not only a permanent forint depreciation in real terms can be excluded from the possible future scenarios, but also the significant and permanent nominal weakening of the forint.’

14 Pursuant to Article 81 of Act XC of 2010.

15 Pursuant to Act LXXV of 2011 on the fixing of exchange rates used for repayments of foreign exchange-denominated mortgage loans and the procedure of forced sales of residential properties.

16 The difference between the instalments calculated with the actual and the fixed exchange rates (the latter equalling approximately the exchange rate prevailing at the time of the borrowing) is kept on record by the credit institutions in the period of the exchange rate fixing as a so-called collecting account loan. 50% of the interest content of the monthly instalment above the fixed exchange rate is paid by the state and the bank each. Repayment at the fixed exchange rate may last for 5 years at most.

are still able to perform, the introduction of the forced sale quota¹⁷ and the programme of NET Zrt.,¹⁸ which started operation on 1 January 2012, aim to maintain the habitation rights of non-performing mortgage borrowers.

The existing portfolios represented a significant systemic risk, greatly contributed to the vulnerability of the country and narrowed the leeway of economic policy. In view of the long maturities and the depreciation of the forint, the portfolios would have run out only very slowly, preserving the above risk for a long time.

The idea of converting households' FX loans into forints first arose in 2011 (for example, see the proposal of *Barta et al., 2011*). However, due to the economic situation at that time and investors' assessment of Hungary, it seemed to be a risky step (the country was subjected to excessive deficit procedure by the EU, was downgraded to non-investment grade category, and the crisis of the euro-area periphery was going on). In order to prevent the instalments of the loans converted into HUF (in 2011, the potentially concerned portfolios were also more significant) from rising (at the time the yields and the central bank base rate were some 4 percentage points higher than in 2014), it would have been unavoidable to introduce some interest rate state subsidy from the budget, in addition to extending maturities. However, the fiscal situation at that time was very restricted. The MNB should have provided the funds for the conversion into HUF, to the debit of its reserves. In the aforementioned economic environment, the level of reserves was lower and its assessment by foreign investors was also more pronounced than in 2014.

In view of the above, for the downsizing of the portfolios, a step aiming at a narrower group of foreign currency debtors was made at the turn of 2011/2012: foreign exchange mortgage loan debtors had an opportunity for early repayment at a preferential exchange rate.¹⁹ As a result, nearly one quarter – HUF 1,355 billion (approx. EUR 4.5 bn) – of the FX-denominated mortgage loans was repaid early. The exchange rate difference between the preferential exchange rate and the market loan had to be covered by the lending financial institutions (*HFSÁ, 2012*). Accordingly, some of the exchange loss that occurred as a result of the crisis was driven back by the Government from the debtors to the creditors. The amount of households' outstanding FX loans remained significant even after the early repayment.

In order to prevent the exchange rate risk from jeopardising habitation rights at the system level in the future and for a significant reduction of FX loan portfolios, in November 2014 the Government made a decision on the conversion of FX mortgage loans into HUF at

17 It means the quarterly maximum number of non-performing housing loan debtors' properties subject to forced sale.

18 The task of the National Asset Management Company (NET) is to help socially needy debtors who have a mortgage loan, but are permanently unable to meet their payment obligations. Upon the existence of certain conditions, the NET purchases these debtors' residential property, ensuring at the same time that the debtors can stay in their home as a tenant.

19 Pursuant to Act CXXI of 2011 on the amendment to certain laws related to home protection.

market exchange rates.²⁰ Accordingly, at end-2014 the MNB sold foreign exchange worth nearly EUR 9 billion necessary for the conversion to the domestic banking sector. Credit institutions, in turn, converted the FX debtors' loans into HUF. The consumers will receive the relevant notice together with the so-called settlement described later starting from March 2015. In this manner, the MNB ensured that the phasing out of household FX loans would take place rapidly, preserving the stability of the financial system and without any major impact on the exchange rate of the HUF. On 15 January 2015, the Swiss central bank stopped maintaining an exchange rate threshold against the euro, i.e. it let the revaluing power break loose in the market, resulting in a nearly 20% depreciation of the HUF against the CHF. As a result of the conversion, Hungarian mortgage loan debtors were not affected by this negative shift in the exchange rate. Following that event, even the Hungarian Banking Association admitted that phasing out the exchange rate risk from the retail mortgage loan market was the right decision (*MTI, 2015*).

In early 2015, also taking into account the effect of the settlement legislation presented below, households' FX loans outstanding declined by some HUF 3,300 billion (approx. EUR 11 billion). Accordingly, by mid-2015 the amount of FX loans outstanding is expected to decrease below HUF 500 billion, i.e. less than 8% of all household loans, and thus FX loans will practically be phased out.²¹ In addition, simultaneously with the conversion, the switch-over to fair pricing, which is described below, will also be implemented.

3.2 The funding risk, unfair pricing conditions

The manner of determining the interest rate could not clearly be characterised by either the terms of 'fixed' or 'variable' rates. This is why we use the expression 'interest rate unilaterally changeable by the bank'.²² This was an important product characteristic, because it entailed the possibility of unfair unilateral increases in the interest rate (Feature 6).

FX mortgage loans were sold with two types of interest rates. One of them was a fixed interest rate. However, according to the loan agreement, banks had wide possibilities to change the fixed interest rate. The other product was of an indexed type. Banks applied a margin above a money market benchmark yield (3-, 6- or 12-month EURIBOR/CHF-LIBOR). Depending on the money market situation, the product was repriced immediately. At the same time, banks also had wide possibilities to change the margin as well. We use

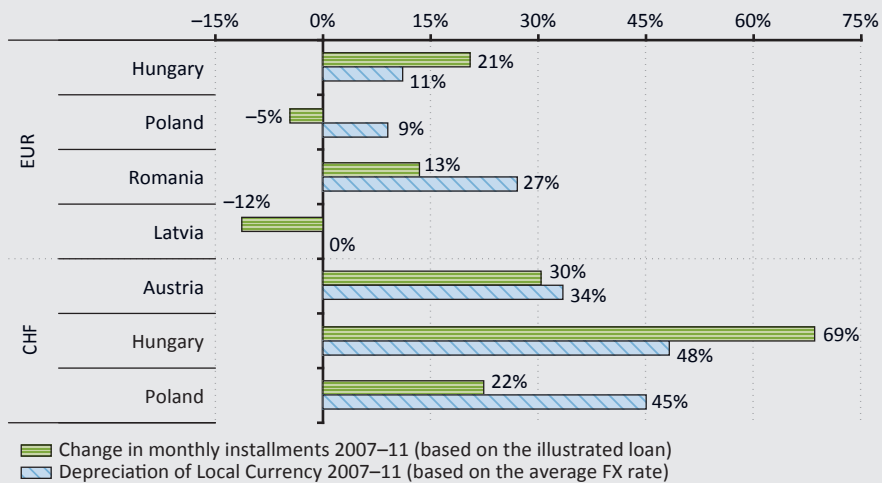
²⁰ Pursuant to Act LXXVII of 2014 on the modification of the currency of certain consumer loan agreements and issues relating to interest rate rules, the conversion into forints is not mandatory. Consumers may block conversion into forints if certain conditions are met.

²¹ The remaining FX loans will mostly be vehicle loans and partly personal loans; their average maturity is low, so this portfolio will also shrink quickly.

²² The same expression is used in the so-called "Papcsák Report", a parliamentary report dealing with the problem of household FX loans (OGY [2012]).

the expression ‘interest rate unilaterally changeable by the bank’ in view of the above. For the aforementioned reasons, the annual percentage rate (APR) determined upon concluding the contract became incomparable, as the price quotation was valid only for the first year at most, whereas the loan usually had a maturity of 15–20 years. The practice was not transparent, and the consumer was unable to make a distinction whether the repricing initiated by the bank was caused by changes in its real costs or by an intention to increase profits.

Figure 5
Changes in the instalments of average housing loans and in the exchange rates of local currencies between 2007 and 2011



Sources: Szigel, 2012; MNB

FX lending to households was not a unique phenomenon in the region. At the same time, from a consumer’s point of view, there are major differences in terms of product characteristics. In Poland, Romania and the Baltic states a significant portion of loans were really variable-rate FX loans. They were practically granted by the same banking groups that are present in Hungary as well. It needs to be emphasised, however, that presumably as a result of more determined actions by the authorities of these countries, transparency as well as fair pricing were much better implemented in the contracts in these countries. The loans really featured indexed interest rates, i.e. a pre-determined, fixed margin tied to a specific money market yield was applied (e.g. EURIBOR + 5 per cent). Banks could not change the margin to this extent unilaterally. This also meant that the banks there, which belong to the same banking group, took on the so-called margin risk as well. If the assessment of the given bank or the country risk premium deteriorated, it could not be shifted to the client (*Bethlendi 2009b*). Due to the above, only in Hungary did it occur that debtors were exposed to an interest rate shock as well, in addition to

the exchange rate shock. Together, these two factors resulted in a significant increase in instalments. The average interest rate increase applied to FX-denominated mortgage loans was 2 percentage points following the crisis. Meanwhile, in the neighbouring countries concerned the change (decline) in the interest rate was able to significantly offset the negative exchange rate effect. Moreover, in certain cases instalments even declined.

Banks basically refinanced their long-term FX mortgage loans from short and synthetic sources. This technique entailed a non-negligible renewal risk, which was primarily realised as a cost for clients (Feature 7).

The Hungarian banking sector did not raise the CHF funds necessary for the lending in CHF in a traditional manner (from collecting CHF deposits or issuing long-term foreign currency bonds), but financed them within its balance sheet from HUF or EUR deposits. Banks typically cover the resulting on-balance-sheet open FX position with off-balance-sheet (derivative) transactions concluded with non-residents.²³ They primarily use two types: the short-term FX swap and the longer-term cross-currency basis swap (CBS). The essence of both derivatives is that domestic banks take out FX loans within the framework of transactions concluded mainly with non-residents, and simultaneously provide forint loans to their clients. Then, at a later date, they swap these monies back. It needs to be emphasised here that the traditional method – e.g. CHF bond issue – would have entailed higher costs over the short run, but the stable refinancing structure would have been more advantageous over the longer term.

As the domestic banking sector lent significant amounts of foreign exchange, it was strongly reliant on the financing technique presented above. However, as a result of the money market shock that impacted Hungary as well in September 2008, domestic banks were unable to renew their derivative positions or only able to do so at a very high price. Only the coordinated action of the MNB and foreign central banks was able to remedy this situation.

The refinancing cost risk presented above was borne to a significant extent by the debtors; *moreover, this occurred in an asymmetrical manner: declining refinancing, country risk and bank risk premiums did not entail an automatic decrease in client costs.*²⁴

Significant amounts of FX loans were still disbursed in 2008. In late 2008 and early 2009 the interest rates on existing portfolios were raised. Reacting to the mass problem of

²³ Typically with two transactions: HUF–EUR and EUR–CHF. If foreign exchange funds were obtained from the parent bank, it was typically euro, and in this case they only had to conclude one CBS.

²⁴ The cost of CBS transactions increased from the pre-crisis annual 15 basis points (0.15 percentage points) to 250–300 basis points during the crisis. At the same time, the Swiss money market interest rate declined by approximately the same extent. Regarding the Hungarian bank margin, the two effects nearly offset one another on average. Nevertheless, banks raised the interest rates on loans, referring to rising costs of funds. Then, in 2009 Q2, derivative costs started to decline considerably. Overall, based on available market data and quotations, in the summer of 2009 domestic banks' average refinancing cost was already below the pre-crisis level. At the same time, APR levels did not decline. Moreover, in the case of loans prior to the summer of 2008 the APR increased by 1 percentage point on average (Bethlendi [2009]).

rising instalments rather late (compared to the launch of FX mortgage loans in 2004), after the accumulation of large portfolios, the first self-regulatory measure of the market, the so-called code of conduct, was issued in October 2009.²⁵ The preamble of the code stipulates the principles of transparency (there will be increased emphasis on clarity and transparency as well as on the availability of the necessary information in lending to households) and symmetry. At the same time, the code contains a very long list of reasons that allow the banks that join the code to increase their interest rates. Accordingly, the code, in fact, left ample leeway in an institutionalised form for creditors to raise their interest rates, and the principle of symmetry could not succeed either, because in many cases the creditor found an excuse in the long list of reasons for not reducing the interest rate.

The amendments to the Act on Credit Institutions and Financial Enterprises (ACI) effective as of 1 January 2010 practically put the provisions of the code of conduct into statutory effect. The act determined the rules concerning unilateral amendments of contract for all credit, loan and financial leasing agreements concluded with consumers. Starting from that date, the reasons for unilateral interest rate increases, which were disadvantageous for the consumer, had to be listed in the general contract terms and conditions. In addition, fees and costs were allowed to be increased only by the annual consumer price index of the CSO, and contracts could not be amended by introducing new fees and charges. However, the amendment did not terminate the problems indicated for the code of conduct. Creditors still had ample leeway to raise their interest rates, although they had to document such moves better. The version of the ACI effective as of 27 November 2010 narrowed the list of reasons in the case of housing loans, credit and financial leasing agreements.

In the case of mortgage loans, the amendment to the ACI effective as of 1 April 2012 limited, but did not terminate completely the unfair practice that banks shifted their margin risk to consumers. Loans disbursed after this date or recontracted loans could only be offered with a fixed interest rate or a fixed interest rate spread indexed to a reference interest rate specified in the act. Nevertheless, the fixed interest rate and the repricing rules of the interest rate spread by themselves did not guarantee transparency and proportionality for clients.²⁶ At the same time, fees and costs to be paid regularly in addition to the interest were allowed to be raised only by the percentage of annual inflation. However, the provisions of 1 January 2010 remained in force for non-mortgage type loans.

²⁵ Code of conduct on the fair behaviour of financial institutions providing loans to households vis-à-vis clients.

²⁶ For loans with a reference interest rate the regulation allowed the changing of the interest rate spread only in two cases (non-performance; non-payment of home insurance), but it has to be emphasised here as well that the law leaves the impact of the changes in conditions on the spread to be regulated in the internal rules of the financial institution, and thus does not guarantee transparency for the client. At the same time, Government Decree 275/2010 remained in force for fixed-interest loans, providing ample opportunity for unilateral hikes with the expiry of the interest rate period (changes in market environment, credit risk and regulatory environment).

With regard to existing portfolios and contracts that expired within the last five years, unilateral interest rate increases may be deemed unfair in the case of any loan (including forint-denominated loans and consumer credit²⁷ as well), pursuant to the act which entered into force in July 2014²⁸ on the basis of the harmonised decision of 2014 of the Curia²⁹ (the Supreme Court of Hungary), if it is not clear and not transparent for the debtor how changes in certain circumstances affect the debtor's payment obligations. This lawful presumption covered all foreign currency denominated loans extended until 26 July 2014. In the case of HUF-denominated loans and loans disbursed and repaid in foreign currency the lawful presumption of unfairness is valid for general contract terms and conditions dated before 27 November 2010.³⁰ Banks went to court against the presumption. When this article was written, the lawsuits were not closed completely, but most of them had already been lost by the financial institutions in the first instance and second instance as well. Pursuant to Act XXXVIII of 2014, credit institutions are obliged to interpret financial advantages stemming from unfair interest rate increases (and from the application of the spread to be presented later) as principal repayment and pay it back to the debtors or reduce the debt accordingly. This is what we call settlement³¹ in brief.

Unfairness is expected to be validly established for a wide range of existing loans, entailing the necessity of a forward-looking resolution of these contracts. Therefore, the National Assembly passed Act LXXVIII of 2014 on the amendment of Act CLXII of 2009 on consumer credit and certain related acts so that the circumstances of fair pricing could materialise for all household loan products. *The changeover to fair pricing will be implemented as of February 2015 both for new lending and the existing portfolios.* Pursuant to the law the possibility of unilateral increases in interest rates, costs and fees will be greatly limited and such increases may take place only due to objectively measurable reasons and in a transparent manner. If the interest rate spread changes in the upcoming interest period to the disadvantage of the consumer, the consumer may terminate the loan agreement without any costs or charges. The range and maximum extent of applicable fees is also limited. In addition, the rules aimed at improving the provision of information to consumers were also expanded to a large extent.

27 With the exception of credit card loans, overdraft facilities and state-subsidised housing loans.

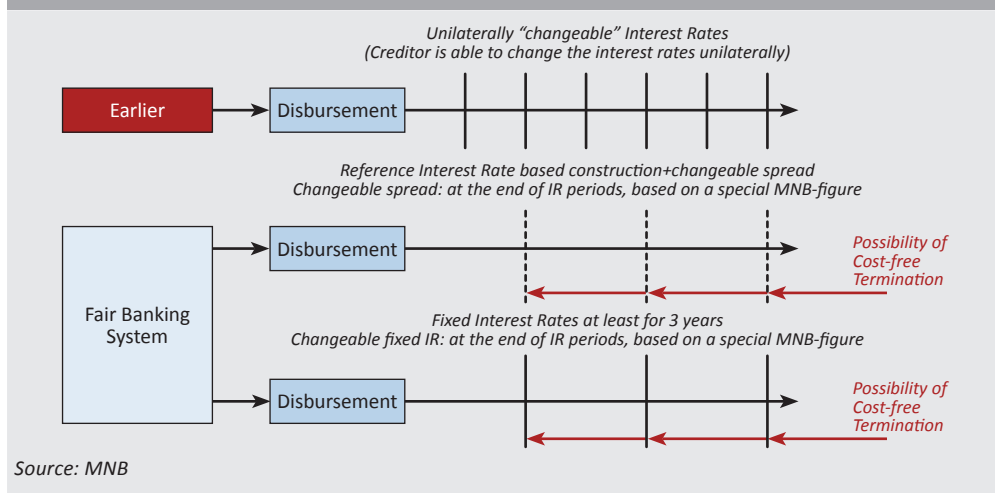
28 Act XXXVIII of 2014 on the settlement of certain questions related to the Supreme Court's uniformity ruling on financial institutions' consumer loan contracts.

29 Decision No. 2/2014 PJE. Contractual clauses that enable unilateral amendment of a contract are unfair if they do not comply with the following seven principles: the principle of clear and intelligible drafting; the principle of taxonomic definition; the principle of objectivity; the principle of factuality and proportionality; the principle of transparency; the principle of terminability and the principle of symmetry.

30 Relating to the period following that date the MNB may initiate proceedings of public interest for the pronouncement of unfairness. As of 2010, creditors presumably met the conditions of fair pricing in certain cases.

31 The detailed rules of settlement are determined in MNB Decrees.

Figure 6
Changeover to the fair pricing practice



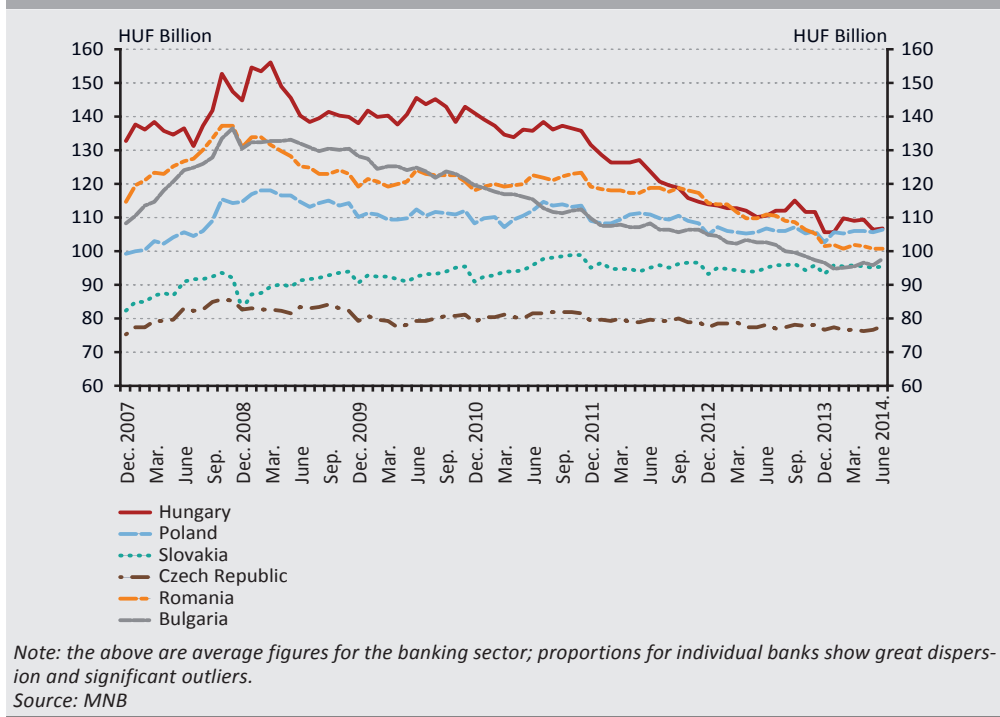
The excessive pursuit of growth resulted in an increase in credit institutions' liquidity risk, the loan-to-deposit ratio was disturbed, and its effect also appeared in the costs of funds and thus in client costs (Feature 8).

In view of the excessive pursuit of growth, the domestic banking sector raised considerable amounts of foreign funds – mainly through parent banks. As a result, the domestic banking sector became highly dependent on short-term FX liabilities in international comparison as well, and the loan-to-deposit ratio increased considerably compared to other countries of the region as well, moving far away from the value of around 100%, which can be considered healthy. Accordingly, cheap foreign funds added to risk appetite and fed procyclical lending.

Due in large part to FX lending, excessive maturity mismatch evolved in the foreign exchange positions in the domestic banking sector. In order to handle this, the so-called foreign exchange funding adequacy ratio (FFAR) was introduced in July 2012. The primary objective of this indicator was to moderate the banking sector's on-balance-sheet and off-balance-sheet FX position maturity mismatch, thus reducing the external vulnerability of the banking sector and the country by this as well (Fáykiss, 2014).

Also on the basis of the above experiences – in addition to the aforementioned liquidity objective – an important target designated by the MNB in its programme announced in the spring of 2014 relating to the banking sector was that the loan-to-deposit ratio of the domestic banking sector should not permanently and considerably deviate from 100% (Nagy–Vonák, 2014).

Figure 7
Loan-to-deposit ratio in international comparison



3.3 Credit risk

In designing the scheme, it was already well known that the credit risk of these products is higher than that of HUF loans. The MNB called attention to this when FX mortgage lending was introduced (in 2004). Compared to HUF loans, the instalments of FX loans may change to a greater extent and more often due to the short repricing period and the immediate shifting of the exchange rate risk to the consumer. Domestic households are unprotected against changes of this nature, as they do not have any natural hedge (income or savings in CHF). The extent of the transformation of the risks shifted to households into credit risk depends on the extent and permanence of the given interest rate or exchange rate change. The chance of insolvency is higher in the case of loans where, upon borrowing, the debtor maximises the amount to be borrowed on the basis of the current interest rate and exchange rate levels (MNB, 2004). The higher credit risk of FX loans may be offset by a higher credit risk margin, lower LTV ratio and stricter examination of income. As mentioned before, the initial conditions of FX lending were quickly eased, and the factors that mitigate the above risks moved in the opposite direction. In addition, due to the relative homogeneity of the significant volumes and the collateral, the risk of becoming more difficult to sell the collateral also increased significantly.

The regulatory maximum for LTV ratios was only determined as of 1 January 2010 on the basis of Government Decree 361/2009. At the same time, the decree banned purely collateral-based lending. Nevertheless, only general principles were defined for the examination of income, practically leaving ample leeway for creditors in this field. Based on international experience, the real solution is the maximisation of the payment-to-income (PTI) ratio. This was introduced by an MNB Decree³² as of 1 January 2015, which also involved a tightening of the 2010 maximum LTV rules. Had only this regulation in itself been introduced (with similar parameters) in 2004, excessive lending, and particularly its subprime nature, could have been prevented.

In addition to the above, so-called deferred principal repayment products, which carried further risks, also appeared. Loans starting with a certain principal repayment grace period constituted one of the types; only the interest had to be paid on the loan during the grace period. The optional grace period was typically between one and five years. Loans combined with investment (combined loans) can be considered as another grace period scheme; in this case the client invested the amount corresponding to the principal repayment in an investment product. The investment (traditional mixed or unit-linked type life insurance, home savings and loan association) was linked to the loan, and upon maturity it had to be spent on principal repayment.

These schemes that provide temporary easing of payment or deferred principal repayment can be considered expressly high-risk ones; they amplified the risk factors of normal mortgage lending and created new ones as well.³³

As of March 2013, the Supervisory Authority considerably raised the capital requirement of combined loans, similarly to the JPY-denominated loans, although in this period the disbursement of these types of loans was already very subdued. Subsequently, sales of loans like this practically stopped.³⁴

The applied risk management methodologies and results only suggested false safety; they were unsuitable for the real measurement of risks (Feature 9).

Quantitative methodologies appeared in household risk management as well in the early 2000s; they attempted to differentiate between clients and to estimate banks' expected losses.³⁵ And the equity was intended to cover unexpected losses. Banks did not have experiences (figures) of their own for the estimation of the parameters of the models. Moreover, as described above, there were major differences between the credit risks of

32 MNB Decree 32/2014 (IX. 10.).

33 Income-based lending is becoming more difficult; asset price risk is increasing and is expanding to include new risk elements (in the case of combined loans, the scope of collateral is complemented with financial instruments).

34 The additional capital requirement does not apply to the products of home savings and loan associations combined with HUF-denominated loans.

35 Expected loss is the product of multiplication of probability of default (PD), loss given default (LGD) and exposure at default (EAD).

each year of disbursement. On the other hand, the experiences of developed countries had only limited relevance in the domestic market due to its characteristics (e.g. FX lending). Moreover, there were no major attempts to measure the correlations between parameters or non-linear relations.³⁶ The applied shock scenarios showed very moderate loss subsequently.

Banks' risk management failed, not only because of the aforementioned bad incentive system, but also because of the methodologies and product characteristics applied as well as due to the evolution of systemic risk. At the same time, it was realised by those concerned very late. This is confirmed by the fact that for example at the conference 'Portfolio.hu Mortgage Lending and Home Financing' held in May 2008, speakers only talked about an increase in the risk of mortgage lending, but practically nobody indicated a real emergency. Moreover, compared to the US subprime crisis, they considered the situation in Hungary more positive.³⁷

Unfortunately, all the above described risks have materialised since then. One of the principles of prudent risk management proved true again: it is not the high risk, but the unmeasurable risk that is the most dangerous.

*In view of the endogenous nature of risks and the identical behaviour of many actors in large volume, FX lending became an important macroprudential – systemic – risk.*³⁸

The measures described above, with special regard to the rules of settlement, conversion into forints and fair banking, are expected to have an overall positive effect for clients and thus on the portfolio quality as well. As a result of declining and less volatile instalments, lower probability of default is expected for the future. The exchange rate risk will cease as a result of the conversion into forints, and this will continue to mitigate credit risks considerably. At the same time, no material improvement is expected in the case of the already non-performing debtors, as for them the overpayment reduces the arrears of interest and fees, and thus in their case, under the same conditions, outstanding loans decline to a lesser extent than in the case of those who perform. Overall, the amount of non-performing loans may remain significant. The handling of this situation requires further measures in 2015. An important means could be the introduction in Hungary of the institution of personal bankruptcy, which is suitable for the comprehensive management of the problem of non-performing debtors, and the expansion of the programme of the NET.

36 For example, the examination of the relationship between exchange rate–PD–LGD.

37 The remarks included: 'overall, a still conservative Hungarian level in spite of the increasing LTV ratio, (...) significant difference in the loan-to-GDP level, (...) significantly better Hungarian portfolio quality' etc.

38 Most of the risks of FX lending can be deemed endogenous, i.e. they were created by the financial system and its players – creditors, supervisory authority, intermediaries, regulatory authorities, etc. – themselves, and they are not attributable to an external circumstance. However, the endogenous risks arising simultaneously at micro level do not simply become added up, especially not when actors behave alike, but amplify one another, thus becoming a systemic risk.

3.4 Cost risk

It was mentioned before that many of the domestic credit institutions struggle with economies of scale problems in the domestic household credit market. Accordingly, the players are sensitive to the changes in general banking costs and portfolios. The general contract terms and conditions of products allowed creditors to refer to their costs and raise their lending-related fees and charges in a way that was not transparent for clients. After 2008, with a decline in new loans, they strived to cover their relatively increasing costs to the debit of the loans outstanding.

4 Smaller cases of unfairness: FX spread and costs incurred in HUF

In addition to the possibility of unilateral interest rate increases, in order to achieve the profit targets, the products had other unfair characteristics as well, which were subsequently identified by the court or law (Feature 10).

For the majority of FX loans, banks used a buying and a selling rate upon loan disbursement and repayment. The extent of the spread applied (deviation from the central rate) was left to the discretion of banks; (weighted with the FX loan portfolio of seven large banks) it amounted to 1.25% prior to the crisis and increased to an average 1.7% after 2008. As a result, banks' profitability from the payments related to disbursement and repayment was similar to that of changing foreign exchange and currency. In the case of mortgage loans,³⁹ as of 27 November 2010 the ACI banned the application of the spread, and financial institutions have to use either their own mean rate of exchange determined and announced by themselves or the official exchange rate determined and announced by the MNB.

In 2014, on the basis of its harmonised decision mentioned above, the Curia declared the practice of applying an FX spread unfair and void. The – already presented – Settlement Act (XXXVIII of 2014), which was adopted on the basis of this decision, bans the further application of the spread, which has to be calculated the same way as, and refunded to the debtors together with, the unilateral interest rate increases. The press criticised the law as retroactive legislation. However, without this it would have been impossible to handle the numerous court proceedings going on in this subject and the social problem behind all of this. Another counter-argument was that the spread was a part of the APR calculation at that time. However, this does not provide a justification for the phenomenon

³⁹ Initially it applied only to housing loans and financial leasing and was extended to all mortgage loan products later.

in a legal sense, and does not make the institution fair; it only wanted to handle it in terms of product comparison. Something that is not expressly forbidden by legislation is not necessarily fair. This should be decided subsequently by the court, and this occurred with the Curia's decision in 2014.

Various costs and fees were also linked to the FX loans. Although a considerable portion of these⁴⁰ were incurred in forints for the credit institutions, they still required clients to pay these costs on a foreign currency basis. Firstly, this way they could apply the spread to it, and secondly, as of 2008 the forint depreciated significantly against the CHF, and thus the costs collected from clients increased in forints, while credit institutions' real cost payments in forints remained unchanged. This practice was terminated by the amendment to the ACI effective as of 29 September 2011. Since then, creditors have shifted to consumers only those costs in foreign currency that actually incur in foreign currency for the creditors as well.

5 Summary

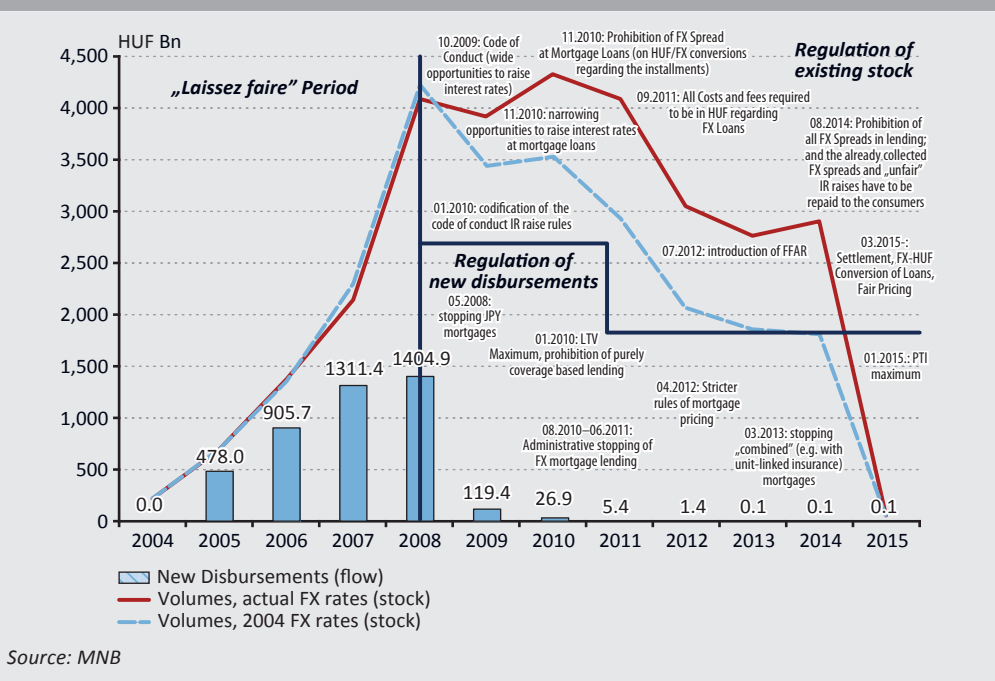
In relation to the upswing in FX mortgage loans to Hungarian households between 2004 and 2008, we found ten features typical of product development and management that together resulted in systemic risk. The risks have materialised since then, greatly undermining the confidence in the financial intermediary system and making FX lending a major social problem.

1. Bank managers' bonus schemes included only short-term volume growth targets, while the risk aspects (risk costs) of products were neglected.
2. As a consequence of the compulsion to increase volumes, which eclipsed the risk consideration, in the case of FX loans creditors strived to ease households' liquidity constraints by all means, which at the same time led to the evolution of widespread lending of a subprime nature.
3. The scope of loan purposes expanded considerably, also leading to an expansion in risks.
4. Creditors shifted the additional risks stemming from the schemes to their clients, but over the longer term this resulted in a significant increase in credit risks.
5. Over the short run, the use of Swiss franc financing was able to better ease households' liquidity constraints, but at the same time it proved to be much riskier over the longer term compared to euro-denominated lending.

⁴⁰ For example, the fees and costs in connection with the conclusion of contracts, correspondence, production of statements and certificates, client visits, credit monitoring, termination, appraisal and replacement of collateral, amendments of contract, insurance services related to coverage on credits, as well as the administration of credit agreements and the closing of the related credit account.

6. The proper expression for the method of determining the interest rate is 'interest rate unilaterally changeable by the bank'. This product characteristic entailed the possibility of unfair unilateral increases in the interest rate.
7. For the profit target, products had other characteristics as well, which were subsequently found unfair by the court and by law as well.
8. Banks basically refinanced their long-term FX mortgage loans from short and synthetic sources. This technique entailed a non-negligible renewal risk, which was primarily realised as a cost for clients.
9. The excessive pursuit of growth resulted in an increase in credit institutions' liquidity risk, and its effect appeared in the costs of funds and thus in client costs as well.
10. The applied risk management methodologies and results only suggested false safety; they were unsuitable for the real measurement of risks.

Figure 8
Credit institutions' CHF-denominated household mortgage loans at current prices and with exchange rate adjustment, new lending at current prices and the regulatory steps affecting them 2004–2015



At the same time, the study also presented what systemic failure resulted from the regulatory and supervisory authorities' completely *laissez faire, laissez passer* approach to household lending from both prudential and consumer protection aspects, since market self-regulation does not work in this field. The other lesson is that if the regulation of a given activity is determined for a long time by the above *laissez faire* principles, its more prudent regulation that corrects the market failure and prevents its recurrence is a time-consuming process. It is difficult and time-consuming to remedy a systemic risk problem subsequently. The example of Hungarian household FX lending shows that the management of a complicated systemic problem may last as long as the emergence of the problem itself. Remedying the past problems and establishing the overall conditions for fair lending is expected to be completed in 2015.

References

BALÁS, T. – BANAI, Á. – HOSSZÚ, Zs. (2015): A nemteljesítési valószínűség és az optimális PTI-szint modellezése egy háztartási kérdőíves felmérés felhasználásával (Modelling the probability of default and the optimum PTI level using a questionnaire-based survey of households). *MNB Occasional Papers* 117.

BARTA, GY. – SPURNY, T. – SURÁNYI, GY. (2011): Radikális terv a lakossági devizahitelek kezelésére (Radical plan to handle household FX loans). *Figyelő*, http://fn.hir24.hu/gazdasag/2011/04/06/egy_radikalis_terv_lakossagi (date of downloading: 20.01.2015).

BETHLENDI, A. – FÁYKISS, P. – GYURA, G. – SZOMBATI, A. (2014): A Magyar Állam mikroprudenciális és makroprudenciális szabályozásának és ellenőrzésének jellemzői a devizahitelezés területén. A folyamat hiányosságainak bemutatása. Fogyasztóvédelmi anomáliák (Characteristics of the microprudential and macroprudential regulation and supervision by the Hungarian State in the field of FX lending. Presentation of the deficiencies of the procedure. Consumer protection anomalies). Book chapter, *A devizahitelezés nagy kézikönyve* (Large manual of FX lending). Budapest: Nemzeti Közszolgálati és Tankönyv Kiadó.

BETHLENDI, A. (2011): Policy measures and failures on foreign currency household lending in Central- and Eastern Europe. *Acta Oeconomica* 61 (2), June.

BETHLENDI, A. (2009b): Olcsóbb pénzből nagyobb profit (Higher profit from cheaper money). *Figyelő*, 38.

BETHLENDI, A. (2009a): A hazai hitelpiac empirikus vizsgálata. Fejlődési irányok, makrogazdasági és pénzügyi stabilitási következmények (Empirical study of the domestic credit market. Directions of development, macroeconomic and financial stability consequences). Ph.D. thesis.

BETHLENDI, A. (2006): Maximálttól az indexáltig, innovációk a lakossági jelzálog-hitelezésben (From maximised to indexed, innovations in household mortgage lending). *Bank&Tőzsde*, 11–12.

BETHLENDI, A. – CZETI, T. – KREKÓ, J. – NAGY, M. – PALOTAI, D. (2005): Driving forces behind private sector foreign currency lending in *Hungary MNB Background Studies 2*.

CSAJBÓK, A. – HUDECZ, A. – TAMÁSI, B. (2010): Foreign currency borrowing of households in new EU member states. *MNB OP 87*.

FÁYKISS, P. (2014): A bank „veszélyes üzem” – Miért van szükség a banki likviditás szabályozására? (A bank is a ‘dangerous business’ – Why is it necessary to regulate bank liquidity?), http://www.mnb.hu/Root/Dokumentumtar/MNB/Kiadvanyok/szakmai_cikkek/a-bankrendszer-jovoje/Faykiss_Peter_Likviditasi_eloirasok_szakmai_cikk.pdf (date of downloading: 20.01.2015).

HOFFMANN, M. – KOLOZSI, P.P. – NAGY, M. (2014): A forintosítás időben elnyújtva csökkenti a jegybank mérlegét és így a forintlikviditást (The conversion to forint decreases the balance sheet of the central bank and thus forint liquidity extended in time). http://www.mnb.hu/Root/Dokumentumtar/MNB/Kiadvanyok/szakmai_cikkek/Devizahitel/A_forintositas_idoben_elnyujtva_a_jegybank_merleget_es_igy_a_forintlikviditast.pdf (date of downloading: 20.01.2015)

KIRÁLY, J. – NAGY, M. (2008): Jelzálogpiacok válságban: kockázatalapú verseny és tanulságok (Mortgage markets in crisis: risk-based competition and lessons). *Hitelintézeti Szemle 7* (5).

KISGERGELY, K. (2010): Carry trade. *MNB Bulletin*, June.

MNB (2004): Additional risks of foreign currency-based house purchase lending. Report on Financial Stability. June. http://www.mnb.hu/Root/Dokumentumtar/MNB/Kiadvanyok/mnbhu_stabil/mnbhu_stab_jel_0406/stab_jel_0406_hu.pdf (date of downloading: 20.01.2015).

MNB (2009): Report on Financial Stability. April 2009 http://www.mnb.hu/Root/Dokumentumtar/MNB/Kiadvanyok/mnbhu_stabil/mnbhu_stab_jel_20090406/stabjel_2009_aprilis_hu.pdf (date of downloading: 20.01.2015).

MNB (2014a): Financial Stability Report. November. http://www.mnb.hu/Root/Dokumentumtar/MNB/Kiadvanyok/mnbhu_stabil/mnbhu_stab_jel_201411/Penzugyi_stabilitasi_jelentes_2014_november.pdf (date of downloading: 20.01.2015).

MNB (2014b): Pénzügyi fogyasztóvédelmi és piacfelügyeleti jelentés 2014 (Financial consumer protection and market supervision report), http://www.mnb.hu/Root/Dokumentumtar/MNB/Kiadvanyok/penzgyi-fogyasztovedelmi-es-piacfelgyeleti-jelentes/Penzugyi_fogyasztovedelmi_es_piacfelgyeleti_jelentes_2014_publikalásra_20141204_digitalis.pdf (date of downloading: 20.01.2015)

MTI (2006): Bankszövetség: nem kell félni a devizaalapú konstrukcióktól (Hungarian Banking Association: No need to be afraid of FX-denominated schemes), MTI press release, 31 January. MTI News archives 1988–2014 (date of downloading: 20.01.2015).

MTI (2015): Bankszövetség: az autóhitelek terheit is csökkenti az elszámolás (Hungarian Banking Association: The settlement reduces car purchase loan debtors' burdens as well), MTI press release, 19 January. MTI News archives 1988–2014 (date of downloading: 20.01.2015).

NAGY, M. – VONÁK, B. (2014): Egy jól működő magyar bankrendszer 10 ismérve (10 features of a well-functioning Hungarian banking sector). http://www.mnb.hu/Root/Dokumentumtar/MNB/Kiadvanyok/szakmai_cikkek/a-bankrendszer-jovoje/Egy_jol_mukodo_magyar_bankrendszer_10_ismerve.pdf (date of downloading: 20.01.2015).

OGY (2012): Az Országgyűlés Alkotmányügyi, igazságügyi és ügyrendi bizottságának jelentése a 2002-2010. közötti lakossági deviza-eladósodás okainak feltárásáról, valamint az esetleges kormányzati felelősség vizsgálatáról (Report of the Constitutional, Justice and Rules of Procedure Committee of the National Assembly on exploring the reasons of households' foreign currency indebtedness between 2002 and 2010 and on the examination of the possible responsibility of the Government). J/5881.

HFSA (2012): Gyorselemzés a végtörlesztésről (Rapid analysis of early repayment). http://felugyelet.mnb.hu/data/cms2334451/gyorselemzes_vegtorlesztes_120312j.pdf (date of downloading: 20.01.2015).

SZIGEL, G. (2012): Kevésbé közismert (?) tények a magyarországi lakossági devizahitelezésről. Lakossági devizahitelezés Közép- és Kelet-Európában (Less known (?) facts about foreign currency lending to households in Hungary. Foreign Currency Lending to Households in Central and Eastern Europe), Conference organised by the Freedom and Reform Institute.

Diverging financial regulations after the crisis? A comparison of the EU's and the United States' responses

Zsuzsánna Biedermann – Ágnes Orosz

The study aims to compare the regulatory changes occurring on both sides of the Atlantic. An inappropriate regulatory environment contributed to the onset of the financial and economic crisis, and therefore the post-crisis regulation attempts to remedy the earlier deficiencies and address the problems that emerged during the crisis. The study evaluates and compares the latest financial regulation initiatives on both sides of the Atlantic and assesses the diverging attitudes to regulation in the EU and the United States in six exemplary areas: remuneration, bank capital requirements, derivatives, credit rating agencies, the regulation of hedge funds, and consumer protection. Fundamental differences in regulation pose a challenge to firms operating in both environments and harmonisation remains elusive. However, in some areas, regulators from both sides of the Atlantic are willing to give broad deference to certain regulations of foreign jurisdictions, instead of their own ones. Regular dialogue between the United States and the European Union points in the right direction, but as the article points out there are many improvements which still need to be made in order to reach a consensus acceptable for financial market actors as well as regulators.

Journal of Economic Literature (JEL) Classification: G28, G29

Keywords: Financial market regulation, remuneration, capital requirements, credit rating agencies regulation, regulation of derivative

*Zsuzsánna Biedermann and Ágnes Orosz are research fellows at the Institute of World Economics of the Centre for Economic and Regional Studies of the Hungarian Academy of Sciences.
E-mail: biedermann.zsuzsanna@krtk.mta.hu, orosz.agnes@krtk.mta.hu.*

1 Introduction

Appropriate regulatory responses to recurring crises are a persistent problem of capitalism. In the period of economic upturn preceding the current crisis, developed countries' capital markets seemingly worked with incredible efficiency. This created the moral foundation for deregulation. The nightmare of recession seemed unrealistic, and the stringency of the regulatory environment started to ease, amidst general optimism. However, the crisis proved that the processes of recent decades and the increasing complexity of financial markets did not bring increasing profits with decreasing risks, as experts from financial institutions led us to believe. The two key reasons of the crisis are markets turning opaque due to the proliferation of financial innovations, and the inappropriate regulatory environment (*Biedermann, 2012a*).

Post-crisis regulation is fundamentally different from that of a more balanced financial and economic era. Since public trust in financial institutions and markets decreased rapidly after 2007, policymakers were pushed to re-evaluate their share in the creation of the global economic turmoil. Although there are other increasingly important actors in the global financial markets, in this article we devote particular attention to the regulatory changes in the European Union (EU) and the United States (US). In response to the recent financial crisis, extensive legislative initiatives were undertaken in many jurisdictions, most notably in the US and the EU, as well as at the international level. This was often accompanied by revamping of existing institutions such as the Basel Committee of Banking Supervisors and the introduction of new organisations such as the Financial Stability Board (*Chatzistavrou et al., 2013*).

The interconnectedness of financial markets was exposed in light of the recent financial and economic crisis; therefore, several regulatory initiatives of the financial markets have been pushed to the forefront of the global economic cooperation agenda (G20, Bank for International Settlements, the Financial Action Task Force) at the level of political principals (*Véron, 2014*). The worldwide impact of the economic crisis on financial market regulation has forced US and EU regulators and policymakers to adjust their role in the context of a more interconnected global arena. However, these adjustments have been unbalanced. Policymakers on both sides of the Atlantic were forced to rethink the means of financial regulation, and realize that “national interests can no longer dominate; rather, these interests must be harmonised” (*Stoltenberg et al., 2011:578–579*). Reaching this theoretical conclusion is not enough, as there are practical steps and legal processes that need to be implemented to create a harmonised environment for financial firms operating in both the EU and the US.

Rule-makers try to avoid regulatory arbitrage by calling for consistency in implementing G20 and other reforms. However, introducing identical or similar requirements in different jurisdictions may lead to some actors becoming subject to multiple overlapping

regulatory regimes. The effects could be the following: reducing the quality or usefulness of information available to regulators; introducing unnecessarily duplicate requirements and distorting competition; encouraging participants to make venue choices based on avoidance of administrative complexity; and increasing the compliance burden or costs of compliance for regulated entities without achieving any additional benefits (*GFMA, 2012*).

This article evaluates and compares the latest financial regulation initiatives on both sides of the Atlantic, and reflects diverging attitudes to regulation in the EU and the United States. Fundamental differences in regulation pose a challenge to firms operating in both environments, and although the present overhaul would be a unique opportunity for the creation of a uniform global financial regulation, it remains elusive to this day.

2 Theoretical framework for financial regulation

This section provides a theoretical background of financial market regulation. Financial market regulation is the subject of fierce debate, for instance on the issue of ideal capital requirement levels (*Dewatripont – Tirole, 1994; Goodhart et al., 1998; or Acharya et al., 2010*). *Acharya et al. (2010)* presents that excessive regulation involves costs, but the effects, even an unleashed disaster can be observed ex-post only. According to *Šútorová and Teplý (2014)*, “It implies that optimal regulation should be the art of balancing the immeasurable against the unknowable. As a result, effective financial market regulation is basically a ‘mission impossible’ and recurring crises can be still expected in the future”. In the case of financial regulation, it must be highlighted that, despite its importance, global regulatory efforts will not be able to prevent financial markets from future crises and financial upheavals on their own (*Reinhart–Rogoff, 2009; Acharya et al., 2010*).

As for the goals, on the one hand regulation should ensure the safety and stability of the financial system (including the promotion of consumer protection as well), and on the other hand it should foster the growth and development of the financial markets. Consequently, financial regulation should be “focused, primarily rule-based and time and state-varying (light during normal periods, increasing as systemic threats build up)” (*Brunnermeier et al., 2009:59*). Globalisation of financial markets manifests itself in the increasing interconnectedness and interchangeability of financial service providers, which makes financial regulation even more problematic (*Pan, 2011*). Rather than being based on a consistent theoretical framework, financial regulation is usually imposed in reaction to some previous crisis. This area has always involved “a pragmatic response by practical officials, and concerned politicians, to immediate problems, following the dictum that – We must not let that happen again” (*Goodhart, 2010:165*).

A fundamental reconsideration of global financial regulation has occurred as a response to the crisis. In the aftermath, policymakers seemed more concerned about stability issues rather than financial markets' competitiveness. On the contrary, faced with a sluggish recovery, governments are now trying to make sure achieving one goal does not occur at the expense of the other (*Pan, 2011*).

It is extremely difficult to balance between financial lobbies, the public will and the haunting image of a global crisis relapse. Financial regulatory responses to the current crisis need to take into account domestic, but also regional and global, features of the financial system. This resulted in somewhat different alterations of the previous regulatory frameworks in Europe and America which need ulterior follow-up and coordination. Since regulatory arbitrage may hinder global recovery, reforms to achieve global financial stability seem more important than ever. The required reforms "mitigating systemic (as opposed to idiosyncratic) risk; alterations in incentive structures; and better data and information to reduce unknowns" are independent, and any set of reforms may only marginally improve global financial stability (*Claessens–Kodres, 2014:15*).

3 Comparing EU and US responses

It is obvious that the EU and the US play a central role in shaping global finance, as they account for more than two-thirds of all financial services by transaction volumes. Although ties between the two financial markets are almost organic, there are several issues which are being tackled in a fundamentally different manner (*CMWG, 2010*). The financial crisis triggered a wave of new regulations worldwide "to make markets and institutions more transparent, less complex, and less leveraged" (*IMF, 2012:75*). Post-crisis amendments highlight the divergence of regulatory approaches in the United States and the European Union, since the American Dodd-Frank Act is more of an all-encompassing law, while the EU is methodically regulating sector by sector (*The Economist, 2012*).

The *Dodd-Frank Act (2010)* is the US legislative response to the financial crisis, which implements the measures agreed on at international level by the G20 and elaborated further by the Financial Stability Board and the Basel Committee on Banking Supervision (*Sabel, 2012*). American president Barack Obama announced his intention to reform the American financial sector in June 2009 and signed the Dodd-Frank Act on Wall Street reform and consumer protection a year later. The stated aim of the legislation was "to promote the financial stability of the United States by improving accountability and transparency in the financial system, to end "too big to fail", to protect the American taxpayer by ending bailouts, to protect consumers from abusive financial services practices, and for other purposes." As any major financial reform, it received harsh criticism, some arguing that its measures were not sufficient to prevent a similar financial crisis, others

contending that it was too rigid and reduced the competitiveness of American financial firms. Furthermore, large financial firms giving financial advice and performing various financial operations on their own account, representing the classic case of conflict of interest, are required to put their clients' interests first. However, this theoretical norm will be difficult to respect since consulting and trading on an own account within the same firm is still considered legal.

The Dodd-Frank Act (among others) introduced a watered-down version of the Volcker Rule (originally intended to restrict banks from trading on their own account as well as making speculative investments in risky funds): banks are only allowed to make higher risk investments with up to 3% of their tier 1 capital. Neither can banks possess more than a 3% stake in any private equity group or hedge fund. The 3% capital threshold is probably not strict enough to limit banks' risky activities and proprietary trading. The Dodd-Frank Act also introduced transparency reforms for the derivatives market, and comprehensive regulation of swaps, without removing the possibility of excessive leverage from the system. The EU proposed initiatives similar to the Volcker Rule. The structural measures submitted by the US (Volcker Rule), UK (ring-fencing¹), and EU (Liikanen group recommendations/banking structural reform proposal) aim to decrease the probability of bank failure and its systemic implications by reducing complexity and interconnectedness. The Liikanen Report highlighted the need for re-structuring of banks into separate legal entities (*Viñals et al., 2013*) and as a follow-up to the Liikanen report, the Commission established a High-level Expert Group to examine possible reforms to the structure of the EU's banking sector. The Group's mandate was to determine whether, in addition to ongoing regulatory reforms, structural reforms of EU banks would strengthen financial stability and improve efficiency and consumer protection, and, if so, to make proposals as appropriate. The Commission examined the possible reform options and their implications and, on January 2014, it adopted a proposal for a regulation (*European Commission, 2014a*).

The EU took a three-pronged approach based partially on the European Markets Infrastructure Regulation (EMIR) as a cornerstone of the post-crisis reform agenda. Together with the revisions to Markets in Financial Instruments Directive (MiFID) and the increased capital requirements for banks (CRD IV² implementing Basel III³), these

1 Ring-fencing promotes resolvability at the level of the retail bank, but not necessarily at the group level.

2 "In 2013, the European Union adopted a legislative package to strengthen the regulation of the banking sector and to implement the Basel III agreement in the EU legal framework. The new package replaces the current Capital Requirements Directives (2006/48 and 2006/49) with a Directive and a Regulation and is a major step towards creating a sounder and safer financial system... The package is due to enter into force on 1 January 2014" (EBA, 2013).

3 "Basel III", developed by the Basel Committee on Banking Supervision, is a cornerstone in the overhaul of banking regulation to achieve stricter supervision and risk management of the banking sector. The financial crisis revealed certain procyclical elements of banking regulation, and accordingly Basel III aims to mitigate the procyclical nature of the regulatory framework, while strengthening bank capital requirements and introducing new regulatory requirements on bank liquidity and bank leverage (Ernst and Young, 2010).

three packages will dramatically alter the current operation of financial markets in Europe (Deloitte, 2012).

The European Market Infrastructure Regulation (EMIR) was adopted in 2012 by the European Parliament and Council to improve transparency and risk management on the “over the counter” (OTC) derivatives market. EMIR stipulates that OTC derivative contracts (with some exceptions) must be reported and cleared (unless they are below the clearing threshold). It also sets additional safety measures for central clearing counterparties and trade repositories (ESMA, 2013).

EMIR concentrates on the post-trade regulation of OTC contracts, but pre-trade and trade-related aspects of OTC regulation were also under review. The European Council concluded an agreement regarding the Markets in Financial Instruments Directive (MiFID) review in June 2013, based on the original aims of making financial markets more efficient, resilient and transparent and investor protection more robust (Ernst and Young, 2013). As a result of the original MiFID, which had to be implemented by 2007, European financial markets became more fragmented, with trading taking place on a growing number of platforms. MiFID also contributed to more intense over-the-counter trading and the development of dark pools, and consequently market transparency decreased. The new regulation proposes the notion of OTF (Organised Trading Facilities) to include platforms that are not yet regulated. It tries to move the trading of derivative contracts to trading venues, and to broaden pre and post-trade transparency rules from listed shares to all instruments (ABBL, 2013). MiFID II also aims to restrict high-frequency trading and excessive speculation on commodity derivatives and improve consumer protection for retail investors who buy financial products (Finance Watch, 2013).

Banks, businesses and financial service providers will have to make strategic choices to comply with the new legislation on both sides of the Atlantic. But fragmentation of the global financial space seems inevitable, as both European and American regulation and implementation processes are speeding up and gradually taking final shape.

When we try to compare the European and American financial frameworks, we must emphasise the different political background: in Europe, the financial crisis has become a sovereign debt crisis. The EU is trying to regulate its financial sector while stabilising collapsing banks and euro-area Member States one after the other. Moreover, while the United States is more or less coherent and homogenous, the EU is composed of 28 Member States with widely varying interests, making the legislation process slower and the end result more fragmented. When it comes to financial regulation, the United Kingdom, as the second most important financial centre after the United States, is often opposed to regulation it considers too rigid and detailed.⁴ Prime Minister David Cameron expressed

4 Based on the interview with Rita Pupli, Financial Department officer at the Ministry for National Economy.

fears in October 2011 claiming that London's financial centre is under "constant attack through Brussels directives."⁵

The following part of the study aims at highlighting differences and similarities of post-crisis financial regulation on both sides of the Atlantic associated with certain key phenomena linked directly to the financial crisis after 2007.

4 Regulatory changes on both sides of the Atlantic

We decided to analyse similarities and differences in these six areas, as these key aspects reflect how determined policymakers are to change the flawed logic and systemic problems of pre-crisis financial regulation. At the same time, these are the major areas where the two financial systems can be easily compared based on the text of the legislations, but also on press releases and analyses resulting from regular talks and discussions the two jurisdictions are having in order to harmonise their systems. For the purpose of highlighting the main differences between the US and EU approaches, we compare the regulatory responses in six exemplary areas: remuneration, bank capital requirements, derivatives, credit rating agencies, the regulation of hedge funds, and consumer protection.

Remuneration requirements have attracted significant popular and political attention. Excessive, poorly structured remuneration in financial institutions has been considered as an important ingredient in the development of the global financial crisis. Credit ratings agencies have also been subject to substantial criticism, due to conflicts of interest arising from their business revenue models, and the poor predictive ability of ratings has also been a cause for concerns (*Davis, 2011*). Bank capital requirements as macroprudential policy tools are gaining more and more attention, since policymakers aim to use these tools to reduce the pro-cyclicality of credit and leverage (*Yellen, 2010; Hanson et al., 2011*). Creating a new regulatory framework for over-the-counter (OTC) derivatives is an important element of financial regulation, because during the financial crisis, derivatives were portrayed as exacerbating stress in the financial system and global economy. As a result, policymakers set themselves the goal of building a more robust, transparent framework for the global derivatives markets (*Oudéa, 2013*). Hedge funds played a central role in generating systemic risk during the crisis, and thus changes to their regulation is a crucial element of financial regulation (*Gropp, 2014*). According to the findings of *Adams, Füss and Gropp (2014)*, it can be concluded that hedge funds may be the most important

⁵ Reuters: UK threatens veto over EU financial regulation. Available at <http://uk.reuters.com/article/2011/11/08/uk-britain-financial-hoban-idUKTRE7A74WO20111108> (accessed on 23.03.2013).

transmitters of shocks during crises, being more important than commercial banks or investment banks. *Evans (2010)* argues that regulatory intervention in consumer protection is an attractive option for policymakers to raise public attention. The global financial crisis has highlighted the need for strong consumer protection and financial literacy. As a result, governments worldwide are looking at practical and effective ways of improving consumer protection in financial services (*Rutledge, 2010*).

4.1 Remuneration

Before the crisis, the incentive systems of numerous financial firms prompted both financial institution executives and employees to undertake short-term risks, instead of taking into consideration the interests of their depositors/shareholders and maintaining sustainable profitability in the long term. Rewards were tied to the success of the company on the market. The indicators of success in this field usually involved market share figures (number of new contracts, income, and profit), increase in client numbers, etc. As a result, lending standards became progressively laxer and contracting volumes were exaggerated (clients were talked into well rated, but rather risky deals) in the hopes of attaining higher bonuses. Even if a financial company or a bank went bankrupt, managers were not obliged to repay their bonuses, moreover: several top executives were paid excessive severance payments (golden parachutes). Many executives tried to conceal the company's liquidity problems (with the help of auditors and credit rating agencies) until the last minute (*Biedermann, 2012b*). The above described routine contributed significantly to a so-called "boom frenzy" which ultimately led to massive irresponsible financial behaviour.

American legislation tackled the issue in a soft manner. The Dodd-Frank Act prescribes a shareholder vote on executive compensation. Pursuant to the Act's provisions, joint-stock companies shall in their proxy statements, at least once every three years, request shareholders to take a vote to approve the compensation of executives. The result of the vote, however, is not binding for management. The vote on compensation also requires that in the event that shareholders are asked to approve an acquisition, merger, proposed sale, etc., the person making such solicitation shall also disclose how much compensation corporate executives will receive due to the given transaction. These vote results are also non-binding (*Fried–Shilon, 2012*).

By contrast, the EU took harsher measures to cap bankers' bonuses. The CRD IV package, containing the Capital Requirements Directive IV (CRD IV) and the Capital Requirements Regulation (CRR), specifies provisions regarding the compensation policies of financial institutions, including a "bonus cap". The British government sought annulment of the remuneration-related requirements, but as of early 2015, due to the "minimal prospects for success", it decided not to pursue the case any longer (*Osborne, 2014*). Although capping bonuses may be effective in fighting short-sighted manager strategies, they might

result in increasing fixed salaries or drive away talent. If an exodus of bankers takes place, the City of London may lose ground to New York and Asian financial centres.

4.2 Capital requirements

The relative importance of banks in the world economy in the last two hundred years has been on the rise; from financial intermediaries channelling savings into productive activities, they have become fundamental players in most developed countries, boosting or slowing down a country's economic performance. This process gathered pace in the decades preceding the current crisis. The scale of banking grew rapidly: between 1870 and 1970, the average bank assets-to-GDP ratio rose from 16% to over 70% per cent. In the roughly 40 years since 1970, the ratio of bank assets-to-GDP has more than doubled, rising from around 70% to over 200% (*Haldane, 2012*). Banking concentration has also risen dramatically, contributing to the evolution of banks that are systemically important financial institutions (SIFIs).

The existence of SIFIs involves a three-fold policy challenge. First, such institutions are responsible for systemic risk by blunting incentives to manage risks prudently and by creating a massive contingent liability for governments. Second, SIFIs distort competition. And third, the favoured treatment of SIFIs lowers public trust in the fairness of the system (*Goldstein–Véron, 2011*).

The operation of banks has its innate risks due to the nature of their activity. Because of the maturity mismatch between bank assets and liabilities, banks are subject to the possibility of runs and systemic risk (*Allen–Carletti, 2009*). Bank regulation is designed to minimise these risks stemming from the characteristics of banking activities. The relatively lax and pro-cyclical regulatory environment, as well as the moral hazard related to SIFIs encouraged banks' risk-taking and expanded banks' range of activities from the 1980s on (*Taylor, 2012*). The operation of banks became riskier, as they used excessive leveraging and started lending to less reliable customers. The hallmark of this excessive risk-taking was loans to NINJA (*No Income No Job or Assets*) customers, who then started to default in significant magnitudes (*Talbott, 2010*). The above phenomena are widely considered to have contributed to the global financial crisis.

Reforming minimum capital requirements for banks and certain financial service providers aims to strengthen the resilience of the financial sector, which proved to be insufficient during the crisis. The ratio between the capital a bank must retain and the risks it incurs in its activities are defined by the Basel Committee on Banking Supervision at the international level. The first Basel Accords were published in 1988 by central bankers from all around the world and were enforced in the Group of Ten countries in 1992 (*BIS, 2009*). Due to swift transformation in the financial sphere in the following two decades, a more comprehensive, better adapted set of risk and capital management requirements was published by the BCBS in 2004 (Basel II) and implemented gradually in most G20

countries by 2010 (*BIS, 2013*), when Basel III was developed to address shortcomings of the previous regulatory framework revealed by the financial crisis (*Elliott, 2010a*).⁶

Basel III improves the quality and quantity of capital retained by banks in order to better absorb shocks,⁷ introduces a counter-cyclical buffer that can be used in times of crisis,⁸ an additional non-risk weighted leverage ratio and liquidity coverage ratio to be met, and strengthens risk capture and risk management practices. Since Basel III is not legally binding, the Basel Committee member countries are entitled to implement it in their own way, respecting the spirit of Basel III as a general basis. The implementation of Basel III rules is therefore advancing very slowly and unevenly. The progressive “phase in” of specific provisions, particularly on liquidity and leverage, are likely to influence the relative competitiveness of US and EU financial institutions.

Both American and European regulators face fierce resistance from bankers who claim to need a longer period of preparation to implement the required changes (*EBIC, 2013*). Although the Basel III capital proposals have promising elements, including a leverage ratio, a capital buffer and a mechanism to deal with pro-cyclicality through dynamic provisioning based on expected losses, it might face the same fate as Basel II which never properly came into effect.⁹

While in the EU the CRD IV framework applies to all credit institutions and investment firms, in the United States the scope of implementation is narrower: smaller bank holding companies and some savings and loans companies will be exempt from the relevant provisions. While some EU requirements are more liberal, others are more rigorous (scope of application of the Basel framework, capital buffers and eligibility criteria for recognising real estate collateral) as compared to the minimum requirements stipulated in the Basel III framework. The Basel Committee on Banking Supervision assessed European implementation,¹⁰ and claimed it to be materially non-compliant with the minimum standards of Basel III, deviating from both the letter and the spirit of the Basel framework. Special emphasis is put on the methodology used to calculate CVA risk capital requirements (*BIS, 2014*). The identified deviations, especially those more rigorous than US Final Rules,¹¹ might pose serious challenges for financial institutions operating in both environments.

6 Basel II did not enter into force until January 2008 in the EU and April 2010 in the US. In response to the crisis and to remedy some shortcomings of Basel II, the BCBS adopted the Basel III Accord in September 2010 (Paulo, 2011).

7 The definition of what counts as “Tier I” capital is also stricter.

8 Basel II was criticised for being pro-cyclical from the start (minimum capital requirements were usually underestimated in boom periods, and banks could not go below the minimum capital requirements even in times of crisis).

9 In the United States, Basel II was never fully implemented, and therefore the Final US Rules will replace a Basel I-based capital system.

10 For the full implementation of CRD IV and the CRR, the EU relies upon the timely issuance of EBA standards and guidelines.

11 In July 2013, the Board of Governors of the Federal Reserve System (the “Federal Reserve”) and other bank regulatory agencies approved final rules (“Final US Rules”) which codify the US Federal regulatory agencies’ regulatory capital rules into a single, comprehensive regulatory framework (Sabel, 2013).

The different accounting standards which are applied in the US and the EU make the comparison of capital requirements all the more difficult.¹² In relation to some elements of a bank's balance sheet, IFRS (International Financial Reporting Standards) and US GAAP (US Generally Accepted Accounting Principles) are totally incomparable (*Lannoo, 2010a*).

Another serious problem lies in the very nature of the financial system. The Basel regulatory framework can only regulate banks. However, banks can shift financial "promises" to non-regulated or less-regulated insurance companies in various jurisdictions. There are several other actors on the financial market that might act like banks (e.g. some hedge funds issue securities in their own name and take deposits of investors and invest with leverage on behalf of investors). This shadow banking system does not operate according to the same rules as the banking system does (*Blundell et al., 2010*).

Hence, even if stricter rules are applied to banks, other bank-related and shadow banking institutions will continue operating outside these rules, and previously well regulated banking activities might be taken over. In other words, the new banking standards may encourage certain activities to move to the nonbank sector, where banking standards do not apply (*IMF, 2012*).

4.3 Derivatives

A derivative security (forwards, swaps, futures, options) generally refers to a financial contract whose value is derived from the value of an underlying asset. Derivatives allow users to meet the demand for cost-effective protection against risks associated with movements in the prices of the underlying, and thus users of derivatives can hedge against fluctuations in exchange and interest rates, equity and commodity prices, as well as credit worthiness. The derivatives market has skyrocketed during the last 25 years, and the rapid improvements in computer technology in the 1990s allowed asset managers to design and develop increasingly sophisticated derivatives as part of their risk management tools (*Chui, 2012*). They generally ensured much higher yields before the crisis than deposit interest, and offered a wide range of investment opportunities with high returns compared to the amount invested. This, however, was not due to the "risk-free" nature of derivatives transactions, but rather to the overly optimistic speculations related to such. Due to high leveraging, investors can lose multiples of their original investment if they take up unfavourable speculative positions (*Biedermann, 2012a*).

Moreover, a flourishing market in derivative products developed outside the regulated markets (over-the-counter, OTC), under significantly more "unregulated" conditions, which made the markets more opaque. According to *Paulo (2011)*, almost 90% of derivatives are not traded on regulated markets, but over the counter.

12 The EU has adopted IFRS, whereas the US continues to apply its own standards (US GAAP).

The financial crisis was seriously aggravated by the excessive use of derivatives such as credit default swaps (CDS) for speculative purposes, instead their use for hedging existing risks (*Elliott, 2010b*). The lack of appropriate regulation of OTC derivatives transactions and insufficient risk aversion are addressed both in the European and American regulatory efforts.

There is a general effort to bring to light as many transactions that were previously concluded on unregulated platforms as possible. In Europe, standardised derivatives will have to take place on MTFs (multi-lateral trading facilities), in the US on SEFs (Swap Execution Facilities) and reduce counterparty risk by obligating trading parties to clear transactions via a central counterparty.¹³ The key requirements regarding derivatives are by and large the same in the European (EMIR) and American (Dodd-Frank Act, Title VII) regimes both regarding trade data and clearing requirements. These rules are compulsory for both financial and non-financial companies which conclude more than a certain threshold number of derivative transactions. Both jurisdictions granted a wide exemption for commercial users of derivatives who are hedging their underlying business risks (*Deloitte, 2012*).

However, while the frameworks are very similar, there are significant differences in implementation and technical details. *Jones (2014)* wrote about a Transatlantic tug-of-war over derivatives, since both the EU and the United States reiterated their commitment several times to bring about a coherent and smooth global market of derivatives (Path Forward,¹⁴ Financial Markets Regulatory Dialogue¹⁵ press releases¹⁶) and still no compromise is in sight. United States CCPs are still not allowed to clear EU derivatives contracts without the added cost of complying with European rules as well. Another key challenge is minimising divergences with regard to margin for uncleared swaps.

Moreover, whereas US capital markets are more alike, the European financial landscape is far from being homogeneous. The fragmentation of European markets pose challenges (among others) to the regulation of central counterparties (CCPs). According to the

13 A central counterparty stands between two parties, guaranteeing a trade if one party defaults.

14 In 2013, EU and United States regulators signed the “Path Forward” agreement, a promise to harmonise their derivatives rules in an attempt to avoid fragmenting the sector.

15 The Financial Market Regulatory Dialogue has been the forum for discussion of EU and US regulators since 2002. It brings together representatives of the European Commission (DG MARKT), the European Supervisory Authorities (ESAs – European Banking Authority, European Insurance and Occupational Pensions Authority, European Securities and Markets Authority) and the US Treasury and independent regulatory agencies, including the Board of Governors of the Federal Reserve System, Commodity Futures Trading Commission (CFTC), Federal Deposit Insurance Corporation, and Securities and Exchange Commission (SEC). The members of the EU-US regulatory dialogue hold regular exchange of information on regulatory developments on both sides of the Atlantic.

16 United States (U.S.) – European Union (EU) Financial Markets Regulatory Dialogue Joint Statement of 15 January, 2015: “Participants highlighted EU and US efforts to implement OTC derivatives reforms and their continued efforts to settle remaining issues related to cross-border market participants, transactions, and infrastructures. Both sides welcomed the extension of the transitional period for capital requirements for exposures to central counterparties (CCPs). The extension allows the EU to continue to engage with CFTC and SEC staffs to move forward on equivalence decisions for US CCPs. EC and CFTC staffs committed to resolving soon issues related to equivalence for US-based CCPs under the European Markets and Infrastructure Regulation (EMIR) on the basis of an effective system of substituted compliance for dually-registered CCPs” (p. 2.)

European Association of CCP Clearing Houses (EACH), an umbrella group for Europe's 23 clearing houses, European requirements are more onerous (more expensive and burdensome) than American ones, which might undermine the competitiveness of European CCPs, putting them at a regulatory disadvantage and encouraging regulatory arbitrage.

As for the differences in EMIR's effect, according to *Károly Mátrai*, director (Risk Management and Economy) of the Hungarian central clearing house (KELER), some provisions might raise serious difficulties for the operation of smaller clearing houses.¹⁷

4.4 Credit rating agencies

The importance of the analysis of credit ratings agencies (hereinafter referred to as CRAs) stems from the consensus on blaming them for part of the financial crisis (*Lannoo, 2010a*). The market is currently dominated by three large credit rating agencies, which reign over 94% of the global market (*European Commission, 2008*). They had already erred in their forecasts on a number of occasions before and at the beginning of the mortgage crisis, and rated securities and credit products which soon lost their value, as excellent. Moody's, Fitch and Standard & Poor's gave premium category ratings even to those collateralised debt obligations, the underlying subprime mortgagors of which were already insolvent. Between the second half of 2007 and the first half of 2008, the rating of several securities changed from AAA (obligation will be met with a very high probability) to CCC (significant credit risk) over the course of a single day (in the period in question, mortgage-backed securities were downgraded in a total value of USD 1.9 trillion) (*Morris, 2008*).

Many institutions were only allowed to have a certain ratio of low-rated investments and were forced to start selling following the downgrade. Those who could have purchased were unable to do so due to strict regulations. It was therefore the system itself which reinforced negative feedback and elevated panic. What is of more concern is the conflict of interest that arises in the advisory business of CRAs. The advisory arms of CRAs might help potential issuers gain a desired rating. Therefore, it would be desirable to legally separate the ratings business from ratings advisory services (*Brunnermeier et al., 2009*).

Implementation of the regulation differs significantly between the US and the EU. In spite of extensive US-EU dialogue on financial regulation, regulation of the CRAs remains an area of fundamental divergence between the two parties. The key differences in the two approaches stem from different perception of the rating business. US authorities prefer market discipline through transparency and competition, establishing a state-sanctioned oligopoly, in which the basis of competition will be the quality of ratings. By contrast, EU

17 Based on the interview with Károly Mátrai (21st March, 2013).

authorities aim to promote CRAs' accountability through supervision, while raising barriers of entry into the rating business (*Lannoo, 2010b*).

US regulation has employed credit ratings since the 1930s without supervising CRAs, in response to the 1929 market crash. Between the 1930s and the 1970s, the use of ratings in regulation did not change significantly; consequently the US regulation has grown to be highly dependent upon ratings in areas such as securities, pensions, banking, real estate, and insurance (*Cinquegrana, 2009*). However, in light of the 2007-08 global financial crisis and mounting evidence of the responsibility of CRAs in the debacle, the United States Securities and Exchange Commission – in the hope of reducing the overwhelming influence of CRAs over US and global economy – decided in 2011 to try and erase compulsory reliance on credit rating agencies from financial regulation rulebooks where possible. The overall aim is “to remove or replace all references to CRA ratings in laws and regulations and give alternatives where possible” (*Finance and Strategy, 2013*). The new rules also support financial market actors to elaborate their own credit assessments. The EU has also taken significant steps to remove the hard wiring of CRA ratings from its rules and regulations through the adoption of the CRA III Regulation (*FSB, 2013*). Just like in the United States, rating agencies can be held liable if their reports cause damage to an investor or an issuer due to infringement of CRA Regulation or gross negligence. The third CRA package also tries to reduce overreliance by encouraging self-assessment of financial institutions. The Regulation will improve the independence of CRAs and help eliminate conflicts of interest by introducing mandatory rotation for certain complex structured financial instruments (re-securitisations). There are also limitations as regards the shareholding of rating agencies. The EU is also supporting the use of smaller CRAs in order to reduce high market concentration of the three largest agencies. To mitigate the risk of conflicts of interest, the new rules also prohibit a shareholder of a CRA with 10% or more of the capital or voting rights from holding 10% or more of a rated entity (*European Commission, 2013*). The issue of the third-country regime was the most debated point during the negotiation of the CRA Regulation, that is why the 2012 decision of the EU to recognise the legal and supervisory framework of the US for credit rating agencies as equivalent to the EU requirements came as a surprise for many observers.

4.5 Supervision of hedge funds

Hedge funds were blamed for their part in the crisis, but their real role is unclear. Hedge funds have fewer assets and less leverage than banks, making it less likely that hedge funds might cause the next crisis. As already mentioned, Title IV of the Dodd-Frank Act restricts a banking entity from having an ownership interest in or being a sponsor of a private equity or hedge fund if such investments amount to more than 3% of the bank's Tier 1 capital or the bank's interest is more than 3% of the total ownership of the fund (*Kaal, 2010*).

Hedge funds with more than USD 150 million in Assets Under Management (AUM) are required to register as investment advisers and must disclose information on their trades and portfolios to the SEC (Securities and Exchange Commission). The Dodd-Frank Act also directs the SEC to set up rules for the registration and reporting of hedge fund managers who were previously exempt from registration. By obligatory registration, the SEC may collect necessary information in order to curtail those who operate in the “shadows of our markets”, prevent fraud, limit systemic risk, and provide information to investors. In addition to making registration mandatory, the Dodd-Frank Act requires registered hedge fund advisors to file periodic reports (*Kaal, 2013*).

The EU’s directive on Alternative Investment Fund Managers (AIFMD) came into effect in July 2014, standardising the managers’ operation and defining provisions on selling their funds within the European Economic Area. In order to register and to obtain a “passport”, the fund managers must enrol in their home jurisdiction. Possessing a passport authorises selling funds across the EU. However, not all jurisdictions are favourable for non-EU funds: the UK, the Netherlands and Northern European requirements are easier to handle, while Southern Europeans are more restrictive. Managers are also discouraged by a range of authorisation fees and administrative hurdles.¹⁸ Previous UCITS¹⁹ passporting fees were minimal, and thus charges varying from one member state to the other have puzzled several managers. As a result, several US managers are only entering the UK and Switzerland, and “waiting for the playing field to settle down”.

4.6 Consumer protection

Before the crisis, on the one hand, low financial literacy on the consumer side and increased financial product complexity on the financial service provider side led to consumers who felt or were actually misled or taken advantage of. On the other hand, unregulated or inadequately supervised financial service providers (with growing conflicts of interest) and the spread of misaligned incentives taking into account short-term economic performance only, also increased the possibility of consumers facing fraud or abuse (*OECD, 2011*).

Policymakers seem to have realised that creating a sense of safety for consumers is a basic ingredient of any well-operating financial system and that consumer confidence boosts growth and innovation over the long term. Therefore developed countries have put

¹⁸ Austria, for example, charges a fee of at least EUR 1,100 (USD 1,409) for processing documents and an annual fee of EUR 600 for monitoring compliance. Britain and Hungary, by contrast, do not charge an initial fee, though they require fund managers which set up a local branch to pay “periodic” fees (*Cohn, 2014, The Reuters article*).

¹⁹ “UCITS” or “undertakings for the collective investment in transferable securities” are investment funds regulated at the European Union level. They account for around 75% of all collective investments by small investors in Europe. The legislative instrument covering these funds is Directive 2014/91/EU (European Commission, 2014b).

consumer protection and financial education at the top of their agenda in recent years (*Chakrabarty, 2013*).

Regulatory responses to the regulatory vacuum in the consumer protection system in the United States were addressed and treated as a central problem in the Dodd-Frank Act. Among other consumer friendly initiatives, the flagship initiative of the Act was to create the Consumer Financial Protection Bureau (*CFPB, 2013*) to consolidate consumer protection powers from seven federal agencies (*Puzzanghera, 2011*). Although its initial steps were hampered by harsh Republican opposition (arguing that the Bureau was given too much power and it would limit credit availability and limit consumers' financial product choices), the Bureau is considered a relatively successful agency contributing actively to consumer protection (*Singletary, 2012*).

Consumer protection in the field of financial products in the EU falls within the jurisdiction of the new European Supervisory Authorities (*Kastner, 2013*). These ESAs cooperate with national supervisory bodies to protect financial consumers. The European Commission has been coming up with consumer-friendly proposals regarding deposit guarantees, a unified mortgage lending information sheet for a better comparison of services, stricter regulations of complex retail investment products, etc. (*European Commission, 2010a; 2010b; 2011; 2012*).

In 2014, the directive ensuring that all European citizens have access to a basic bank account was considered a great achievement in the field of consumer protection (*EurActiv, 2014*). As Directive 2014/92/EU (the "Payment Accounts Directive") has been adopted, the EU aims to harmonise the opening of bank accounts for European citizens in all credit institutions, to make banking fees transparent and to facilitate account switching. Consequently, the consumer rights of EU citizens will be improved in the field of (1) access to payment accounts, (2) comparability of payment account fees and (3) payment account switching. However, making consumer protection and education a central issue when reforming the financial system cannot conceal the fact that consumers – even if they are financially well-informed – are usually not in a position to dictate certain contractual terms (e.g. when taking out a mortgage).

5 Conclusions

In order to stabilise the financial markets, the EU and the US are in the midst of a fundamental institutional and regulatory overhaul. The crisis brought into focus the interconnections between financial markets and clearly highlighted that regulators, supervisors and financial centres across the globe need closer cooperation (*Calvino, 2013*).

The US and Europe play a central role in shaping global finance, accounting for more than two-thirds of all financial services. Although ties between the two financial markets are almost organic, there are several fundamental issues where regulatory frameworks differ. Alterations can partly be explained by the different political background and decision-making mechanisms, but also by diverging attitudes.

The divergence of regulatory schemes is very problematic: corresponding the different sets of rules is a time-consuming and money-consuming task (salient administrative costs, uncertainties about the future regulations). Both the EU and the United States are well aware of disadvantages stemming from the differences in regulation. That is one reason why the two entities initiated the regular the Financial Markets Regulatory Dialogue back in 2002. It is obvious that if a country requires adaptation to its financial regulation from third countries, it becomes a “rule-maker”. “Rule-takers” adjust to standards set by other actors. Therefore, making or taking financial regulation reflects an economic actor’s ability to influence others to accept its rules (*Quaglia, 2014*). In our case, although the EU and the United States share similar objectives, they both prefer the role of rule-maker to that of passive “downloaders” of rules set by the other. Nevertheless, international agreement on cross-border regulatory issues is of fundamental importance: differences represent a huge legal and technical challenge for companies operating both in Europe and overseas, which have to implement two sets of regulations simultaneously.

The surge in financial regulation activities after the crisis represents a huge opportunity to create a more uniform global financial environment. By comparing six exemplary areas of the regulatory responses in the US and the EU, we conclude that several rules are inter-related and have overlapping goals, but that divergence in their implementation poses a serious challenge for firms operating in both environments. In some areas, regulators have managed to recognise each other’s legal and supervisory framework as equivalent through continuous dialogue and cooperation (e.g. credit rating agencies). Regarding other, similarly crucial fields, disparities persist (e.g. central counterparties and derivatives).

Consequently, as financial markets continue to integrate, regulators face similar problems in the EU and the United States, but their implementation sometimes diverge and differ. Regular bilateral cooperation (FMRD) and thoroughly described third-party requirements as well as established substituted compliance/equivalence²⁰ procedures point in the right direction. Since it is in both jurisdictions’ interest to promote financial firms’ smooth cross-border operation, reciprocal recognition of financial rules is hopefully within reach.

²⁰ Substituted compliance: if a relevant body determines that a foreign jurisdiction’s rules are comparable to its own rules, it is basically referring to the idea that broad deference should be given to a foreign jurisdiction’s full regulatory regime – in lieu of one’s own regulatory regime – so long as it is comparable in its objectives (This approach in the EU jargon is referred to as “equivalence”) CFTC, Interpretive Guidance and Policy Statement Regarding Compliance with Certain Swap Regulations (CFTC, 2012).

References

ABBL (2013): MiFID. Association des Banques et Banquiers. Luxembourg, <http://www.abbl.lu/dossiers/mifid>. Accessed on 15 October, 2013.

ACHARYA, V. A. et al. (2010): *Regulating Wall Street: The Dodd-Frank Act and the New Architecture of Global Finance*. New York: Wiley Finance.

ADAMS, Z. – FÜSS, R. – GROPP, R. (2014): Spillover Effects among Financial Institutions: A State-Dependent Sensitivity Value-at-Risk Approach. *Journal of Financial and Quantitative Analysis* 49 (3), pp. 575–598.

ALLEN, F. AND CARLETTI, E. (2009): The Roles of Banks in Financial Systems. In: BERGER, A. N., MOLYNEUX, P. and WILSON, J. O. S. (eds.): *The Oxford Handbook of Banking*. Oxford New York: Oxford University Press, Chapter 2, pp. 37–57.

BIEDERMANN, ZS. (2012a): The History of American Financial Regulation. *Public Finance Quarterly*, 57 (3), pp. 313–331.

BIEDERMANN, ZS. (2012b): The challenges of the regulation of the international financial system. (A nemzetközi pénzügyi rendszer szabályozásának kihívásai). In: FARKAS, P., MEISEL, S. and NOVÁK, T. (szerk.): *The changing world economy. (A változó világgazdaság – útkeresések, tapasztalatok és kilátások)*. Vol. 1: Global questions (Globális kérdések). Budapest: MTA KRTK, pp. 80–96.

BIS (2009): History of the Basel Committee and its Membership. Bank for International Settlements, Basel. <http://www.bis.org/bcbs/history.pdf>. Accessed on 17.03.2013.

BIS (2013): International regulatory framework for banks (Basel III). Bank for International Settlements, Basel. Letölthető: <http://www.bis.org/bcbs/basel3.htm>. Accessed on 17.10.2013.

BIS (2014): Regulatory Consistency Assessment Programme (RCAP) Assessment of Basel III regulations – European Union. Letölthető: <http://www.bis.org/bcbs/publ/d300.pdf>. Accessed on 27.01.2015.

BLUNDELL-WIGNALL, A. – ATKINSON, P. (2010): Thinking beyond Basel III: Necessary Solutions for Capital and Liquidity. *OECD Journal: Financial Market Trends*, Vol. 1.

BRUNNERMEIER, M.K. – CROCKETT, A. – GOODHART, C.A.E. – PERSAUD, A. – SHIN, H.S. (2009): *The Fundamental Principles of Financial Regulation*. Geneva Reports on the World Economy, 11th ed. Genf: International Center for Monetary and Banking Studies, ICMB, and Centre for Economic Policy Research, CEPR.

CALVINO, N. (2013): Financial Regulation in the US and EU: Integration or Fragmentation? Policy Discussion at Bruegel think tank Brussels, July 3, 2013. http://ec.europa.eu/internal_market/speeches/docs/2013/20130703_speech_calvino_en.pdf. Accessed on 21.10.2013.

CFPB (2013): Creating the Consumer Bureau. Consumer Financial Protection Bureau. <http://www.consumerfinance.gov/the-bureau/creatingthebureau/>. Accessed on 21.10.2013.

CFTC (2012): Interpretive Guidance and Policy Statement Regarding Compliance with Certain Swap Regulations. Commodity Futures Trading Commission. <http://www.cftc.gov/ucm/groups/public/@newsroom/documents/file/federalregister071213b.pdf>. Accessed on 28.01.2015.

CHAKRABARTY, K. C. (2013): Financial consumer protection. Inaugural address by the Deputy Governor of the Reserve Bank of India, at the Reserve Bank of India – Bank of France Seminar on „Consumer protection”, organized at the College of Agricultural Banking, Pune, 22 March 2013. <http://www.bis.org/review/r130402b.pdf>. Accessed on 18.10.2013.

CHATZISTAVROU, F. – KATSIKAS, D. – TIRKIDES, Y. (2013): Strengthening EU presence in global financial regulation reform. In: FABRY, E. – ROSELLI, C. (eds.): Think global – act European IV. Thinking strategically about the EU’s external action. Paris: Institut Jacques Delors, pp. 76–84.

CHUI, M. (2012): Derivatives markets, products and participants: an overview. In: *IFC Bulletin* No. 35. Data requirements for monitoring derivative transactions. BIS, pp. 3–12.

CINQUEGRANA, P. (2009): The Reform of the Credit Rating Agencies: A Comparative Perspective. ECMI Policy Brief No. 12 Feb., Center for Economic Policy Studies (CEPS).

CLAESSENS, S. – KODRES, L. (2014): The Regulatory Responses to the Global Financial Crisis: Some Uncomfortable Questions. IMF Working Paper Series WP/14/46. IMF, Washington D.C.

CMWG (2010): EU-U.S. financial markets – need for cooperation in difficult times. TABD CMWG, Washington, Brussels. http://www.law.harvard.edu/programs/about/pifs/symposia/europe/2010-europe/briefing-book/concept-papers/tabd_eu-u-s--financial-markets.pdf. Accessed on 11.04.2013.

COHN, C. (2014): Smaller alternative funds complain of European ‘passport’ costs. *Reuters*, <http://uk.reuters.com/article/2014/11/28/hedgefunds-europe-fees-idUKKCN0JC00A20141128> Accessed on 27.01.2015.

DAVIS, K. (2011): Regulatory Reform Post the Global Financial Crisis: An Overview. A report prepared for the Melbourne APEC Finance Centre. http://www.apec.org.au/docs/11_CON_GFC/Regulatory%20Reform%20Post%20GFC-%20Overview%20Paper.pdf. Accessed on 27.01.2015.

DELOITTE (2012): EMIR: A giant stride forward but further work to do. EMEA Centre for Regulatory Strategy. Financial Services, 22 February. <http://www.deloitte.com/assets/Dcom-UnitedKingdom/Local%20Assets/Documents/Industries/Financial%20Services/Issues/uk-fs-emir-giant-stride-forward.pdf>. Accessed on 16.04.2013.

DEWATRIPONT, M. J. and TIROLE, J. (1994): A Theory of Debt and Equity: Diversity of Security and Manager-Shareholder Congruence. *Quarterly Journal of Economics* 109 (4), pp. 1027–1054.

DODD–FRANK ACT (2010): The Dodd–Frank Wall Street Reform and Consumer Protection Act. <http://www.gpo.gov/fdsys/pkg/BILLS-111hr4173enr/pdf/BILLS-111hr4173enr.pdf>. Accessed on 22.10.2013.

EBA (2013): Implementing Basel III Europe: CRD IV package. European Banking Authority. <http://www.eba.europa.eu/regulation-and-policy/implementing-basel-iii-europe>. Accessed on 17.10.2013.

EBIC (2013): Basel III implementation / EU-US level playing field. European Banking Industry Committee, Brussels. <http://www.eubic.org/Position%20papers/004C-2013%20-%20EBIC%20Letter%20Basel%20III%20implementation%20-%20EU-US%20level%20playing%20field.pdf>. 09.04.2013.

ELLIOTT, D. J. (2010a): Basel III, the Banks, and the Economy. The Brookings Institution, Washington D. C. http://www.brookings.edu/~media/research/files/papers/2010/7/26%20basel%20elliott/0726_basel_elliott.pdf. Accessed on 06.04.2013.

ELLIOTT, D. J. (2010b): The Danger of Divergence: Transatlantic Cooperation on Financial Reform. The Atlantic Council and Thomson Reuters. http://thomsonreuters.com/content/news_ideas/white_papers/corporate/markupfielditems/The_Danger_of_Divergence.pdf. Accessed on 19.03.2013.

ERNST AND YOUNG (2010): The bar is now set, Basel III calibrations and timeline. [http://www.ey.com/Publication/vwLUAssets/The_bar_is_now_set:_Basel_III_calibrations_and_timeline/\\$FILE/Basel%20III_01%20Nov_IF_7_Bar%20is%20now%20set.pdf](http://www.ey.com/Publication/vwLUAssets/The_bar_is_now_set:_Basel_III_calibrations_and_timeline/$FILE/Basel%20III_01%20Nov_IF_7_Bar%20is%20now%20set.pdf). Accessed on 17.10.2013.

ERNST AND YOUNG (2013): The world of financial instruments just got more complex. Time to take note., Capital markets reform: MiFID II. [http://www.ey.com/Publication/vwLUAssets/MiFID_II_adds_complexity_to_financial_instruments/\\$FILE/MiFID_II_adds_complexity_to_financial_instruments.pdf](http://www.ey.com/Publication/vwLUAssets/MiFID_II_adds_complexity_to_financial_instruments/$FILE/MiFID_II_adds_complexity_to_financial_instruments.pdf). Accessed on 17.10.2013.

ESMA (2013): What does EMIR mean for Non-financial counterparties? European Securities and Markets Authority. http://www.esma.europa.eu/system/files/emir_for_non-financials.pdf. Accessed on 17.10.2013.

EC (2008): Commission staff working document accompanying the Proposal for a Regulation of the European Parliament and of the Council on Credit Rating Agencies. Impact Assessment, SEC/2008/2746. European Commission, Brussels. http://ec.europa.eu/finance/securities/docs/agencies/impact_assessment_en.pdf. Accessed on 21.10.2014.

EC (2010a): Commission Proposes Package to Boost Consumer Protection and Confidence in Financial Services, 12.07.2010. http://europa.eu/rapid/press-release_IP-10-918_en.htm. Accessed on 21.10.2013.

EC (2010b): Regulating Financial Services for Sustainable Growth. EC, European Economic and Social Committee (EESC). <http://www.eesc.europa.eu/?i=portal.en.int-opinions.15779>. Accessed on 21.10.2013.

EC (2011): Regulating Financial Services for Sustainable Growth, Feb. European Commission, Brussels. http://ec.europa.eu/internal_market/finances/docs/110209_progress_report_financial_issues_en.pdf Accessed on 21.10.2013.

EC (2012): Special Eurobarometer 373: Retail Financial Services:Report. European Commission, Brussels. http://ec.europa.eu/internal_market/finservices-retail/docs/policy/eb_special_373-report_en.pdf. Accessed on 21.10.2013.

EC (2013): New rules on credit rating agencies (CRAs) enter into force – frequently asked questions. European Commission, Brussels. http://europa.eu/rapid/press-release_MEMO-13-571_en.htm. Accessed on 24.01.2015.

EC (2014a): Banking structural reform. European Commission, Brussels. http://ec.europa.eu/finance/investment/ucits-directive/index_en.htm. Accessed on 05.02.2015.

EC (2014b): UCITS – Undertakings for the collective investment in transferable securities. European Commission, Brussels. http://ec.europa.eu/finance/investment/ucits-directive/index_en.htm. Accessed on 24.01.2015.

EURACTIV (2014): EU strikes deal on universal right to basic bank account. <http://www.euractiv.com/euro-finance/basic-banking-features-talks-rea-news-534284>. Accessed on 24.01.2015.

EVANS, D. S. (2010): Why Now is Not the Time to Revamp Consumer Financial Protection (7 January 2010). SSRN: <http://ssrn.com/abstract=1538005>. Accessed on 24.01.2015.

FINANCE AND STRATEGY (2013): Stricter European rules on Credit Rating Agencies. <http://en.finance.sia-partners.com/20130619/stricter-european-rules-on-credit-rating-agencies/>. Accessed on 25.01.2015.

FINANCEWATCH (2013): MiFID II Key Issues. <http://www.finance-watch.org/our-work/dossiers?fid=98&keyissues=1>. Accessed on 17.10.2013.

FRIED, J. M. and SHILON, N. (2012): The Dodd-Frank Clawback and the Problem of Excess Pay. Harvard Law School. The Corporate Board, January/February 2012. <http://www.law.harvard.edu/faculty/jfried/1201FriedShilon.pdf> Accessed on 06.04.2013.

FSB (2013): Credit Rating Agencies – Reducing reliance and strengthening oversight. Progress report to the St Petersburg G20 Summit. http://www.financialstabilityboard.org/wp-content/uploads/r_130829d.pdf?page_moved=1. Accessed on 25.01.2015.

GFMA (2012): Regulatory Reform Programme – Extraterritoriality Issues in US and EU. Global Financial Markets Association. <http://www.gfma.org/Initiatives/Consistency-of-Implementation/GFMA-Paper-Detailing-Extraterritoriality-Issues-in-US-and-EU/>. Accessed on 25.01.2015.

GOLDSTEIN, M. AND VÉRON, N. (2011): The European Union should start a debate on too-big-to-fail. VoxEU.org, 14 Avril 2011. <http://www.voxeu.org/article/eu-should-start-debate-too-big-to-fail> Accessed on 07.04.2013.

GOODHART, C. ET AL. (1998): *Financial Regulation: Why, How, and Where Now?* New York: Routledge.

GOODHART, C. (2010): How should we regulate bank capital and financial products? What role for „living wills”? In: TURNER, A. et al. (eds.): *The Future of Finance: The LSE Report*. London: London School of Economics and Political Science, Chapter 5, pp. 165–186.

GROPP, R. (2014): How Important Are Hedge Funds in a Crisis? *FRBSF Economic Letter*, Federal Reserve Bank of San Fransisco. <http://www.frbsf.org/economic-research/publications/economic-letter/> Accessed on 26.01.2015.

HALDANE, A. G. (2012): On being the right size. Institute of Economic Affairs’ 22nd Annual Series, The 2012 Beesley Lectures. <http://www.bankofengland.co.uk/publications/Documents/speeches/2012/speech615.pdf>. Accessed on 12.04.2013.

HANSON S. G. – KASHYAP, A.K. – STEIN, J. C. (2011): A Macprudential Approach to Financial Regulation. *Journal of Economic Perspectives* 25 (1), pp. 3–28.

IMF (2012): Global Financial Stability Report. Restoring Confidence and Progressing on Reforms. Interational Monetary Foundation, Washington D.C. <http://www.imf.org/external/pubs/ft/gfsr/2012/02/pdf/c3.pdf>. Accessed on 02.03.2013.

JONES, H. (2014): EU throws down gauntlet to U.S. over derivatives. *Reuters*, <http://uk.reuters.com/article/2014/06/27/eu-regulations-clearing-idUKL6N0P83L720140627>. Accessed on 27.01.2015.

KAAL, W. A. (2010): Financial Market Regulation after the Crisis:The Case for Hedge Fund Regulation via Basel III. http://works.bepress.com /cgi/viewcontent.cgi?article=1000&context=wulf_kaal. Accessed on 22.03.2013.

- KAAL, W. A. (2013): Hedge Fund Manager Registration Under the Dodd-Frank Act – An Empirical Study. *San Diego Law Review* 50 (1), pp. 244–322.
- KASTNER, L. (2013): Transnational Civil Society and the Consumer-friendly Turn in Financial Regulation. Maxpo Discussion Paper No. 13/2. http://www.maxpo.eu/pub/maxpo_dp/maxpodp13-2.pdf. Accessed on 21.10.2013.
- LANNOO, K. (2010a): Comparing the EU and US Responses to the Financial Crisis. ECMI Policy Brief No. 14, January. Center for Economic Policy Studies (CEPS).
- LANNOO, K. (2010b): What reforms for the credit rating industry? A European perspective. ECMI Policy Brief No. 17, October. Center for Economic Policy Studies (CEPS).
- MORRIS, C. R. (2008): *The two trillion-dollar meltdown – Easy money, high rollers, and the Great Credit Crash*. Chapter 6: *The Great Unwinding*. New York: PublicAffairs, pp. 113–142.
- OECD (2011): G20 High-level principles on financial consumer protection. Organisation for Economic Cooperation and Development. <http://www.oecd.org/daf/fin/financial-markets/48892010.pdf>. Accessed on 18.10.2013.
- OSBORNE, B. (2014): George Osborne, Chancellor of the Exchequer to Mark Carney, Chair of Financial Stability Board, 20 November 2014. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/377192/CX_MC_201114.pdf. Accessed on 29.01.2015.
- ODÉA, F. (2013): Consequences of the new regulatory landscape on OTC derivatives trading. Banque de France, *Financial Stability Review* No. 17. https://www.banque-france.fr/fileadmin/user_upload/banque_de_france/publications/Revue_de_la_stabilite_financiere/2013/rsf-avril-2013/23-OUEDA_Frederic.pdf. Accessed on 29.01.2015.
- PAN, E. J. (2011): Structural Reform of Financial Regulation. *Transnational Law & Contemporary Problems* 19 (3), pp. 796–867.
- PAULO, S. (2011): Europe and the global financial crisis. Taking stock of the EU's policy response. Robert Schuman Foundation, Europe and the Global Financial Crisis: Explained in 10 Sheets. Avril 2011. http://www.robert-schuman.eu/doc/questions_europe/qe-200-en.pdf. Accessed on 02.04.2013.
- PUZZANGHERA, J. (2011): GOP stalls confirmation of consumer agency nominee. *Los Angeles Times*. <http://articles.latimes.com/2011/sep/07/business/la-fi-consumer-bureau-cordray-20110907>. Accessed on 20.10.2013.
- QUAGLIA, L. (2014): *The European Union and Global Financial Regulation*. Oxford and New York: Oxford University Press.

REINHART, C. M. AND ROGOFF, K. S. (2009): *This Time Is Different: Eight Centuries of Financial Folly*. Princeton: Princeton University Press.

RUTLEDGE, S.L. (2014): Consumer Protection and Financial Literacy Lessons from Nine Country Studies. *Policy Research Working Paper*, No. 5326. The World Bank Europe and Central Asia Region Finance and Private Sector Department. http://siteresources.worldbank.org/EXTFINANCIALSECTOR/Resources/Consumer_Protection_and_Fin_LiteracyWPS5326.pdf. Accessed on 28.01.2015.

SABEL, B. K. (2012): Dodd-Frank: The Fed's Proposal for Enhanced Supervision of Foreign Banks. Shearman and Sterling LLP. Client publication, 18 December. <http://www.shearman.com/files/Publication/50177e86-b1d7-41ee-b5c4-f084cac36422/Presentation/PublicationAttachment/668b01f2-d3d0-4869-9fea-56424aa77c20/Dodd-Frank-Feds-Proposal-for-Enhanced-Supervision-of-Foreign-Banks-FIA-121812.pdf>. Accessed on 12.04.2013.

SABEL, B. K. (2014): Basel III Framework:US/EU Comparison. The Harvard Law School Forum on Corporate Governance and Financial Regulation, September. <http://blogs.law.harvard.edu/corpgov/2013/09/27/basel-iii-framework-useu-comparison/> Accessed on 28.01.2015.

SINGLETARY, M. (2012): Consumer Financial Protection Bureau got off to a good start in its inaugural year. *The Washington Post*. http://articles.washingtonpost.com/2012-07-10/business/35486606_1_consumer-financial-protection-bureau-prepayment-penalties-high-cost-mortgages. Accessed on 21.10.2013.

STOLTENBERG, C. – CRUTCHFIELD GEORGE, B. – LACEY, K. A. – CUTHBERT, M. (2011): The Past Decade of Regulatory Change in the U.S. and EU Capital Market Regimes: An Evolution from National Interests toward International Harmonization with Emerging G-20 Leadership. *Berkeley Journal of International Law*, 29 (2), pp. 576–648.

ŠÚTOROVÁ, B. and TEPLÝ, P. (2014): The Level of Capital and the Value of EU Banks under Basel III. *Prague Economic Papers*, 19 (2), pp. 226–243.

TALBOTT, J. R. (2010): *Contagion: The Financial Epidemic That is Sweeping the Global Economy... and How to Protect Yourself from It*. Hoboken, N. J.: Wiley.

TAYLOR, A. M. (2012): The Great Leveraging. *CEPR Discussion Papers* No. 9082. London: Centre for Economic Policy Research. <http://www.bis.org/events/conf120621/taylor.pdf> Accessed on 12.04.2013.

THE ECONOMIST (2012): Laws for all – Lots of rules, but not all good ones. *The Economist*, 18 February. <http://www.economist.com/node/21547835>. Accessed on 02.04.2013.

VÉRON, N. (2014): The G20 financial reform agenda after five years. *Bruegel Policy Contribution*, No. 11, September. <http://www.bruegel.org/download/parent/849-the-g20-financial-reform-agenda/file/1752-the-g20-financial-reform-agenda/>. Accessed on 29.01.2015.

VIÑALS, J. – PAZARBASIOGLU, C. – SURTI, J. – NARAIN, A. – ERBENOVA, M. – CHOW, J. (2013): Creating a Safer Financial System: Will the Volcker, Vickers, and Liikanen Structural Measures Help? *IMF Staff Discussion Note*, SDN/13/4. <http://www.imf.org/external/pubs/ft/sdn/2013/sdn1304.pdf>. Accessed on 29.01.2015.

YELLEN, J.. L (2012): Macroprudential Supervision and Monetary Policy in the Post-crisis World. Speech At the Annual Meeting of the National Association for Business Economics, Denver, CO, 11 October. <http://www.federalreserve.gov/newsevents/speech/yellen20101011a.htm>. Accessed on 28.01.2015.

International Trends in Student Lending

Máté Vona

Several volumes of study have recently been published on the subject of financing education. These could even be used as textbooks for a course on the funding of higher education, as they discuss current issues of this practice in meticulous detail. This paper is intended to provide an overview in a similar spirit, but in a narrower, yet very current area of the financing of education, namely student lending. This paper presents the most important student lending-related national statistics of OECD countries in a systematic form, and draws conclusions concerning the initiatives of the system of financing of higher education through a comparative analysis of those. This study seeks to answer the question of whether student lending in the future will play an increasing role in the financing of higher education, regardless of economic background. It arrives at the conclusion that if we strive to involve additional resources in higher education in large European countries with populations exceeding 20 million people, such as Germany or France, to an extent equalling approximately 1% of the GDP, the use of private funding is almost the only available option. If this is accomplished by increasing tuition fees, which is what the international models suggest, the market of student lending is projected to experience significant growth. However, the results of this process will become significant in the space of several decades.

Journal of Economic Literature (JEL) Classification: G15, I22

Keywords: Economics of education, financing of higher education, student lending, OECD countries

*Máté Vona, doctoral candidate of the Economics Doctoral School of University of Debrecen.
E-mail: mate.vona@econ.unideb.hu.*

This research was implemented with the support of the European Union and the State of Hungary. It was co-financed by the European Social Fund in the framework of the TÁMOP-4.2.4.A/2-11/1-2012-0001 "National Excellence Program" – "Development and operation of a national system providing personal support to students and researchers convergence programme" highlighted project.

1 Introduction

Human knowledge, or the human factor, plays a key role in economic growth. One form of investment in productivity is learning in an organised form (*Schultz, 1961*). Participation in public education is obligatory; however, large numbers of people today study in higher education as well. Studying in higher education can also be considered a kind of investment, because although it is a costly process, the average college or university graduate has much better chances in their career and life than a person without a degree. As a service, higher education incurs costs. For an individual, this may occur in the form of direct and indirect costs. Direct costs may include, for example, tuition, lodging, and living costs. Indirect costs, or opportunity costs, include missed income that the individual would have earned had they not invested in higher education. The first category represents actual expenses and may be significant, compared to savings and income (*Varga, 1998*). According to OECD statistics, in developed countries, on average a student receives their first degree at the age of 27 (OECD, 2014:79). This means that at the end of their studies, most of them have no or very little savings. One typical solution to this problem is when the student involves their family in the financing of their education. In the United States, for instance, there are loan schemes designed expressly for such cases. FFEL is a loan for family members of persons studying in higher education.¹

One central issue in the matter of financing of higher education is the involvement of the state. Although higher education cannot be considered to be a public good in the classic sense, since it is possible to exclude an individual from consumption and the consumption of individuals may also impair the consumption options of others, we still consider it important to have the state enter this market. One reason is that higher education has favourable external effects. Human capital with a high level of education is capable of higher productivity and better efficiency. This trickles down to those who work in their environment, which is usually not paid for (*Lucas, 1988*).

The literature of cost-sharing deals with questions around the role of the state and that of individuals (*Halász, 2014:44*). *Johnstone (2004)* identifies four key players in cost-sharing, who share the costs of education. In addition to the *state* channel, the following players belong to the channel of private financing: *students*, the *family* and *donors*. In addition to their income and savings, students or their family can also fund studies through loans not borrowed from the state. The donors fund either the educational institutions or the other two players (state, families).²

There are several forms and models for the involvement of the state (*Halász, 2012*). The involvement of the state may be realised through the funding of institutions. This

1 Federal Family Education Loan (FFEL) is a scheme designed to enable the parents of students to borrow in an effort to finance the costs of education (US Department of Education, 2015).

2 Neither the referenced author nor this article seeks to assess the funding of institutions of higher education in relation to their research or business activities.

happens when the state supports institutions of higher education, which charge students only partial costs. An extreme but frequent example of this is when the institution of higher education is owned by the state and offers its services tuition-free. However, it can happen in these cases as well that the scope of consumers is restricted by an entry procedure. *Another possible way is to directly support students or their families by means of scholarships, grants, or through a student-lending system.* The state may also provide support to donors, for example, by granting tax breaks. Here one may think of company scholarships, which entitle the company to a tax credit. *In this study, we highlight student lending in relation to these options.*

One of the central questions of student lending is whether the private market is able to provide it. Although it has been mentioned that students may also borrow loans themselves, the market may be wary of providing such loans to students for their studies. The title of productivity is not transferable; therefore, it cannot be mortgaged either. And requiring a guarantee by the family would exclude from financing precisely those parties who probably need it the most (*McPherson & Schapiro, 2006*). Although the mechanism of securitisation enables lenders to transfer risk to financial actors who are willing to take it on, *Roy (2014)* states that during the crisis quasi-arbitrage transactions could also be performed using student loan-based derivative instruments. After the crisis, however, the popularity of these kinds of financial activities decreased.

One natural point of entry is when the state enters the market as the surety provider. On one hand, it may be the guarantor of the borrowers (asset-side guarantee); on the other hand, it may support the institutions (liability-side guarantee). As with any insurance-related problem, moral risk occurs in this case, too. If the borrower fails to pay, the state provides a guarantee to the lender, the lender's interest in collecting the loan, and the borrower's interest in repayment will decrease. If the state provides a guarantee for the source that is available for the lender, then the lender may be inclined to lend and collect too generously. In the latter case, the moral risk is manageable by having an organisation that is owned by the state itself, and collection is tied to the taxation system. This is how the Hungarian Student Loan Centre operates, for example, while the United States may be a case in point for asset-side guarantee provision. Finally, the state may also operate as a lender. *Berlinger (2002)* argues that, in fact, lending with a full guarantee is not through private sources, but rather state funding.

In the first section, we review those basic relationships that must be known in order to assess the problems discussed in this paper, which are partly related to funding and partly to economics of education. On one hand, we present the relationship between the economic performance of the countries and the ratio of persons with a degree; on the other hand, we look at the entire volume of investment in higher education. Furthermore, we explore how expenditures in higher education have changed over the past decade and a half. In this way, the paper illustrates the statement that the growth of the market of higher education can be considered to be global and is also significant in less-developed

OECD countries. If we also explore the trends in terms of state and private investments, it is possible to see that both have increased over the recent period. Funding of studies from student loans is, in fact, a private investment, since it is actually a transfer of future income. Based on the trends, we anticipate that student lending will grow. However, it remains to be seen where and in what way this growth will come about. Should we expect explosive growth of the large student loan markets to match those in the United States, where the debt portfolio of households with student loans hovers around 1,100 billion dollars? Is it going to be common, as in Australia, for 80% of students to have a student loan upon graduation? What is the volume of the debt portfolio that we should expect? When answering these questions, we explore the hypothesis that the growth of investment in higher education is sustainable given the models known today.

Analysis of these questions is primarily based on the most recent statistics from the 2014 volume of *Education at a Glance*, issued by the statistical office of the OECD. We present the source of these data in the second section.

The third section contains a comparative analysis of the data. Finally, the paper ends with a conclusion. In the conclusion, we formulate a statement concerning the hypothesis mentioned above (after the part containing the analysis): although there is a clear initiative in the global market of higher education to involve private funding as widely as possible, we still cannot anticipate exorbitant growth in student lending. One or two countries have a student-lending market that can be considered quite large. Primarily in smaller countries, such as those in Scandinavia, it is possible to realise very significant investments without high tuition. Despite that, student lending is present in Scandinavian countries. By contrast, in Germany, for example, it is less common. However, if countries with populations exceeding 60 million also start moving towards a system with high tuition involving a high ratio of private funds, then we can expect that there will evolve a lending ratio of 40–60% of students, coupled with repayment terms of 10–15 years. But these variables show significant deviation even in the small sample. In summary, the future of student lending is rather unpredictable, but its spread is inevitable.

2 Statement of the problem

In this section, we present by means of figures and tables some fundamental relationships necessary for the explanation of the subject of the economics of education. It is a consequence of the human factor involved in production that a higher level of education results in higher GDP in the future, but it should also be mentioned that the process is probably circular. The data in *Table 1* also prompt us to draw a similar conclusion. *Table 1* is a correlation table that shows, by means of the intersection of lines and columns corresponding to the appropriate years, linear correlation coefficients of the ratio of graduates and per capita GDP in the 34 OECD countries. It should be noted that a linear

relationship does not mean causality, but based on the theory a relationship may be assumed and its direction can also be specified. Below the main diagonal of the matrix, we find a linear correlation coefficient of medium value (0.4–0.5), which we interpret to mean that there is a positive linear relationship of medium strength between past per capita GDP and the ratio of persons involved in higher education.

Table 1

Correlation table between the ratio of graduates in various years (demographic of ages 25–64) and per capita GDP (at constant purchasing power, at 2005 prices) in OECD countries

		Per capita GDP (at constant purchasing power, at 2005 prices)					
		2000	2005	2008	2009	2010	2011
Ratio of graduates within the 25-64 demographic	2000	0.445	0.457	0.427	0.435	0.435	0.441
	2005	0.441	0.446	0.422	0.440	0.439	0.445
	2008	0.450	0.459	0.434	0.454	0.454	0.459
	2009	0.504	0.519	0.499	0.515	0.518	0.524
	2010	0.494	0.510	0.489	0.506	0.509	0.515
	2011	0.522	0.541	0.523	0.537	0.540	0.544

Source: calculation of the author based on OECD (2014:45–46), OECD (2015)

If we go above the main diagonal, we can register relationships between persons involved in higher education in the past and future GDP figures. It is perhaps worth noting that the correlation coefficients are stronger between the higher education ratios at the end of the 2000s and the GDP figures of former years. We interpret this to mean that *in more affluent countries, the ratio of persons involved in higher education increased by an even higher extent than in the less affluent OECD countries*. With the exception of Chile, there is no country that shows a decrease of student ratios exceeding 1 percentage point between any two consecutive years (OECD, 2014: 45–46).

Table 2

Relationship between per capita GDP (2011) and expenses on higher education as a percentage of GDP (2011) in OECD countries

		Per capita GDP (at constant purchasing power, at 2005 prices)					
		2000	2005	2008	2009	2010	2011
Expenditure on higher education as the percentage of GDP	2000	0.36439	0.369437	0.361048	0.381893	0.407583	0.421458
	2005	0.315214	0.314073	0.321331	0.346271	0.368337	0.368259
	2008	0.252037	0.268346	0.256987	0.279249	0.300916	0.307875
	2009	0.28888	0.302874	0.290481	0.308062	0.329046	0.334196
	2010	0.217978	0.231407	0.224659	0.237232	0.259356	0.26874
	2011	0.216917	0.234362	0.226955	0.241474	0.261512	0.270104

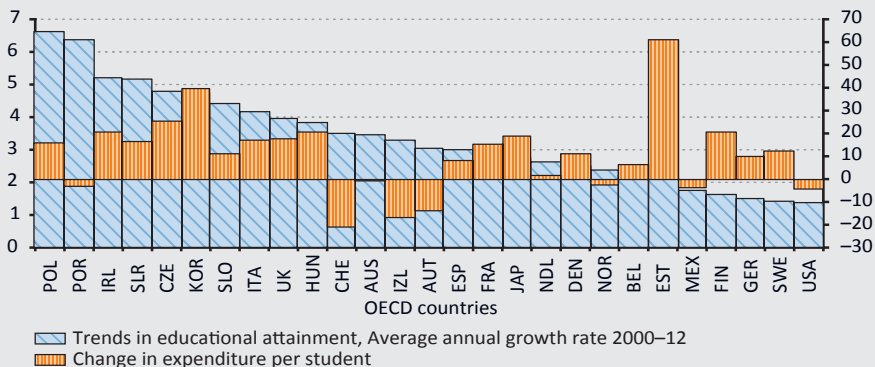
Source: calculation of the author based on OECD (2014: 231), OECD (2015)

Table 2 can be interpreted similarly to the first one. It shows the correlation between expenditure on higher education proportionate to GDP and the expenses on higher education as a percentage of GDP, based on a sample of 34 OECD countries. Here the correlation is not so strong as in the system of relationships presented in Table 1. Typically, these countries spend 1–1.8% of their annual GDP on higher education (OECD, 2014: 231). According to Table 1, those countries that spent a higher ratio of their GDP on higher education at the beginning of the 2000s were the more affluent ones, and this relationship was strengthened. Countries that had spent higher ratios earlier were more likely to catch up with the more developed ones later. *However, the correlations weakened significantly.* For example, only a weak positive correlation existed between the per capita GDP a decade earlier and the GDP-proportionate expenditure. The correlation with the current spending characteristics is even weaker than it had been at the beginning of the 2000s in the instant data.

Figure 1 shows the student ratio and the expenses broken down by country, as well as according to their changes. We can conclude that there is a general increase in the ratio of graduates: in the 2000s, positive average growth rates were typical (blue), as was already mentioned above. If we consider institutional expenses per one student, the picture grows more complex. No clear pattern can be discerned in Figure 1 that would imply that the changes in institutional expenditure per one student show a correlation with the massification of higher education. A case in point is that in both Portugal and the United States, the volume of institutional expenditures per one student is a bit lower than in 2005, although in the former country the process of massification of higher education was much more significant during this period than in the latter.

Figure 1

Average annual growth rate in the ratio of graduates within the 25–64 demographic between 2000–2011 (blue), and the percentage change in the expenses of institutions of higher education per one student from 2005 to 2011³



Source: calculation of the author based on OECD (2014:45–46) and OECD (2014:220)

3 Owing to a lack of data, TUR, NZ, LUX, CHL, CAN, and GRE are not included.

In Europe, the model of the welfare state faces serious sustainability challenges (*Berend T., 2003; Sapir, 2005; Snower et al., 2009*) and state-financed higher education may be one of the “victims” of these challenges. Other forms of involvement of the state may be promoted. Germany is a case in point, where tuition was introduced after 30 years (*Dwenger et al., 2012*). Current economic processes point toward the so-called knowledge-based society, in which the human factor plays a more significant role than at any time in the past (*Lundvall, 2006*). One form of increasing productivity is through education (*Schultz, 1961; Becker, 1964*). The process of massification of higher education, recorded since the 1960s (*Lomas, 2002*), only enables the funding of higher education almost entirely from central budgetary sources, in accordance with the principle of equal opportunities and fairness, at a high expense to the state (*Marcucci–Johnstone, 2007*). Some signs of this must also be found in Hungary, where in the recent past a significant process of change has taken place, resulting in certain majors becoming almost entirely chargeable.

Concerning the definition of tuition, *Marcucci–Johnstone (2007a)* identify four basic models of education financing. The two most typical are the upfront tuition fee model and its opposite, the model of state funding (i.e. no tuition fee). There are also concepts that combine elements from both models, such as the system of the dual-track tuition fee (also applied in Hungary), in which some students are financed by the state, while those who fail to reach the admittance score limit for state-financed places have an opportunity to purchase studies for themselves. There is also the differentiated model, which applies separate fees for international students. As *Barr (2004)* puts it, “free” higher education is a dead end, which cannot be sustained in the long term in the 21st century. One typical proof of this is that Germany, with one of the most significant examples of free higher education, has permitted its states to introduce a tuition fee in their institutions of higher education; several states did take this opportunity (*Dwenger et al., 2012*).

One possible way for the financing of tuition fees is the student loan, as mentioned above. Student lending may be provided according to several concepts. One of the simplest concepts is the conventional mortgage type loan, in which repayment starts immediately after the loan is extended (i.e. there is no grace period and the debt must be repaid in annuity-type instalments, depending on the borrowed amount). However, this model is rather difficult for the borrower if they are in a financially disadvantaged state, since during their studies the borrowers have no or very little income (*Del Ray–Racionario, 2010*). On the other hand, predictability and easy administration are mentioned as its advantages. Income-contingent repayment is more advantageous for the borrower. Here the repayment of the student loan is defined on the basis of the current or deferred income of the borrower. However, the downside of this scheme is that the term of repayment is uncertain. (For more details, see *García-Peñalosa–Walde, 2000; Berlinger, 2002; Chapman, 2006; Del Ray–Racionario, 2010*). Additional models include the graduate tax, which is actually not a repayment schedule based on the loan portfolio, but rather an obligatory tax that must be paid regardless of the initial borrowing. No such scheme has yet been introduced in practice (*Chapman, 2006*). The last model, also a theoretical concept, is

designed to conclude so-called human capital contracts in order to involve the private sector in the financing of higher education. Annuity and income-contingent loans are common, but one can see a variety of conditions depending on the place of application. More details are provided about this in section 4 of the study.

Based on the data of *Tables 1* and *2* and the data of the primary axis in *Figure 1*, we can conclude that the size of the market of higher education is continuing to grow globally. We can see the highest growth in those countries that are striving to catch up with the most developed economies, such as Poland, the Czech Republic, Portugal, Ireland, and South Korea.

Based on the figures and this hypothesis, the remaining part of this paper explores the following problem. If we anticipate the continued massification of higher education and an increasing need for sources of lending, it must be noted that a strong economic background does not provide a clear answer to the question of funding (see the secondary axis of *Figure 1*). Is it possible that the involvement of private funding and student lending are the answers to these processes, or do there perhaps exist alternative funding models that can be expected to surge?

3 Source of the data

We use the *OECD Education at a Glance* database, mentioned and used earlier, for the exploration of the problems specified above. This is probably the widest available collection of statistics on education, and it certainly is as far as education-financing data is concerned. The publication *Education at a Glance* was first issued in 1992. Since then it has been published annually. Its constantly updated database is also available as a download from the Internet. In addition, each year new statistics and reports are added to the publication. For example, one of the most recent additions to the subject of education financing has been a presentation of data related to student lending; this is a good indication of how current this topic is. However, data processing takes time; therefore, the most recent data in the 2014 publication are typically from 2011 or 2012.

The source of the data is the so-called INES programme, Indicators of Education Systems, which includes data on 34 OECD countries and the non-member G20 countries. The current study only focuses on the OECD countries.

The INES programme uses several sources in the collection of data.

One of the most important sources is the data of the annual survey of UNESCO, OECD and EUROSTAT on the typical statistics of education, such as number of students, staff working in education, and education financing. (i) The study contains a significant volume of data

on skills and competences, which are taken from the results of PISA and PIAAC tests. (ii) It also analyses the circumstances of teachers and tutors, including data taken from the OECD survey called TALIS. (iii) It can be supplemented by ad hoc surveys.

Therefore, the data presented in the following part is based on the primary data collection of OECD, as well as data pulled from other sources. In many cases, the presented data is already processed data, as raw data sources are not available. When publishing its data, OECD strives to ensure comparability; thus, in most cases it only shares ratios and averages. Nevertheless, these are suitable for drawing fundamental conclusions.

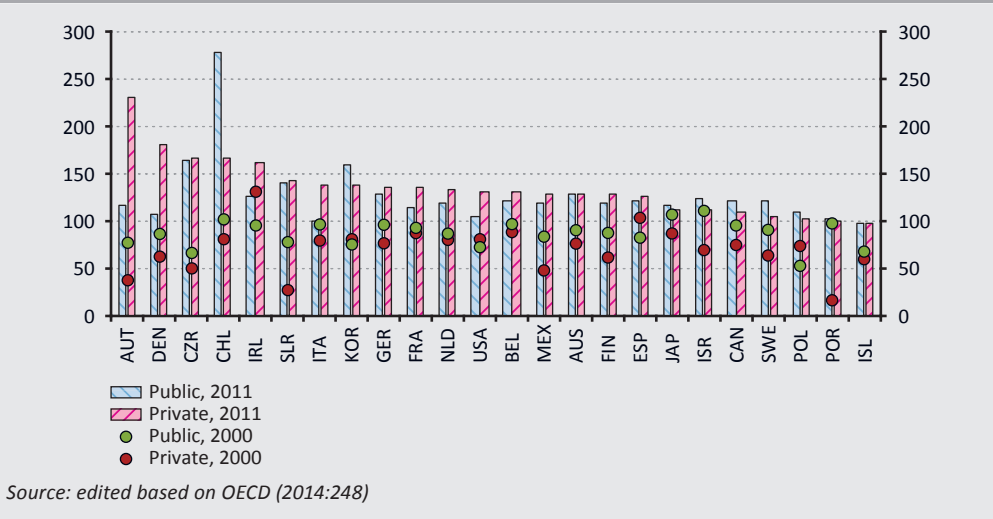
Whenever supplementary data was required (for example, per capita GDP or population figures), the OECD database was consulted concerning the relevant similar years, even when more recent sets of supplementary data were also available (for example, for 2012 or 2013) (OECD, 2012).

In many cases, OECD was not able to collect data for every country, because the statistical office of the given country could not or would not release the data. In these cases, we strive in the paper to present as much data as possible, indicating which countries were omitted from the analysis due to lack of data or other causes. Annex 1 of the paper includes the list of countries and notation used in the paper. In several statistics, Belgium was divided up into Flemish and Wallonian regions, and we used the data from the Flemish part whenever possible.

4 Empirical analysis

Since student lending is one of the ways in which private funds are involved in the financing of higher education, the first point that needs to be explored is how private funds and state funds are distributed for the individual countries and how they have evolved over time. In *Figure 2*, 2005 is the point of comparison. For example, in 2000 in Austria the value of private investments was less than 50% of the corresponding value in 2005 (39.1%), but by 2011 it had reached 230% of the value of 2005. Typically, a major change in private funding took place in the 2000s. Chile is different, since the involvement of state funds was very significant after 2005. Furthermore, the great expansion of higher education in the Czech Republic is also remarkable. The line at 100 can be considered critical, since the “points” above that line indicate a drop in expenditures between 2000 and 2005. We can find examples for that primarily concerning the expenditures of the state, such as in Japan or Israel.

Figure 2
State and private educational expenditures in 2011 and in 2000, as a percentage of the expenditures in 2005, calculated at constant prices⁴



It can be concluded from Figure 2 that there is no or hardly any presumable correlation between the involvement of private and state funds. If we calculate a correlation coefficient for the change data calculated from the two sets of data, then we arrive at correlation coefficients of 0.3 and 0.22 in the changes in private and state expenditures. This implies that although it is more typical that the two values increase simultaneously, the linear relationship is very weak. The Czech Republic, Austria, Portugal, Slovakia and Mexico could be mentioned as examples where significant amounts of capital were involved. The case of Poland is especially interesting: although in that country there was only an increase of 26% between 2000 and 2005 in the ratio of the value, the Polish student loan system started operating in 1998, which coincides with the surge in the involvement of private capital. However, by the second half of the decade the involvement of additional capital seems to have run into limits.

Furthermore, the Czech Republic should be mentioned. It was one of the leaders in the involvement of private capital. Even though no state-supported student loan programme operates in the country, there are solutions offered by private banks, but these usually involve the obligation of opening an account.⁵ Consequently, student lending does not seem to be a necessary or sufficient condition for the growth of permanent private funding.

One example of a way to involve private funding that is initially effective is the application of relatively low tuition fees. In Europe, very high tuitions (i.e. ones exceeding 5,000

⁴ Not included due to a lack of data: EST, GRE, HUN, LUX, NZ, NOR, SLO, CHE, TUR, UK.

⁵ For more details, see European Funding Guide (2014).

euros) are typically only applied in England. On the other hand, in Austria, Germany and the Nordic countries there is no tuition fee or tuition may be required only as an option. In the case of the rest of the countries, the average tuition fee is typically below 1,000 euros (*Eurydice, 2014*).

Table 3 points out a relationship concerning the necessity of involving private capital in terms of three different dimensions. The sizes of the countries are characterised by their respective populations. Countries with less than 20 million inhabitants have been assigned to the small size category, while those with more than 20 million inhabitants fall into the large country category. Concerning the ratio of state expenditures, the ratio of 60% has been selected as the borderline. Where the ratio of state expenditures within the entire sector of higher education exceeded 60%, the country has been assigned to the higher state ratio; where it did not, it went into the low state ratio category. In *Table 3*, the third variable is spending by one resident, which was arrived at as the per capita GDP multiplied by educational expenditures proportionate with GDP. This is a result of the author's own calculation. The most important thing about this indicator is that for it to be high, both high participation in higher education and a high level of support per one student are necessary. If we only consider spending per one student, it may also be high, because not many persons are involved in higher education compared to the entire society. Here the line of division was \$500 calculated at 2005 prices and purchasing power, under which level we classified the country as one with a low expenditure, while above \$500 meant a high expenditure. In fact, the lines of division are arbitrary; the basis of the selection was the density values shown by the histograms in *Annex 2*. The decision was easier regarding population and expenditure, because the line of division was set on the border between the two peaks. Concerning the expenditures per one resident, the distribution has one peak; therefore, it was natural to select the average as the dividing line. The average value has been calculated as \$498, which we rounded up to \$500. We also wanted to ensure that a change in the borders would not upset the classification. For example, shifting the dividing line by 5% only changed the classification of one country; if the line was set at \$475 concerning the expenditure per one resident, then Belgium would be transferred into the group of Austria, the Netherlands and the Nordic countries.

Table 3 is a useful classification because it shows how much latitude the individual countries have. *We have not found any education-financing model that could be characterised by high spending per inhabitant and large state size, proportionate to both the total population and the expenditures of the state.* If we classify the countries based on a similar principle, according to the figures of the year 2000 (as we do in *Annex 3*), then two countries would be assigned to this group: France and Canada. In Canada, the ratio of state expenditure was 61% at the time (just above the selected dividing line), and in France the average spending per one resident was \$398 calculated at 2005 prices and purchasing power, which just exceeded the average figure of \$360 among the countries at that time.

Table 3
Models concerning educational expenditures⁶
 (2011)

		Expenditure per one resident (\$, at 2005 prices and at purchasing power)	
Ratio of state expenditure (%)	Population (million persons)	Low (<500)	High (>500)
High (>60)	Large (>20)	FRA, GER, ESP, MEX, ITA, POL	
	Small (<20)	BEL, DEN, FIN, IZL, NZ, POR, SLO, SLR	AUT, CZE, EST, NLD, NOR, SWE, IRL
Low (<60)	Large (>20)	JAP, UK	AUS, CAN, KOR, USA
	Small (<20)	CHL, ISR	

Source: calculations of the author based on OECD (2014:248); OECD (2015a) and OECD (2015b)

Therefore, both countries would just only fit into these two categories. Later on, they were actually removed, so we cannot consider them as a model for this category. *In countries with a small population, high spending per one resident can also be realised mainly through the channels of the state, with the Scandinavian countries being good examples, but the Czech Republic and Estonia are also interesting.* In 2000, the Czech Republic was still in the low spending category on this line. There are no data about Estonia concerning 2000. *However, it is interesting that we have not come across any model in which the spending per one resident exceeded the average when the sector was characterised by the small size of the state.* Although low expenditure by the state has been a characteristic of larger countries, Chile and Israel are experimenting with such a model, but the spending per one resident does not exceed the average. On the other hand, it is very interesting that in 2000 Australia belonged to this category, but it was removed owing to an increase in population. In 2000, its population was only 19 million, yet this increased to 22.4 million by 2011. In 2000, Israel also belonged to this category, but the spending per one resident practically stagnated there, so it fell below the average. *If a small country intends to reposition itself for private resources, then the example of Australia may be the most useful.* Although in terms of the area of the country it is huge, in terms of actual inhabitants it is not so big.

As mentioned earlier, in addition to the community choice between state and private funding, it is another highlighted question about how the state should channel funds into the educational system. For example, supporting student lending is a possible channel. *Table 4* presents distribution with a similar logic as in *Table 3*, but according to a new variable. The ratio of state expenditure is the same as in *Table 3*; however, the other variable within state expenditures shows what percent of the expenditures are spent on institutional financing. Concerning this variable, the basis of the grouping is the average value. Institutional financing by the state constitutes 77% of state spending, which can

6 Not included due to a lack of data: CHE, GRE, HUN, LUX, TUR.

be considered a high value in itself; therefore, a country where the ratio of institutional financing is 68% can already be regarded as being relatively low. As *Table 4* shows, both institutional financing and student financing have their own “followers”. It is worth mentioning that *we only find large countries (ones with a population exceeding 20 million) with a focus on student financing with a low level of state expenditure. If a large country implemented a system focused on student financing with a high state expenditure ratio, that would certainly be a novelty.* Since we have no timeline of the statistics on institutional financing, we cannot make any comparison with historical figures from these databases.

Table 4
Models for education funding⁷

The ratio spent on public institutions within state expenditure	Ratio of state expenditure (%)	
	High (> 60)	Low (< 60)
High (> 77)	AUT, BEL, CZR, EST, FIN, FRA, GER, IRL, MEX, POL, POR, SPA	CAN, ISR, KOR
Low (< 77)	DEN, ISL, NLD, NZ, NOR, SLO, SWE	AUS, CHL, JAP, UK, US

Source: OECD (2014:248) and OECD (2014:276)

It is worth exploring the distribution ratio between the two forms (i.e. between student lending and scholarships) if the state takes on a role aimed at private individuals. By expenditure on student lending, we mean the entire loan amount borrowed, and by scholarship we mean the amount received.

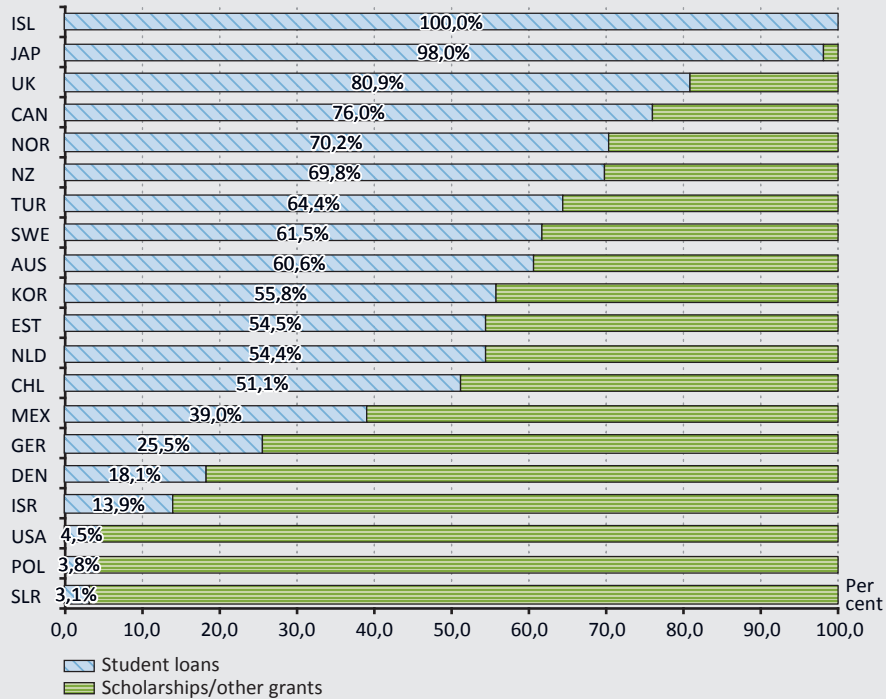
We compare *Figure 3* to *Table 4* to support the contention that in *those countries where institutional financing is relatively low, student lending will appear within student funding.* *Figure 3* only shows those countries about which we had data and the expenditure on student lending exceeds 0. The case of the United States is remarkable: it is by far the system with the largest student loan market, yet the involvement of the state in funding is low.

Table 5 shows the history of student lending by the state in a particular system, and to which type it belongs: to the income-contingent repayment type or to the category of annuity lending with mortgage repayment. The table implies that *although in the 1950s and 1960s student lending already existed, the major systems widely applied today only emerged later and gradually.*

⁷ Not included due to a lack of data: CHE, GRE, HUN, LUX, TUR.

Figure 3
Distribution of involvement of the state between student lending (blue) and scholarship transfers (green)

(2011)



Source: calculation of the author based on OECD (2014:276)

Table 5
State student-lending programs according to inception and type (mortgage type lending – normal typeface; income contingent student lending – boldface; mixed lending – boldface, italics)

Before the 60's	60's	70's	80's	90's	After 2000
Japan	Canada	Denmark	Australia	Estonia	Hungary
Norway	Finland	Mexico	Belgium	New Zealand	Poland
	<i>Iceland</i>	<i>United States</i>	Netherlands	United Kingdom	Spain
	Turkey				

Source: edited based on OECD (2014: 274–275)

Furthermore, based on *Table 5* we claim that governments apply a relatively careful approach concerning the organisation of student lending by the state, and although quite a lot of experiences have been collected about this, perhaps we still do not know enough

to consider state student-lending programmes as natural. Over the next decade, several other countries will probably also join the existing ones with an abundant supply of data.

Table 6 presents some characteristics of the schemes that are already operating, based on which we can conclude that in the case of the average programmes, we should expect repayment terms of approximately 5–15 years and instalments of approximately 1,000–1,500 dollars annually. These instalments typically fall due on small debts. If we consider the two values and ignore the time value of money (apart from one or two exceptions, student loans bear a discounted interest, and precisely because of that, their interests are very low), then borrowers of student loans accumulated average debts of between 5,000–25,000 dollars. This can mainly be compared to debts arising from car loans. In fact, in the United States the market of student loans is the closest to this market in terms of size. The significance of such a market is mainly determined by how many persons are affected by it. In that regard, we can find very significant variations even though there is a scarcity of data. It is difficult to predict how many borrowers a student loan programme will have, but it is an oft-stated expectation from student-lending systems that they should be transparent and flexible. *Marcucci–Johnstone (2007b)* list six types of expectations of a well-designed and well-executed student loan programme: they should be generally available; able to provide sufficient funds; need-based; minimally subsidised; collectible; and able to tap the private capital markets.

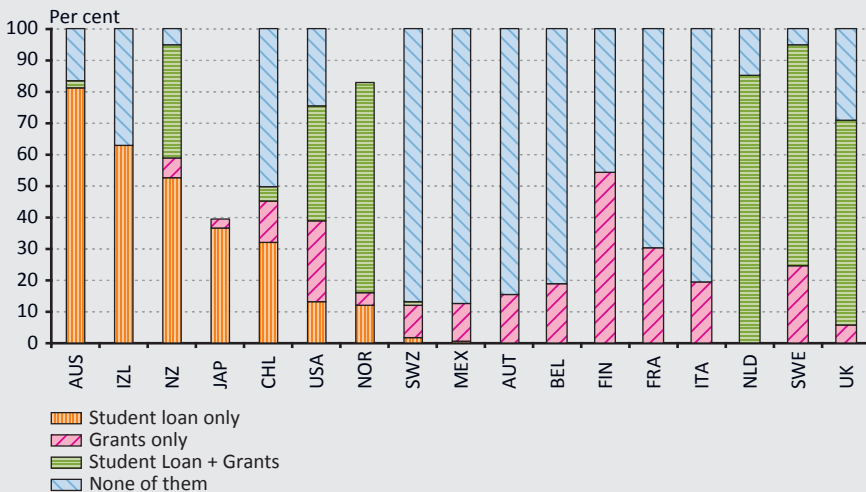
Figure 4 provides further details on the question of affected persons. As a form of support, student lending and scholarship are not mutually exclusive. Scholarship holders also qualify for borrowing, should they need to do so; furthermore, borrowers of student loans also qualify for scholarships. However, educational systems differ in terms of how these facilities are distributed among affected persons. Figure 3 provides some guidance. The ratio of persons only receiving student loans is very low, with the exception of Australia, Iceland and New Zealand. However, the scholarship-plus-student loan combination is more common. Student lending is probably a frequently applied source of funding among students when coupled with an appropriate system of scholarships. Consider the examples of Sweden or the Netherlands, where students almost exclusively use this combination. Even so, a significant variation has been registered in the range of 30% and 80% exposure. Due to this, it is actually quite difficult to predict the exact extent to which student lending by the state becomes a widely applied facility among students in order to cover their costs.

It may be argued that after some time, mobility becomes so strong that such a student-supporting organisation should be organised at the level of the European Union. On a large scale, this is an opportunity for the distant future (*Berlinger, 2012*). A programme called Erasmus+ Masters Loan will be started in the summer of 2015; it is designed to grant loans in the amount of almost 3 billion euros between 2015 and 2022 to persons studying in master courses abroad. It is expected that approximately 200,000 persons will borrow this loan, which will be an interesting experiment (*europa.eu, 2015*).

Table 6
Data related to student lending

Country	Average loan repayment	Average amount of payment	Ration of graduates with debt
Australia	8 years	m	55
Belgium	5 years	276,275	n.a.
Canada	10 years	1057,92	n.a.
Denmark	7 -15 years	1975	45
Finland	5-10 years	1353,2541	38,5
Hungary	10-15 years	1039,296757	27,6
Iceland	22 years	n.a.	n.a.
Japan	15 years	1195,705	n.a.
Netherlands	15 years	n.a.	n.a.
New Zealand	6.7 years	1615	n.a.
Norway	16.4 years	1987,367668	n.a.
Spain	4.4 years	4392,003218	n.a.
Sweden	25 years	1130,904	n.a.
Turkey	1-2 years	2576,016	20
United Kingdom	14-15 years	n.a.	79
United States	10-25 years	m	67,7

Source: edited based on OECD (2014:275)

Figure 4
Ratio of students receiving funds from various sources or from a combination of sources


Source: calculations of the author based on OECD (2014:273)

5 Conclusions

In the section on analysis, we identify the following key trends on the basis of various figures: (i) In the long run, the volume of both private and state investments is continuing to grow, but the pace is slower; furthermore, there is no major correlation in the extent of the changes, only in their direction at best (*Figure 3*). (ii) Larger countries may run into size limits if they follow the Scandinavian model in the distribution of state sources and in the design of education financing, because one can never see an example of this working permanently for a large country (i.e. one with more than 20 million inhabitants) (*Figures 3–4*). (iii) The scholarship system and student lending could instead be designed as two systems that complement each other; in that case, they can become very common in practice (*Figure 3*). (iv) In a properly balanced system, however, a very high number of students may be affected by the process (as much as 70–80% of graduates, which may constitute 40% of the relevant demographic). Since graduates are typically persons under the age of 30, borrowing a student loan is probably one of their first serious financial decisions, which may mean a commitment of 5–15 years, with a cash flow equalling 1,000–1,500 dollars annually. Thus the student lending market can be as high as the market of car loans (*Tables 1–2*).

In the conclusion of the paper, research directions are formulated based on the results of the analysis.

The purpose of the paper was to provide a brief summary of the knowledge that we have on the economy of education at present, especially concerning the situation and trend of student lending. In the form of a brief theoretical introduction, we presented the circular dynamic that characterises the relationship between higher education and level of economic development. The more developed an economy is, the more it spends on education, which promotes further development. Student lending may be one of the tools of direct state support to students, which also affects the financial markets. Student lending is a complex issue, as it can be detached from regular lending, since the investment itself cannot be mortgaged. Accordingly, the issue of the involvement of the state in the financing of higher education is an issue that must be addressed with student lending in mind.

The trend whereby both private individuals and the state are spending more and more on higher education is identifiable, but it is difficult to identify anything else than a weak positive relationship between the two. There are countries where the expenditures of the state keep increasing at a faster pace, while in others private expenditures show faster growth. Typically, however, both of these keep growing to some extent. We managed to identify one of the characteristic types of education-financing models, the large country-large state model, as one of the possible engines for growth of the student lending markets. The global market is dominated by initiatives that are capable of pushing these systems,

operating with a large higher education market and a high level of state involvement, out of their current positions. Here we can expect potentially high tuition fees and large-scale student lending in the long term. At present, we cannot see any example in which investments in education would exceed 2% of GDP with the process taking place in a large country with high state involvement. These countries, such as Germany or France, either start moving towards a new model or have to follow the “Anglo-Saxon” path.

In light of the results of this paper and the relationships presented, it is possible to start moving in several directions. Based on the simple relationships of the first section, we can easily highlight cases that could be very exciting as a case study. One example is Chile, which has long been committed to such a regime of financing of higher education. It is numerically similar to a possible model that we could also recommend to countries following the large state involvement model. For the time being, these ratios are not yet reflected in a high per capita GDP, but research with a case study could enable us to identify economic impacts. Poland or Estonia lend themselves to such case studies. The social embeddedness of the fast emergence of Estonia could be an interesting topic.

The matter of risks raises an empirical question concerning student lending, both at an individual and a social level. At present, the market does not seem large enough to threaten with macro-level risks,⁸ but one may ask whether this could change later on and, if so, under what conditions. Furthermore, the borrowing of student loans and its impact on educational choices is a relatively poorly charted area in literature. Fortunately, more and more secondary data enabling complex statistical analyses will become available concerning the financing of education, which will enable further research on this topic (even using Hungary as a sample, if that is desired).

An assessment of opinions on student lending could be a primary research topic. To what extent do long-standing programs comply with criteria of transparency and ease of comprehension? The comparative analysis of mortgage-type and income-dependent loans is also a topic that is still quite far from being fully researched.

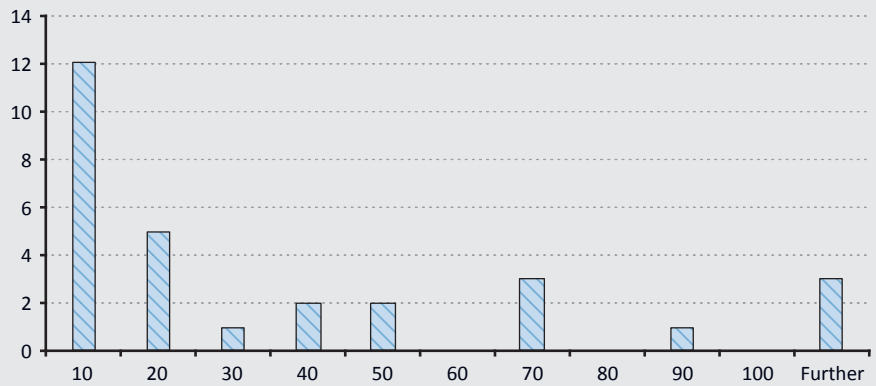
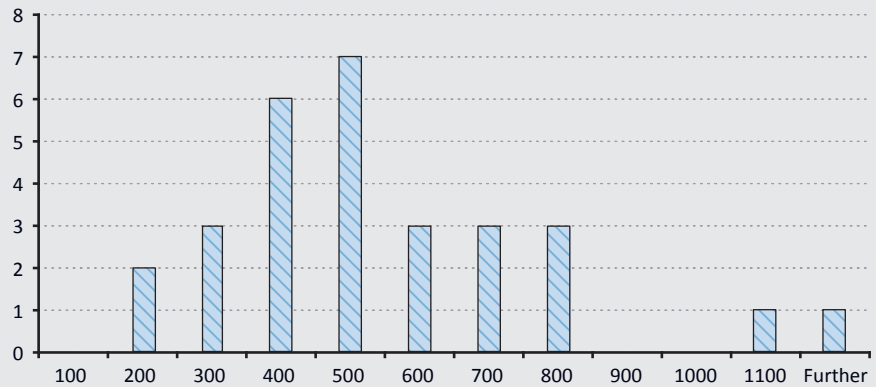
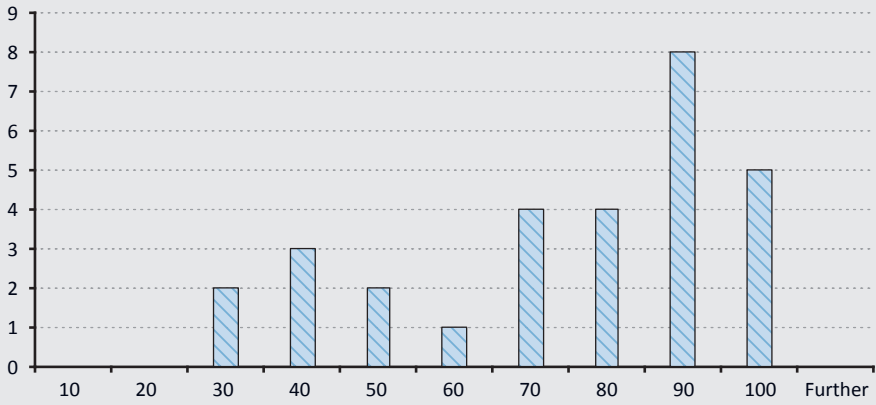
⁸ Over recent years, many authors have referred to the American student lending market as the trouble spot of the next crisis. However, the student-lending market is fundamentally different than a mortgage market, and perhaps most importantly, it is much smaller.

Annexes

Annex 1: Notation of countries

Abbreviation	Name of country	Name of country in Hungarian
AUS	Australia	Ausztrália
AUT	Austria	Ausztria
BEL	Belgium	Belgium
CAN	Canada	Kanada
CHL	Chile	Chile
CZE	Czech Republic	Csehország
DEN	Denmark	Dánia
EST	Estonia	Észtország
FIN	Finland	Finnország
FRA	France	Franciaország
GER	Germany	Németország
GRE	Greece	Görögország
HUN	Hungary	Magyarország
ISL	Iceland	Izland
IRL	Ireland	Írország
ISR	Israel	Izrael
ITA	Italy	Olaszország
JAP	Japan	Japán
KOR	Korea	Dél-Korea
LUX	Luxembourg	Luxemburg
MEX	Mexico	Mexikó
NLD	Netherlands	Hollandia
NZ	New Zealand	Új-Zéland
NOR	Norway	Norvégia
POL	Poland	Lengyelország
POR	Portugal	Portugália
SLR	Slovak Republic	Szlovákia
SLO	Slovenia	Szlovénia
ESP	Spain	Spanyolország
SWE	Sweden	Svédország
CHE	Switzerland	Svájc
TUR	Turkey	Törökország
UK	United Kingdom	Egyesült Királyság
USA	United States	Amerikai Egyesült Államok

Annex 2: Histograms for data of the year 2011



Source: calculations of the author based on OECD (2014:248); OECD (2015a) and OECD (2015b)

Annex 3: Models concerning educational expenditures (2000)⁹

Ratio of state expenditure (%)	Population (million persons)	Expenditure per one resident (\$, at 2005 prices and at purchasing power)	
		Low (<360)	High (>360)
High (>60)	Large (>20)	GER,ESP,MEX,ITA,POL, TUR, UK	CAN, FRA
	Small (<20)	AUT, CZR, GRE, HUN, ISL, POR, SLR	BEL, DEN, FIN, IRL, NLD, NOR, SWE
Low (<60)	Large (>20)		JAP,KOR,USA
	Small (<20)	CHL	AUS, ISR

Source: calculations of the author based on OECD (2014:248); OECD (2015a) and OECD (2015b)

References

BECKER, G. S. (1964): Human Capital – A Theoretical and Empirical Analysis with Special References to Education. New York: *National Bureau of Economic Research*.

BARR, N. (2004): Higher Education Funding. *Oxford Review of Economic Policy*, 20 (2), pp. 264–283.

BEREND T., IVÁN (2003): A jóléti állam: válság és kiutak. *Magyar Tudomány*, 48 (10), pp. 1273–1278.

BERLINGER, EDINA (2002): A jövedelemarányos hallgatói visszafizetésen alapuló hitelrendszerek. PhD-értekezés. Budapesti Közgazdaságtudományi és Államigazgatási Egyetem. Ph.D. thesis Economic and State Administration University of Budapest, Ph.D. programme in Economics, Budapest. http://phd.lib.uni-corvinus.hu/226/1/berlinger_edina_dissz.pdf (downloaded on 01.12.2014).

BERLINGER, EDINA (2002): A jövedelemarányos törlesztésű diákhitel egyszerű modellje. *Közgazdasági Szemle*, XLIX (12), pp. 1042–1062.

BERLINGER, EDINA (2012): Miért van szükség európai szintű diákhitel-rendszerre is? In: TEMESI JÓZSEF (ed.) (2012): *Felsőoktatás-finanszírozás – Nemzetközi tendenciák és a hazai helyzet*. Budapest: Aula Kiadó.

⁹ Not included due to a lack of data: CHE, GRE, HUN, LUX, TUR.

CHAPMAN, B. (2006): Income Contingent Loans for Higher Education: International Reforms. In: HANUSHEK, E. A. – WELCH, F. (eds.) (2006): Handbook of Economics of Education. Vol. 2, Elsevier B. V.

DWENGER, N. – STORCK, J. – WROHLICH, K. (2012): Do Tuition Fees Affect The Mobility of University Applicants? Evidence From A Natural Experiment. *Economics of Education*, 31 (1), pp. 155–167.

DEL RAY, E. – RACIONARIO, M. (2010): Financing Schemes of Higher Education. *European Journal of Political Economy*, 26 (1), pp. 104–113.

European Funding Guide (2014): Grants and Loans in the Czech Republic. <http://www.european-funding-guide.eu/articles/grants-and-loans/grants-and-loans-czech-republic> (downloaded on 05.12.2014.).

Eurydice (2014): National Student Fee and Support Systems in European Higher Education. European Commission, http://eacea.ec.europa.eu/education/eurydice/documents/facts_and_figures/fees_support.pdf (downloaded on 20.12.2014.).

GARCIA-PEÑALOSA, C. – WALDE, K. (2000): Efficiency and Equity Effects of Subsidies to Higher Education. *Oxford Economic Papers* 52, pp. 702–722.

HALÁSZ, GÁBOR (2012): Finanszírozási reformok a felsőoktatásban: nemzetközi összehasonlító elemzés. In: TEMESI JÓZSEF (szerk) (2012): Felsőoktatás-finanszírozás – Nemzetközi tendenciák és a hazai helyzet. Budapest: Aula Kiadó.

JOHNSTONE, D. B. (2004): The economics and politics of cost sharing in higher education: comparative perspectives. *Economics of Education Review* 23, pp. 403–410.

LUCAS, R. E. (1988): On The Mechanics of Economic Development. *Journal of Monetary Economics* 22, pp. 3–42.

LOMAS, L. (2001): Does the Development of Mass Education Necessarily Mean the End of Quality? The Sixth QHE Seminar, Birmingham.

LUNDVALL, B.-Å. (2002): The University in the Learning Economy. *DRUID Working Paper* 02-06.

MARCUCCI, P. N. – JOHNSTONE, D. B. (2007a): Tuition Fee Policies in Comparative Perspective: Theoretical and Political Rationales. *Journal of Higher Education Policy and Management* 29 (1), pp. 25–40.

MARCUCCI, P. N. – JOHNSTONE, D. B. (2007b): Worldwide Trends in Higher Education Finance: Cost-Sharing, Student Loans, and the Support of Academic Research. http://unesco.amu.edu.pl/pdf/Worldwide_Trends_in_Higher_Education_Finance_Cost-Sharing_%20Student%20Loans.pdf (downloaded on 24.01.2015.).

MCPHERSON, M. S. – SCHAPIRO, M. O. (2006): US Higher Education Finance In: HANUSHEK, E. A. – WELCH F. (eds.) (2006): *Handbook of the Economics of Education*, Vol. 2., Amsterdam: North-Holland.

NERLOVE, M. (1975): Some Problems in Use of Income-Contingent Loans in Financing Higher Education. *Journal of Political Economy* 83 (1), pp. 157–184.

OECD (2014): *Education at a Glance 2014: OECD Indicators*. OECD Publishing. <http://www.oecd.org/edu/Education-at-a-Glance-2014.pdf> (downloaded on 16.12.2014.).

OECD (2012): *Indicators of Education Systems*. <http://www.oecd.org/education/skills-beyond-school/49338320.pdf> (downloaded on 30.12.2014.).

OECD (2015a): Level of GDP per capita and productivity. <http://stats.oecd.org/index.aspx?queryid=60702> (downloaded on 01.01.2014.).

OECD (2015b): Population <http://stats.oecd.org/index.aspx?queryid=60702> (downloaded on 03.12.2014.).

SAPIR, A. (2005): Globalisation and the Reform of European Social Models. *Journal of Common Market Studies* 44 (2), pp. 369–390. <http://www.ulb.ac.be/cours/delaet/econ076/docs/sapir.pdf> (downloaded on 28.03.2012.).

SCHULTZ, T. W. (1961): Investment In Human Capital. *The American Economic Review*, 51 (1), pp. 1-17.

SNOWER, D. J. – BROWN, A. J. G. – MERKL, C. (2009): Globalization and the Welfare State: A Review of Hans-Werner Sinn's „Can Germany Be Saved?”. *Journal of Economic Literature* 47 (1), pp. 136–158.

ROY, M. (2014): When the Student Loan ABS Market Is on Fire: Near-Arbitrage Opportunities, Fire-Sale Insurance and a Good Time to Stimulate Loan Origination with a TALF. http://halley.exp.sis.pitt.edu/comet/presentColloquium.do?col_id=7208. (downloaded on 24.01.2015.).

U.S. Department of Education (2015): Federal Family Education Loan (FFEL) Program. <http://www2.ed.gov/programs/ffel/index.html>, Letölve: 2015. január 25.

VARGA, JÚLIA (1998): *Oktatás-gazdaságtan*. Budapest: Közgazdasági Szemle Alapítvány.

The role of household portfolio restructuring in financing of the general government

Zsuzsa Kékesi – Balázs Kóczyán – Balázs Sisak

Following the crisis, up until the end of 2014, net financial savings of households' had been gradually increasing, reflected also in the ever greater expansion in financial assets. Since the beginning of 2012, in the course of households' portfolio allocations, securities have been gaining ground: first government securities, and later mutual funds. During 2013 portfolio restructuring started: households have started to use their savings previously accumulated in bank deposits as well for purchasing government securities and mutual funds. As a result of the above mentioned trends, financing of the general government by households has increased significantly, and according to most recent figures, it is considered to be high even when compared to other members of the European Union. In recent years the increase of household financing has been even more considerable if indirect financing – mutual funds, pension funds – is also taken into account. Present article analyses the impact of households' savings on the financing structure of the general government in a descriptive way.

Journal of Economic Literature (JEL) Classification: E21, H63, G18

Keywords: savings, households, government securities, financing

After the crisis, there was a change in the behaviour of Hungarian households manifested in growing financial savings, where precautionary considerations became dominant. Following the outbreak of the crisis Hungarian households started to save an increasing portion of their disposable income. With regard to net savings, part of the increase was accounted for the so called “forced savings” due to rising loan repayments, and the decline in borrowings linked to demand and supply reasons also enhanced the expansion of net

*Kékesi Zsuzsa, economic analyst at MNB's Directorate Monetary Policy and Financial Market Analysis.
Email: kekesizs@mnf.hu.
Kóczyán Balázs junior analyst at MNB's Directorate Monetary Policy and Financial Market Analysis
Email: koczyanb@mnf.hu.
Sisak Balázs economic analyst at MNB's Directorate Monetary Policy and Financial Market Analysis
Email: sisakb@mnf.hu.*

savings. However, net savings have increased by a larger degree than this, which was due to the rapid growth of financial assets. The increased accumulation of financial assets of Hungarian households may have also contributed to the recovery of sustainable economic growth since it has provided internal funding for economic actors at an increasing scale. In addition, households have strengthened the capacity of the country to withstand adverse shocks through investing an increasing portion of their higher savings into Hungarian government securities – thus providing internal sources of finance for the general government, which is of special importance since it constitutes a more stable source. The structure of the present article is the following: first, the theories explaining households' savings and the post-crisis savings trend of Hungarian households are briefly outlined. After that, the "yield-hunting", portfolio restructuring and the impacts thereof on households' savings are covered. Recent developments are also presented briefly: namely, the types of government securities preferred by households in the last 2-3 years, and the way how the households have turned to the longer-term papers in recent months. Subsequently, the trend of government securities held by Hungarian households is examined as compared to other European countries. Finally, a summary follows on the economic impacts, benefits and risks of households' purchases of government securities.

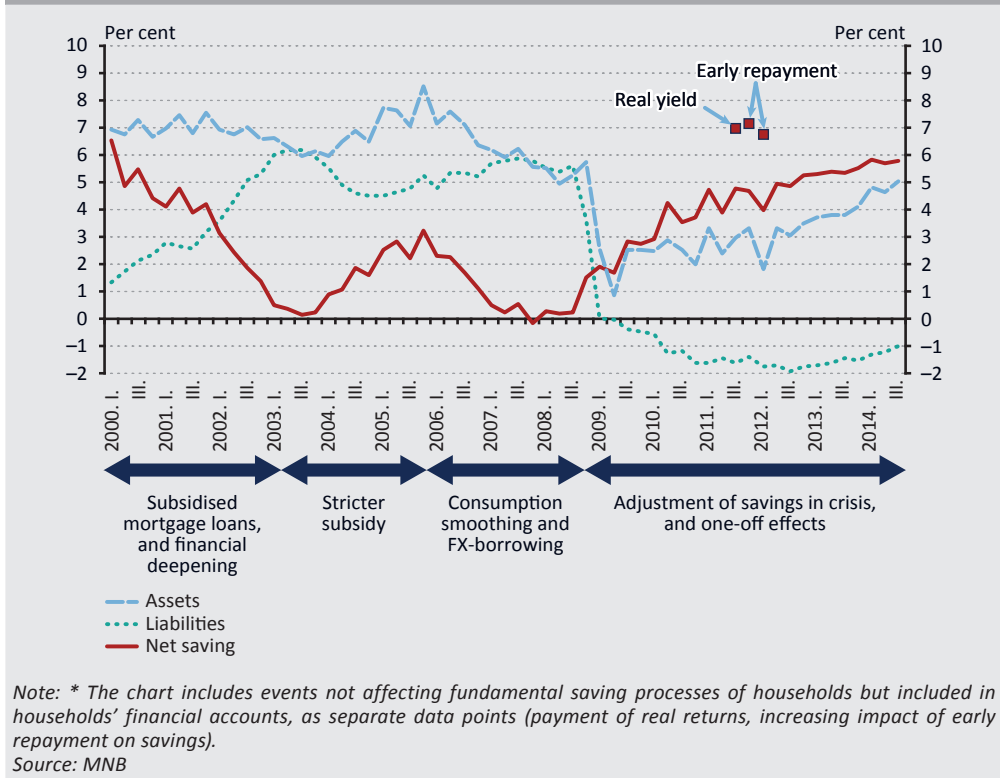
1 Savings behaviour of hungarian households in the last decade

Pursuant to relevant theories, households' savings are primarily determined by income and real interest rates, however, expectations also have a decisive role. Keynes, in his general theory, argued that saving is a function of consumption, which shall reduce economic growth through cuts in consumption (Keynes, 1936). Two hypotheses, still prevailing today, were published as a response to the above: the life-cycle hypothesis (Modigliani, 1986) and the permanent income hypothesis (Friedman, 1986). Both theories argue that households make consumption-saving decisions based on longer-term income rather than current income expectations. According to the life-cycle hypothesis, the propensity to save can change significantly over the various life-cycles since individuals plan their consumption over their entire life. The beginning of the life-cycle is usually characterised by indebtedness, then, pursuant to the theory, economic actors spend their savings accumulated during their life-cycle at the end of it. Pursuant to the permanent income hypothesis during their life households increase their savings in order to smooth their consumption expenditures when expecting the reduction of their permanent income, and reduce it when expecting the increase in the permanent income.

According to theories explaining the link between real interest rates and savings, interest rates have an impact on savings in several effect, namely through substitution, income and wealth. The intertemporal substitution effect is linked to the time value of money: a rise in interest rates urges economic agents to postpone more current consumption in order to consume more in the future. The income effect is the opposite, since a rise in interest rates shall increase future interest income of households, thus less savings are needed to reach the same level of consumption in the future. A rise in interest rates shall reduce the market value of real assets through revaluation, which is compensated by the economic agents by increasing their savings, reducing their consumption (Elmendorf, 1996). Income expectations can also significantly affect savings. Following the crisis, the increased rate of unemployment and uncertainties with regard to the exchange rate may have also contributed considerably to the increase of savings resulting from precautionary considerations of households. Precautionary savings in general are associated with large variance of future income: usually, there is a positive relationship between the uncertainty regarding future income and the savings rate (Leland, 1968). Some studies have demonstrated the presence of precautionary wealth as well (Carroll–Kimball, 2006), however, the level thereof is difficult to be determined accurately due to the significant unobserved heterogeneity of the data. The level of income related uncertainties may also be influenced by expectations on the pension system (Murata, 2003).

The saving behaviour of households is fundamentally determined by their current income situation and their expectations on future income. During the second half of the 2000s (mainly between 2006 and 2008), households considered their declining income due to budgetary adjustments as temporary, and smoothed their consumption and housing expenses, which brought about another rapid boom in lending (Figure 1). The process was enhanced by the fact that, due to the prevalence of foreign currency lending, liquidity constraints were eased for households, thus an increasing number of households were able to adapt their consumption (housing expenses) to an expected future income path. As opposed to that, following the crisis of 2008, on account of decreasing life-cycle income due to the contraction in the real economy, households sharply reduced their pace of running into debt and slowed down their financial asset accumulation. The rapid adaptation of the end of 2008 and the beginning of 2009, therefore, is partially the consequence of tightening credit conditions as well as declined credit demand, and the thus increasingly shrinking amount of spendable income. Increased unemployment and deteriorating growth prospects brought about greater uncertainties of income, and in the longer-term increased focus on precautionary savings considerations: households gradually started to increase their financial assets, while at the same time gradually reducing their loans; as opposed to this, the significant accumulation of financial assets prior to the crisis was realized along with considerable levels of borrowing, which on the whole represented a low level of net savings.

Figure 1
Net savings of households as a proportion of GDP, with a breakdown by basic processes
(seasonally adjusted figures)

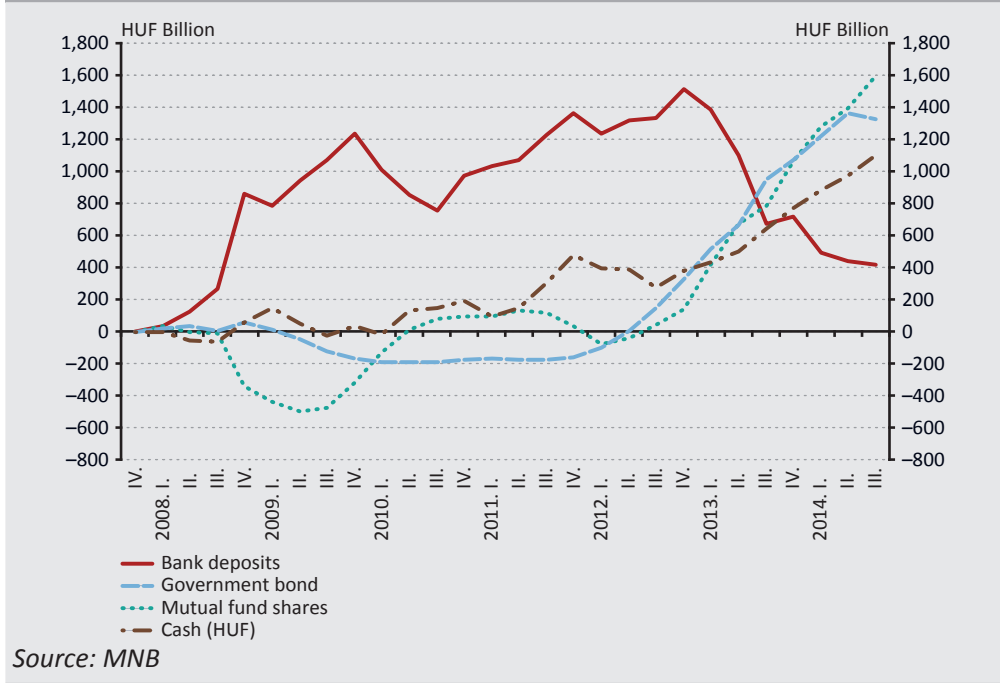


On the basis of previously published studies and analysing trends of recent years, real interest rates may have had only a minor impact on the level of savings. A previous study on Hungarian savings figures found only a weak relationship between real interest rates and savings, however, did not reject the possibility that in the 1990s the extreme values of interest rates could have influenced households' savings (Árvai–Menczel, 2000). According to the study, no income, substitution and wealth effect could be demonstrated in the course of the second half of the 1990s. Recent trends have confirmed the observation that any change in the level of interest rates has only minor impact on the level of savings. Although deposit rates have reached a historical low level in the last 18 months, financial asset accumulation of households is close to the pre-crisis figure. An environment of declining yields experienced in recent years would by itself enhance household consumption, however, neither such lending boom nor any decline in savings has been experienced (in other words the substitution effect does not apply). The reaction of households to the low-yield environment was not to increase indebtedness, but to increase financial asset accumulation, to restructure existing savings. On the basis of all the above, it can be concluded that precautionary considerations are, even 5 years after the

outbreak of the crisis, still dominant. However, it is also worth noting that the higher level of savings rate may also reflect the income effect: should households have expectations for persistently low interest rates, that would mean a persistent decline of their income from financial assets – thus households could react to persistently lower levels of income with increasing their savings.

The fundamental reason for the increasing share of securities within the portfolio of households' savings is the changing yield environment. During the post-crisis years households placed their additional savings into bank deposits, which was probably the result of increasing deposit yields as well as households' risk averse behaviour (Figure 2). Then, from 2009 – primarily in accordance with improving capital market sentiment – there was an increase in the demand for mutual funds, and subsequently priority was again given to bank deposits. There seemed to be a profound change in the portfolio allocation of households since 2012. The fact that households used part of their savings held in bank deposits and mutual funds for early repayments, resulting in a slight decline of financial assets, also contributed to the above. Subsequently, households started to place an increasing portion of their additional savings more into government securities and mutual funds; however, starting from the end of the year, funds started to flow not only from additional savings but also from existing stocks towards securities. The restructuring

Figure 2
Change in financial assets held by households
(cumulative transactions)



Source: MNB

was primarily supported by the fact that, due to the declining cycle of the central bank base rate as of August 2012, interest rates on bank deposits have meaningfully declined. Thus, as a consequence of the yield decline, households chose, out of investment types of similar risks, government securities with substantial yield premiums as well as bonds and money market funds. A characteristic of the recent period was that both the yield of interest bearing treasury bills and the retrospective yield of mutual funds, closely monitored by households, exceeded interests on short-term bank deposits. The low-yield environment may have increased, besides the securities, cash demands of households as well, since the opportunity cost of holding cash has declined due to falling interest rates. The amount of cash held by households might have also been affected by strengthened precautionary considerations since cash is considered to be the most easily accessible risk-free form of saving for households. Declining inflation and the gradual expansion of retail trade could have also played a role in the increase of cash balances, while the role of the grey economy may also not be ruled out completely. In addition, the introduction of the financial transaction levy and the cost-free cash withdrawal can also be mentioned among the reasons for the increase of cash stock (Kékesi–Kóczyán, 2014).

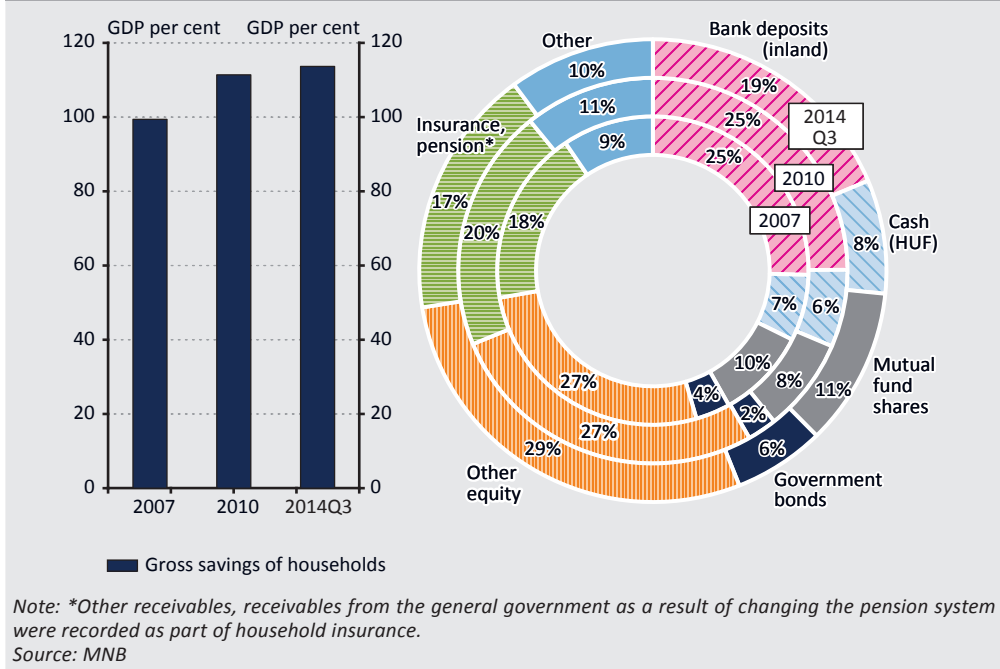
On the financial assets of households that exceeds 110 percent of GDP clearly shows signs of the impact of portfolio restructuring starting from 2012. Gross financial assets of households were around 100-110 percent of GDP in recent years (Figure 3).¹ Upon examining the share of asset types, the trend of portfolio restructuring experienced in recent years can clearly be demonstrated. While between 2007 and 2010 the share of bank deposits basically remained unchanged, by the third quarter of 2014 it fell substantially, by almost 6 percentage points. Although the stock of both mutual funds and cash has grown significantly, the biggest growth was experienced in government securities savings of households. Within the financial assets of households, despite the restructuring, bank deposits and the rather illiquid participations continue to represent the largest share.

With regard to their savings, households typically commit themselves in the short-term, thus longer-term investment types represent a smaller share within the financial savings of households. As mentioned above, among savings of households those forms of savings considered to be more liquid, bank deposits continue to represent one of the biggest weight. Looking at the maturity structure of bank deposit savings households place their savings predominantly into deposits with a maturity of, at the most, one year or into sight deposits. In November 2014 almost 86 percent of household deposits at monetary institutions belonged to the above category, while only the remaining 14 percent of deposits had long-term maturity. The most popular mutual funds are those without a defined maturity (open-end funds), thus can be liquidated rapidly. In other words, the investment preferences of households also help in understanding the rationale behind the fact that in the course of 2012 and 2013 Interest-Bearing Treasury Bill with a maturity

¹ Receivables from the general government outstanding as a result of changing the pension fund system are not recorded among other receivables.

of one year was the most popular. The next chapter gives a detailed overview of the developments in the government securities portfolio of households.

Figure 3
Financial assets held by households



Box 1

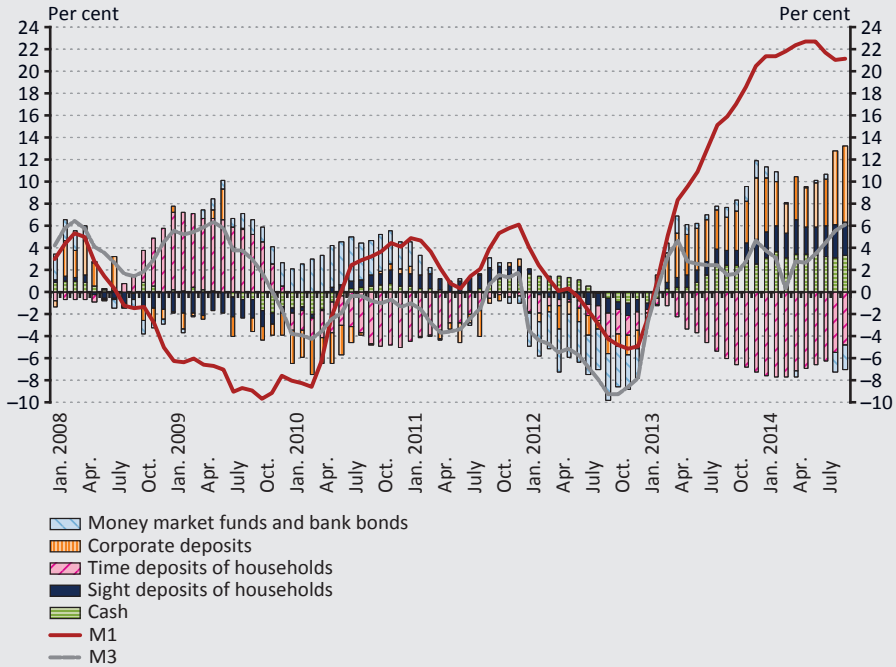
Trend of monetary aggregates in the light of portfolio restructuring

The change in the structure of financial assets held by households is also reflected in the trend of monetary aggregates. The growth rates of the various monetary aggregates prior to 2013 – with the exception of a short period following the outbreak of the crisis – showed a strong correlation. The main reason behind the strong link is that the M3 aggregate also covers M1 money supply category including liquid assets (e.g. cash, sight deposit) – together with the less liquid (e.g.: deposits with maturity of less than 2 years, bank securities, money market investment funds) assets. However, from 2013 onwards the real growth rates of M1 and M3 have followed a markedly different path: that is, real growth rates of liquid and less liquid assets diverge to a significant extent.

To explain the “opening gap” of money supply indicators, the extent of contribution of the various sub-items to the annual real growth rate of M3 aggregate was examined (Chart 4). From 2013 onwards, the reduction of retail time deposits in real terms has considerably reduced the growth of the M3 indicator.

The cut back of time deposits benefited primarily mutual funds and – through the increasing stock of government securities held by households – the general government. The increase of corporate deposits is also linked to the portfolio restructuring of households since here bank deposits of non-money market mutual funds are also presented. The stock of liquid assets has also shown a robust increase in real terms in the last two years, which can be explained on the one hand by the historically low level of opportunity cost (inflation, and deposit rates) and on the other hand by the increase in consumption, and the introduction of the financial transaction levy and the cost-free cash withdrawal.

Figure 4
Key factors of M3 annual growth rate

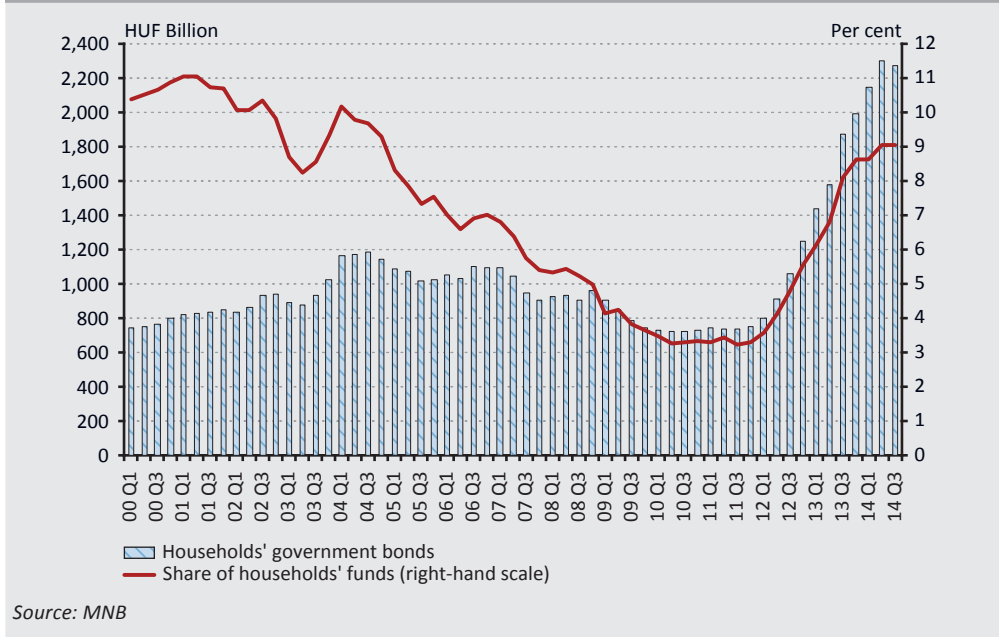


Source: MNB

2 The growing importance of government securities within household savings

A determining factor in the portfolio restructuring since 2012 is the increasingly expanding purchase of government securities by households. Until 2004 the stock of government securities held by households increased; subsequently, it started to decline, and in the beginning of 2010, even in nominal terms, it significantly lagged behind the levels experienced previously. Parallel to all this, the share of household financing of government debt also declined – this, however, could also be attributed to the fact that government debt increased significantly after its deepest figure of 51.9 percent of GDP in the end of 2001. As a consequence of this, the almost unchanged stock of government securities held by households was financing an ever smaller portion of government debt, and the share of retail financing dropped below 3.3 percent by the beginning of 2010 (Figure 5). The impact of considerably rising household savings following the crisis was not reflected in the stock of government securities held by households: although government securities are one of the most secure types of investment, the stock of government securities held by households did not start to rise. This could be explained mainly by the competition

Figure 5
Stock of government securities held by households



for funding: the banking sector started an intensive competition for acquiring household savings – on the one hand banks offered higher interest rates, and on the other hand the success of deposit-taking was also supported by marketing actions. In case of government securities a further disadvantage was the less widespread sales channel and the fact that securities targeted at households at that time were less flexible, while households could choose from a wide range of deposit types and maturities in case of bank deposits. At the same time, the “attitude” of households towards government securities has changed – supported by the new government strategy, and thanks to the trend going on since 2012, the stock of government securities held by households rose to a level close to HUF 2300 billion by the autumn of 2014, in other words, households are financing the general government directly with this amount. This chapter briefly covers the factors which could have played a role in the expansion of household government securities experienced recently.

Upon making their decisions on portfolio allocation, Hungarian households can make purchases not only from traditional government securities, but also from the so called retail government securities issued explicitly for them. Retail government securities are considered to be risk-free assets since the state guarantees payment of the total capital and interests due – regardless of the threshold – and this amount due shall not lapse. Hungarian households can purchase from government securities intended for households issued by the Government Debt Management Agency (ÁKK), as well as from government securities issued for a wider group of buyers (thus statistics of the MNB and ÁKK differ with regard to the stock of government securities held by households, in more details please refer to the text in the box). Securities explicitly intended for households had already been sold even prior to 2012: Hungarian households – primarily at the agencies of Hungarian State Treasury (MÁK) – could purchase for example Interest-Bearing Treasury Bills (IBTB), Premium Hungarian Government Bonds (PHGB), Treasury Savings Bills (TSB) as well – the latter were sold also through the Hungarian Post Company. Later this offer was further extended with the 6-month Treasury Saving bill, the Premium Euro Hungarian Government Bond (PEHGB), the Baby Bond as well as the Bonus Hungarian Government Bond (BHGB). *Table 1* summarizes the key characteristics of retail government securities. It is worth mentioning that while previously there was a smaller “choice” available for households, in the course of the recent years both regarding the maturity and the denomination as well as the type of interest, the offer of government securities has been expanded significantly.

Table 1
Retail government securities (based on data available on the website of ÁKK)

Papers name	First issuance	Maturity	Interest	Denomination	Points of sale
Treasury Savings Bills		1-2 years	Fixed, step-up rate interest	Forint	Magyar Posta Zrt.
Interest-Bearing Treasury Bills	January, 2000.	12 months	Fixed interest, decided before issuance	Forint	Offices of Hungarian State Treasury, WebKincstár, and in banks
Premium Hungarian Government Bond	December, 2010.	3 or 5 years	Yearly increment of price levels + interest rate premia	Forint	Offices of Hungarian State Treasury, WebKincstár, and in banks
6-Month Treasury Bill	April, 2011.	6 months	Fixed interest	Forint	Offices of Hungarian State Treasury
Premium Euro Hungarian Government Bond	November, 2012.	3 years	Harmonized index of consumer prices in euro zone + interest rate premia	Euro	Offices of Hungarian State Treasury, WebKincstár, and in banks
Baby-bond	December, 2013.	19 years	Yearly increment of price levels + interest rate premia	Forint	Offices of Hungarian State Treasury, WebKincstár, and in banks
Bonus Hungarian Government Bond	March, 2014.	4, 6, or 10 years	12-month treasury bills interest rate + interest rate premia	Forint	Offices of Hungarian State Treasury, WebKincstár, and in banks

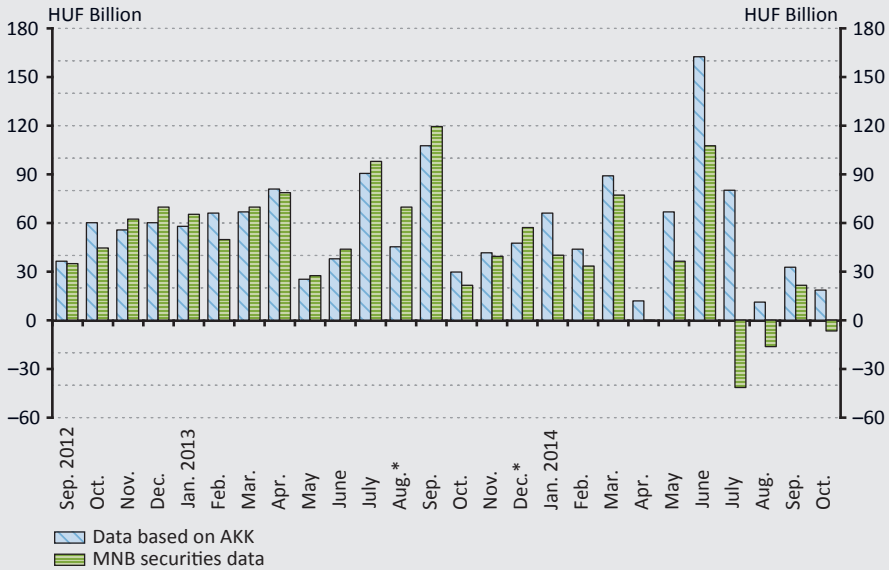
Box 2

Various data sources on household government securities transactions

When analysing the demand for household government securities, it is worth presenting which data sources should be used when observing household² savings held in government securities and net government securities purchased by households. Basically two data source can be used: (1) monthly press releases of ÁKK which issues government securities, or (2) securities statistics of the National Bank of Hungary (MNB). The two time series had shown a very similar trend until the middle of 2013, and since then there have been slight differences (*Chart 6*).

² http://www.mnb.hu/Root/Dokumentumtar/MNB/Statiztika/mnbhu_statiztikai_idosorok/a-rezidens-kibocsatasu-ertekpapirok-adatai-kibocsatoi-es-tulajdonosi-bontasban/Ertekpapir_modszertan_hu.pdf

Figure 6
Monthly net government securities purchased by households pursuant to various data sources



Note: *ÁKK data based on indirect calculation
 Source: ÁKK, MNB

The difference observed between the two statistics derives mainly from the fact that while MNB in case of securities discloses data split by holding sectors (in this case households – with self-employed entrepreneurs also included), ÁKK in general publishes sales of retail government securities. In case of data disclosed by ÁKK, however, it may occur that market securities (non-retail) purchased by the household sector are not included in the data published. The difference between the statistics may also be the consequence of statistics including purchases not made by households.³ The difference is also reflected in the stock statistics: while for example based on the press release of ÁKK, the stock of government securities held by households as of October 2014 amounted to HUF 2354 billion, based on the securities statistics of MNB the stock of government securities held by households was HUF 2258 billion. From the observation above, it is concluded that for analysing government securities savings of the household sector, it shall be more appropriate to use disclosures of MNB. However, using figures disclosed by ÁKK is supported by the fact that they are made available sooner, and they also enable making conclusions on basic trends, since they provide comprehensive data on government bonds sold to households.

3 In such cases ÁKK generally indicates if the purchase was not made by the household sector.

A significant portion of the demand for household government securities is linked to purchasing one type of security, which is the Interest-Bearing Treasury Bill⁴. Almost two thirds of savings accumulated in government securities from the beginning of 2012 increased the stock of IBTB, which in part is the consequence of the wide distribution network. The other major type of household government security is the Premium Hungarian Government Bond⁵ where only a minor net purchase could be observed. Even though during this period the interest rate of the premium Hungarian government bond exceeded that of the Interest-Bearing Treasury Bill, the term premium of securities with longer-terms was not enough for their demand to achieve a more significant growth rate. In other words, the increasing stock of government securities held by households experienced until mid-2014 was not primarily linked to securities sold exclusively at MÁK agencies, but to Interest-Bearing Treasury Bills sold also through commercial banks. The marked increase in demand is mainly due to a rise in spreads: following the November 2011 positive turn in the difference between the interest rates of IBTBs and short-term bank deposits, was followed in February by purchases of IBTBs (Figure 8).

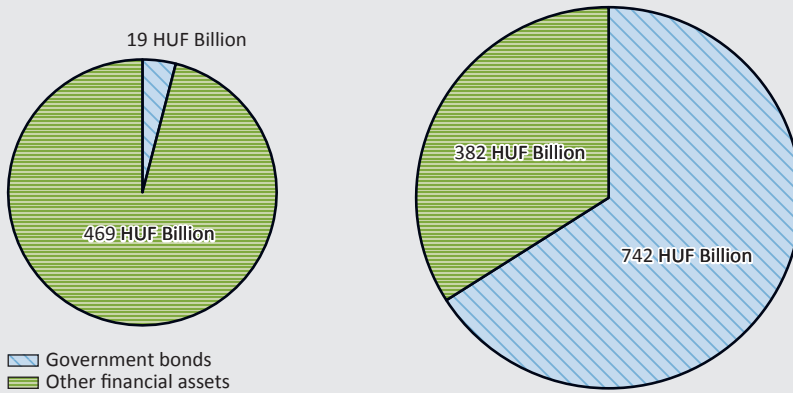
Several factors may have played a role in the increased stock of retail government securities, and within that, the stock of Interest-Bearing Treasury Bills. The expansion of household government securities was probably enhanced to the largest extent by the change in the investment environment (paragraphs 1-3), and the government's strategy to support internal financing (paragraphs 4-6):

1. *Significantly increasing private savings.* After the autumn of 2008, important changes could be observed with regard to the consumption-savings decisions of Hungarian households. Since the outbreak of the crisis, savings have grown considerably and precautionary savings considerations have intensified. Not only net, but also gross savings have been increasing significantly, the source of which, as opposed to previous experiences, was not household borrowing. Thus, households could not only restructure their existing assets, but spent their recently accumulated savings on purchasing government securities (Figure 7).
2. *Declining inflation and interest rates.* As a result of the low inflationary and gradually declining interest rate environment, the role of interest rate advantage could also be appreciated. This must have also been supported by the fact that, parallel to falling household lending, banks needed less deposit-taking, which also resulted in lower levels of deposits' interest rates.

4 The interest bearing treasury bill (KKJ) is a fixed-interest-bearing government security with a one-year maturity, the interest rate of which was 2.5 percent as of end-2014.

5 A floating rate bond with a 3 or 5-year maturity, the interest rate of which is calculated as the sum of the annual average percentage change of the consumer price index, as officially disclosed by the Central Statistical Office for the year preceding the year of interest payment due (but not less than zero), and the interest premium (the amount of which in case of most traded bonds is 3 percent).

Figure 7
Accumulation of households' financial assets and the expansion of government securities
(based on transactions)

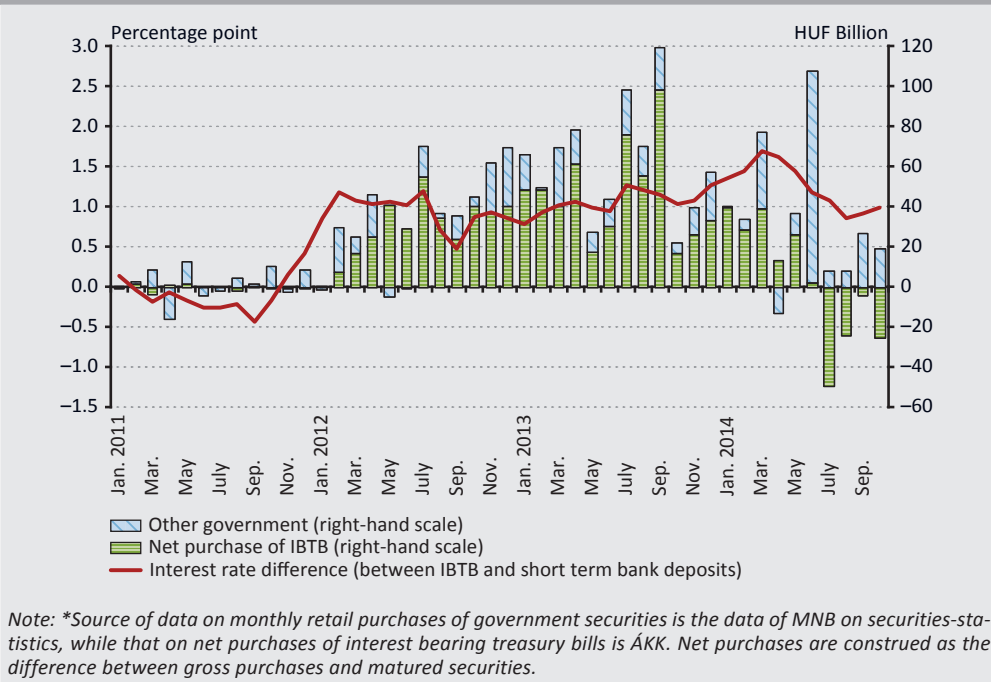


Source: MNB

3. *Securitisation.* The rationale behind household purchases of government securities, that is the “securitisation”, could be the yield advantage as well as the development of the financial system. The latter is of key importance because in this case the restructuring could be permanent.
4. *Interest advantage.* Until the summer of 2014, the interest rate of interest bearing treasury bills, on average, exceeded the average interest rate of bank deposits with maturity of less than one year with one percentage point (*Figure 8*).
5. *Supportive government policy.* A further incentive in case of Interest-Bearing Treasury Bills could have been that they could have been subscribed in several places – as opposed to most household government securities – they could be purchased, in addition to the agencies and online facilities of the Hungarian State Treasury, at the branch networks of further eight commercial banks. In this respect it should be outlined that later on the sales channel was also extended in case of the other (Bonus and Premium Government Bonds) securities (while the number of MÁK agencies also grew), and thus, purchases were simplified, resulting in increased sales of longer-term government securities (*Figure 9*). In addition, in accordance with the intention of the government, for the purpose of promoting government securities, marketing expenses of ÁKK have also been increased (advertising campaign, and launching ‘allampapir.hu’).
6. *Health contribution tax exemption, interest income tax exemption.* Since August 2013, investments held in Hungarian forint government securities – as well as in certain

investment funds⁶ – have been exempt from health contribution tax imposed on interest income, which could have further increased the attractiveness of government securities as opposed to bank deposits (Kékesi–Kóczyán, 2014). On the other hand, longer-term government securities match the profile of long-term investment accounts, with which households can avoid having to pay interest tax, while also being covered against potential interest rate fluctuations through investing in floating rate securities.

Figure 8
Households' net government securities purchases* and the interest rate difference of bank deposits and Interest-Bearing Treasury Bills



Although the share of domestic sources in financing the government debt has increased considerably in recent years, households' short-term government securities carry a renewal risk. The rise in the stock of government securities held by households was accompanied by the decline of average residual maturity: households' short-term government securities pose a renewal risk. The rise in the stock of government securities held by households was manifested mainly in the stock of short-term – one year – government securities⁷.

6 Return on investments held in mutual funds is exempt from health care tax supposing that in line with internal policies they invest in forint government securities in an amount of at least 80 percent.

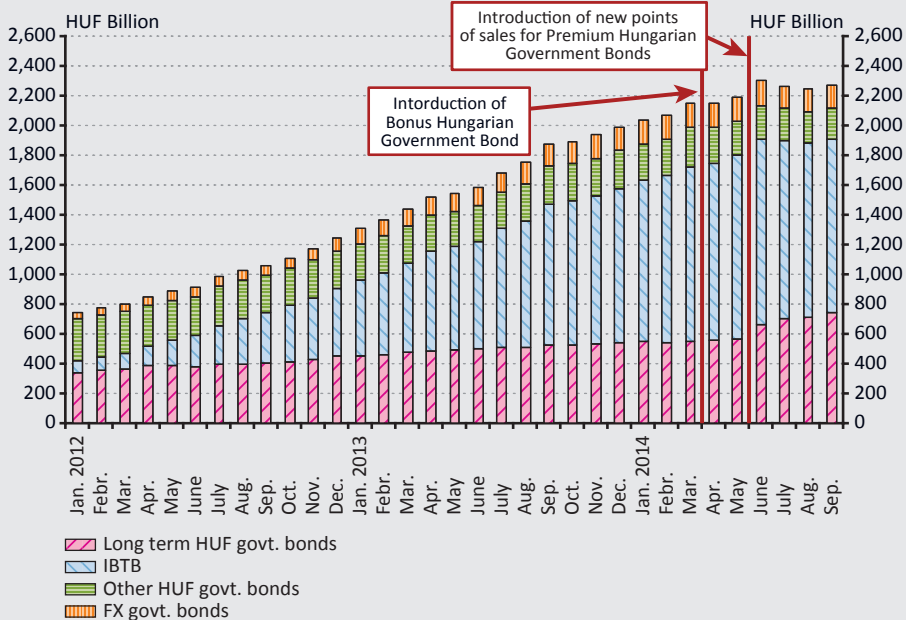
7 As outlined above, households within their financial savings usually showed preference for savings with shorter-terms, at the maximum with maturities of up to one year, thus this behaviour is in line with the previous structure of retail savings.

As a consequence, the average residual maturity of retail government securities have gradually declined, and by mid-2014 reached about one year. The stock of securities maturing within one year pursuant to the original term amounted to about HUF 1400 billion in September 2014. This means that, on average, retail government securities of more than HUF 100 billion will mature each month during the next year, which could pose challenges. (This kind of household behaviour is also reflected in the stock of bank deposits since more than 80 percent of total deposits outstanding are made up of one-year term deposits or current accounts.)

Continued interest rate premium can mitigate renewal risks. There have been instances for purchases of similar scale in the past, for example in 2004, however, the growth in stock thereof proved to be temporary, no renewals were made upon maturity. This could be attributed to the fact that interests offered for renewing securities maturing in 2005 were significantly lower, i.e. with 3-4 percentage points, than the interest rates of maturing securities. In case of considerably reduced yields the risk arises that households will not renew their maturing stock, thus net purchases can again turn into negative. However, the risk thereof may be reduced by the fact that, although, parallel to easing cycle of the central bank, the interest rate of IBTBs has also declined gradually (from 8 percent in February 2012 to 2.5 percent), the interest advantage continues to be close to 1 percentage point as opposed to one-year term bank deposits.

However, since mid-2014 the demand of households for longer-term government securities has increased significantly, which can also reduce renewal risks inherent in government securities held by households. Since March 2014, probably in connection with the declining interest rate difference, the stock of short-term treasury bills has declined. At the same time, however, savings in longer-term government securities have grown (*Figure 9*). The fact that ÁKK issued new retail government securities in the course of March 2014 could have played a role in the above. Two series of the bonus Hungarian government bond were issued in March, maturing in 2018, and in 2020. Interest rates of the securities were linked to the average auction yield of one-year T-bills: securities with shorter-term ensured a yield premium of 1.75 percentage points, and those with longer-term a yield premium of 2.5 percentage points above the yield of the one-year T-bills. The stock of long-term securities, however, has started to grow significantly only after that, since June 2014. An important factor in this was that, from then on, premium and bonus Hungarian government bonds were not only sold at the State Treasury offices of the Hungarian State Treasury and through the internet (*WebKincstár*), but also through the branch networks of distributors (commercial banks).

Figure 9
Stock of government securities held by households split by maturity and exchange rate

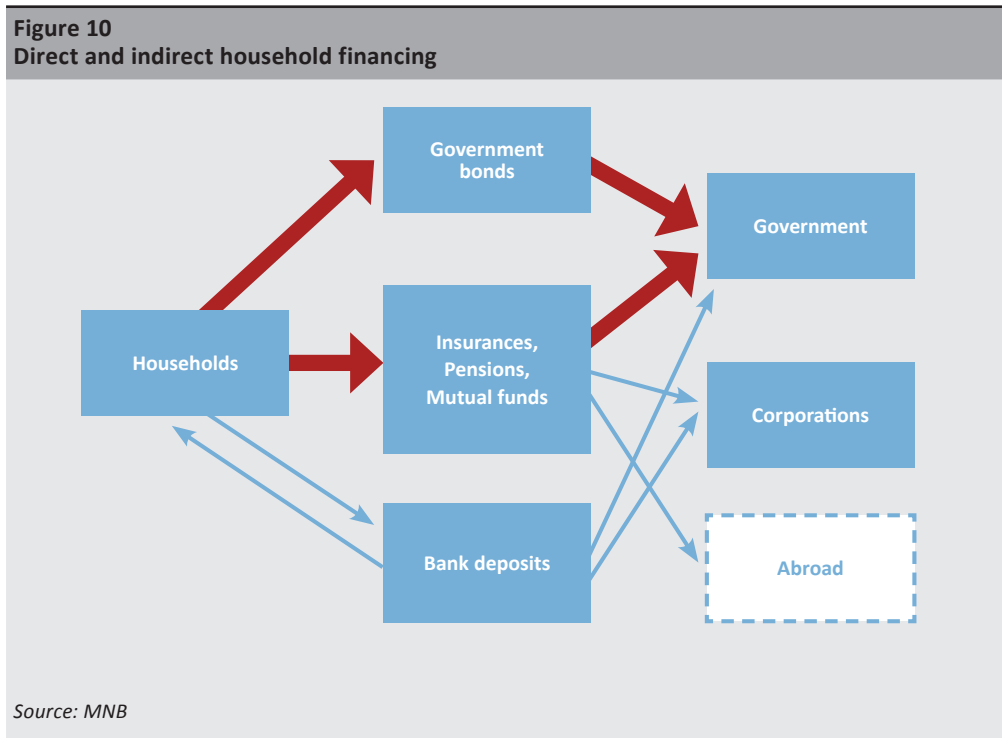


Source: MNB

3 Which sector is actually financed by households?

Ultimately, households finance the main sectors (government, corporations and the foreign sector) through their decisions on asset allocation. As mentioned in the introduction, households' savings finance domestic economic agents, the government and corporations (as well as through holding foreign assets the foreign sector, too). However, in order to have a better understanding of which sector the savings of Hungarian households finance, not only direct financing forms, but indirect possession, through mutual funds, insurance companies, funds, should also be taken into account. We use direct financing when the asset purchased is recorded in the balance sheet of households as receivables from the relevant sector (for example government securities). In contrast, in case of indirect financing, households do not directly finance the main domestic sectors, but through other financial intermediaries (for example mutual funds, insurance companies, pension funds), and hold assets indirectly.

To quantify household financing, the stock of government securities indirectly held by households should also be taken into account. Upon analysing household financing, in general, only the stock of government securities directly held by households is considered. However, government securities indirectly held by households also form part of household financing, the size of which is quantified in the next chapter. Securities indirectly held by households also form part of financing the general government since, on the one hand, in case of investment types offered by financial intermediaries households have an impact (of an extent depending on the type) on savings held in the portfolio, and on the other hand, return on investments is indirectly received by households. For example, in case of mutual funds households may choose from, among others, money market, bond or even real estate mutual funds, in other words, households’ decisions on portfolio allocation can reflect their preferences (Figure 10).

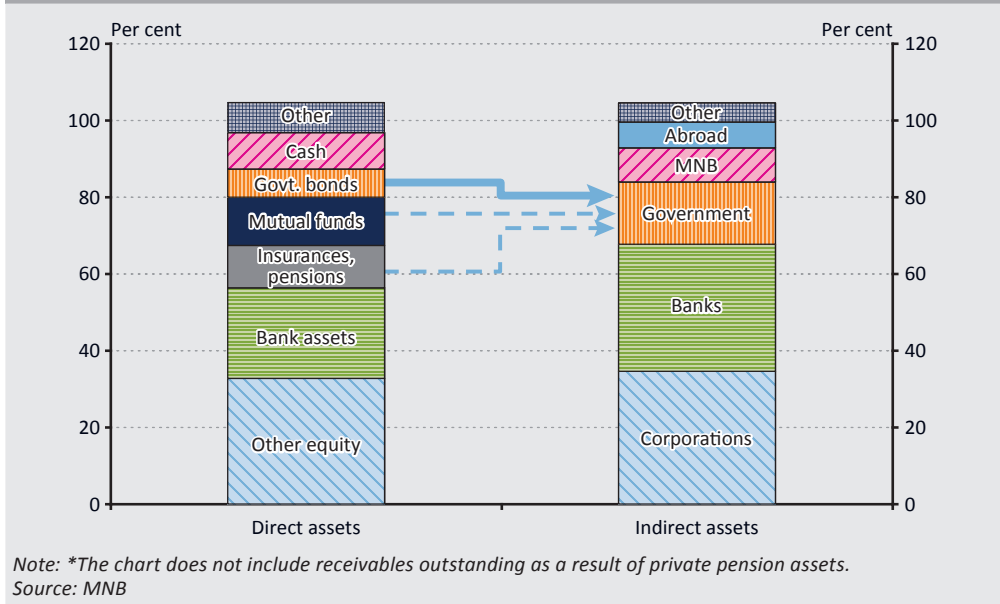


Households indirectly possess a stock of government securities amounting to more than 7 percent of GDP, while including indirect⁸ possession as well, the figure is almost 16 percent. Households finance the government directly through possessing government securities, however, the sector also possesses government securities indirectly, through mutual funds,

8 The stock of indirectly held government securities of households is based on assumptions, and considerable uncertainty surrounds it. Bank deposits are not taken into account as part of indirect financing since upon placing their savings into banks, households do not make their decisions on the basis of the asset portfolio of the banks.

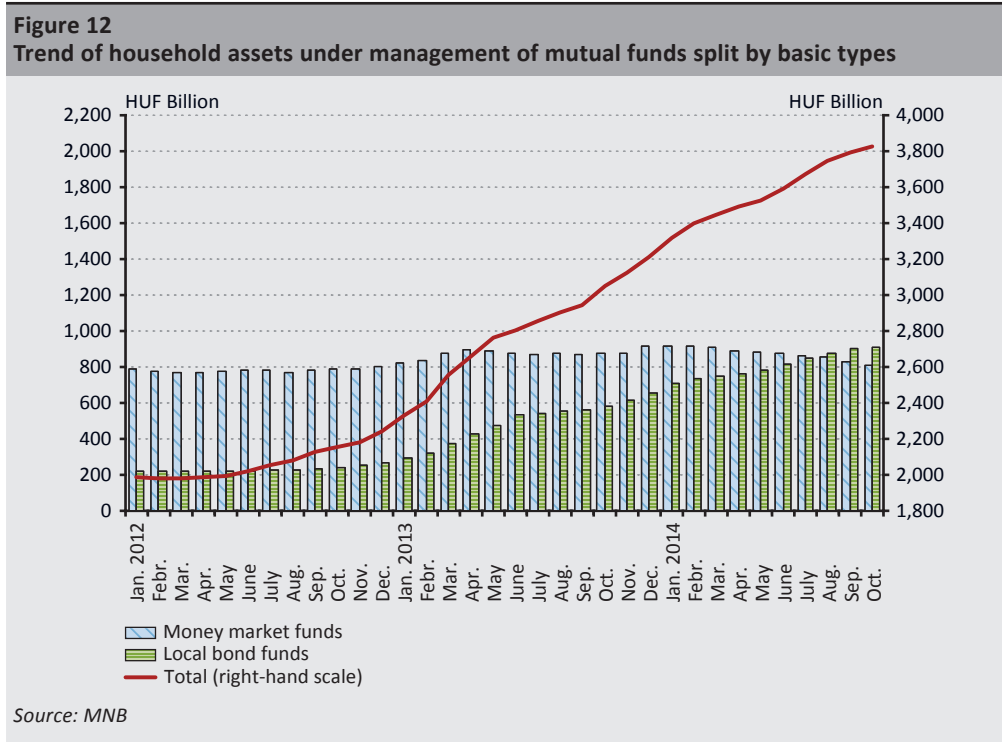
insurance companies, pension funds. Thus, the household sector in total holds government securities of an extent much greater than that possessed directly, representing close to 16 percent of GDP (it is the right hand side of Figure 11, where assets of households held through financial intermediaries were also taken into account).

Figure 11
Gross financial assets of households* as a proportion of GDP
 (September 2014)



The rise in the stock of government securities held by households has recoiled since mid-2014, however, through mutual funds, households provide the government with additional funding on an increasing scale. Since mid-2014 the growth of stock of government securities held by households came to a halt. This – as mentioned above – could have been the result of the fact that the interest advantage of Interest-Bearing Treasury Bills as opposed to short-term bank deposits has declined to 1 percentage point. The lost demand for short-term securities could only partially be replaced by long-term securities (BHGB, PHGB), thus the increase of the stock of government securities held by households has significantly slowed down. However, mutual fund purchases and thus indirect financing of the general government continued. While previously households showed preference mainly for mutual funds offered by money market funds, since 2013 this has changed: mutual funds investing in bonds have increased substantially, from HUF 300 billion to above HUF 900 billion (Figure 12). Households – as mentioned above – in case of mutual funds typically make decisions based on retrospective yields, thus in the rise a decisive role must have been played by rising exchange rates due to falling returns (retrospective yield of money market funds could have increased to a smaller extent as a result of low bank interest rates and shorter-term government securities). Thus, as

a consequence, savings of households held in bond funds exceed the stock of mutual market funds’ shares – issued for households. This may, however, imply that indirect household financing of the general government in the course of the last years have, parallel to the expansion of mutual funds, increased significantly.



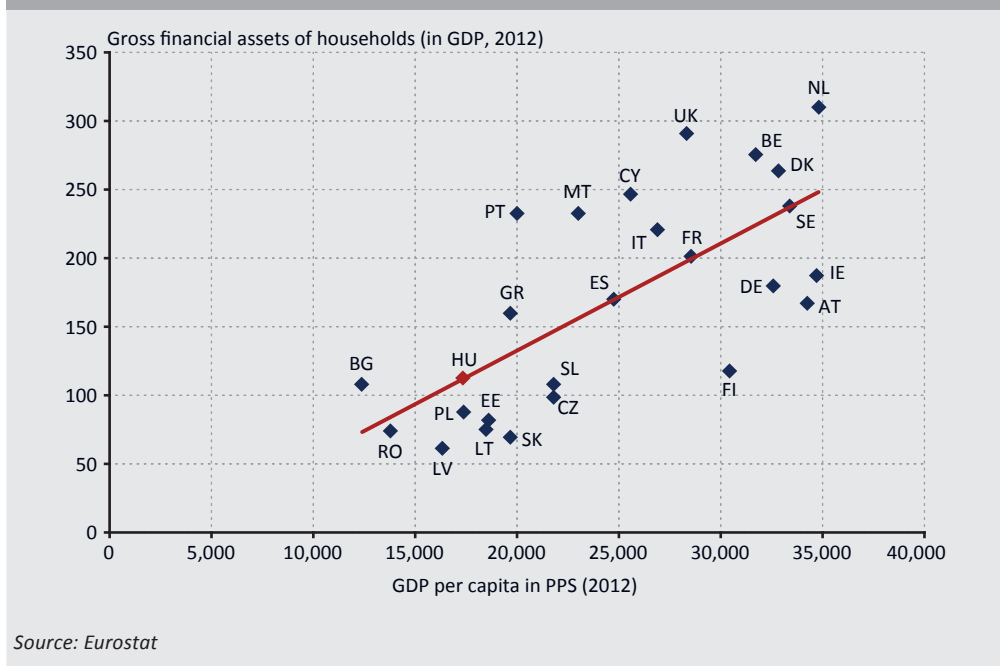
4 Household financing of the general government in other countries

As demonstrated in the previous chapters, in Hungary household sector savings held in government securities have increased significantly in recent years, with a key role attributed to declining deposit rates parallel to falling inflation and the behaviour of households “seeking yield”. An international comparison on households’ possession of government securities should also be made. In the next chapter we analyse the trend of savings held in government securities in other countries of the European Union.

International figures suggest that the stock of financial assets possessed by households is higher in countries with higher per capita GDP. With respect to households’ savings

it can be observed that in general, in more developed countries with higher per capita GDP, financial assets of households can amount to as much as twice the level observed in less developed countries (e.g. Hungary). In case of Hungary, it is also worth noting that the financial assets of Hungarian households as a proportion of GDP is higher compared to that of Hungary's regional competitors (Poland, Czech Republic, Slovakia) (Figure 13). The difference in directly possessed government securities of the various countries could also be explained by the different savings-rate of households as well as the different scales of government debt and financing structure.

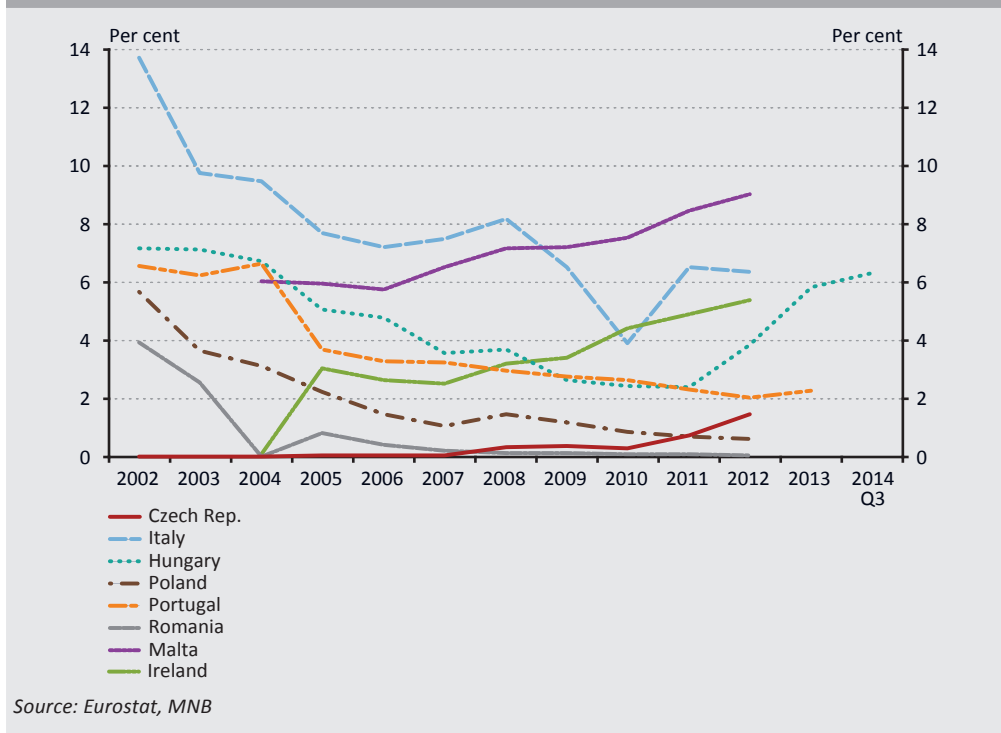
Figure 13
Financial assets of households and the per capita GDP



Looking at the members of the European Union, in Hungary the direct government securities stock of households as a proportion of their financial assets is high. Due to differences resulting from various levels of development, it is more appropriate to analyse the portion invested directly into government securities out of financial assets held by households. Since the beginning of the 2000s, the assets of Hungarian households held in government securities have had a shrinking weight within financial assets. This could also be attributed to the fact that, parallel to high interbank rates, retail deposit rates have also remained high. From 2002 onwards the role of households in financing the general government has also declined in Italy, however, in spite of this, it still exceeded the level observed in most members of the European Union for most of the time of the period observed. In Hungary following the deepest point in 2010–2011, within

two years the share of government securities as part of financial assets of households rose considerably, and reached a level close to 6 percent by the end of 2013 from the previous level of 2.4 percent. Based on information available to date, in 2014 the portfolio restructuring of Hungarian households probably slowed down, thus the expanding rate of retail government securities also declined – in spite of this, by September 2014 the share of government securities increased further, and amounted to 6.3 percent of financial assets. Looking at ratios-to-GDP figures, similar trends can be experienced, however, for example in Italy or Ireland and Malta the assets of households as a percentage of GDP amount to almost double of the level of the Hungarian figure, thus assets of households held in government securities significantly exceed that observed in Hungary (*Figure 14*). If other equity, which is considered to be rather illiquid, were not included in financial assets, the stock of government securities held by Hungarian households would be around the Maltese figure of 9 percent. In case of the Czech Republic, which is on a similar level with regard to household assets as a percentage of GDP, although the stock of government securities of households lags well behind the figure observed in Hungary, household demand for government securities has gradually increased in recent years due primarily to the retail government securities program. In Finland, where the level of financial assets is similar, however, household possession of government securities is very small.

Figure 14
The ratio of retail possession of government securities as a proportion of retail financial assets



Direct government securities data, however, in case of most countries are only available until 2012; furthermore, there are only limited data on direct household possession of government securities in an international context. Although in Eurostat – at the time of writing the present article – data for most countries were only available for 2012, while the scale of household financing may have also changed considerably in other countries as well in the last two years. But it may also be that in certain countries households express a preference not for direct, but rather for indirect financing forms – this, however, is not included in data series including direct government securities. Furthermore, in this respect it should also be underlined that the figures are influenced to a great extent by the amount of government debt of the various countries and the level of financial savings of households.

5 Due to increased household financing the structure of financing the general government has changed too

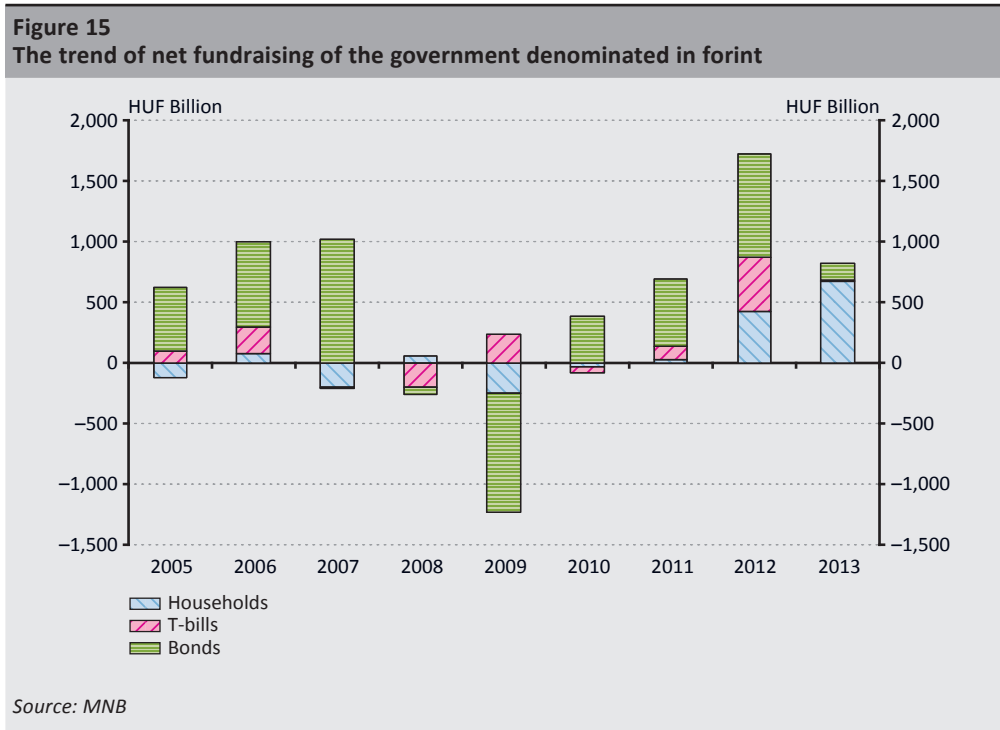
Having purchased government securities at a significant scale, as experienced in recent years, Hungarian households are financing the general government to a large extent, even when compared to other European countries. Strengthened domestic financing may decrease external vulnerability of the economy and also the exchange rate risk of financing the general government. However, further increase of the stock of government securities held by households may be slowed down by the fact that domestic funding needs of the banking system may gradually increase parallel to the recovery of lending and the conversion of foreign currency loans into forint-based loans, and due to short-term stocks significant renewals are required. While in general the figure of financing takes into account only government securities directly possessed by households, the following chapter of present article also presents the scale and change of indirect financing in recent years.

The increased role of households has several aspects. In recent years the role of the household sector has increased considerably in financing the general government. At the same time however, the structure through which the general government has raised funds in recent years as well as the impact of retail portfolio restructuring on financing of the government and its financing costs should also be examined.

5.1 Change of the government’s financing structure

While above the emphasis was placed on the value of government securities within direct or indirect savings forms as part of savings of the household sector (in the balance sheet thereof), in the followings an overview is given on how the changed portfolio restructuring of households influences the structure of general government financing.

The role of households’ financing has considerably grown since 2012 (Figure 15). The amount of forint funds raised by the government during 2012 was significant, partly due to the fact that the government did not issue any foreign exchange bonds, thus refinancing of maturing government debt was covered exclusively by forint bonds. The stock of government securities held by households started to increase significantly in this year, thus household purchases of government securities contributed to financing the general government already in a greater extent. As previously shown, household purchases of government securities continued in the course of 2013, and thus more than half of net issues denominated in forint were purchased by households. The fact that, with falling deposit rates, investing in government securities was an attractive alternative for households, also played a role in purchases well exceeding the amounts experienced in previous years – as already presented above.



Borrowing from international organizations has fallen significantly in recent years. As a consequence of the 2008 financial crisis, Hungary could not fund itself from the financial markets, thus the country raised considerable loans from international organizations, which represented a significant weight even within the central government debt. This loan, however, was gradually repaid, and by the end of Q3 2014, it amounted to only 4.4 percent of the central government debt.

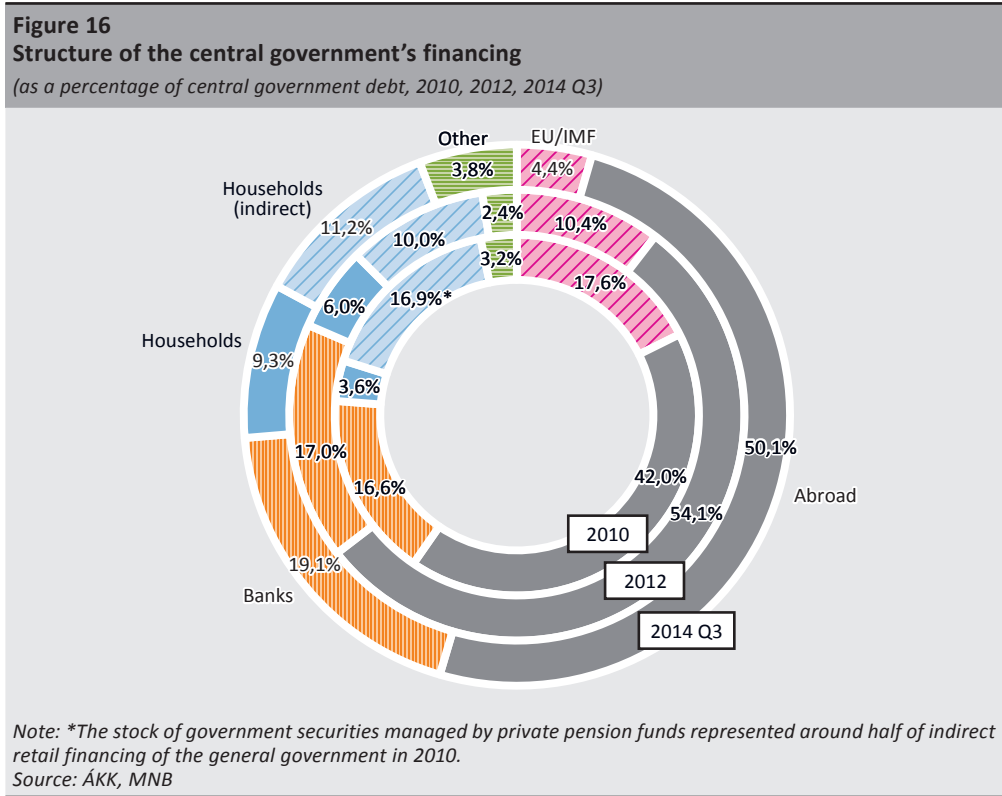
As a consequence of changes in the private pension system, households' indirect government bonds stock decreased, however the households' share in the central governments debt, due to recent purchases of households of governments bonds and mutual funds' shares, has reached its previous levels. Another considerable issue in recent years was changing the private pension system. Households have, to a great extent, been financing the government indirectly through pension funds. Following the change in the system, the assets of households held in the private pension system were heavily reduced, and thus the scale of indirect financing of the government debt also declined. However, the impact of declined households' financing is modified by the fact that, although indirect financing decreased, parallel to this, through withdrawing government securities held by private pension funds, government debt also declined.

Government securities directly purchased by households rose significantly as compared to 2012, while the role of indirect financing also rose. In recent years – in line with considerable retail purchases of government securities – the role of households in financing government debt increased from 3.6 percent in 2010 to 9.3 percent by Q3 2014, which even in historic comparison is considered as high (Figure 16). There was a considerable decline in indirect financing in 2011 as a result of the change made in the pension system. At the same time, however, through the portfolio restructuring which followed, the stock of mutual funds together with government securities, also showed a heavy increase⁹. Thus, in total, indirect possession of government securities also increased significantly, and according to the most recent figures it already exceeds 11 percent of the central government debt.

Taking into account indirect financing of households' as well, in Q3 2014 the proportion of resources reached the previous figure, still including private pension savings, of financing rate. As a result of portfolio restructuring, direct and indirect financing of households amounted to more than 20 percent of the central government debt in Q3 2014, which corresponds to the previous financing scale – still including the private pension assets. On the other hand, the decline of loans from international organizations was also achieved parallel to increased retail financing. Although household financing was transformed considerably in one step through changing the pension system, households with the help of their continuously growing savings and with significant purchases of government

⁹ Together with mutual funds, insurance companies and voluntary pension funds are also financing the general government to a large extent.

securities and mutual funds restored the pre-existing high rate of household financing. The considerable rise of directly held government securities also played a role.



5.2 Impacts of expanding household financing

Through increased domestic financing, both external debt, being of particular importance for external vulnerability of the economy, and the Structure of the central government's financing's exchange rate exposure can decline. With the exception of the last few months, the increase of financing was reflected most notably in the rise of short-term funding, however, this also led to the growth of the stock of shortened-term government¹⁰ debt. Interests received by domestic players may stimulate the economy so that consolidated domestic financing costs shall not necessarily exceed that of external fundraising. At the same time, however, household financing has various aspects. The next chapter reviews these main issues.

Households can support general government financing not only directly, through possessing government securities. As presented above, the increase of households financing brought

¹⁰ Debt which was originally long-term, but is maturing within one year.

about a growing share of domestic financing of the general government. Reduced external financing from the perspectives of external vulnerability – through decreasing external debt – can be considered as a positive outcome. However, it is worth noting that even if households placed their savings in the financial intermediary sector instead of purchasing government securities, the scale of domestic financing of the general government would not necessarily decline. This could occur if household funds were placed at intermediaries which invest all funds received into government securities.

Higher interest rates of retail government securities – compared to alternative investment opportunities – increase the income of households, which could have a positive impact on external vulnerability of the economy and on economic growth. Expansion of household government securities is partly related to the attractive pricing of government securities intended for households as compared to other investment opportunities available on the market (e.g. bank deposits with the same maturity). The increased interest received on government securities is directly transferred to households. If indirect financing of the general government grew, as outlined above, only part of the interest would be received by households due to operational expenses of the financial intermediary system¹¹. Expansion of direct financing leads to increased income of households, as well¹², which, through increased consumption or balance-sheet adjustment, shall facilitate the strengthening of economic stability and growth. The exact impact shall very much depend on the income-savings position of households in possession of government securities. This is because the degree of marginal propensity to consumption depends on household income or wealth: households with higher level of income or wealth tend to have lower marginal propensity to consumption (Carroll et al., 2014). Thus, increased income level thereof due to higher interest income on government securities tends to bring about, through increased savings, a further decline in the external vulnerability of the economy. If the interest income of households with lower levels of income or wealth rises, then growth contribution of household consumption may be higher.

Government security stock held (indirectly) by financial intermediaries may be more stable, however, only part of interests paid by the government is transferred to households. It should also be underlined that financing of the general government through financial intermediaries is assumed to be achievable on a longer-term. As already presented above, households in general (excluding the last few months) have a preference for shorter-term government securities. In recent months households were purchasing more and more longer-term securities; in spite of this, the majority of the stock of government securities held by households continues to have a maturity of one year. At the same time however, for example mutual funds, due to several investors, can invest into longer-term government

¹¹ In this case, however, maintenance or expansion of the financial intermediary sector may contribute to growth through higher employment or to reduced vulnerability of the economy.

¹² At this point it is worth noting that additional income compared to yields on alternative investment opportunities may increase disposable income of households.

securities since there is only a smaller influence of individual decision-making on the resources of mutual funds. Purchases of longer-term securities are also hindered by the fact that Hungarian households – as observed – make their investment decisions basically for a one-year time period, thus they can or are willing to engage less in the longer-term. At the same time, financial intermediaries can bring together several small investors, thus can provide the general government with funding on a longer-term, as a result of which they can help reduce renewal risks of the government debt through the decrease of debt maturing within a year. This, however, has a cost: less interest income is received by households. Similarly, pension funds and insurance companies are typically able to purchase government securities on a longer-term, thus financing the general government is ensured under lower levels of uncertainty.

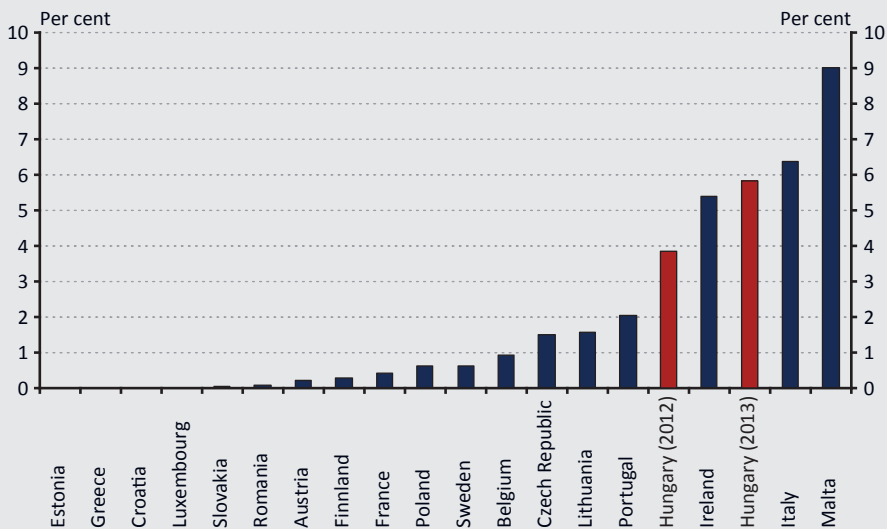
Additional costs of higher interest rates of government securities intended for households can be offset by the fact that domestic funding does not increase the need for reserves, and thus overall consolidated costs of the government may even be lower. Upon analysing expanding household financing, the costs of financing should also be examined. Pricing of retail government securities is very favourable, thus the question arises whether external resources should be converted to domestic funds. Costs of financing, however, should be analysed on the consolidated government level: high level of external fundraising through increased short-term debt may lead to higher possession of foreign exchange reserves (Hoffman et al, 2013). Given this, the cost of government financing by the household sector shall not necessarily exceed the costs of financing from other markets, moreover, the interest income shall in full be received by the household sector directly, as mentioned above, with second round effects thereof – either on the revenues of the general government (for example rising VAT revenues as a result of consumption) or on its financing.

The stock of government securities held by households is less volatile to the HUF exchange rate fluctuations, thus is a more stable source for the government. A further advantage of financing with retail government securities is that it provides stable funding for the government on the maturity horizon even in cases of international money market turbulences. Under deteriorating external conditions, international investors can sell their riskier assets, which in certain cases may have an impact on the Hungarian sovereign-debt market as well. In contrast, any possible and unforeseen tightening liquidity on the international capital market has a smaller influence on retail investors. In contrast, however, we mention that following the autumn of 2008, households reduced their exposure to government securities, which might have been the consequence of the consumption smoothing behaviour of households. At the same, the scale of the reaction of households was by an order of magnitude smaller than that of foreign investors.

The considerable level of short-term stock of government securities, however, entails significant renewal risks, which could be further intensified if banks as well start to follow a more competitive deposit-taking behaviour. The fact that banks need funding from retail deposits could also have a meaningful impact on the development of households'

financial assets. If banks trying to ensure forint funds – along with raising interest rates – start deposit-taking, then it could well be that the stock of government securities held by households will also decline. The rationale behind this is that households make their choices of investment opportunities on the basis of yields offered, thus their resources released as government securities mature may not necessarily be reinvested to finance the general government. In 2015 the renewal risks of forint based retail government securities may further be increased by the conversion of foreign currency loans into forint-based loans, too, since it can step up competition for domestic forint funds among the banks (MNB, 2014b). As a consequence, part of household funds currently held in government securities may again flow towards bank deposits. In this respect it should be noted that if ÁKK would like to continue to increase the share of domestic financing of government debt, it would result in the rise of interest rates on retail government securities, thus ultimately, in increased interest rate expenses of the government (this, however, would increase disposable income of households, and would not necessarily entail additional costs on a consolidated level). It could be important, in international comparison, the share of government bonds in the households' financial assets – except for a few examples – does not exceeds that of in Hungary in the recent years.

Figure 17
The share of households government bonds in households' financial assets
(2012)



Source: Eurostat, MNB

Permanent restructuring of household assets may have a negative impact on the supply of funding of certain economic agent. In recent years households have increasingly been purchasing government securities, which, while decreasing external dependency of the

general government, may slow down the decrease of external debt of banks – in other words the overall external dependency of the national economy may not necessarily decrease due to the household purchases of government bonds. Since the beginning of 2012 households have significantly increased the amount of their stock of government securities, an important part of which, however, was financed by reducing their bank deposits. It is expected that in the short-term the fall of available funding will not have a negative effect on lending, but will probably slow down the decrease of the external debt of the banks. However, this also means that household purchases of government securities may indirectly impede the decrease of net external, within that short-term external, debt of banks. In other words, declining external dependency of the government may slow down the external dependency of another sector. However, on a consolidated level the economy's external dependency decreases, due to the private sector's saving.

6 Summary

The net savings rate of households grew considerably between 2008 and 2014. Part of the growth was due to higher levels of loan repayments, however, financial asset accumulation of households with strengthened precautionary considerations has increasingly contributed to this rise. In the course of the portfolio allocation decisions of households, since the beginning of 2012, securities have played an increasingly important role: in particular government securities and mutual funds. The easing cycle of the central bank enhanced portfolio restructuring of households, since households have increasingly begun to look for safe investments with higher rates of return. Thus, while in 2011 government securities represented a mere 2 percent within financial assets of households, the figure by Q3 2014 rose above 6 percent, which is considered to be high even in international comparison. However due to the large stock of short term government securities, keeping at level and increasing households' financing might require further measures from the government.

The stock of mutual funds of households have also increased considerably in this period: instead of the previously popular money market funds, assets managed by bond funds have had the highest increase, and have become the type of fund representing the largest weight by households. Thus, households through possessing mutual funds are representing a growing weight in financing the government debt.

On the one hand, household financing may have several advantages, for example: interest income is received directly by households, which can give support to growth, or may provide the government with more stable funds since households are assumed to be less sensitive to potential exchange rate fluctuations, money market turbulences. Or with increased domestic financing the external debt, thus external vulnerability of the economy, can be decreased.

On the other hand, household financing may entail risks, for example the stock of short-term government securities held by households is significant, which entails renewal risk. Furthermore, if for example due to its financing needs, the banking sector offered higher interest rates for households, then this could even lead to declining stock of government securities held by households, or to increased interest expenses of the government.

References

GOVERNMENT DEBT MANAGEMENT AGENCY (2014): KKJ issues. <http://www.akk.hu/aukcio.ivy?public.cat-sys-831CB809-1D7C-4ACE-B415-0238913A053E-filtergroup=search> (downloaded on 01.12.2014).

ÁRVAI ZSÓFIA – MENCZEL PÉTER (2000): Savings of Hungarian households between 1995 and 2000. *MNB Working Papers* 2000, 8.

CARROLL, CHRISTOPHER D. – KIMBALL, MILES S. (2006): Precautionary saving and precautionary wealth. *The New Palgrave Dictionary of Economics*, 2nd Ed.

CARROLL, CHRISTOPHER D.– SLACALEK, JIRI – TOKUOKA, KIICHI (2014): The distribution of wealth and the MPC: Implications of New European Data. *American Economic Review* 104 (5), pp. 107–111.

ELMENDORF, DOUGLAS W. (1996): The Effect of Interest-Rate Changes on Household Saving and Consumption: A Survey. *Federal Reserve Board Working Paper* 1996, 27.

EUROSTAT: STATISTICS DATABASE (2014): http://epp.eurostat.ec.europa.eu/portal/page/portal/statistics/search_database (downloaded on 1 December 2014)

HOFFMAN, MIHÁLY – KÉKESI, ZSUZSA – KOROKNAI, PÉTER (2013): Earnings of the central bank and determining factors thereof. *MNB Bulletin*, October 2013, pp. 36–48.

FRIEDMAN, MILTON (1986): *Inflation, Unemployment, and Monetary Policy*. Budapest: Közgazdasági és Jogi Könyvkiadó.

KÉKESI, ZSUZSA – KÓCZIÁN, BALÁZS (2014): Security vs. bank deposit: Forms of savings of households. *MNB Professional articles*, 14 July 2014.

KEYNES, JOHN MAYNARD (1936): *The general theory of employment, interest and money*. London: Macmillan. In Hungarian: *A foglalkoztatás, a kamat és a pénz elmélete*. Budapest: Közgazdasági és Jogi Könyvkiadó, 1965.

LELAND, HAYNE E. (1968): The precautionary demand for saving. *The Quarterly Journal of Economics* 82 (3), pp. 465–473.

MODIGLIANI, FRANCO (1986): Life cycle, Individual Thrift, and the Wealth of Nations. *The American Economic Review* 76 (3), pp. 297–313.

MAGYAR NEMZETI BANK (2014a): Data on securities issued by Hungarian residents with breakdown by issuer and holding sectors. http://www.mnb.hu/Root/Dokumentumtar/MNB/Statisztika/mnbhu_statisztikai_idosorok/a-rezidens-kibocsatasu-ertekpapirok-adatai-kibocsatoi-es-tulajdonosi-bontasban/Idosoros_havi_hu.xls (downloaded on 08.12. 2014).

MAGYAR NEMZETI BANK (2014b): Stability Report. The Central Bank of Hungary, November 2014.

MURATA, KEIKO (2003): Precautionary Savings and Income Uncertainty: Evidence from Japanese Micro Data. *Monetary and Economic Studies* 21 (3), pp. 21–52.

The safety trap – the financial market and macroeconomic consequences of the scarcity of safe assets

Dániel Horváth – Róbert Szini

Despite near-zero interest rates set by large central banks and other steps towards monetary easing in recent years, the economic environment has been characterised by low inflation globally and deflationary fears in some regions, while real economic activity has remained moderate. Although symptoms of this phenomenon are similar to that of the liquidity trap, important differences may be identified, which suggests that other factors may be important as well. One of the new approaches to appear in the literature identifies the structural excess demand of safe assets as a background factor that was aggravated by cyclical effects in the crisis. The mechanism of the so-called safety trap is similar to that of the liquidity trap, but it can be observed among safe assets; therefore, it can be considered a special type of liquidity trap. Financial market tensions trigger an economic downturn and a deflationary spiral in both cases, but different types of monetary policy responses may be effective. While forward guidance may be effective in the case of a liquidity trap, certain quantitative easing policies may provide a solution in the case of a safety trap.

Journal of Economic Literature (JEL) Classification: G01, G15, E44, E52

Keywords: financial markets, risk-free assets, liquidity trap, monetary policy

1 Introduction

Due to the recent economic crisis, financial market returns have stabilised at a permanently low level. This phenomenon and its possible consequences have received ample attention from decision-makers of economic policy, and several analyses published in the literature have used more innovative approaches than previously in order to better

The authors are staff members at the Magyar Nemzeti Bank. E-mail: horvathd@mnk.hu, szinir@mnk.hu.

understand the processes. One of the proposed approaches was an in-depth study of the supply-and-demand factors related to safe assets. According to the safety trap model, increased demand for risk-free and safe financial assets (“safe assets”) may result in substantial macro-economic effects in extreme cases, due to the scarcity of these assets. The phenomenon may be regarded as a special case of the well-known liquidity trap; it can be studied in a similar way, but there is a substantial difference in terms of its consequences and effective economic policy responses.

The return is so low in a liquidity trap situation that economic actors may become indifferent to holding cash versus holding other low-return investment assets.¹ Due to the ensuing low nominal interest rate, over time monetary policy will have limited options to ease monetary conditions by means of its classical toolkit, although this would be justified by the deflationary processes and the decline in real economic output. Due to the fall in risk appetite, the demand for safe assets is stronger in a safety trap scenario; therefore, their return will be close to zero. After reaching this limit, the equilibrium of the risk-free asset market can be restored by a fall in real economic activity, not the decrease in the interest rate.

Even though the consequences of the two cases are similar, there are important differences regarding their underlying cause and, hence, economic policy responses. According to theoretical results, forward guidance and commitment of the central bank may be effective in liquidity traps; however, the use of quantitative easing may prove more useful in safety traps. The situation is further complicated by the fact that the two trap situations may be simultaneously present in a crisis, and different effects may predominate during various phases of the crisis. Therefore, the effective economic policy responses may also vary over time.

We deal with the causes and consequences of the scarcity of safe assets in our article, covering both the theoretical and practical aspects and placing particular emphasis on monetary policy implications.

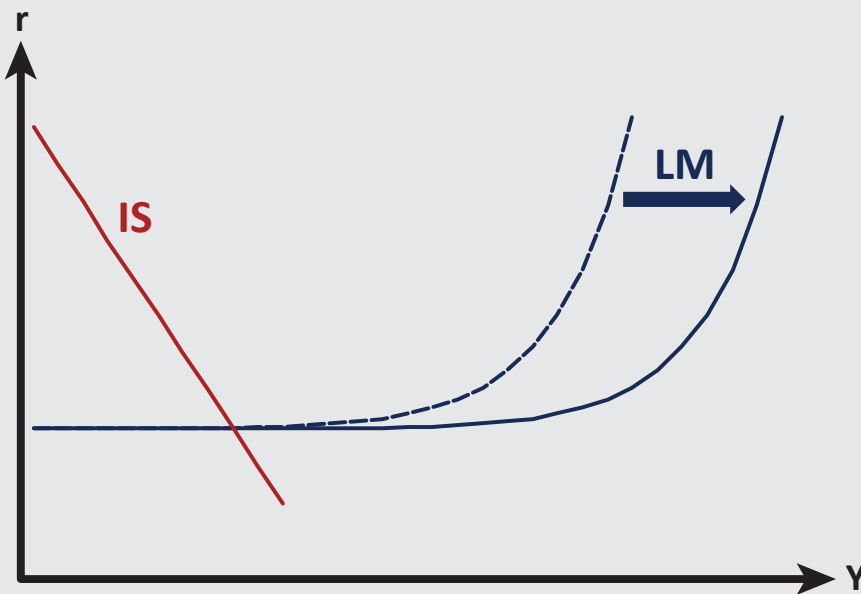
Section 2 of this article introduces the New-Keynesian Liquidity Trap as a reference. Section 3 deals with safe assets and the causes of their scarcity. Section 4 summarises the modelling attempts and conclusions to date in the literature. Section 5 presents in more detail the work of *Caballero et al. (2014)*, which may be regarded as the most developed model of the phenomenon. Section 6 summarises monetary policy and emerging market implications.

1 See Keynes (1965), p. 230.

2 Definition of liquidity trap

According to the original definition of *Keynes (1965)*, a liquidity trap is a situation in which interest rates fall to such low levels in a given economy that savers become indifferent to holding cash versus holding debt instruments. The theoretical background of the phenomenon is explained by the speculative money demand motive of Keynes's liquidity preference theory, according to which the demand for cash becomes infinitely elastic at a positive "lower limit" of cash demand (i.e. the excess liquidity injected into the economy will be fully held as cash savings, so it has no effect on the interest rate and real economic activity). In this case, the effectiveness of monetary policy drastically decreases in the sense that, through an increase in money supply, it becomes unable to substantially influence the prevailing interest rate in the economy. It is worth noting that such a situation may also arise in the case of a sudden change in the willingness of savers to hold cash, without the drop of the interest rate to zero, which may be mostly observed in times of crisis when investor confidence is seriously undermined.

Figure 1
Liquidity trap in the IS-LM model



Note: In the case of an equilibrium developing at the flat part of the LM curve, an increase in money supply will neither influence the interest rate nor the output.

Due to experiences gained in Japan and during the global crisis, the concept of a liquidity trap has been further developed over the past two decades, and it is now used in a slightly different sense than in the original definition of Keynes.² In current economic literature, the term is usually used in connection with the zero lower bound of the central bank's base rate. At the zero lower bound, monetary policy is no longer able to ease monetary conditions by means of conventional tools in spite of the fact that this would be justified by an environment characterised by low inflation (and/or recession). It should be stressed that, in contrast to the original approach, the cause of the problem in this case is not directly an increase in willingness to hold cash, but the zero lower bound of the short-term interest rate.

Although the definition and underlying reasons of the liquidity trap are different in the traditional and modern views, the two approaches are quite similar in terms of their consequences: the conventional instruments of monetary policy lose their effectiveness and interest rates become “stuck” at a low rate, while aggregate demand falls further and recession and deflationary processes worsen. An important difference, however, is that the two approaches of the liquidity trap call for different economic policy responses. According to the traditional approach, monetary policy loses its effectiveness in the case of a liquidity trap and only fiscal policy can stimulate the economy. In contrast, modern approaches recommend the use of unconventional central bank instruments, and most of these models focus on studying the effectiveness of the possible instruments.

The model for risk-free assets presented below is compared with one of the most popular, the New-Keynesian approach to the liquidity trap.³ Based on the results of this school, any monetary policy instruments that increase the expected future wealth of savers stimulate the economy in a liquidity trap situation. This also includes forward guidance, which means higher future asset prices and higher inflation by “fixing” the low interest rate. Due to an increase in expected wealth, forward guidance shifts upward and through the lower real interest rate, flattening the intertemporal budget constraint and thus increasing present aggregate demand.

The New-Keynesian liquidity trap models generally come to opposite conclusions with regard to quantitative easing programmes. A major reason for this is that the asset purchases in themselves only result in a present increase in the monetary base, which, by definition, does not affect prices and the real economy in a liquidity trap situation. *Krugman (1998)* points out that, in the case of a “simple” quantitative easing, the market expects that monetary policy – according to its mandate – will endeavour to keep inflation low after escaping the liquidity trap, and therefore the future demand-increasing effect will not be present through expected inflation and asset prices, as in the case of forward guidance. Consequently, quantitative easing can only be effective in conjunction with

2 The work of Paul Krugman advanced the reinterpretation of the concept, based on the experiences gained in Japan (see Krugman, 1998). For further definition issues regarding the liquidity trap, see the articles by Rhodes (2011) or Koppány (2007).

3 See e.g. Eggertson et al. (2003); Werning (2012); or Cochrane (2013).

some commitment to an increased monetary base and maintenance of the low interest rate.⁴ Overall, quantitative easing programmes in themselves do not influence aggregate demand, according to the New-Keynesian approach to the liquidity trap.⁵

The results related to forward guidance and quantitative easing are interesting for the purposes of this article because their effectiveness on liquidity traps and so-called safety traps will be compared later.

3 The scarcity of safe assets

The mainstream economic reasoning on liquidity traps makes the simplification that the economic actors may either be holding their savings in cash or in a given government bond investment. Concerning the possible investment forms, this is a limitation in regard to both maturity and risk.⁶ However, many investments with different maturity and risks are available in reality, which may affect the practical relevance of the theoretical results related to liquidity traps. Experience has shown that it may be important to first and foremost take into account the risk dimension,⁷ since the scarcity of safe assets and their macroeconomic importance has been identified by several authors in recent years.

3.1 What is a safe asset?

Before studying the scarcity of safe assets, it is worth briefly referring to issues of terminology and definition. In the literature dealing with this topic, these instruments are referred to as “safe assets”, but this is an unusual name in Hungarian financial terminology. Even though the term “risk-free asset” may be used, this is problematic for different reasons. On one hand, the recent global crisis pointed out that, in contrast to models, “there are no real risk-free assets” in reality (*IMF, 2012*); therefore, the term may be misleading. On the other hand, investors also face inflation risk in the case of US government bonds traditionally considered as risk-free,⁸ and *Beckworth (2013)* demonstrates that the stock

4 According to Krugman, the monetary policy has to “credibly promise to be irresponsible”.

5 For the purposes of our article, we can be satisfied with this statement referring to the general case; however, it is worth mentioning a recent result (see e.g. Woodford (2012)). According to theoretical and empirical results, some targeted quantitative easing programmes focusing on submarkets may have an economic stimulus effect in liquidity traps as well.

6 For further problems of the typical approach to investment decisions in the mainstream economic thinking, see e.g. Hossein-zadeh, Ismael (2014).

7 For a broader overview of the risk factors prevailing in government bond returns, see Horváth et al. (2014).

8 The stock of Papers indexed to inflation is very limited in the world, so it would not be practical to limit the term “safe asset” to only these Papers.

of government bonds held by foreign investors typically decreased in high inflationary periods (i.e. high inflation was actually regarded as a risk). In addition, it can also be noted that *Papers* considered to be risk-free signify a secure cash flow only if they are held until maturity; the investor runs an interest-rate risk in the case of a sale before the maturity date. On the basis of these considerations, the term “low-risk” will be used for the examined asset class in the Hungarian version of the article. In the English version, to remain in line with the literature, we refer to this asset class as “safe assets”.

What is understood by safe assets is naturally a more important question than the name; however, there is no clear position on this set of assets in the literature:

- according to the strictest definition, only liquid and credit risk-free government bonds may be included in this group (see e.g. *M.C.K., 2012*);
- with regard to the potential use of *Papers*, those assets may be considered safe that function as a wealth accumulation asset, collateral and pricing benchmark, in addition to being regarded as safe assets by prudential regulation;
- from a modelling point of view, the practical definition is the one that regards those assets as safe assets whose value is independent from the state of the world (i.e. “information insensitive”) (*Steffen, 2012; Gourinchas et al., 2012*);⁹
- based on a definition that focuses on subjectivity, safe assets are those that “investors would feel comfortable using as a store of value” (*Beckworth, 2011*).

Although the above definitions make possible both a narrow and broad interpretation of safe assets, the models and related results are based on information insensitivity and an absence of risks. This is not likely to represent a serious problem with regard to the practical relevance of conclusions presented later, but the differences in definitions is worth keeping in mind.

3.2 Demand and supply factors

Some studies examining the background of high current account deficit in the United States before the crisis have already dealt with the supply-and-demand imbalances of the safe asset market.¹⁰ The emerging market crash in the 90s and the “dot-com bubble” that shocked the developed markets have generally been identified as background factors that, on one hand, contributed to increasing the appetite of investors for safe assets

⁹ From a modeling point of view, this approach may be useful because the present and future values of safe assets are the same in every state of the world. Therefore, in the case of a future shock, it is easier to establish a relationship between the present and future values of risky assets as well (see section 5 of this article for more detail).

¹⁰ See e.g. Caballero (2006); Caballero et al. (2006); Bernanke (2005; 2007).

and, on the other hand, resulted in a decrease in the number of assets considered to be safe. With regard to the crises, it can also be highlighted that, based on lessons learned, more and more emerging market central banks started to build higher foreign exchange reserves, which previously had almost exclusively been held in high-quality government bonds. In addition, certain commodity-exporting emerging countries had had significant current account surpluses due to booming exports and growing global market prices; through their sovereign¹¹ funds, these were partially invested in assets considered to be safe. The development of financial markets has also increased the demand for safe assets: some high-quality collateral was necessary for the implementation of increasingly complex financial transactions. In addition, the ageing societies of developed countries are requiring more and more forms of safe saving.

While there has been pressure on the demand side, the supply side has not been able to keep up with the need. Since there are a very limited number of assets in the emerging countries that may be considered risk-free, this increasing demand was mostly directed to the developed markets. This had two important consequences. On one hand, the yields on government bonds of certain developed countries – primarily the United States – have fallen to a very low level, which might have contributed to the development of risk-appetite and stock-exchange booms prior to the crisis. On the other hand, excess demand for safe assets created incentives for the private sector to generate such assets, which facilitated the development of instruments that create assets with higher ratings from risky ones (e.g. CDOs, MBSs). On this basis, it can be said that the excess demand for safe assets contributed to the development of global imbalances prior to the crisis and the subsequent spread of assets that were later proven to be toxic.

The consequences of the scarcity of safe assets were felt much more pronouncedly in the crisis (both in the phases of the subprime crisis and the sovereign crisis) and the subsequent period, so more and more research was published in the literature on this topic.¹² On the demand side, the effect of the deterioration of investor confidence has been of particular importance in the crisis. Supply has fallen on one hand due to sovereign downgrades and on the other hand by the market collapses of instruments created by the private sector. Due to these processes, the value of safe assets has significantly increased, while their returns have fallen close to zero.

¹¹ Based on the aggregation of the SWF Institute, the assets held in sovereign funds exceeded USD 7,000 billion by the end of 2014.

¹² See e.g. Caballero (2010); Bernanke et al. (2011); IMF (2012); Gourinchas et al. (2012); Gorton et al. (2013); Aoki (2014).

Figure 2
The distribution of sovereign credit ratings

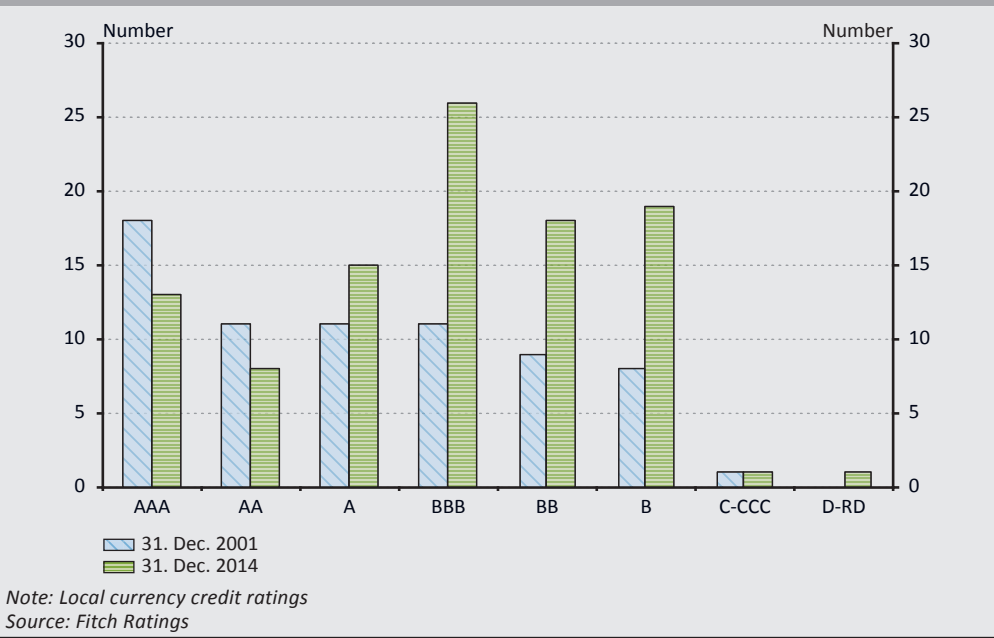
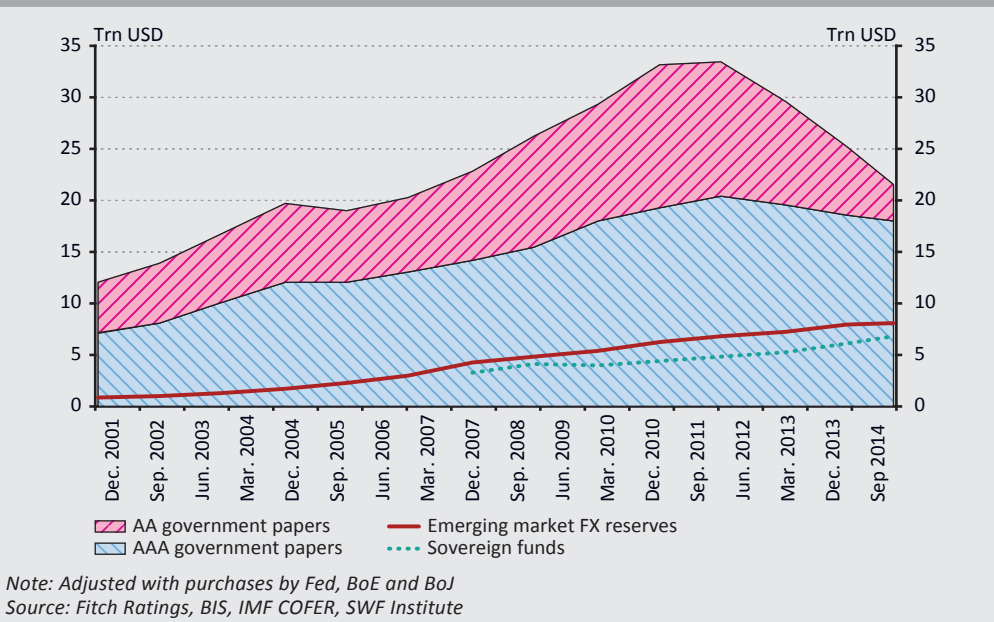


Figure 3
The development of the global amount of highly rated sovereign Papers and the assets held in the foreign exchange reserves and sovereign funds of emerging countries



Figures 2 and 3 show how the quantity of highly rated sovereign debt decreased in absolute and relative terms and how demand through emerging market foreign exchange reserves and sovereign funds increased. Similar processes could also be observed in the case of safe assets of the private sector (e.g. MBS market) (Bernanke et al., 2011; Gorton, 2010).

Although the tensions have somewhat eased after the most intense phase of the crisis (2008–2009), looking ahead factors can be identified on both the demand and supply sides that may act as incentives for the persistence of the problem.

Following the experience of the crisis, safe assets will likely continue to play a decisive role in portfolio and liquidity management with regard to demand, and their benchmark role may also remain strong, which is a factor that supports demand as well.¹³ In addition, due to the tightening of the prudential regulatory environment (Basel III, Solvency II), increased demand may also be expected from banks and insurance companies. Similar to the period prior to the crisis, the development of financial markets may also bring an increase in demand due to margin requirements. It may also be highlighted that the OTC market structure had begun to be transformed into a central counterparty clearing (CCP) system, which also increased systemic margin requirements. The role of the asset purchase programmes of central banks introduced in the crisis and afterwards may also be mentioned here: the Fed and the Bank of England strive to maintain the quantity purchased, while the asset purchase programme of the Bank of Japan is currently still active, and the ECB announced an asset purchase programme of EUR 60 billion per month lasting until September 2016. All of these central bank purchases decrease the quantity of safe assets available on the market. It may also be highlighted in the case of the ECB programme that the German *Papers*, which are considered to be the safest, are purchased in the largest quantity due to the use of ECB capital keys.

With regard to the expected supply-side processes, it can first be said that, due to the already high debt levels of the developed countries, a substantial increase in the highly rated debt stock is not likely in the medium term, while there seems to be no serious chance that trust will be quickly restored in the sovereigns previously considered safe but subsequently downgraded in the crisis. As a response to the economic crisis, trust in instruments offered by the private sector has also vanished. The emerging countries continue to be able to contribute to the supply of safe assets only to a limited extent. However, on the supply side, the activities of central banks may support the markets; based on experience of the crisis, they contribute to maintaining market stability through their instruments, if necessary. The most important factors related to the supply and demand of safe assets are summarised in *Tables 1 and 2* (based on IMF, 2012).

¹³ A further interesting issue is the possible effect of excess demand for safe assets on the benchmark role of these assets. If the returns on assets considered safe in asset pricing models are low due to structural excess demand and not because of fundamental reasons, this fact might invalidate the conditions of the traditional asset pricing models (see e.g. Berlinger et al., 1999) and might theoretically contribute to the development of asset price bubbles (which presumably happened prior to the crisis).

Table 1
Summary table of demand factors related to safe assets

Source of demand	Investor type	Factor	Trend of factor
Portfolio management	Mutual funds	Role of safe assets in portfolio allocation and liquidity management	↑
	Insurance companies, Pension plans	Conservative investment policy	→
	Nonbank financial institutions	Low level of investor confidence	↑
Collateral for transactions	Banks and other financial intermediaries	Margin need of derivative transactions	↑
		Stricter rules for collateral management	↑
		Collateral need of repos	→
Regulation	Banks	Basel III	↑
		Higher risk-weight for downgraded sovereign papers	→
	Insurance companies	Solvency II	↑
Crisis management	Central banks	Asset purchase programs	↑
Benchmark role	Banks and other financial intermediaries	General demand for safe investments	→

Source: IMF (2012)

Overall, it can be said that the global scarcity of safe assets could also result from cyclical and structural factors. Although cyclical effects may have receded since the crisis, due to structural reasons, factors may dominate in the medium term to strengthen this phenomenon.

Table 2
Summary table of supply factors related to safe assets

Source of supply	Factor	Trend of factor
Developed sovereigns	Debt problems, downgrades	↓
Private sector	Low level of investor confidence after the crisis	↓
Central banks	Risk management tools in the crisis	↑
Emerging sovereigns	Limited ability to issue safe assets	→

Source: IMF (2012)

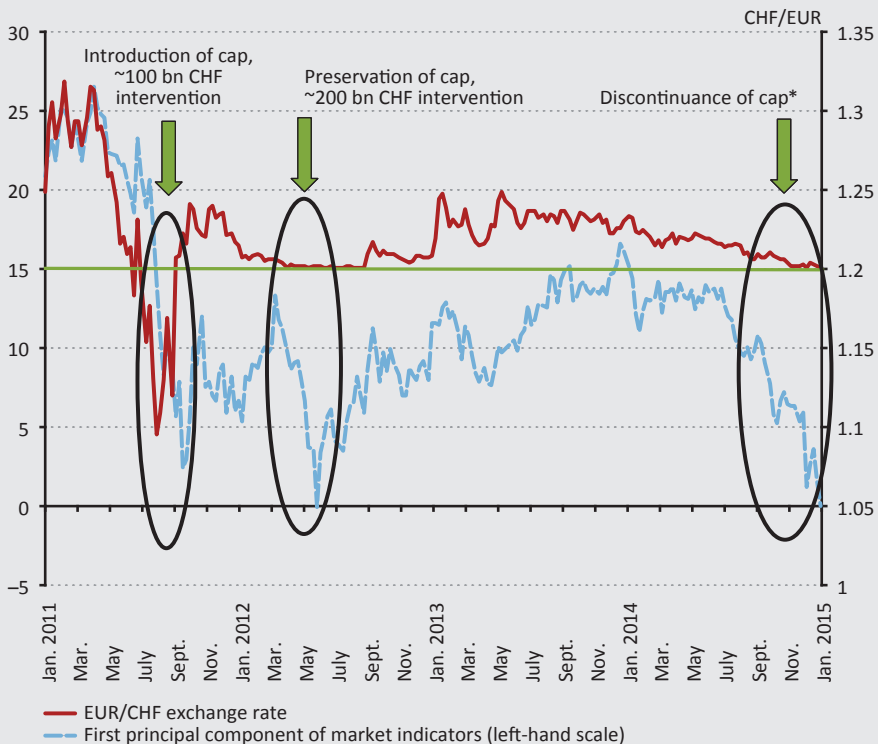
Box 1**Practical examples of the consequences of a scarcity of safe assets**

In the box, two brief examples demonstrate the practical consequences of a scarcity of safe assets.

I. Pressure on the exchange-rate ceiling of the Swiss central bank

The Swiss franc is widely considered to be a safe-haven asset (i.e. a safe asset whose value generally appreciates in turbulent periods). In response to the fast appreciation of the franc, the Swiss central bank decided to establish an exchange-rate ceiling of 1.2 CHF/EUR in autumn 2011, which was necessitated by the substantial decrease in the global risk appetite. Subsequently, the exchange rate of the franc remained in the range of 1.2–1.25, and periodically “stuck” to the 1.2 rate. Even though the exchange rate of the Swiss franc as a risk indicator has thus essentially lost its previous information content, from the price

Figure 4
The euro/Swiss franc exchange rate and development of the principle component made up of market indicators



Note: *No intervention data were available at the writing of this article.

Source: Bloomberg, www.snb.ch, own calculation

dynamics of other safe-haven assets we may still be able to draw conclusions about the demand for safe assets. In this way, we can determine the possible pressure on the Swiss exchange rate ceiling at certain periods. Figure 4 shows the development of the principle component, calculated on the basis of the values of other safe-haven assets and certain market indicators,¹⁴ which signals this pressure. Based on the development of the principle component highlighting the dynamics of the demand for safe assets, the demand on the Swiss franc market might have also been increasing since autumn 2014. The central bank lifted the exchange rate ceiling in January 2015. Based on the first opinions of market analysts, the ensuing appreciation of the franc decreased the growth outlook of the Swiss economy and increased deflationary risks.

This case may be interpreted as a consequence of structural and cyclical global excess demand for safe assets, and it highlights the possible negative macro-economic effects of the phenomenon.

II. The role of US government bonds

We can summarise the consequences of a scarcity of safe assets and risk-free market perception related to US government bonds based on the thoughts of *Robert Jenkins*, one of the managers of the Bank of England:¹⁵

1. Due to the present environment of extremely low returns, the government of the United States can secure very cheap financing, which may temporarily obscure the problems related to the long-term sustainability of the budget and delay necessary structural reforms. A 1 percentage-point rise in the interest rate would mean an annual expenditure growth of USD 160 billion. The normalisation of returns, compared to the average of pre-crisis returns, would mean an annual additional expenditure of USD 500 billion in the United States (which is equivalent to 3 percent of GDP).
2. There is a significant foreign demand for US Papers because of the role of the dollar as a reserve currency, the perception that US government bonds are risk-free, and global excess demand for safe assets. Therefore, almost half of the outstanding stock is held by foreign actors, which is an excessively high value among the developed countries and might limit the financial independence of the United States.
3. As a result of the quantitative easing programmes focusing on the long-term government bond segment, as well as so-called “operation twist” operations aimed at increasing the balance sheet of the central bank, the stock held by foreigners has substantially decreased in recent years. Due to this, the interest-rate exposure of foreign market participants has decreased, perhaps making them more willing to sell their US Papers at the start of yield normalisation, which might make returns and the exchange rate of the dollar more volatile.

¹⁴ The first principle component is calculated on the basis of the 10-year euro and dollar returns, the euro/dollar exchange rate, the value of gold, the VIX index and the weekly changes of the EMBI Global spread, which may be interpreted as a composite global risk indicator (the lower levels indicate a decrease in the risk appetite).

¹⁵ Jenkins (2013)

4. The global pricing of pension assets of around USD 20 thousand billion, assets held in investments funds in the value of USD 60 thousand billion and derivative assets of USD 600 thousand billion is directly or indirectly connected to the yields developing in the US government debt market. Therefore, any bias has multiple effects on global processes, and any wavering of faith in risk-free US Papers would have unforeseeable consequences.
5. In recent years, following the 2011 downgrading of the United States, as well as the risks arising from the aforementioned factors, more and more investors have revised their investment strategies. This has resulted in a higher reliance on internal or external rating-weighted indices, instead of market capitalisation-based indices as benchmarks. Beyond the government bond market of the United States, this may negatively influence other large borrowers as well (see, for instance, Italy, which has a large government bond market but “only” a BBB credit rating).

4 Modelling opportunities

The literature examines and presents several approaches and modelling opportunities, among which we would like to highlight the results of *Gourinchas et al. (2012)*. In their article, these authors look for an answer to the question of how a possible future scarcity of safe financial assets (i.e. a shortage of assets) would affect the financial stability of the world. The authors underline the timeliness of the topic and question, since they argue that in the case of an economic shock, only these assets would be able to provide sufficient security for economic actors. Since in addition to being stable in value these assets also cover financial transactions, they fulfil the prudential requirements of the financial intermediary system, as well as fill the pricing benchmark function of financial instruments. Hence, their possible absence would significantly increase the instability of the financial system. The authors find the answer to the question asked in their article in a new type of modelling framework: they study financial bubbles, with the help of which the supply level of safe financial instruments can be temporarily increased. Nevertheless, the financial bubble studied by the authors cannot be a perfect substitute, since, during its evaluation, it must be assumed that its future value is stable. Namely, if some uncertainty later arose with regard to its value, this would further worsen the problem of supply shortage. Therefore, the scarcity of safe assets entails a risk that financial bubbles might appear, since this can temporarily mitigate the phenomenon. Based on the results obtained, the authors draw attention to the fact that safe financial assets should be definitively defined by competent and consistent authorities in prudential regulation, since the private sector has a high moral hazard.

In this article, *Agarwal (2012)* studied the role of the central bank in the case of excess demand of safe assets. The study was also conducted within a modelling framework,

due to which it was concluded that the role of the central bank in avoiding the supply shortage in question is outstanding if the amount of safe financial instruments that can be issued by the government is limited (i.e. it cannot be increased above a certain level since the central bank can directly influence the amount of risk-free assets held by the market participants through the use of its instruments). The other key finding of the study is that the amount of safe financial instruments serving a long-term preservation of value significantly determines the willingness of market participants to buy risky assets as well. This means that the risk premium expected for holding risky assets will be lower if safe financial instruments are present in greater proportion in the portfolios of market participants.

The article of *Aoki et al. (2014)* offers a specific suggestion for solving the phenomenon of supply shortage discussed in our article. In the modelling framework that serves as the basis for the study, the economy is hit by a negative shock, due to which the supply of safe assets is increased. The supply shortage can be avoided in two ways: by decreasing the real interest rate and thereby the demand for safe assets, or by providing adequate supply to meet excess demand. The “safe asset bubble”¹⁶ approach suggested by *Aoki et al. (2014)* provides a solution to the latter; the approach would create excess supply, fulfilling demand and thereby ensuring a consistent level of consumption of market participants over several periods, in spite of the negative economic shock. Based on the model described by the authors, the bubbles clearly lower economic growth, since market participants will invest capital in the bubbles in place of risky assets (i.e. the overall price for slower economic growth is to ensure a consistent level of consumption over several periods). The authors also studied the use of bubbles from the aspect of social welfare, and they came to the conclusion that the level of overall social welfare¹⁷ was in every case higher with bubbles than without them. Nevertheless, the authors of the article draw attention to the fact that, in addition to the welfare-enhancing effect of bubbles, the value of bubbles depends on the subjective assessment of investors. Therefore, they can never be safe or risk-free. Consequently, a pressing problem can only be handled in the short term through the use of bubbles, and hence it is an absolute necessity to take further measures that can ensure the supply of safe assets at an adequate level, so that market participants can effectively protect themselves against economic shocks.

¹⁶ Risk-free assets or assets regarded/identified as low-risk assets.

¹⁷ Social welfare decreases with the fall of economic growth, but increases with an increase in consumption and the smoothing out of the consumption level over several periods. Based on the model of the authors, the positive effect caused by the latter two changes to welfare exceeds the negative welfare effect caused by the slowdown in economic growth.

5 The model

In the following, we review the model of *Caballero et al. (2014)*, which describes the equilibrium of the safe financial asset market, with particular regard to a scenario in which a scarcity of safe financial assets, together with a sudden increase in demand, may cause significant macro-economic effects.

5.1 Equilibrium

Let us assume that the actual level of output of a given economy (further denoted by X) may be influenced by two different types of economic shock:¹⁸ a positive shock, which increases the output μ^+ -times (i.e. above the original level ($\mu^+X > X$)) and a negative shock, which decreases the output μ^- -times (i.e. below the original level ($\mu^-X < X$)). Let us further assume that, out of the two shocks, only one shock can take place (i.e. after each shock, the new output level is constant in the long run).

Assuming an overlapping generation (OLG) structure, the birth and death rates of the agents are further denoted by ϑ ; furthermore, we assume that the agents only consume at the moment of their death.¹⁹ Based on the previous conditions and denotations, the aggregate consumption function can be written for time t as $C_t = \vartheta W_t$, where W_t is the aggregate wealth pertaining to time t , which is owned by the individual agents. In the case of market equilibrium, we consume as much as we produce ($X = C$) so that, on the basis of the aggregate consumption function, the following relationship is obtained for wealth in equilibrium at every time t :

$$W = \frac{X}{\theta}.$$

The model of *Caballero et al. (2014)* distinguishes between two types of market actors. The risk-neutral agents hold both risk-free²⁰ and risky assets in their portfolio, while the risk-averse agents²¹ only like to hold the former type of assets. Let us further assume

18 For the purposes of modelling the economic shocks, the authors use Poisson processes with different intensity parameters (λ^+ , λ^-), but they assume that these parameters belong to 0 in order to be able to study the model within a simpler framework ($\lambda^+ \rightarrow 0$, $\lambda^- \rightarrow 0$). The simplifying assumption can be used for managing the potential macro-economic effects of the increased demand for risk-free assets; the assumption is only lifted in the study of forward guidance belonging to the unconventional instruments of the central bank, the result of which will be addressed later.

19 In addition to the overlapping generation structure, theoretical simplification takes place so that the simple aggregate consumption function can be defined later.

20 Since the model is based on the information insensitivity of safe assets, we are dealing with risk-free assets in the description of the model.

21 The risk-averse market participants are infinitely risk-averse (i.e. they develop their portfolios at time interval t and $t + dt$ as if the economic shock would take place with probability 1 in the next infinitely small time interval).

that the fraction of risk-neutral agents is $1 - \alpha$ in the total population, while the fraction of risk-averse agents is α , and the total wealth is distributed among these two types of agents in every time t (i.e. $W_t^k + W_t^s = W_t$, where index k denotes risk-averse agents and index s denotes risk-neutral ones).

From the supply side, let us further assume that δX part of the total output is accumulated in the form of wealth at every time t (in the form of dividends), while its $(1 - \delta)X$ part will be allocated between new agents and agents remaining in the market. Prior to the economic shock, the total accumulated wealth and total market value of assets must be equal in the equilibrium, as follows:

$$V = W = \frac{X}{\theta}.$$

Furthermore, we assume that only a fraction ρ of the total assets is risk-free, and we note that the total value of the assets is the same as the sum of the values of the risky and risk-free components (i.e. $V = V^m + V^r$, where index m denotes risk-free assets and index r denotes risky assets). From the above, we can write down the supply of risk-free financial assets after a potential negative economic shock:

$$V^m = \rho \mu^- \frac{X}{\theta}.$$

Since by definition the value of risk-free assets does not change in the case of a negative shock, the present supply of risky assets can be defined by the use of the relationship $V - V^m$

$$V^r = \left(1 - \rho \mu^-\right) \frac{X}{\theta}.$$

Since we have already indicated when introducing the agents that the risk-averse agents only hold risk-free assets in their portfolios, their total wealth cannot be higher than the total market value of risk-free assets (i.e. $W_t^k \leq V^m$).

We need to introduce three more variables in order to be able to write down the equation determining the market equilibrium. Hereafter, let r denote the rate on risky assets, r^m denote the rate on risk-free assets and δ^m denote the dividends paid by produced and issued risk-free assets. The equation system describing the market equilibrium is the following, according to *Caballero et al. (2014)*:

$$\begin{aligned} r^m V^m &= \delta^m X \\ r V^r &= (\delta - \delta^m) X \\ W_t^k &= -\theta W_t^k + \alpha (1 - \delta) X + r^m W_t^k \\ W_t^s &= -\theta W_t^s + (1 - \alpha) (1 - \delta) X + r W_t^s \\ W_t^k + W_t^s &= V^m + V^r \end{aligned}$$

In terms of this model, *Caballero et al. (2014)* distinguish between two different cases, based on whether condition $W_t^k \leq V^m$ is met in the form of an inequality (i.e. it is not binding) or in the form of an equality (i.e. a binding condition). If the condition is not binding, then the risk-neutral agents will also possess a certain share of the risk-free assets, which can be fulfilled only if the rates on both types of assets are the same:

$$r = r^m = \delta\theta .$$

Therefore, the relevant case to be analysed is the one in which the inequality is fulfilled as a binding condition ($W^k = V^m$). The safety trap scenario, which is the main topic of our article, may appear in such a market environment. Based on the previously described relationships, we are able to calculate the scarcity condition of the risk-free financial assets by means of appropriate algebraic transformations:²²

$$\alpha > \rho\mu^- .$$

For the sake of analysing the safety trap scenario, we henceforth assume that the above condition is not met and therefore the supply of risk-free financial assets is determined by the severity of the negative shock (μ^-) and the ability of the economy to create risk-free assets (ρ). Their demand is determined by the level of α which, based on the condition in question, is higher than the supply. If $r^m < \delta\theta < r$ there is a positive risk premium ($r - r^m > 0$) in the model.

5.2 The safety trap scenario

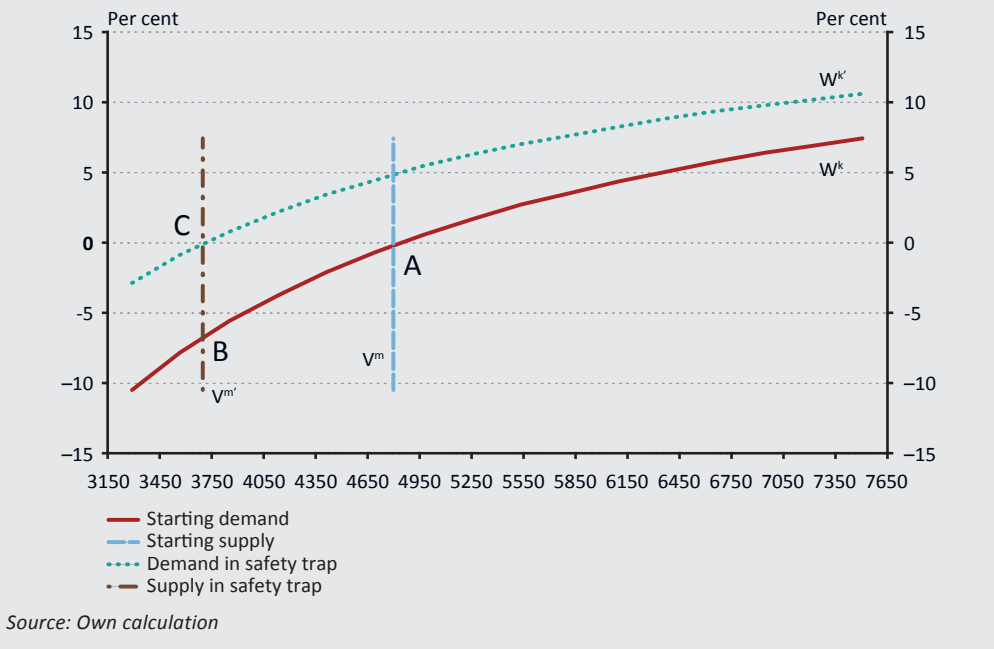
Based on the scarcity condition described above, if the severity of the negative economic shock increases (μ^- decreases) or the ability of the economy to create risk-free assets decreases (ρ decreases), the supply of these assets falls and simultaneously the demand for these assets grows (ρ increases). The demand will decrease to enable the risk-free financial asset market to reach equilibrium again, which may take place through a reduction in the risk-free interest rate (r^m). But what happens if the risk-free interest rate cannot be negative (i.e., the $r^m \geq 0$ bound prevails)?

For the purposes of studying the above case, we introduce parameter ξ , which shows us how the actual level of output is related to the potential level of output. That is, if $\xi < 1$, then the actual level of output ξX is under the potential level of output. The aforementioned $(1 - \delta)X$ (i.e. the output divided between the new market participants and the participants remaining on the market), as well as ξX , (i.e. the dividends paid) are reinterpreted in the following way: the former is the amount of produced goods,

²² The interested reader can find the specific deduction in the article of Caballero et al. (2014).

while the latter is the amount required for the “re-production” of labour used in the next period. Then, if $\xi < 1$, less input will be used in production. With regard to the market participants and the initial condition according to which the market participants only consume when they die, we can state that those leaving market demand have produced goods (for consumption purposes) and supply assets required for the “re-production” of labour, while the new entrants and participants remaining in the market supply produce goods and demand assets. The development of the safety trap scenario in the environment presented above can be illustrated by the following graph:

Figure 5
The supply and demand of safe assets in a safety trap



In the above graph, curve V^m indicates r^m , (i.e. the rate on risk-free financial assets at a given supply level), while W^k indicates rate r^m at a given supply level. The intersection of the two curves indicates the rate of risk-free returns developing in equilibrium.²³ Assuming that the negative shock described in the previous chapter takes place so that the supply for risk-free financial assets decreases (i.e. the vertical line V^m shifts left in the above graph, which is denoted by V^m). Then, in a situation characterised by interest rate r^m and decreasing supply, excess demand for risk-free assets develops and the wealth of risk-

²³ This is indicated by point A in the graph.

averse agents relatively increases, since the new interest rate²⁴ corresponding to the new supply level would be lower in equilibrium than the current value. This means that in order to reach equilibrium again, the actual interest rate should be appropriately reduced, by means of which demand and the total wealth of risk-averse agents fall. Nevertheless, the pre-condition for the development of a safety trap scenario is the existence of a lower bound for interest rates, the percent of which is 0, as described above. The above graph shows the conditions for developing a safety trap scenario. The interest rate of risk-free assets was 0 in equilibrium prior to the shock, which, due to the bound applied, cannot fulfil the negative interest rate condition required for reaching a new equilibrium corresponding to decreasing supply after the shock. Therefore, the question arises, how can a new equilibrium be reached in the market by keeping the interest rate at the original 0 percent?

Since the interest rate cannot be reduced in order to reach a new equilibrium after the shock, the demand and the wealth of the risk-averse agents may only be decreased by a recession. The effect of the recession is indicated by the previously described parameter ξ in the model, which also reduces the actual level of output. Based on lower supply and lower demand after the shock, the new equilibrium²⁵ is determined by the following equation:

$$\frac{\alpha(1-\delta)\xi X}{\theta - r^m} = \rho\mu - \frac{X}{\theta}.$$

As we can observe in *Figure 5*, the new equilibrium is reached at a lower level of demand and supply by such a recession effect (parameter ξ) that the equilibrium interest rate still remains at 0. That is, the recession reduces excess demand for risk-free assets in such a way that supply is not modified, thereby ensuring the development of a new equilibrium.

However, a recession not only affects risk-averse agents, but risk-neutral ones as well. They also hold risky assets, in addition to risk-free financial assets, through which their accumulated wealth is reduced (as outlined above). Following a potential recession, the dividends from risky assets will definitely decrease (i.e. the value of r parameter decreases), thereby reducing the value of risky assets, which further decreases the wealth accumulated by risk-neutral market participants. This further reduces market demand for assets, further deepening the recession. It should be noted that the accumulated wealth of risk-averse market participants is the same in both potential outcomes (i.e. it is not dependent on whether the new equilibrium is reached by an open decrease in r^m or through a recession). At the same time, due to the decrease in the value of risky assets, the wealth situation of risk-neutral market participants will be worse during a recession than if r^m were free to reduce.

24 The lower rate required for establishing equilibrium is indicated by point B in the graph.

25 This is indicated by point C in the graph.

6 Monetary policy and emerging market implications

In the following, based on the model *Caballero et al. (2014)*, we present two instruments belonging to the collection of possible methods of the central bank that may be suitable for solving the safety trap scenario; we also address aspects of the emerging market.

6.1 Effectiveness of forward guidance

Forward guidance means the public commitment of the central bank to the long-term maintenance of loose monetary conditions (i.e. according to the communication of the central bank, monetary conditions will not be immediately tightened even if the inflation target remains above the level considered desirable for a while).²⁶ Based on the results, if the cause of the current low interest rate is a scarcity of safe assets, forward guidance will not be effective.

In order to study the effectiveness of forward guidance, let us assume that every condition of the safety trap scenario – the main topic of our article and what was described in the previous section – is fulfilled (i.e. the economy was hit by a negative shock, condition $r^m=0$ is fulfilled and a new equilibrium was reached by recession, which is represented by condition $\xi < 1$ in the model). We assume that as part of forward guidance, the central bank communicates to market participants that, after the recovery of the economy,²⁷ the interest rate r^m will be kept at a low level for a while. The economic recovery will be taken into account by the Poisson shock mentioned at the introduction of this model, which has a positive intensity²⁸ in this case, where $\mu^+ X > X$. Let us first consider the case where the safety trap situation is followed by a recession and the central bank uses forward guidance, but a positive shock does not take place. Then the supply of risk-free assets still remains at a lower level²⁹ and, due to the recession, the supply of risky assets will also be at a lower level than the original one:

$$V^m = \rho\mu^- \frac{X}{\theta}$$

$$V^r = \left(\xi - \rho\mu^-\right) \frac{X}{\theta}.$$

²⁶ Bihari (2013); Ábel et al. (2014).

²⁷ As described by mathematical tools, we assume that the economy recovers at time t , then the central bank fixes the interest rate of risk-free financial assets at level δ for period $t + T$, where $t < \delta\vartheta$ and where $\delta\vartheta$ is the natural interest rate used in the introduction of the model. Following period $t + T$, the relevant interest rate is fixed again at level δ .

²⁸ $\lambda^+ > 0$

²⁹ The level corresponding to the curve shifted to the left in the graph used in the introduction of the model.

Since the central bank has already used forward guidance, its effect is integrated into the return achievable on risky assets, which consists of lower dividends on one hand and, on the other, the amount of wealth accumulated in a given period. This is expressed by the following formula:

$$rV' = \xi\delta X + \lambda^+ \left(\mu^+ - \xi \right) \frac{X}{\theta}.$$

These three equations determine the r return on risky assets. If our result obtained for the supply of risky assets is used in the latter context, we obtain the following relationship for the return on risky assets:

$$r = \frac{\xi\delta\theta + \lambda^+ \left(\mu^+ - \xi \right)}{\xi - \rho\mu^-}.$$

Note that the parameters of positive shock are only present in the equation of the risky interest rates level, so the use of forward guidance has only one effect before the economic recovery: the return on risky assets will be higher. Therefore, the supply for the risk-free assets and the risky assets will not change, compared to the situation in a recession; furthermore, the wealth (demand) of risk-averse agents will also not change and, due to equilibrium, the returns on risky assets will rise to such an extent that the wealth (demand) of risk-neutral participants will also remain the same. In light of this, it is clear that if economic recovery (i.e. the positive Poisson shock takes place), the supply (value) of risky assets will permanently grow, which will enhance the wealth of the risk-neutral market participants.

Overall, the forward guidance instrument proves to be ineffective in managing the safety trap phenomenon in this model because it keeps the supply for risk-free financial assets at the same level (i.e. it does not increase their output). This is also true for the risky assets if the promise of the central bank has already been made but economic growth has not yet begun. On the whole, the only effect of forward guidance is an increase in the risky interest rate r .

6.2 Effectiveness of quantitative easing

Quantitative easing belonging to the unconventional central bank instruments should be treated together with the introduction of government instruments. It must be noted that the quantitative and qualitative easing distinguished in the literature have different effects on the central bank balance sheet (i.e. quantitative easing leaves the proportion of asset categories unchanged, while the balance sheet total as a whole rises); meanwhile, qualitative easing leaves the balance sheet total unchanged and there will be more risky assets in the portfolio. The instrument described below is a quantitative and qualitative

easing.³⁰ First, the public debt and the tax rate imposed by the government must be defined. Let τ^+ denote the tax rate after a positive economic shock, τ^- denote the tax rate after a negative shock and τ denote the tax rate before a negative shock. Based on the fiscal capacity of the state,³¹ $\tau^+ < \tau^-$, since, due to the economic shock, a lower level of tax revenue is expected, which is also sufficient to finance public debt. Based on our previous denotations, the public debt level after a negative shock is defined as:

$$D = \tau^- \mu^- \frac{X}{\theta}.$$

Since by definition we can assume that the fiscal constraints are stricter after a negative economic shock than after a positive shock, parameter τ^- can be used as a measure of the fiscal capacity of the government, which characterises its ability to raise tax rates. Let us further assume that there is a safety trap situation (i.e. the economy was hit by a negative shock), the demand for risk-free financial assets has increased, the rate of risk-free return is 0 (i.e. it cannot be further decreased), and the money market equilibrium is restored by the recession ($\xi < 1$) described in the previous sections.

In the above situation, the government may raise the supply for risk-free financial assets at the expense of short-term public debt, the level of which is the function of the previously mentioned fiscal capacity, which is measured in the level of tax rate τ^- . Consequently, the higher the fiscal capacity, the more capable the government is to raise the supply for risk-free financial assets at the expense of short-term public debt, thereby reducing the risk premium.³² Based on our previous calculations, if the level of public debt increases from level D to level D' , then the lower output level of the recession also increases, namely from level ξX to level $\xi' X$, where

$$\xi' = \frac{D'}{D} \xi > \xi.$$

So that the state can also finance the public debt level D' , it must have suitable fiscal capacity (i.e. it must set a suitable tax rate level):

$$\tau'^- = \frac{D'}{D} \tau^- > \tau^-.$$

On the basis of the above, we can conclude that the government has a comparative advantage over the private sector in the issuance of risk-free assets and, therefore, if its fiscal capacity allows, it can efficiently manage the safety trap phenomenon.

But what happens if the government has no possibility of raising tax revenues and thus increasing the supply of risk-free assets at the expense of public debt? In this case, quantitative easing may also prove an effective solution to the safety trap phenomenon.

30 Central banks such as the Japanese central bank often use the two presented methods together in a combined way (Shirai, 2014).

31 In the sense of how long it is able to finance public debt in a negative economic environment.

32 In accordance with our previous denotations: $r - r^* \geq 0$. The specific deduction can be found in Caballero et al. (2014).

In this framework, the state purchases risky assets (through the central bank), while by higher public debt issuance it releases risk-free assets into the system (i.e. it increases demand for them). It is important to underline that this does not apply to the government bond purchase programmes of the central bank, but to the purchase programmes for risky assets (e.g. the QE1 programme of the Fed or the central bank operations related to the “lender of last resort” function). The state does not spend the resources originating from an excess government bond issuance, but invests them in riskier assets through the central bank; hence, this solution does not strain its fiscal capacity. This mechanism works well in this model but naturally the situation is a lot more complicated in practice: the closer link between public finances and the central bank’s outturn, the alignment of strategies and credibility are pre-requisites.

Based on our previous denotations, level D of public debt and level τ of the tax rate are considered to be constant; namely, we assume that the government does not have enough fiscal capacity, such that, on the whole, the return r^k of risk-free assets increases due to the quantitative easing of the central bank, and the return r of risky assets decreases so the risk premium decreases as well.

On the basis of the above, we can conclude that government instruments may be effective in managing the safety trap phenomenon if fiscal capacity allows it, but if this is not the case, the objective pursued may be achieved with the help of quantitative easing.

6.3 Comparison of liquidity trap and safety trap

We have already mentioned that only those central bank instruments that increase the expected future wealth of savers are effective in the New-Keynesian liquidity trap. In contrast, only those assets that increase the amount of safe assets (or what is equivalent to it in the model: the wealth of risk-averse participants) may be effective in a safety trap.

Forward guidance increased present aggregate demand by moving the intertemporal budget constraint in a liquidity trap. Since based on our model this only affects the return on risky assets and not the supply of safe assets, forward guidance may prove ineffective in managing the situation in a safety trap.

According to the New-Keynesian approach, quantitative easing is ineffective in a liquidity trap because it increases money supply in the present (which does not lead to stimulus in a liquidity trap), while it does not represent any commitment for the future. In contrast, the special type of quantitative easing studied in relation to the model (government bond issuance in addition to the purchase of risky assets) may be effective in a safety trap since it increases the supply of safe assets.

6.4 The situation of emerging markets

Emerging-market financial instruments are traditionally not considered as safe assets; therefore, models mostly developed for developed markets and related conclusions in the literature are not necessarily directly applicable to a study focusing on emerging markets. The following is a brief summary of the most important effects of the scarcity of safe assets on the emerging markets.

The safety trap model can also be used in the case of a small and open emerging economy. It may be assumed that there is some bias among the market participants towards the domestic assets (“home bias”), because of which emerging-market domestic government bonds – the domestic assets with the lowest risk – are treated like quasi-risk-free assets. However, in this case, the lower bound of the interest rate is not 0, but the global risk-free interest rate plus a positive risk premium. This means that a safety trap may be more easily established by the increase in the risk premium since the lower bound of the interest rate is higher. On the other hand, it should also be pointed out that the asset market equilibrium is not necessarily restored by a recession. If the domestic economic actors may freely purchase safe assets (with a positive return that is lower than the domestic one) abroad, then they can satisfy their demand in such a way. This means that a safety trap does not necessarily mean a recession in emerging markets, but it may cause developing financial market imbalances.

Let us assume that first we use the model for describing only developed market processes, and then we also take into account the emerging markets. Let us consider the three parameters of the scarcity condition ($\alpha > \rho\mu^-$) gained from the model. From the point of view of the model, emerging market assets are risky assets (i.e. ρ is low). Experience has shown that this country group is more sensitive to global crises, so the recession parameter μ^- may be also lower. Thus, taking account of the emerging markets results in a lower value on the right side of the scarcity condition. It is difficult to make strong statements regarding the proportion of risk-averse market participants (α). Due to foreign exchange reserves being higher than before, as well as large sovereign funds and the increasing demand of the population, there is a high demand for safe assets in these countries as well; on the other hand, due to the lower level of financial integration, demand for these assets may be lower than in the case of the developed markets. Overall, it can be said that emerging-market demand may worsen the scarcity of safe assets at a global level and, due to the low proportion of domestic risk-free assets, the model predicts capital outflow from the emerging markets, which may cause imbalances.

The model may assist us in studying the effects of unconventional central bank policies of developed countries on emerging markets. As we have seen, the special case of quantitative easing results in an increase of risk-free returns, a decrease of returns on risky assets, and higher output. In the case of emerging-market government bonds that are mostly considered risky, this means a reduction in returns, as well as a higher export

due to increasing demand in the emerging markets. In the case of forward guidance, we concluded that it does not help in recovery from a safety trap; it only increases the return on risky assets. Therefore, this central bank instrument has no effect on developed markets but results in an increase in returns in emerging markets. This may help in reducing emerging market imbalances; however, it presumably worsens the recession since it results in the tightening of monetary conditions.

Caballero (2006) draws attention to another important emerging-market phenomenon: the low global interest rate level caused by a scarcity of safe assets is in contrast with the return on certain emerging-market investments. In this respect, investments in real estate may be highlighted. This provides incentives for the development of emerging-market asset price bubbles, which increases macroeconomic volatility and worsens the effects of crises. This effect was reflected in the spread of foreign currency lending in Hungary. *Caballero et al. (2005)* make an interesting monetary policy assumption in this respect. They conclude that due to this effect, a re-definition of the inflation target could be considered in certain circumstances. Specifically, they recommend decreasing the weight of inflation of tradeable assets in the inflation target, because this mitigates the expectations of economic actors that the central bank will react to changes in the exchange rate, thereby reducing speculative motives and the likelihood of creating asset price bubbles.

7 Conclusion

The low inflationary environment and restrained economic activity visible at a global level during the crisis and in recent years may only be partially explained by the liquidity trap phenomenon. However, there are indications that the structural and cyclical scarcity of safe assets may have also contributed to the problem. The mechanism of the so-called safety trap is similar to that of the liquidity trap, but it can be observed among safe assets, and therefore it can be considered as a special case of the liquidity trap. From the demand side, changes in prudential regulation, financial innovations, the spread of collateralised financial transactions and increasing emerging-market demands may have all contributed to the phenomenon. Parallel to this on the supply side, neither developed nor emerging countries nor the private sector can sufficiently increase the issuance of safe assets. Based on the model presented here, a safety trap may cause an economic downturn and deflationary spiral in the same way as a liquidity trap. However, various monetary policy responses may be practical in the two cases. While forward guidance may be effective in the case of a liquidity trap, certain quantitative easing policies may provide a solution in the case of a safety trap. The study of the phenomenon is also relevant from an emerging-market point of view: on one hand, it may contribute to the development of imbalances and bubbles; on the other hand, it sheds new light on the emerging-market effects of the steps of developed central banks.

References

ÁBEL, ISTVÁN – CSORTOS, ORSOLYA – LEHMANN, KRISTÓF – MADARÁSZ, ANNAMÁRIA – SZALAI, ZOLTÁN (2014): Az inflációs célkövetés megújulása a válság után (Inflation targeting in the light of lessons from the financial crisis). *Hitelintézési Szemle* 13 (4).

AGARWAL, RUCHIR (2012): Uncertainty and the Special Role of Safe Assets. PhD dissertation, Harvard University.

AOKI, KOSUKE – NAKAJIMA, TOMOYUKI – NIKOLOV, KALIN (2014): Safe asset shortages and asset price bubbles. *Journal of Mathematical Economics* 53.

BECKWORTH, DAVID (2013): Resolving the Safe Asset Shortage Problem. <http://macromarketmusings.blogspot.hu> (downloaded on 08.11.2014.).

BECKWORTH, DAVID (2011): Why the Global Shortage of Safe Assets Matters. <http://macromarketmusings.blogspot.hu> (downloaded on 14.11.2014.).

BERLINGER, EDINA – WALTER, GYÖRGY (1999): Faktormodellek az értékpapírpiacon. *Bankszemle* 43 (4).

BERNANKE, BEN S. (2005): The global saving glut and the U.S. current account deficit. Speech 77, Board of Governors of the Federal Reserve System.

BERNANKE, BEN S. (2007): Global imbalances: recent developments and prospects. Speech 317, Board of Governors of the Federal Reserve System.

BERNANKE, BEN S. – BERTAUT, CAROL – DEMARCO, LAURIE POUNDER – KAMIN, STEVEN (2011): International Capital Flows and the Returns to Safe Assets in the United States, 2003-2007. *International Finance Discussion Papers* 1014, Board of Governors of the Federal Reserve System.

BIHARI, PÉTER (2013): Nemkonvencionális jegybanki eszközök alkalmazása Magyarországon és külföldön – néhány tapasztalat (The use of unconventional central bank instruments in Hungary and abroad – some examples). *Köz-gazdaság* 2013 (3).

CABALLERO, RICARDO J. – KRISHNAMURTHY, ARVIND (2005): *Inflation Target and Sudden Stops*. Chicago Press.

CABALLERO, RICARDO J. (2006): On the Macroeconomics of Asset Shortages. *NBER Working Papers* 12753.

CABALLERO, RICARDO J. – FARHI, EMMANUEL – GOURINCHAS, PIERRE-OLIVIER (2006): An Equilibrium Model of Global Imbalances and Low Interest Rates. MIT mimeo, June.

- CABALLERO, RICARDO J. (2010): The Other Imbalance and The Financial Crisis. *NBER Working Papers* 15636.
- CABALLERO, RICARDO J. – FARHI, EMMANUEL (2014): The Safety Trap. *NBER Working Papers* 19927.
- COCHRANE, JOHN H. (2013): The New-Keynesian Liquidity Trap. *NBER Working Papers* 19476.
- EGGERTSSON, GAUTI B. – WOODFORD, MICHAEL (2003): The Zero Bound on Interest Rates and Optimal Monetary Policy. *Brookings Papers on Economic Activity*, 2003 (1).
- GORTON, GARY (2010): *Slapped in the Face by the Invisible Hand: Banking and the Panic of 2007*. Oxford: University Press.
- GORTON, GARY – ORDONEZ, GUILLERMO (2013): The Supply and Demand for Safe Assets. *NBER Working Papers* 18732.
- GOURINCHAS, PIERRE-OLIVIER – JEANNE, OLIVIER (2012): Global Safe Assets. *BIS Working Papers* 399.
- HOSSEIN-ZADEH, ISMAEL (2014): *Beyond Mainstream Explanations of the Financial Crisis: Parasitic Finance Capital*. New York: Routledge.
- IMF (2012): Safe Assets: Financial Market Cornerstone? Global Financial Stability Report, Chapter 3, April.
- JENKINS, ROBERT (2013): Think the unthinkable on US debt. *BIS Papers* 72, July.
- KEYNES, JOHN MAYNARD (1965): *A foglalkoztatás, a kamat és a pénz általános elmélete (The General Theory of Employment, Interest and Money)*. Budapest: Közgazdasági és Jogi Könyvkiadó.
- KOPPÁNY, KRISZTIÁN (2007): Likviditási csapda és deflációs spirál egy inflációs célt követő modellben – a hitelesség szerepe (A liquidity trap and deflationary spiral in a model for pursuing an inflation target – the role of credibility). *Közgazdasági Szemle*, Vol. LIV. November 2007, pp. 974–1003.
- KRUGMAN, PAUL R. (1998): It's Baaack: Japan's Slump and the Return of the Liquidity Trap. *Brookings Papers on Economic Activity*, 1998 (2).
- M. C. K. (2012): The Safe Asset Shortage. www.economist.com (downloaded on 03.12.2014.).
- RHODES, JAMES R. (2011): The Curious Case of the Liquidity Trap. *The Hikone Ronso*, Spring, 3872011.

SHIRAI S. (2014): Japan's monetary policy in a challenging environment. *Eurasian Economic Review* 4, pp. 3–24.

STEFFEN, CHRISTOPH, G. (2014): The Safe Asset Controversy: Policy Implications after the Crisis. Deutsches Institut für Wirtschaftsforschung, DIW Roundup 3.

WERNING, IVÁN (2012): Managing a Liquidity Trap: Monetary and Fiscal Policy. *NBER Working Papers* 17344.

WOODFORD, MICHAEL (2012): Methods of Policy Accommodation at the Interest-Rate Lower Bound. Proceedings – Economic Policy Symposium – Jackson Hole, Federal Reserve Bank of Kansas City.

The most important steps of BUBOR reforms led by the Central Bank of Hungary in an international comparison

Szilárd Erhart – Róbert Mátrai

What do interbank reference rates show and why do they play a prominent role? Why was the reform of BUBOR (Budapest Interbank Offered Rate) necessary and what were the reform steps taken by the central bank of Hungary (Magyar Nemzeti Bank – MNB)? In this study, we seek answers to these and similar questions, while also providing an overview of international reform measures. The aim of the reforms initiated by the central bank was to eliminate the main risks arising in connection to the use of LIBOR (London Interbank Offered Rate) methodology in the domestic environment. Reference rates are considered public goods and economic sectors have financial contracts of considerable value indexed to BUBOR; numerous legal regulations also refer to BUBOR. One of the most important reform measure was to establish the Quotation Committee within the Hungarian Forex Association (MFT), in order to strengthen the independence of the administrator. The members of the Quotation Committee include the central bank of Hungary and the delegated parties of the Hungarian Banking Association (HBA). Important changes were made in the methodology of BUBOR in compliance with international practice: (i) the so-called trimming procedure was adjusted to improve the availability and reliability of price quotations; (ii) the number of listed tenors were reduced; and (iii) the methodology of selecting BUBOR market makers was confirmed. In order to make BUBOR quotations more transparent, the central bank of Hungary publishes quotations for each panel bank through the REUTERS press agency and regularly prepares and publishes statistical reviews on whether quotations comply with market conditions. In addition to this, the minutes of the Quotation Committee meetings are public since the first session in July 2014.

Journal of Economic Literature (JEL) Classification: E43, E52, E58

Keywords: BUBOR, reference rate, LIBOR, monetary policy

The authors are grateful to Péter Koroknai, Zsolt Kuti and Gábor Liener, Dániel Palotai and to two anonymous referees for all the useful feedback they provided in the course of assessing the study.

Szilárd Erhart, senior economist of the Directorate Monetary Policy and Financial Market Analysis of the central bank of Hungary and delegated member of the BUBOR Quotation Committee. E-mail: erhartsz@mnbb.hu.

Róbert Mátrai, senior analyst of the Directorate Monetary Policy Instruments Foreign Exchange Reserves and Risk Management of the central bank of Hungary and delegated member of the BUBOR Quotation Committee.

E-mail: matrai@mnbb.hu.

1 Reasons behind the reforms

1.1 Definition of BUBOR

BUBOR (Budapest Interbank Offered Rate) is presumably Hungary's most important reference rate, which shows the trimmed average of interest rate quotations defined in a so-called fixing procedure by quoting banks for each bank day. In the course of the fixing procedure, the interest rate quotation means the interest rate that would be offered by any active quoting bank to another active quoting bank to provide an *unsecured interbank loan* on any given Hungarian bank day, based on its best knowledge and consideration for the tenors (1 day, 1 week, 2 weeks, 1 month, 2 months, 3 months, 6 months, 9 months, 12 months) specified in the quoting procedure by a bank providing interest rate quotation (*Hungarian Forex Association, 2014a*).

1.2 BUBOR is a financial indicator of systemic importance

The development of BUBOR as a financial indicator of systemic importance influences the financial calculation of several thousands of billions of HUF corporate credit and derivative financial products (forward rate agreements, interest rate swaps, etc.) (Erhart et al., 2013). At the end of 2012, the majority of corporate credits with an estimated value of HUF 2,700 billion had a floating rate and were fixed to BUBOR. Although its proportion in relation to forint-based household loans was previously quite low (HUF 4,000 billion), BUBOR may play a more significant role in defining interest rate conditions in this sector as well following the conversion of households' FX loans. Among the off-balance sheet items fixed to BUBOR, FRA transactions and, more specifically, 3-month transactions tied to BUBOR had the largest turnover based on the K14 statistics of the MNB, however, with regard to the total outstanding stock, interest rate swaps (IRS) were the most dominant, with a value of HUF 25,000 billion. As regards FRA and IRS transactions, it should be noted that the vast majority of these were concluded with financial partners in years preceding 2012, (the period in which LIBOR-type benchmarks may have been more exposed to manipulation) (*Kocsis et al., 2013:25*), while the risk of manipulation presented itself rather in relation to non-financial partners.

As financial indicators, BUBOR quotations are also of key importance for the central bank due to their role in monetary transmission (Horváth et al., 2004; BIS, 2013). The initial

step of intervention in monetary policy is to influence market interest rate conditions and expectations. Moreover, numerous legal regulations make reference to BUBOR.¹

1.3 International audits identified the reasons for interbank reference rates reform

Numerous issues arose in relation to interbank price quotations which called into question the credibility of reference rates in general (*Wheatley-Review, 2012a; BIS, 2013; EBA-ESMA, 2013*).

Conflict of interest and risk of manipulation:

The risk manifested in relation to the manipulation of LIBOR² mainly comes from the fact that the financial results and reputation of market makers would be influenced by their own quotations. Hence, it cannot be ruled out that – in addition to determining interest rate expectations, credit risk, etc. – quotations were also influenced by manipulation.

Lack of market activity:

From the aspect of determining BUBOR/LIBOR and other interbank reference rates, the liquidity of the relevant interbank markets – particularly since the crisis of 2008 – is sufficient for tenors shorter than 1 month, and, as a result, there is no actual market activity behind quotations for longer tenors, and thus they are defined by expert judgement.

Reference rates function as lighthouses for the financial markets, hence they are public goods:

Anyone can gain unlimited access to reference rates without interfering anyone else, thus reference rates are considered public goods. However, the externalities and issues arising in relation to public goods are also present for reference rates (issue of “free riders”, tragedy of the commons), which makes intervention by authorities all the more necessary.

Changing requirements for reference rates:

The demand for reference rates containing no credit risk or at least a level of credit risk lower than entailed in interbank reference rates has increased sharply over the last decade. The credit risk related to transactions has dropped substantially due to the centralisation

1 Among others, Act CCXXXVII of 2013 on Credit Institutions and Financial Enterprises, Act LXXV of 2011 on the fixing of exchange rates used for repayments of foreign exchange-denominated mortgage loans and the administration of the forced sales of residential property, Act IV of 2009 on state cash surety to residential loans, Act CVI of 2007 on state assets, Government Decree 250/2000 (XII. 24.) on special provisions regarding the annual reporting and book-keeping obligation of credit institutions and financial enterprises, Government Decree No 215/2000 (XII. 11.) on the special provisions regarding the annual reporting and bookkeeping obligations of investment funds, Government Decree No 251/2000 (XII. 24.) on the specific aspects of the financial statements and accounting responsibilities of investment companies.

2 LIBOR: the abbreviation of a London-based interbank reference rate, named London Interbank Offered Rate.

and collateralisation of settlements on the OTC derivative market, and thus underlying reference rates are less expected to reflect the credit risk; however, LIBOR-type reference rates contain the credit risk component.

Lack of alternatives and the current structure of reference rates could increase monetary policy and stability risks:

Central banks became worried that the increase in banks' credit risk after the crisis spilled over to other sectors, the credit risk of which has not changed. All of this could lead to a snow-ball effect of risk in times of financial system disorder, which could jeopardise financial stability, distort transmission of monetary policy and restrain demand for credit and a macroeconomic recovery.

Incentives for efficient quoting, transparency and control:

Market makers were not encouraged to perform effective quoting either by negative or positive incentives, the efficiency of their activities did not influence the assessment of their fellow market makers, and faulty quotations did not carry any sanctions.

Despite the LIBOR/EURIBOR manipulation scandal, for the majority of international interbank interest rates, including BUBOR, there were no reasons to believe that these rates had been altered from the levels set by market conditions. Generally, the average BUBOR quotations followed the changes in the central bank policy rate (Fliszár, 2013:7). However, in order to maintain the credibility of BUBOR over the long term, the risks which were identified had to be managed.

1.4 Options of public engagement in producing reference rates

The manipulation of LIBOR signalled the partial failure of the market. However, it is still an important question to what extent and in what way public authorities should take part in determining reference rates.

The failure of the market may have been partially caused by the fact that the producers of reference rates did not benefit from the wider social advantages, but had to bear the costs in full. In the case of LIBOR, the British Bankers' Association (BBA) for instance served the needs of global financial markets, so that the benefits coming from free access were enjoyed by the entire financial sector, while the costs were borne solely by the administrator of the reference rate. All of this may have contributed to the BBA not investing the capital necessary for the safe function into the LIBOR system, which threatened the operational safety and quality of the service.

However, international studies drew attention to the fact that the determination and production of reference rates should be guided by a market force (Wheatley Review,

2012b:22). Hence, the administration and participation in the work of quotation panels are still expected from independent market administrators by international authorities.

An argument against fully bringing price quotations under state control is that conflicts of interests would invariably arise, for instance in the event of conflict with certain governmental objectives. In addition, the competitive environment would cease, which would slow down the development of reference rates adjusting to new circumstances and narrow the range of available reference rates. Full state control would weaken the efforts of individual market makers, since they would not have to bear the responsibility.

Options of public engagement:

- introduction of requirements and regulations to guarantee independence of quotations from the profit targets of quoting banks;
- supervision of quotations;
- facilitating a shift to new reference rates with an active contribution to developing possible alternatives (the development of reference rates was carried out in several countries, just like in Hungary, with the participation of central banks in the past);
- participation in the governance and publication of quotations (similarly to the MNB, there are several central banks which contribute to the governance and publication of price quotations and the collection of transaction data);
- improving transparency; and
- mapping the aspects of choosing between alternative reference rates, and introducing them to market operators.

2 Schedule and measures of BUBOR reforms

2.1 Schedule of BUBOR reforms

After the manipulation of LIBOR and EURIBOR, a review of reference rates and financial indexes started. The audit in Hungary launched in June 2012 did not find any signs indicating manipulation of BUBOR, the most important Hungarian reference rate. However, the Hungarian authorities (the MNB and the former Hungarian Financial Supervisory Authority - HFSÁ) considered it necessary to carry out reforms in line with international reforms

(Table 1), due to the shortcomings in the methodology and supervision of quotation. The Monetary Council and the Financial Stability Council approved the BUBOR reform package in January and February 2013.

The reforms started with the publication of recommendations prepared by the MNB and the former HFSA in April 2013. Then, the administrator of quotations, the Hungarian Forex Association entered into multilateral negotiations with the MNB and the Banking Association on institutional and methodological reforms.

Table 1	
Measures taken to restructure BUBOR	
June 2012	<i>When the LIBOR manipulation scandal came to light, it became obvious that a reform of LIBOR and the reference rate following the methodology of LIBOR, including BUBOR, was needed.</i>
June–December 2012	<i>International and national audits into reference rates commenced. The working groups of HFSA and MNB have not found any signs of manipulating BUBOR in Hungary; nevertheless, they deemed reforms necessary.</i>
January–February 2013	<i>The Monetary Council³ and the Financial Stability Council⁴ approved strategic recommendations on the reform of BUBOR. The recommendations covered issues related to the governance, methodology, control and alternatives of BUBOR.</i>
April 2013 – June 2014	<i>The reform of BUBOR commenced. The HFSA disclosed its recommendations for BUBOR panel banks in accordance with the proposals⁵ discussed in the Financial Stability Council meeting held early in the year (April 2013). Four-party negotiations commenced with the administrator of BUBOR: the Hungarian Forex Association (MFT), the Banking Association, the MNB and with the HFSA on the reform of BUBOR (May 2013). The preparation of changes in methodology commenced: decreasing the number of terms, trimming procedure (June 2013).</i>
May 2014	<i>MFT-MNB-Hungarian Banking Association to enter into a three-party agreement on institutional reforms and setting up the Quotation Committee. Since July 2014, the Quotation Committee has held meetings at least every three months and has revised, amongst other things, the methodology of the regular review of quotations and the selection of market makers.</i>

Reforms were implemented in several phases. In consideration of the significant exposure of economic agents to BUBOR and the problems of shifting to new alternatives, which was seemingly unresolvable in the short term, the institutional strengthening of BUBOR

3 Pursuant to Act CXXXIX of 2013 on the Central Bank of Hungary, the Monetary Council (Monetáris Tanács, MT) is the key decision-making organisation of the Central Bank of Hungary, while the Financial Stability Council (PST) makes decisions related to the financial transfer system and its stability within a predefined strategic framework.

4 The Financial Stability Council (PST) was a consultation organisation established by the Governor of the central bank of Hungary and the Minister for National Economy (responsible for regulating the financial, capital and insurance market) at the time of accepting BUBOR reform proposals. (After the integration of the Supervision into the central bank, the PST became an internal organisation of the central bank under Act CXXXIX of 2013 on the Central Bank of Hungary and the members of the organisation have also changed.)

5 Recommendation 8/2013. (IV.29.) of the Chair of HFSA can be found in Appendix 2 for market operators involved in quoting (http://felugyelet.mnb.hu/data/cms2394592/8_2013_ajanlas.pdf).

price quotations was of the utmost importance. This was followed by the revision of methodology from July 2013 onwards. However, several changes to BUBOR may require efforts over the long run (assessment of shifting to transactional data, enlargement of the quoting panel, widening the range of alternative reference rates, etc. The reform tasks for the future are outlined in *Chapter 4* of the study.)

2.2 Institutional reform of BUBOR

For the purposes of strengthening the credibility of quotations, the former HFSA and the MNB suggested increased independence of the organisation responsible for BUBOR quotations from quoting banks by the publication of its Recommendation 8/2013 (IV.29.) in accordance with recommendations of international authorities (IOSCO, 2013; Wheatley Review, 2012b; EBA-ESMA, 2013). In the earlier system, quoting banks influenced reference rates as BUBOR panel banks of the Hungarian Forex Association (MFT) and at the same time were influenced by reference rates, due to their balance sheet exposure. Besides credit institutions, quotations have numerous stakeholders (households and enterprises with loans priced according to BUBOR, financial market participants with a BUBOR-based derivative exposure). Therefore, the supervisory recommendations included the (i) institutional strengthening, and (ii) extension of the Hungarian Forex Association as the main responsible party for BUBOR with the representative of the MNB and with an independent expert delegated by the Hungarian Financial Supervisory Authority (HFSA)⁶ in order to enhance its institutional independence.

Similarly to several other central banks (Czech, Polish, Romanian, etc.), the MNB contributed to the design of interbank reference rates and to their producing. The MNB fulfilled the technical contributor's tasks set out in the Agreement with the Hungarian Forex Association in the course of calculating and publishing BUBOR: receiving and recording interest rate data from active quoting banks and calculating trimmed averages. In addition to this, the MNB was a contributor in specifying the list of active quoting banks by the MFT and archiving the quotations.

In the framework of the institutional reforms, the MNB has been a contributor to the methodological and auditing tasks of quotations through the Quotation Committee since July 2014. The Quotation Committee holds sessions every quarter, and the mandate of members may not be longer than two years, which can be renewed once in accordance with the recommendations of EBA-ESMA (2013).

⁶ As a result of its integration into the central bank in autumn 2013, the HFSA nominated two representatives to the Quotation Committee under the MFT-MNB-Banking Association Agreement.

On the basis of the three-party MFT–MNB–Banking Association Agreement, the Quotation Committee supervises among others the calculation method of BUBOR, the criteria of appointments and recalls of panel banks participating in Quoting Procedures, tenors and quotation mechanisms related to Quoting Procedures, averaging, trimming rules to be applied in the course of Quoting Procedures and the method of guaranteeing the minimum number of quoting banks as well as the management of conflicts of interest of Members arising in connection to their role in the Quotation Committee and beyond (Hungarian Forex Association, 2014b).

In order to strengthen independence, governance of other international reference rates has also been restructured:

- LIBOR: During the course of international institutional reforms, considerable institutional changes of LIBOR were necessary, as it had suffered from the earlier manipulation. To restore credibility a new administrator was selected instead of the British Bankers' Association. Through a tender procedure, the New York-based International Exchange (ICE) became the new LIBOR administrator. To supervise LIBOR, the Oversight Committee was established, the members of which included the Federal Reserve, the Bank of England and the Swiss National Bank, in addition to the panel banks.
- STIBOR: Following the reform proposals of the Riksbank, the management of the Swedish Bankers' Association approved that the administrator's responsibilities be taken over in January 2013.
- EURIBOR: EURIBOR – the EBF as a supervisor of EURIBOR has also carried out institutional reforms: it opted not to appoint panel bank members, and established the European Money Markets Institute to be in charge of quotations instead of EURIBOR EBF.
- TIBOR: The bodies responsible for the administration of TIBOR were established within the Japanese Bankers' Association, including the Oversight Committee involving lawyers and accounting, academic and other experts.
- WIBOR: The WIBOR Council was established with the following members: Polish Oversight Committee (KNF), Warsaw Stock Exchange (GPW), Polish Bankers' Association (ZBP), Finance Minister (MF), KDPW_CCP and the Polish Forex Association.

2.3 Minor changes to the methodology of calculating BUBOR

In order to exclude the main risks arising in relation to LIBOR quotations (manipulation, lack of market activity, potential errors of expert judgement), the methodology of BUBOR was also changed: (i) the number of tenors was reduced, (ii) the trimming procedure was modified, and (iii) the methodology of selecting the panel was confirmed.

Table 2**Administrators of interbank reference rates and new institutional structures of quotations**

Name	Administrator			Institutional changes of quotation supervision
	2012		2014	
BUBOR	ACI Hungary		ACI Hungary	The Submission Committee has been established, and it includes members appointed by the MNB and the Hungarian Banking Association.
LIBOR	British Bankers' Association (BBA)	➔	ICE Benchmark Administration	The Oversight Committee has been established including members appointed by the Bank of England, the Federal Reserve, the Swiss National Bank, ISDA, the Association of Corporate Treasurers, DTCC New York, Thomson Reuters, etc.
PRIBOR	ACI Czech Republic		ACI Czech Republic	Czech National Bank*
EURIBOR	European Banking Federation (EBF)	➔	European Money Market Institute (EMMI)	The governing body of EMMI (Steering Committee) has been broadened to make it more independent of the banking industry. Specifically, it should include members who are not affiliated with panel banks.
WIBOR	ACI Polska		ACI Polska	The WIBOR Council has been established comprising 8 persons to be indicated by the Polish Supervision Authority (KNF), the Warsaw Stock Exchange (GPW), the Polish Bank Association (ZBP), the Minister of Finance (MF), KDPW_CCP and ACI Polska.
STIBOR	panel banks	➔	Swedish Bankers' Association	STIBOR Committee has been established, including an independent member and a member appointed by the Riksbank
TIBOR	Japanese Bankers Association (JBA)	➔	Japanese Bankers Association TIBOR Administrator (JBATA)	JBA TIBOR Oversight Committee has been established, comprising lawyers, accountants, academic experts, and other experts

Note: *The Czech central bank had previously contributed to the calculation of quotations.

Source: ACI Polska, CNB, EMMI, ICE, JBA, Hungarian Forex Association

2.3.1 Number of tenors reduced in the case of BUBOR as well

An important issue of quotations is that no transactions are typically concluded for tenors longer than 1-2 weeks in the unsecured interbank market; hence, the interest rates of longer-term tenors were influenced by expert's judgement (Wheatley Review, 2012a; Erhart et al., 2013). Accordingly, the reduction in the number of maturities was a high-priority

recommendation to methodology at the international level as well. Implementation of the recommendation was made easier by the circumstance that financial contracts usually only refer to a few tenors (typically 1-, 3- and 6-month maturities). In some countries, instead of the 15 tenors earlier used in BUBOR and LIBOR, only a few maturities were used for interbank rate quotations even before the LIBOR case came to light (WIBOR: 9, PRIBOR: 9, ROBOR: 8, STIBOR: 8). In national and international discussions, some argued that the reduction of the number of tenors can be simply implemented, since the rates of other tenors can be interpolated if a few points of the yield curve are preserved.

Table 3
Overall number of interbank reference rate tenors and discontinuation of tenors⁷

Reference rate	Currency	Number of tenors			Tenors discontinued
		2012	2014	Change between 2014 and 2012 (%)	
BUBOR	HUF	15	9	-40%	4, 5, 7, 8, 10, 11 month
CIBOR	DKK	14	8	-43%	4, 5, 7, 8, 10, 11 month
EURIBOR	EUR	15	8	-47%	3 week, 4, 5,7,8,10,11 month
LIBOR	CHF, EUR, GBP, USD, JPY	15	7	-53%	2 week, 4, 5, 7, 8, 9, 10, 11 month
PRIBOR	CZK	9	9	0%	-
ROBOR	RON	8	8	0%	-
STIBOR	SEK	8	6	-25%	9, 12 month
TIBOR	YEN	13	13	0%	-
WIBOR	PLN	9	9	0%	-

Source: ACI Polska, BNRO, CNB, Danish Banker's Association, EMMI, ICE, JBA, Hungarian Forex Association, Riksbank

In international practice, the number of reference rate quotation terms has dropped by 20-50 percent. It was primarily tenors rarely used in contracts longer than 3 months (4, 5, 7, 8, 10, 11 months) which were removed after 2013 (Table 3).

Following the recommendations of MNB, the rules of BUBOR have been modified, so that quotations can only be made by panel banks for the 9 most important tenors (1 day,⁸

⁷ CIBOR (Copenhagen Interbank Offered Rate) - reference rate of interbank loans in Copenhagen denominated in Danish krone, EURIBOR (Euro Interbank Offered Rate) - reference rate of interbank loans denominated in euro, PRIBOR (Prague InterBank Offered Rate) – reference rate of interbank loans denominated in Czech koruna, ROBOR (Romanian Interbank Offered Rate) – reference rate of interbank loans denominated in Romanian leu, STIBOR (Stockholm InterBank Offered Rate) – reference rate of interbank loans in Stockholm denominated in Swedish krona, TIBOR (Tokyo InterBank Offered Rate) reference rate of interbank loans in Tokyo denominated in Japanese yen.

⁸ Overnight (o/n)

1 week, 2 weeks, 1 month, 2 months, 3 months, 6 months, 9 months, 12 months) instead of the previous 15. This simplifies the procedures for market makers and reduces the administration costs of price quotations.

2.3.2 The trimming method was also changed to improve the reliability and availability of quotations

Extremely low and high quotes are disregarded in the international practice when calculating reference rates, which is called a trimming procedure (or just trimming) in the technical terminology. Trimming lowers the risk of manipulation and the spillover of the volatility of individual bank transactions. However, trimming has the drawback that some part of quotations are disregarded every day (in the past it was the four highest and lowest quotations in the case of BUBOR), even if the risks to be managed are not present, and, as a result, valuable information might be disregarded potentially leading to a distortion effect.

If the number of market makers is low, the range of options available to the benchmark administrator is narrower, since valuable observations have to be excluded from the sample. Consequently, in Sweden and some Asian countries, where the number of market makers is low, simple averages are currently used or the extent of trimming depends on the number of market makers.

According to the former BUBOR rules, the highest and lowest four quotations were excluded from the sample of quotations in the trimming procedure conducted by the MNB to calculate averages. In response to the reduction of the number of market makers, however, trimming became dependent on the number of market makers following the recommendations of the MNB. In the new procedure, trimming is adjusted to the number of market makers, so when the number of market makers is lower, less quotations were excluded from the calculation of averages (Hungarian Forex Association, 2014a).

Table 4

Absolute and relative value of trimming in the case of different panel sizes according to the former and new methodology*

Overall number of panel banks (N)	Former methodology		New methodology	
	Trimming (absolute number)	Relative trimming	Trimming (absolute number)	Relative trimming
16<=N	4	<25%	4	<=25%
12<=N < 16	4	27-33%	3	20-25%
7<=N < 12	4	36-57%	2	18-29%
N < 7	4	66%<	1	17%<

Note: *In the table, the extent of an unidirectional trimming was shown.

In international practice, alternatives to the calculation of the mean value were suggested which were less vulnerable to manipulation. These included the median, random selection

and adaptive trimming. The disadvantage of these, however, is that their interpretation and control is more difficult for the public. Considering that there were no suggestions in the international practice for adopting a new calculation method, no such changes were implemented in the case of BUBOR either.

2.3.3 Reversing the reduction of panel size became a priority objective

A larger panel size is beneficial from statistical aspects, particularly in light of the fact that only a part of the sample can be used in the calculation of BUBOR due to trimming (see Chapter 2.3.2 for more details on trimming).

After the manipulation of LIBOR, the risks related to quoting activity increased, leading to a temporary, unwanted decline in the size of the panels in several countries. Quoting activity has become costly, as meeting the recommendations related to the reforms has grown more and more difficult. Furthermore, quoting activity now entails more stringent regulatory supervision and carries a risk to reputation. International authorities have also drawn attention to the risks of declining willingness for voluntary quotation (IOSCO, 2013:32). However, the greatest decline occurred in countries where there were relatively larger panel of submitting banks; for instance the number of EURIBOR market makers dropped from 44 to 25 in a little more than two years.

In the case of WIBOR, only 10 market makers were temporarily active in January 2013, while their number reached 13 by December 2014, which was a figure last achieved in November 2012. A contributing factor may have been the modification of the Money Market Maker system by the National Bank of Poland (NBP) in response to the decline in the size of panel, since from March 2013 only WIBOR panel banks have access to quick tenders of the NBP shorter than 7 days (NBP, 2013).

Reference rate	Currency	Overall number of panel banks		
		September 2012	December 2014	Change (%)
BUBOR	HUF	16	9	-44%
CIBOR	DKK	9	6	-33%
EURIBOR	EUR	44	25	-43%
LIBOR	CHF, EUR, GBP, USD, JPY	8-16 (dependent on the currency)	11-18 (dependent on the currency)	21%
PRIBOR	CZK	8	6	-25%
STIBOR	SEK	6	6	0%
TIBOR	YEN	16	15	-6%
WIBOR	PLN	13	13	0%

Source: ACI Polska, CNB, Danish Banker's Association, EMMI, ICE, JBA, Hungarian Forex Association, Riksbank

In the BUBOR panel, 16 banks were represented in September 2012, while the number of panel banks dropped to 9 in 2014. In an international comparison, the panel size is still considered large compared to countries of similar size (Czech Republic – PRIBOR: 6, Denmark – CIBOR: 6, Sweden – STIBOR: 6), however, due to the challenges of trimming, stopping and reversing the decline in the number of market makers became a priority objective.

The supervisory recommendation prepared in 2013 in cooperation with the MNB suggested an expansion of the panel size, along with other methodological issues (reduction of tenors, trimming, etc.):

“The group of panel banks participating in quotation should be maintained and preferably enlarged, and the HFSa expects this from the participants of the Hungarian interbank market.”⁹

The MNB officially requested certain banks to contribute to BUBOR quotations following the revision of the selection criteria of panel banks in November 2014.

In the event of the continued decline in the number of panel banks, quotations might be made mandatory in the spirit of the pending regulatory recommendation of the European Parliament and Council.

2.4 Improving transparency would be beneficial to quotations

Reviews criticised reference rates because the procedures and decisions related to reference rates are not adequately transparent and a higher degree of transparency would be needed in order to restore credibility (Wheatley Review 2012b; Riksbank 2012; EU Commission 2012; IOSCO, 2013).

To this end, the Wheatley Review (2012b) suggested that the minutes of the LIBOR administrator’s meetings and its sanctions be made public. Furthermore, the report suggested a regular statistical review of quotes to check whether the quotes truly reflect market conditions.

The following measures were taken by the MNB to improve transparency in the reform of BUBOR:

- Publication of BUBOR quotes: In order to reduce risks of manipulation, the MNB published individual bank quotations in time series format on the site of the REUTERS

⁹ MNB Recommendation 8/2013. (IV. 29.) for market operators participating in BUBOR quotation. https://felugyelet.mnb.hu/data/cms2394592/8_2013_ajanlas.pdf.

news agency (BUBOR PANEL). BUBOR averages had been made available before that on the website of the MNB as well as through the news agencies Bloomberg and Reuters.¹⁰

- Regular statistical analysis of BUBOR quotes: Following international recommendations, the Hungarian Banking Association–MNB–MFT entered into a three-party agreement including points that the MNB prepares a regular, annual analysis on whether quotations are in line with market conditions and to investigate if there are any signs of potential manipulation of BUBOR. The Quotation Committee approved the suggestions of the MNB on the methodology of annual statistical analysis of BUBOR quotes. The first regular audit was carried out in February 2015, and the MNB will make the details of this audit publicly available.
- Publication of the protocols drawn up in the sessions of the Quotation Committee: The Quotation Committee decided to publish the shortened protocol of its sessions in accordance with the recommendations of the central bank.

3 Revision of the set of criteria for active quoting banks of BUBOR

3.1 International review

For the purposes of revising the set of criteria for BUBOR quoting banks, the reference rates of 10 mainly European countries and the Eurozone¹¹ were assessed. No quotation rules were found in 3 of these countries (Bulgaria, Croatia, Serbia). The rules of the rest of the reference rates *can be divided into 3 groups based on the extent of regulation of quoting banks*:

1. No regulated predetermined criteria:

- a. The Czech Republic (PRIBID/PRIBOR): Within 60 days the Czech Forex Club assesses the written application of the bank after consulting with the Czech National Bank, and either rejects (without the obligation of any justification) or accepts it (*CNB, 2013*).

10 BUBOR quotes in chronological order from 1996: http://www.mnb.hu/Root/Dokumentumtar/ENMNB/Monetaris_politika/mnben_jegybanki_eszkoztar/mnben_egynaposjegybankieszkozok/bubor2.xls.

11 Bulgaria (SOFIBID/SOFIBOR), the Czech Republic (PRIBID/PRIBOR), Denmark (CIBOR), United Kingdom (LIBOR), Eurozone (EURIBOR), Croatia (ZIBOR), Japan (TIBOR), Poland (WIBID/WIBOR), Romania (ROBID/ROBOR), Sweden (STIBOR), Serbia (BELIBOR).

b. United Kingdom (LIBOR): Future editions of the LIBOR Code of Conduct will include material on criteria for banks joining or leaving the relevant panel of contributing banks. The effective LIBOR Code does not contain precise guidelines. The reason for the lack of criteria is that ICE Benchmark Administration Ltd. only took over the regulation of LIBOR on 1 February 2014 (*ICE, 2014*).

2. *Criteria cannot be quantified or only hardly:*

a. Sweden (STIBOR): The bank must have a significant indirect or direct link to STIBOR in its operations for at least one year and act as an intermediary or issuer on the Swedish money market; moreover, it must have personnel and systems that guarantee the bank can report interest rates every business day. The bank applies for membership and in its proposal it indicates its commitment to meeting the STIBOR rules and the decisions made by the Swedish Bankers' Association and the STIBOR Committee (*SBA, 2014*).

b. Denmark (CIBOR): Reporting banks can be divided into two groups with the members of the first group available on the market all day long (between 0830 and 1600) and it can be assumed that they have sufficient lines for all the other CIBOR reporting banks. The members of the first group take part in other quotation beyond CIBOR. In order to join the second group, an application must be submitted to the Danish Bankers' Association or the recommendation of a bank in the first group is necessary, and the bank must have been active in the money market for at least one year. The CIBOR committee assesses the followings upon admission:

- the applicant should characterise the market in several products within the product range;
- it should have sufficient resources available; and
- its participation should enhance the quality of the reference rate (*DBA, 2012*).

3. *Criteria can be easily quantified:*

a. Eurozone (EURIBOR): Only those banks qualify for panel membership which have the capacity to handle significant volumes of euro-interest rate related instruments. Mainly the following items are considered in assessing the activities and expertise of the potential panel bank:

- short-term loans;
- money market papers (e.g. Certificate of Deposits and Commercial Papers);
- reverse repurchase agreements;
- short-term deposits;
- repurchase agreements;
- to a lesser extent derivatives referring to a EURIBOR underlying denominated in the currency of EMU countries; and
- foreign currency exchange swaps with at least one leg denominated in EMU currency (*EMMI, 2014*).

- b. Poland (WIBID/WIBOR): The invitation of the Organiser (the Polish Financial Markets Association) is necessary to participate in the fixing process. A credit institution can be invited if it has at least a 1 percent share in the assets of the Polish banking sector. The Organiser considers the following when deciding to invite a new member:
- the role the bank plays in the interbank market, in particular, its ability to provide liquidity and its transaction figures;
 - the Tier 1 capital ratio of the bank; and
 - the bank's professionalism and reputation on the interbank market (*ACI POLSKA, 2013*).
- c. Japan (TIBOR): In selecting reference banks, the administrator generally take into account the continuity of TIBOR, the diversification of the financial industry as well as the following features of banks:
- market trading volumes (Yen TIBOR - Japanese market; Euroyen TIBOR – offshore markets);
 - yen asset balance;
 - track record in providing rate submissions (if it is not a newly selected bank); and
 - degree of establishment of the processes required to comply with the Code of Conduct (*JBA, 2014*).
- d. Romania (ROBID/ROBOR): The following criteria are taken into consideration when inviting banks:
- activity on the interbank money market;
 - the limits for RON deposits granted by the credit institution to other Participants; and
 - the other credit institutions' limits for RON deposits granted to this credit institution. (*BNRO, 2014*).

Based on the above, the reference rates where the rules contain criteria that can be easily translated into numbers share a common feature, namely, that that the unsecured interbank loan market activity of the applying credit institution is assessed. In addition to depo market turnover, other transactions in financial markets linked to the reference yield or turnover of financial markets similar to the market of its underlying product (repo activity, money market papers issued, foreign currency exchange swaps and other derivatives) are also included in the regulations of several reference rate. In the case of WIBOR and TIBOR, similarly to BUBOR, the criteria related to the size of banks are included (size of the balance sheet, Tier 1 capital level).

3.2 Range of indicators used for selecting the BUBOR panel

In line with the BUBOR regulation in effect prior to November 2014, the basis for listing active quoting banks had two components: 50 percent was the ranking of the HUF interbank loan/deposit and FX swap deals turnover in the calendar quarter prior to the actual period, weighted by maturity (turnover ranking), and the other 50 percent was the

ranking calculated on the basis of the total assets of each bank reported as of the end of the calendar quarter. In the case of FX swap transactions, the HUF amount at the first leg of the swap is taken into account. Amongst the banks specified on the list prepared in accordance with the above, those banks may participate in the BUBOR fixing procedure the ranking of which on the list is not lower than the number specified by the Quotation Committee with the contribution of the MNB (the central bank of Hungary), provided that the number of such participating banks may not exceed 16 under any circumstances (*Hungarian Forex Association, 2014*).

Accordingly, under the BUBOR regulation in effect prior to November 2014 a maximum of 16 banks can take part in the fixing procedure; hence we focus on the first 16 banks in the ranks in studies used in this chapter. In the course of the revision, the extent to which the application of various indicators differentiate between individual banks is assessed and we examine how the list of 16 banks potentially arriving in the best 16 would change if certain indicators were to be used. To do this, the list of the 16 banks was compiled using the criteria set out in the BUBOR regulation and based on the most up-to-date data (August – September – October 2014), which could be compared to existing rankings made in accordance with the time series of indicators measuring the market activity spanning from January 2011 to September 2014. The ranks were defined for 39 credit institutions with VIBER (the Real-time Gross Settlement System) or BKR (Interbank Clearing System) membership and reserve obligation. The source of data are the D01, K02, K12, K14 and E06 data services of the credit institutions and KELER performed towards the MNB.

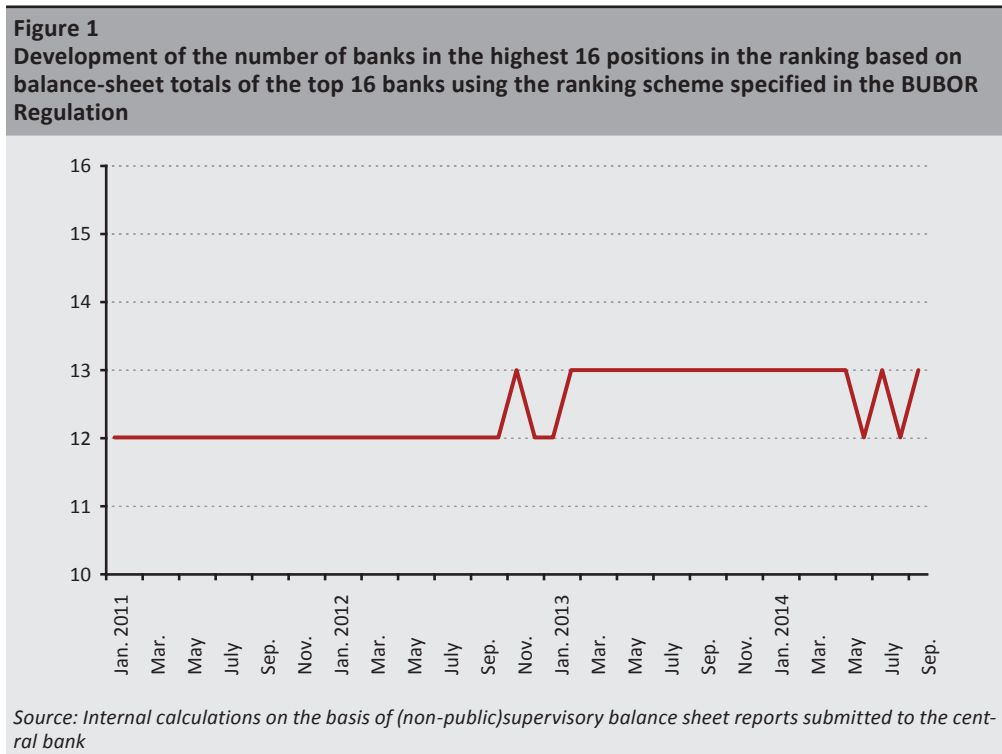
3.2.1 Indicators on the size of banks (balance-sheet total)

Among indicators on the size of banks, the most obvious and easy-to-produce are the banks' balance-sheet totals, which have already taken into consideration by the Quotation Committee in cooperation with the MNB under the BUBOR regulation effective until November 2014 prior to the revision to determine the list of active quoting banks. In the case of the Japanese reference rate, it is not the balance-sheet total measuring the entire pool of assets which is assessed during selection, but rather a part of it, and the size of assets denominated in domestic currency is taken into account. A significant part of the financial market turnover of Hungarian credit institutions is concluded on FX-swap markets, which partly serve to hedge the exchange rate risk arising from foreign currency denominated or foreign currency based assets of banks; accordingly, besides their forint-denominated instruments, their assets denominated in foreign currency also have influence on the market presence and market knowledge of banks. All this justifies that, in contrast to the Japanese practice, in the selection process of quoting banks for BUBOR an indicator relating to the size of banks should be used that expresses the size of foreign currency denominated assets as well, not only the size of assets denominated in forint.

The balance-sheet total expresses the size of forint and foreign currency denominated assets of credit institutions, it is available for all credit institutions and unambiguous

ranking can be assigned based on it. Consequently, *the balance-sheet total is an indicator suitable for differentiating between individual banks*. However, moving from larger banks towards smaller ones in the ranking the difference between the balance-sheet total of neighbouring credit institutions decreases, the combined balance-sheet total of the 16 largest banks makes up 89 percent of the balance-sheet total of the 39 studied banks. As a result, in the course of differentiating banks with smaller balance-sheet totals, *ranking is strongly influenced by even small nominal difference, which justifies the diversification of indicators, and the consideration of other indicators when assigning ranks*.

Based on *Figure 1*, out of the 16 banks in the most recent ranking based on BUBOR Regulation, 12-13 banks were included in the highest 16 positions in the ranking based merely on their balance-sheet totals. Accordingly, *the other component of the criterion specified in the Regulation (the interbank deposit/credit and foreign currency swap market ranking) has an effect on the position of 3-4 banks*.



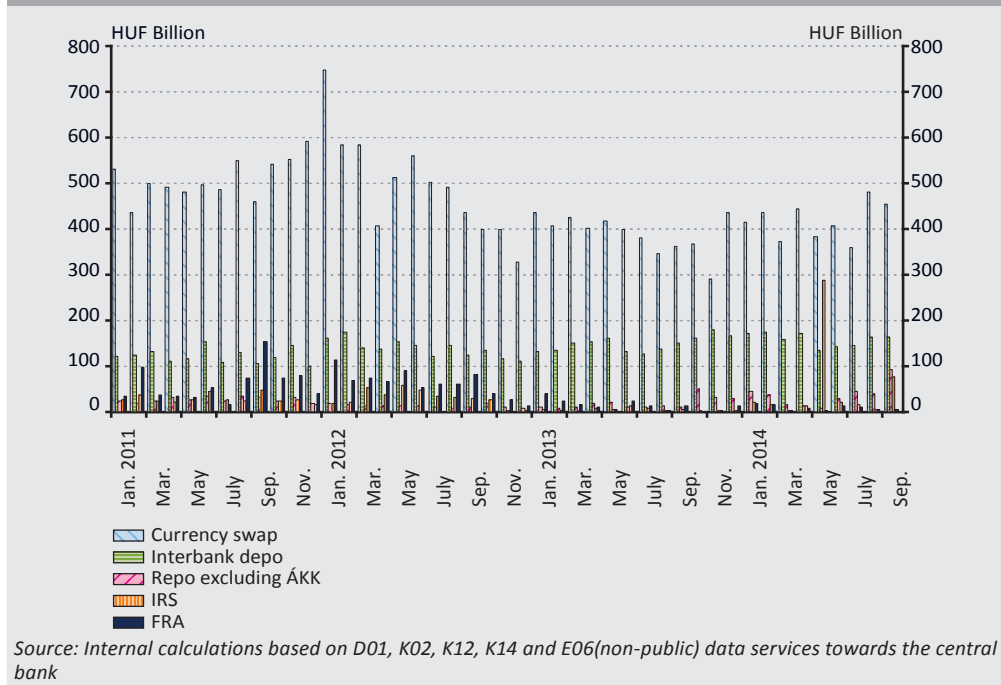
3.2.2 Indicators for measuring the market activity of banks

The turnover of the most important domestic interbank markets (foreign currency swap, depo, repo, FRA, IRS) were assessed among the indicators measuring the market activity of banks. In the case of EURIBOR, the Steering Committee examines money market papers

as well; however, due to the low issuing volumes in the domestic market, the assessment of this market is not reasonable in the case of Hungary. Although, among the examined markets, only depo, FRA and IRS markets¹² are linked to BUBOR, the foreign currency swap and repo market activity of the credit institutions also influences the market knowledge of credit institutions' dealers, and hence we deemed it reasonable to extend the study to these markets as well.

Among domestic interbank markets, the foreign currency swap market has the highest turnover, while the second in the ranking based on dealing volumes is the unsecured interbank credit/deposit (depo) market. The turnover of other domestic interbank markets (repo excluding ÁKK¹³ transactions, IRS, FRA) lags behind the turnover of the first two markets, particularly from the end of 2012 (except a few months with extraordinary figures).¹⁴ *If merely the data available on the turnover of interbank markets are considered,*

Figure 2
Development of the daily average turnover of the most important domestic interbank markets on a monthly basis



12 BUBOR quotes apply to credit provision in the HUF-based depo market, and the HUF-based IRS and FRA transactions' payment function is tied to BUBOR.

13 The Hungarian public debt management agency.

14 The low domestic turnovers in the FRA and IRS markets are more or less due to the fact that IRS and FRA contracts are often performed by a foreign member of the bank group in the foreign markets in the case of domestic credit institutions that belong to foreign bank groups. These transactions are not among the data services assessed, and hence the MNB does not have a direct oversight over these.

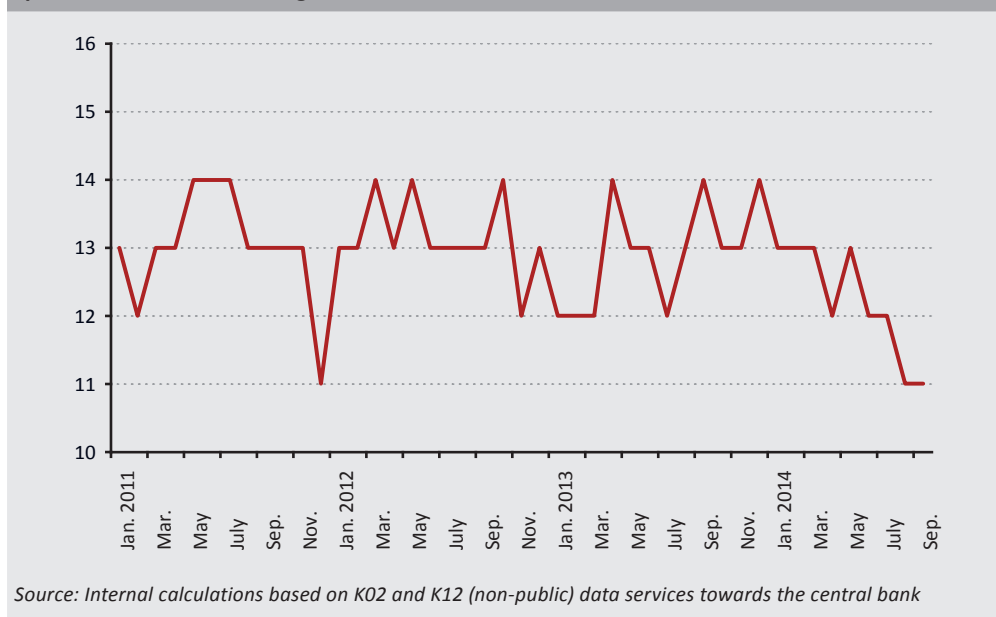
then it was not reasonable that the turnovers of domestic interbank markets other than depo and foreign currency swap market influence the selection of active quoting banks. However, the modification of EMIR¹⁵ and relevant regulatory technical standards may bring a remarkable extension of data available to central banks on transactions concluded in foreign markets, which could well justify the future revision of conclusions.

In the following chapters, we examine the suitability and usefulness of the assessment of aspects other than turnover in improving the quality and data content of the ranking of the most important domestic interbank markets.

3.2.2.1 Interbank unsecured forint credit/deposit market (depo market)

The depo market is considered substantial on the basis of BUBOR’s definition, since BUBOR quotes apply to credit provision in the depo market. If its turnover is considered, it is the second largest segment of domestic interbank markets; its daily turnover is near HUF 140 billion. Almost all domestic banks with direct VIBER or BKR membership (35 out of 39 banks) conclude transactions in the depo market, and thus the *market is suitable for ranking banks*. Due to its importance, it is justified to include its turnover among the

Figure 3
Development of the number of banks in the highest 16 positions in the ranking based on the maturity-weighted depo market turnover of the top 16 banks using the ranking scheme specified in the BUBOR Regulation



15 Resolution No. 648/2012/EU of the European Parliament and Council on OTC derivatives, central counterparties and trade repositories.

examined indicators. However, it also applies to this market, that when moving from banks with higher turnover towards ones with lower volumes, the difference between neighbouring banks decreases. The transactions of the 16 banks with the highest turnover in the depo market represent 96 percent of the total market turnover, therefore *the depo market is suitable for stable differentiation among banks with lower turnover only with certain limitations.*

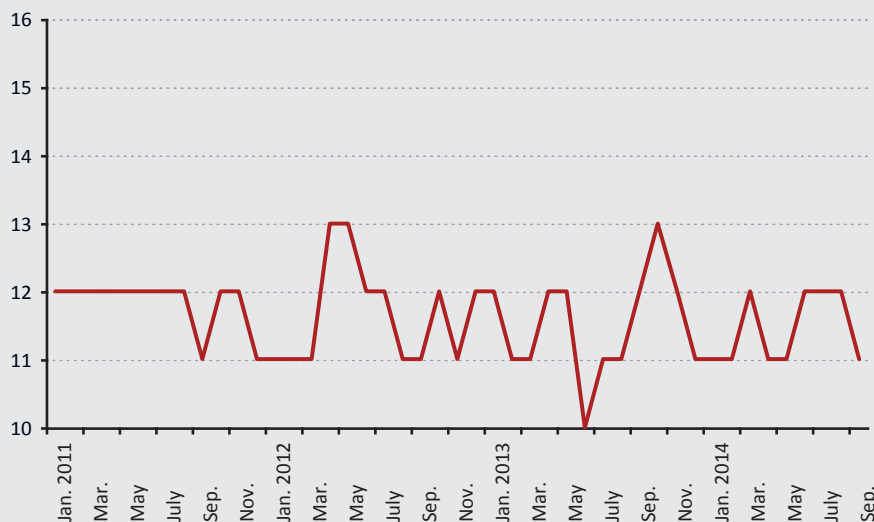
Based on *Figure 3* out of the 16 banks in the most recent ranking based on BUBOR Regulation, 11-14 banks were included in the highest 16 positions in the ranking based merely on their depo market turnover. Accordingly, *the other 2 components of the criteria specified in the Regulation (the interbank foreign currency swap market and balance-sheet total rankings) have an effect on the position of 2-5 banks.*

3.2.2.2 Foreign currency swap market

Domestic banks execute the highest turnover in the foreign currency swap market among the interbank markets, with the average volume of daily transactions exceeding HUF 450 billion. Although the significance of the domestic foreign currency swap market

Figure 4

Development of the number of banks in the highest 16 positions in the ranking based on the maturity-weighted foreign currency swap market turnover of the top 16 banks using the ranking scheme specified in the BUBOR Regulation



Source: Internal calculations based on D01 (non-public) data service to the central bank

will decrease as a result of the conversion of residential loans denominated in or based on foreign currency, it is believed that its role among domestic interbank markets will remain important. Foreign currency swap market transactions are parts of the examined indicators even under the current set of criteria. Most foreign banks with direct VIBER or BKR membership (24 out of 39 banks) conclude transactions in the foreign currency swap market, and hence the *market is suitable for ranking banks*. However, it is also true in this market, that when moving from banks with higher turnover towards ones with lower volumes, the difference between neighbouring banks decreases. The transactions of the 16 banks with the highest turnover in the foreign currency swap market make up 99 percent of the total market turnover, while 15 out of 39 banks did not conclude any transactions in the market between July and September 2014, so *the foreign currency swap market is not suitable in itself for differentiating banks with lower turnover*.

Based on *Figure 4*, of the 16 banks in the most recent ranking based on the BUBOR Regulation, 10-13 banks were included in the highest 16 positions in the ranking based merely on the basis of their foreign currency swap market turnover. Accordingly, the other 2 *components of the criteria specified in the Regulation (the interbank deposit/credit market and balance-sheet total rankings) have an effect on the position of 3-6 banks*.

3.2.2.3 Forint repo market filtered from ÁKK transactions

The turnover of the domestic interbank forint repo market is quite low, amounting to around a daily HUF 20 billion on average. The number of banks trading on the market is quite concentrated, as only 12 out of 39 examined banks concluded transactions between July and September 2014, so *the market is less suitable for ranking banks and is unsuitable for differentiating banks with lower transaction volumes*.

Since the number of banks concluding transactions in the repo market is lower (i.e. 12) than the maximum number of quoting banks specified in the BUBOR Regulation, *the activity in the repo market would not influence the list of banks in the top 16 positions in the ranking*.

3.2.2.4 Domestic forint interbank IRS market

Similarly to repo markets, the turnover of the domestic interbank forint IRS market is quite low, amounting to around a daily HUF 20 billion on average.¹⁶ The number of banks trading on the market is quite concentrated, as only 9 out of 39 examined banks concluded transactions between July and September 2014; accordingly, similarly to the repo market, *the IRS market is also less suitable for ranking banks and is unsuitable for differentiating banks with lower transaction volumes*.

¹⁶ See the previous footnote on the reasons behind low transaction volume.

Since the number of banks concluding transactions in the IRS market is lower (i.e. 9) than the maximum number of quoting banks specified in the BUBOR Regulation, *the activity in the IRS market would not influence the list of banks in the top positions in the ranking.*

3.2.2.5 Domestic interbank forint FRA market

Similarly to the repo and IRS markets, the turnover of the domestic interbank forint IRS market is quite low, fluctuating around a daily HUF 10 billion on average in the last two years.¹⁷ The number of banks trading on the market is quite concentrated, since only 3 out of 39 concluded transactions between July and September 2014, so *the FRA market is not suitable for ranking banks.*

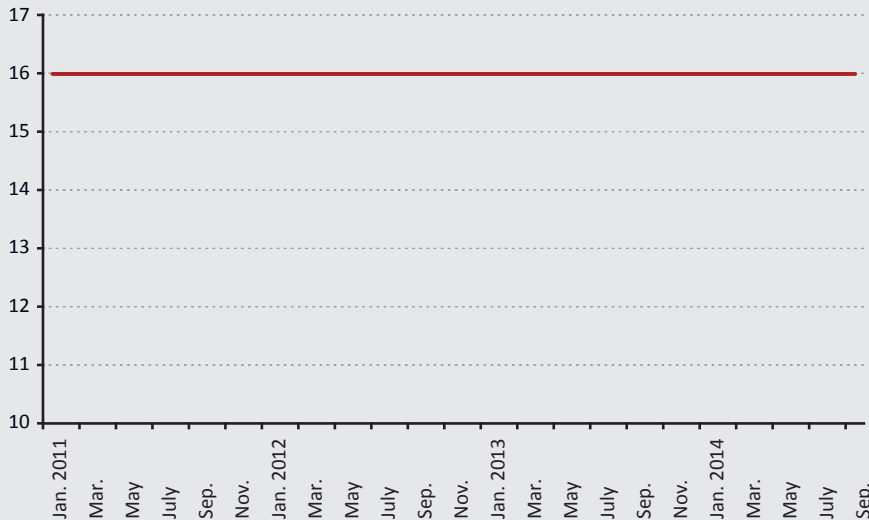
Since the number of banks concluding transactions in the FRA market is lower (i.e. 3) than the maximum number of quoting banks specified in the BUBOR Rules, *the activity in the FRA market would not influence the list of banks in the top positions in the ranking.*

3.3 Conclusions of the revision of the criteria for active quoting banks

Compared to the examined international reference rate regulations, the set of criteria assessed in the case of determining the list of active quoting banks for BUBOR can be easily quantified and I considered well-regulated in an international comparison. Assessing the characteristics of domestic interbank markets, and, within these, the transaction figures and the number of banks trading actively leads us to the conclusion that a further extension of markets taken into account under the BUBOR Regulation in effect until November 2014 would only provide very limited additional information in the course of differentiating between banks and is not likely to significantly influence the ranking obtained using the current methodology. However, the analysis pointed to the fact that there is no single indicator that would perfectly enable differentiation between credit institutions in its own right, including mainly the differentiation between banks with smaller balance-sheet totals and lower transaction volumes; thus when defining the set of criteria the final ranking is justified to be determined based on multiple indicators.

¹⁷ See the previous footnote on the reasons behind low transaction volume.

Figure 5
Development of the number of banks in the highest 16 positions in the ranking based on maturity-weighted repo, IRS and FRA market turnover of the top 16 banks using the ranking scheme specified in the BUBOR Regulation



*Note: *The figure would show 16 banks for individual market segments (repo, IRS, FRA) as well.
 Source: Internal calculations based on K14 and E06 (non-public) data services towards the central bank*

The study confirmed the reasons behind the methodology applied to the selection of quoting banks and its robustness, hence the Quoting Committee made the decision to preserve the methodology on its session on 27 November 2014.

4 Further measures of BUBOR reforms

On the basis of national and international institutional recommendations, further measures would be needed to finalise the BUBOR reforms. On the one hand, the code of conduct of BUBOR quotes should be drawn up under the recommendation of the MNB, which contains the order of procedure expected from participants of quotations and guidelines on the management of conflicts of interest. On the other hand, quotations should be replaced with transactional data as much as possible, as this is an important requirement (Wheatley Review, 2012b; IOSCO, 2013), and alternative reference rates should be developed in accordance with user requirements. After establishing BUBOR in late 1990s, since 2007 the

MNB has been actively contributing to developing and publishing the BIRS index (quotation of interest rate swap transactions) and since 2010 the HUFONIA SWAP index¹⁸. These indexes have a lesser importance compared to BUBOR, since they serve as references for far fewer transactions. Moreover, the preparation of contingency plans is an additional task in cases when BUBOR cannot be produced in opposition to scenarios assuming “normal” market and other conditions (e.g. the number of market makers fall, operating risks, etc.).

5 Summary

Modifications to international reference rates following the manipulation of LIBOR made implementation of the BUBOR reform necessary in 2013. The main objective of the reforms initiated by the MNB was to eliminate primary risks arising in the course of quoting interbank reference rates in the domestic environment. In order to restore the credibility of BUBOR, the methodology of BUBOR has been supervised by a new body since July 2014, the Quotation Committee, whose members include the delegated parties of the central bank of Hungary and the Hungarian Banking Association in addition to the Hungarian Forex Association encompassing the representatives of quoting banks. There were some adjustments to the methodology of BUBOR in the last two years: (i) the so-called trimming procedure was changed to strengthen the availability and reliability of price quotations; (ii) the number of listed tenors were reduced; and (iii) the methodology of selecting BUBOR market makers was confirmed. In order to make BUBOR quotations more transparent, time series data of quotations are disclosed for each panel bank through the REUTERS agency, and the minutes of the Quotation Committee meetings are also publicly available since December 2014. Following the MNB recommendation on preserving the criteria of selecting active quoting banks, several banks were invited to take part in quotations. Future measures of BUBOR reform could be the revision of the code of conduct, considering the shift to transactional data and preparing contingency plans. The draft resolution of the European Parliament and Council on the regulation of financial reference indicators may also influence the development of domestic financial indexes in Hungary.

¹⁸ HUFONIA SWAP: interest rate swap transactions within one year, where one-day interbank interest rate (HUFONIA) is swapped by the parties for a fixed interest rate agreed beforehand. http://www.acihungary.hu/doc/HUFOIS_Fixing.pdf
BIRS: Budapest Interest Rate Swap index, swap transactions, <http://www.acihungary.hu/index.php?id=birs>.

References

ACI Polska (2014): Rules for Fixing WIBID and WIBOR Reference Rates. The Polish Financial Markets Association, December. http://www.acipolska.pl/images/stories/Rules_for_Fixing_WIBID_and_WIBOR_Reference_Rates_EN.pdf.

BNR (2014): Rules for determining the ROBID and ROBOR reference rates. Banca Națională a României. www.bnr.ro/files/d/Legislatie/En/RRR.pdf.

BIS (2013): Towards better reference rate practices: a central bank perspective Report prepared by an ECC Working Group. <http://www.bis.org/publ/othp19.pdf>.

CNB (2013): Rules for reference banks and the calculation (fixing) of reference interest rates (PRIBID and PRIBOR). Česká národní banka, October. https://www.cnb.cz/miranda2/export/sites/www.cnb.cz/en/financional_markets/regulations/download/PRIBOR_rules_2013_en.pdf.

DBA (2012): Consultation document on the regulation of indices. Danish Bankers Association, 21 November. http://ec.europa.eu/internal_market/consultations/2012/benchmarks/registered-organisations/danish-bankers-association_en.pdf.

EBA-ESMA (2013): Report on the administration and management of Euribor. European Banking Authority and European Securities and Markets Authority, January. http://www.esma.europa.eu/system/files/eba_bs_2013_002_annex_1.pdf.

EBA-ESMA (2014): Review of the Implementation of EBA–ESMA Recommendations to Euribor-EBF. http://www.esma.europa.eu/system/files/2014-207_esma-eba_review_of_euribor_recommendations_0.pdf.

EC (2012): Consultation Document on the Regulation of Indices. European Commission, 5 September. http://ec.europa.eu/internal_market/consultations/docs/2012/benchmarks/consultation-document_en.pdf.

EMMI (2014): Euribor Code of Conduct. European Money Markets Institute, September. http://www.emmi-benchmarks.eu/assets/files/Euribor_code_conduct.pdf.

ERHART, SZILÁRD – MOLNÁR, ZOLTÁN – LIGETI, IMRE (2013): A LIBOR-átvilágítás okai és hatásai a nemzetközi bankközi referenciakamat-jegyzésekre. *MNB-szemle*, 2013: 1. http://www.mnb.hu/Root/Dokumentumtar/MNB/Kiadvanyok/mnbhu_mnbszemle/mnbhu-msz-201301/erhart-ligeti-molnar.pdf.

FLISZÁR, VILMOS (2013): A BUBOR-hoz köthető állományok és a BUBOR-jegyzések részletes statisztikai elemzése 2013., Pénzügyi Szervezetek Állami Felügyelete, February. https://felugyelet.mnb.hu/data/cms2384951/BUBOR_allomanyok_jegyzesek.pdf.

IOSCO (2013): Principles for Financial Benchmarks. Final Report, July. <http://www.iosco.org/library/pubdocs/pdf/IOSCOPD415.pdf>.

ICE (2014): Libor Code of Conduct. Benchmark Administration, 3 February. https://www.theice.com/publicdocs/IBA_Code_of_Conduct.pdf.

HORVÁTH, CSILLA – KREKÓ, JUDIT – NASZÓDI, ANNA (2004): Kamatátgyűűzés Magyarországon. *MNB Füzetek*, 2004: 8. http://www.mnb.hu/Root/Dokumentumtar/MNB/Kiadvanyok/mnbhu_mnbfuzetek/mnbhu_mf_2004_8/mf2004_8v.pdf.

JBA (2014): JBA TIBOR Code of Conduct. TIBOR Administration, 1 April. http://www.jbatibor.or.jp/english/public/pdf/JBA%20TIBOR%20Code%20of%20Conduct_E.pdf.

KOCSIS, ZALÁN – CSÁVÁS, CSABA – MÁK, ISTVÁN – PULAI, GYÖRGY (2013): Kamatderivatíva-piacok Magyarországon 2009 és 2012 között a K14-es adatszolgáltatás tükrében. *MNB-tanulmányok* 107. http://www.mnb.hu/Root/Dokumentumtar/MNB/Kiadvanyok/mnbhu_mnbtanulmanyok/MT107.pdf.

MFT (2014a): Hivatalos BUBOR szabályzat. Magyar Forex Társaság, 1 August. http://www.acihungary.hu/doc/bubor_szabalyzat.pdf.

MFT (2014b): A Magyar Forex Társaság egységes szerkezetbe foglalt Alapszabálya. Magyar Forex Társaság. <http://www.acihungary.hu/doc/Alapszabaly2014.pdf>.

NBP (2013): Financial Stability Report. July. <http://www.nbp.pl/en/systemfinansowy/fsr201307.pdf>.

SBA (2014): Framework for STIBOR. Swedish Bankers' Association, January. http://www.swedishbankers.se/Sidor/en/6_Stibor/1_Framework-for-Stibor.aspx.

SVERIGES RIKSBANK (2012): The Riksbank's review of Stibor. *Riksbank Studies*, November. http://www.riksbank.se/Documents/Rapporter/Riksbanksstudie/2012/rap_riksbanksstudie_stibor_121128_eng.pdf.

SVERIGES RIKSBANK (2014): Stibor Revisited, a follow up. *Riksbank Studies*, May. http://www.riksbank.se/Documents/Rapporter/Riksbanksstudie/2014/rap_riksbanksstudie_stibor_140526_eng.pdf.

WHEATLEY REVIEW, THE (2012a): The Wheatley Review of LIBOR: Initial Discussion Paper. August. http://www.hm-treasury.gov.uk/d/condoc_wheatley_review.pdf.

WHEATLEY REVIEW, THE (2012b): The Wheatley Review of LIBOR: Final Report. September. http://cdn.hm-treasury.gov.uk/wheatley_review_libor_finalreport_280912.pdf.

Four hours is actually how many hours? – The actual time required for intraday transfers

Péter Császár

In the past, the Central bank of Hungary took measures to improve the service quality of transfers between credit institutions which enabled actual intraday transfers for the clients of payment service providers automatically and without a noticeable increase in related costs (if certain conditions are met) starting from July 2012. This study shows that transfer orders accounted in the five daily cycles of the intraday clearing module reach the beneficiary client within an average of 2 hours and 5 minutes after debiting the bank account of the payer, and 2 hours and 50 minutes in the first cycle which is considered special from several aspects. The time required for execution in the first cycle is between 58 minutes and 3 hours and 48 minutes with a confidence level of 90%, while in the rest of the cycles it ranges from 36 minutes to 2 hours and 53 minutes. The 4-hour time window defined in the regulation does not include the period when the bank accounts of beneficiary clients are credited by recipient banks. Focusing on the period within the time of execution defined in the legislation, experience shows that credit institutions of the payer were able to forward the sum of the payment order to the credit institution of the beneficiary client in an average of 1 hour and 45 minutes throughout the five cycles of the day. That amounts to 44% of the available time window, while the extent of utilisation of the time window is only 35% in cycles 2-5. The time required for execution was also examined by the various subtypes of transfer. Experiences tell us that standing orders require 1 hour more time compared to single transfers, while credit transfers initiated in batch are executed in 20 minutes less time. Efforts are made to discover the reasons behind the longer time required for transfers in the first cycle of the day, which might be attributable mainly to difference in the process of this cycle and to a lesser degree to the fact that twice the average number of transfers in other cycles are accounted in the first cycle. Finally, recommendations are given for potential means of accelerating the execution of transfers.

Journal of Economic Literature (JEL) Classification: G14, G29

Keywords: intraday transfer, ICS, direct participant, indirect participant, VIBER, MTB

*Péter Császár is an analyst at the Financial Infrastructures Directorate of the Central bank of Hungary.
E-mail: csaszarp@mbn.hu.*

1 Introduction

Two types of payment service providers can take part in the clearing of the Interbank Clearing System (ICS). Direct participants have joined the clearing system themselves and are thus eligible to create orders in the clearing system for themselves or for their clients, while indirect participants take part in clearing through another direct participant credit institution (correspondent bank). The time requirement for executing intraday transfers is the main theme presented in this study, which is based on the intraday transfer data of indirect participant credit institutions and examines this data from various aspects; however, the study also covers transfers between the clients of direct participant and indirect participant cooperative credit institutions as well. Cooperative credit institutions, as indirect participant credit institutions, currently arrange their HUF payment transactions, i.e. intraday transfers, exclusively via Magyar Takarékszövetkezeti Bank Zrt. (MTB), as correspondent bank. The time requirement for intraday transfers between the clients of indirect participants and with the clients of their correspondent bank, which are not accounted in the ICS were not subjected to analysis. The time requirement for transfers within credit institutions were also not examined. These transfers do not require clearing, since they are typically accounting items within the clearing system of the payment service provider (the vast majority of payment service providers use a single clearing system nowadays), and, except transfers requiring conversion, debiting and crediting the payment accounts of clients are carried out in real time and virtually simultaneously.

Payments of small value, which are typically residential and enterprise payment orders, have been accounted in the ICS operated by GIRO Elszámolásforgalmi Zrt. (GIRO Zrt.) as the clearing house since 1994. There are two types of clearing systems operating within this: the overnight and intraday multiple clearing module. This study measures the actual time requirement for completing payment orders accounted in the latter, i.e. intraday transfers. The study is not meant to answer if the maximum execution time (4-hour) requirement according to the legislation is met, but this will also be presented here in an indirect way. The available time window according to the legislation commences at the time of receiving the payment order (this is considered the time of debiting the payment account) and lasts until crediting of the amount on the payment account of the beneficiary client. The study covers a period longer than that, since it also includes the time requirement for the beneficiary client's credit institution arising from the crediting process. The latter is the time requirement for the process that starts when the funds of the amount specified for the payment order received by the credit institution of the beneficiary client after intraday clearing and ends when the beneficiary client may dispose of the incoming amount. The starting time of durations are theoretically different in the two approaches (time of receipt and time of debit); however, in practice these are almost always identical points of time. Therefore, starting times are more or less identical points of time, since the bank account of the payer is usually debited immediately after receiving payment orders.

2 Regulatory environment

The main responsibility of the Central bank of Hungary (MNB) according to the Central Bank Act is to ensure the uninterrupted circulation of money and the reliable and efficient operation of payment and clearing systems supporting the same. In the course of discharging these duties, the MNB

- participates in the development and operation of payment and clearing systems;
- continuously monitors (controls) their operation in order to ensure the secure and efficient operation of these systems and the uninterrupted circulation of money;
- establishes the main rules governing the circulation of money applying to credit institutions, which are set out in a decree (MNB decree¹); and
- controls the observation of these rules by credit institutions within its official competence.

2.1 Intraday transfers before July 2012

Even before July 2012, it was possible for the beneficiary client to receive the amount of the transfer order on the same day the payer initiated the order. This was only ensured between direct participant credit institutions through the Real Time Gross Settlement System (RTGS, or, in Hungarian, VIBER) launched in 1999 and operated by the MNB, where payment orders could be credited within minutes. The primary function of VIBER is to complete high-value, time-critical money and capital market transactions and other payment transactions requiring urgency, where clearing and execution (on a gross principle) occurs in the same step and in real time (*Table 1*). In addition to typical payments, the system enables the completion of low-value payment orders of residential or enterprise clients requiring urgency, but this does not account for a significant portion of the total number of transactions.

The MNB decree did not include special rules for intra-day execution before July 2012, and thus the regulation did not compel or motivate payment service providers to use the VIBER system. Accordingly, the credit institutions only executed the transfer orders of their clients within the day, if this request was indicated by them when submitting their transfer order and they accepted a significantly higher fee compared to ICS clearing. The payment regulation in effect between 1 November 2009 and 30 June 2012 only required the credit institution of the payer client to shall ensure that, after the point in time of receipt

1 Currently, Decree No 18/2009 (VIII.6.) on the circulation of money (MNB decree) is in force.

Table 1**Turnover and key figures of the VIBER system (2013)**

Number of settled transactions (thousands)	Value (Billion HUF)	Settlement agent (clearing)	Clearing house	Number of participating institutions		Typical transactions
				Direct participant	Indirect participant	
1,417	1,287,582	MNB	MNB	45	132	<ul style="list-style-type: none"> – bank-to-bank items: financial market transactions (e.g. HUF leg of HUF FX transactions, HUF cash leg of securities transactions), – intraday credit transfer and clearing of the Postal Clearing Centre's settlements; – central bank operations (e.g. cash and monetary policy operations)

Source: MNB Payment System Report 2014.

(debiting), the amount of the payment transaction is credited to the payee's payment service provider's account by the end of the next business day at the latest. However, there was a voluntary standard under an interbank agreement according to which the payment service providers undertook execution within two hours in the case of VIBER transfers. Meeting this voluntary standard could have well been expected by the payer (for a higher fee), but was unable to legally demand such according to the MNB decree setting out the rules of executing payment orders.

Before July 2012, only the overnight clearing system was operational in the ICS, which ensured the receipt of the transferred amount on the bank day following debiting. This meant a 3-day delay in the case of payment orders initiated before a bank holiday (i.e. on Friday) between debiting the payment account of the payer and crediting the payment account of the beneficiary client, which could even amount to 4-5 days in the case of multiple holidays. Direct participant credit institutions typically send payment transaction to the ICS's overnight module in late afternoon or evening; with the clearing actually performed during the night, while settlement, on the accounts of credit institutions at the MNB, and crediting the bank account of beneficiary clients are completed early in the morning on the day that follows.

2.2 Intraday transfer since July 2012

Directing large volumes of transfers into intraday clearing brings numerous economic advantages for clients. *It leads to an improved competitiveness of economy, since the current account management of enterprises (which frequently conduct transactions) is*

made more efficient. Its advantage includes the savings of clients on interest, which is less remarkable for enterprises managing current account deposits, but represents significant savings for those using current account credit lines. Consequently, the advantages of intra-day completion of transactions are more intensive for enterprise clients, which is why the introduction of intraday transfer was more a demand of enterprises in the first place (Kovács, 2013).

In order to improve the standard of domestic payment services, the MNB already set the aim of enabling the clearing of low-value payments (or at least the majority of such) within one day in 2008. The central bank attached great importance to this, *because the overnight clearing solution introduced in 1994 (and considered modern at that time) had become outdated in the meantime. At the time, not only Western, but also Eastern European countries were making intra-day transfer part of the range of base services (Divéki et al., 2013).* Intra-day transfers were introduced along two separate, however, from the aspect of the central bank's objective, interconnected projects:

- By the adoption of an amendment to the relevant legislation,² the MNB achieved the goal of making intra-day execution of the majority transfer orders mandatory without the separate indication of clients. Significant improvement in the standard of service can only be achieved (meaning the shortening of the time required for completing transfers from client to client), if the application of intraday transfer is not dependent on the ad hoc decision of clients (which formerly resulted in high surcharges for clients), but ensured automatically and in large numbers. In the MNB decree, a set of criteria was laid down, which, if met, removed the right of the credit institution of payers to consider, and made the execution of transfer orders received in accordance with relevant conditions obligatory. In line with the then planned launch of intraday clearing, the legislation also required that the payment service provider of the payer ensure that the amount of national HUF transfer orders submitted electronically within the period of current day execution was forwarded to the beneficiary client's credit institution within 4 hours of receipt, unless their execution requires a conversion of currencies, as of 1 July 2012. This is the so-called *4-hour rule*.

This legislation was needed to enforce a change, since previously neither payment service providers nor GIRO Zrt. (then in majority bank ownership) had taken steps to provide the option of intraday transfer. The reason for this on the part of GIRO Zrt. was that *overnight clearing and the overnight clearing module were operating well (Legeza, 2013:5)*. On the side of credit institutions, the reason was that *the costs of the project were borne by the bank sector, while the negative financial consequences of its introduction, that is, current account deposits with low interest rate on the side of liabilities and the decline in the use of current credit account with high interest rate on the side of assets (Kovács, 2013).*

² Decree 15/2010 (X. 12.) (MNB decree).

– Beyond the adoption of legislation, a new clearing system was also needed, which was launched in accordance with the MNB's plans in July 2012 under the operation of GIRO Zrt. in live mode. This is actually the intraday multiple clearing module, where transfers are cleared in five cycles separate from each other.

The MNB decree does not state the clearing system, and hence the new requirement should be available using VIBER as well. The new clearing system was needed, because VIBER is not suitable for completing this volume of transactions if its capacity is considered, since the system was not developed for such scale of utilisation.³ The number of transactions specified in the legislation covered approximately half of the transactions of the former overnight clearing module (however, an even larger part if value is considered), which means several thousands of transactions in practice.

Besides obligatory execution within 4 hours as specified in the regulation, it allowed credit institutions to channel transfers not falling within the effect of the regulation, e.g. transfers submitted on paper or requiring conversion, into intraday clearing at their own discretion.

Observing the 4-hour rule is only mandatory for the credit institution of the payer. The time window does not include the time requirement for crediting the transferred amount at the credit institution of the beneficiary client on his payment account, since the payment service provider of the payer does not have oversight or information on when the transfer is actually completed. However, the credit side of the payment chain is also regulated in the MNB decree, namely in that the payment service providers of beneficiary clients must credit amounts immediately sent to their account through clearing⁴ at the payment account of their beneficiary clients.

Intraday transfers are cleared at specified times 0830, 1030, 1230, 1440 and 1630.⁵ The result of clearing is submitted by GIRO Zrt. to the direct participant payment service provider, while its financial arrangement (settlement) is carried out in VIBER (*Table 2*).

3 The theoretical daily capacity of the VIBER system is approximately 20,000 cleared transactions. This daily average number of transactions is about one quarter of this in practice.

4 Article 21 of the MNB decree specifies that the payment service provider of the beneficiary shall assign a value date to the amount of the payment transaction on its own account immediately after its crediting and shall credit it on the payment account of the beneficiary client in order to enable the client to dispose over the amount.

5 Except on Saturdays considered bank days due to a rearrangement of holidays, on which days only the first three clearing cycles are completed.

Clearing module	Number of items cleared (thousand)	Value (HUF bn)	Executing party (settlement)	Clearing house	Number of participating institutions		Typical payments
					Direct participants	Indirect participants	
Overnight clearing	158 288	15 963	MNB proprietary home account system	GIRO Zrt.	39	130	<ul style="list-style-type: none"> – transfers submitted on paper by clients; – group collection (e.g. payment of public utility bills); – items of the Hungarian State Treasury (e.g. old-age pensions, family allowance, aids)
Intraday clearing	155 326	59 278	"MNB				<ul style="list-style-type: none"> – individual, group and regular transfers set by clients on an electronic bank channel

Source: MNB Payment System Report 2014.

Clearing the majority of payment orders in the intraday multiple clearing system has some secondary advantages alongside the significant improvement in service quality. It had a positive effect on the *pricing* (Divéki et al., 2013) of payment orders, since the cost of introducing the new clearing is divided up between multiple transactions. This ultimately influenced the payment habits of clients, on the basis of a survey conducted by the MNB on VIBER transfers, since the operation of intraday transfer offers an alternative to VIBER transfer, and, moreover, at a much lower transaction cost. *Adapting to a new clearing system meant that numerous payment orders were not completed by clients in VIBER since the launch of intraday transfer, as opposed to their previous practice* (Luspay et al., 2014).

3 Methodology of data analysis

Historical payment data were used for this study, therefore, the conclusions obtained as a result are not based on expert estimations.

In the course of the analysis, the intraday transfers sent by 17 credit institutions and the intraday transfers received by 20 credit institutions between 1 July 2012 and 31 December 2013 were sampled, that is, 6,927,000 and 7,327,000 transactions respectively in total. Sampling typically meant a transaction on the sending and/or one on the receiving side. Accordingly, 2.99% of transactions on the sending side and 3.16% of transactions on the

receiving side were examined from the total volume of transactions cleared in the ICS intraday clearing module in the initial one and a half year.

Later, a detailed account is given of the effect which certain processes of the payer's credit institution have on the time requirement for transfers. The representative nature of the sample, besides the extensiveness of the sample, is also confirmed by the fact that it was taken from the transactions of credit institutions that have a high total market share in intraday transfers. Market share could be illustrated on the basis of monthly figures of volume for the months taken into consideration in the course of sampling. Instead of this, however, due to *seasonal differences between the volumes of individual months* (Pál, 2013: 516–518), market share was shown based on the annual intraday transfer sent by the credit institutions involved in the sample (Table 3). The credit institutions involved in the sample accounted for 64.7% of the total intraday transfer volume and 70.3% of the volume of direct participants (to which the 4-hour rule applies) on the basis of end-of-year figures of 2013; thus the data included in the analysis and credit institutions give a faithful representation of the volume of intraday transfers.

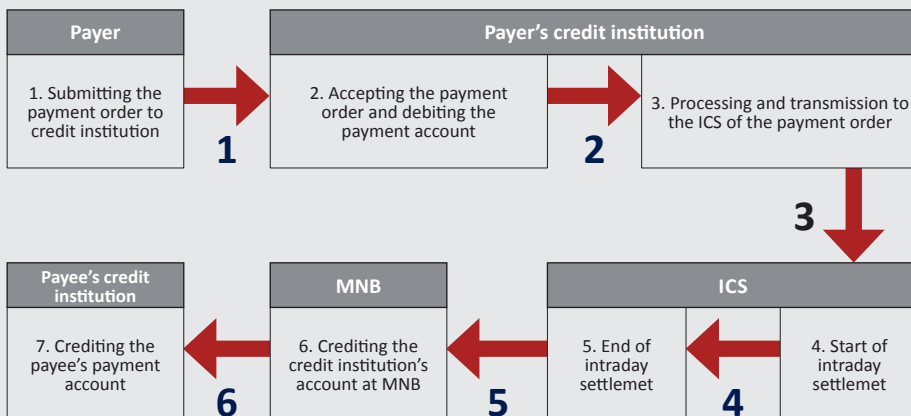
Figures of ICS daytime clearing volume in 2013	Number of items (thousand)	Market share ratio (%)	
		Total to the volume	To the volume of direct participants
Total daytime clearing volume	155 326	100,0%	
1. Sent volume of indirect participants out of this	12 368	8,0%	
2. Sent volume of direct participants out of this	142 958	92,0%	100,0%
2.1 Sent volume of credit institutions involved in the analysis	100 495	64,7%	70,3%
2.2 Volume of other credit institutions not involved in the analysis	42 462	27,3%	29,7%

Source: Own calculation based on P38 (non-public) data service to the central bank

The time requirement for transactions was not measured over the entire payment chain (Figure 1), but starting from debiting of the client's bank account (the point in time under Item 2 of Figure 1). The reason for this is that submission the payment order through an electronic bank channel can be completed by an electronic signature/approval after securing the payment order even outside opening hours of the bank. In such cases, the time of receipt according to the MNB decree falls on the beginning of the subsequent bank day, provided that there are sufficient funds for execution. Accordingly, the time of receipt of a payment order submitted in late afternoon or overnight will be the morning of the subsequent day, while a payment order submitted at the weekend will be received on Monday morning, if these days qualify as a business day at the credit institution of the payer.

The available database contains the times and dates of submission, but measuring any timeframe starting from this point of time would be of little economic use. Payment orders could be submitted outside business days as well, and their time of receipt will be later, on the subsequent business day. In such cases, credit institutions may not only debit the payment account of their client in the morning of the next business day (at receipt). For instance, if the client submits his payment order at 2315 on Friday and does not indicate a later value date, then the bank will carry out the debit automatically on the subsequent business day, that is, on Monday morning between around 0600 and 0800, depending on the opening time of their systems. After the time of submission, but until the receipt on Monday or time of debiting, the client may even decide to cancel the order or spend its funds with his bank card. Since the payment order is debited on Monday and executed in the clearing cycle of the same day, the funds of the order will yield interest at the account of the client, regardless of the time of submission. Therefore, there is no difference if the client submitted his payment order on Friday overnight or at another point of time during the weekend, or even on Monday morning at dawn: the transaction will be still forwarded to the first cycle of Monday in all three cases for the purposes of clearing. This is why measuring from the time of submission would significantly distort the actual data relating to the time required for execution, not to mention payment orders submitted weeks or months prior to the date of execution indicated in the payment order.

Figure 1
The payment process between two credit institutions as direct participants



Source: edited the flowchart by the author

The average time requirement for client-to-client transfers can be determined in several ways. The easiest and most accurate method of measuring this time is to assign the credit data of the actual client bank account to the actual bank account debiting times. In this case, the period between the two points in time would be the end result, however, this requires that data relating to the debiting and crediting of intraday transfers be available to us. However, the MNB has no database that would provide such a comprehensive set

of data, but data from individual data service were available for the period between 1 July 2012 and 31 December 2013.⁶ These typically monthly figures were used to measure the timeframe of transfers. In the course of making such measurements, the time sections marked with arrows 2-6 in *Figure 1* were determined separately.⁷ These averages weighted with the numbers of executed transfers provided the average timeframe of all credit institutions involved in the sample for each time section (marked with arrows 2-6). Adding up these time sections we get the average timeframe of transfer from the payer's credit institution to the beneficiary client.

It was considered using a weighted average calculation that the higher cash flow the credit institution had, the more important the time requirement is as set by its own processes and the payment habits of its client. For instance (measuring the time section marked by arrow 2 in *Figure 1*):

- if credit institution A received a total of 50,000 payment orders for execution in a month and forwarded them to ICS in an average of 30 minutes from debiting, while
- credit institution B did the same in 45 minutes, but its clients only submitted 10,000 payment orders, then
- these two credit institutions together would forward 60,000 payment orders into the intraday clearing in 32.5 minutes from receipt.

The time sections determined through weighting and their aggregation in itself does not distort the final result, since the calculated time requirement is determined by the features of the credit institutions' systems and processes and not the data pool where they were taken from. Naturally, there were months in the examined period when payment data from multiple credit institutions were available, and hence the actual time requirement between them could have been measured. However, measuring this would enable us to determine a very narrow sample from the entire available database, and consequently the result could not have been considered representative, that is, we would not be able to project it to the whole credit institution sector in general.

The average times of time sections marked with the arrows in *Figure 1* at credit institutions could be measured fully from the available database, since the database provided by the credit institutions contained the debiting and sending times within ISC, and hence the average time between debiting and sending within ISC could be determined for each cycle. The actual starting and ending point of the clearing time of each day and each cycle was also known from other data service from GIRO. In the latter, the point of time of settling the clearing (time of VIBER arrangement) was taken into consideration for the analysis. The data giving a picture of these special institutions generated the time sections

6 Data tables requested in the course of audits of payment services.

7 Time sections marked by arrows 4 and 5 were calculated together, because the time section marked by arrow 5 would give a very short interval in itself, however, due to the process it is illustrated separately in *Figure 1*.

of all the credit institutions involved in the analysis in a pro rata volume and weighted. The average time requirement of crediting was determined in a similar manner from the side of beneficiary credit institutions, when the time lapsed starting from the end of ISC clearing (time of clearing settlement) until the transferred amount was credited on the payment account of clients. It is important to note that the legislation sets the “4-hour rule” for the maximum timeframe of executing time sections marked with arrows 2-5, but the analysis covered the measurement of the time section indicated by arrow 6.

The receipt and debiting of payment orders is not synonymous, but in the majority of cases these two points of time coincide. The receipt and debiting of payment orders typically occurs simultaneously, when submitted within the bank's opening hours and the funds needed for execution are available. In this case, the payment order is practically received at the moment of submission and the bank account of the payer is also debited with the same amount as well. Such concurrence is present when in the morning of a business day (at opening) the credit institution commences the processing of payment orders submitted electronically between the closing of the preceding day and the opening of that day, that is, their receipt according to the legislation and also debits payment accounts at the same time. The two times of execution do not coincide in the relatively rare cases when the credit institution cannot carry out the debiting of the payment order received, even though the client has the necessary funds. This may well happen for instance (depending on the credit institution's system) for payment orders in queue, if the amount of payment order in queue is not debited immediately, but only a few minutes later on the bank account after receiving the funds (which, in this case, coincides with the time of receipt in terms of the 4-hour execution time). But the same happens when the credit institution cannot carry out the immediate debiting of the bank account with a payment order received within a time specified for execution due to some sort of technical problem.

4 Timeframe of intraday transfer between direct participant credit institutions

In accordance with the methodology, the time requirement for executing payment orders is measured in sections, with 4 sections used in total, and then we obtain the time requirement for the transfer by adding up these time sections. These sections are the following in order:

Section 1: the time starting at the time of debiting payment orders and ending at the time when they are forwarded to ICS;

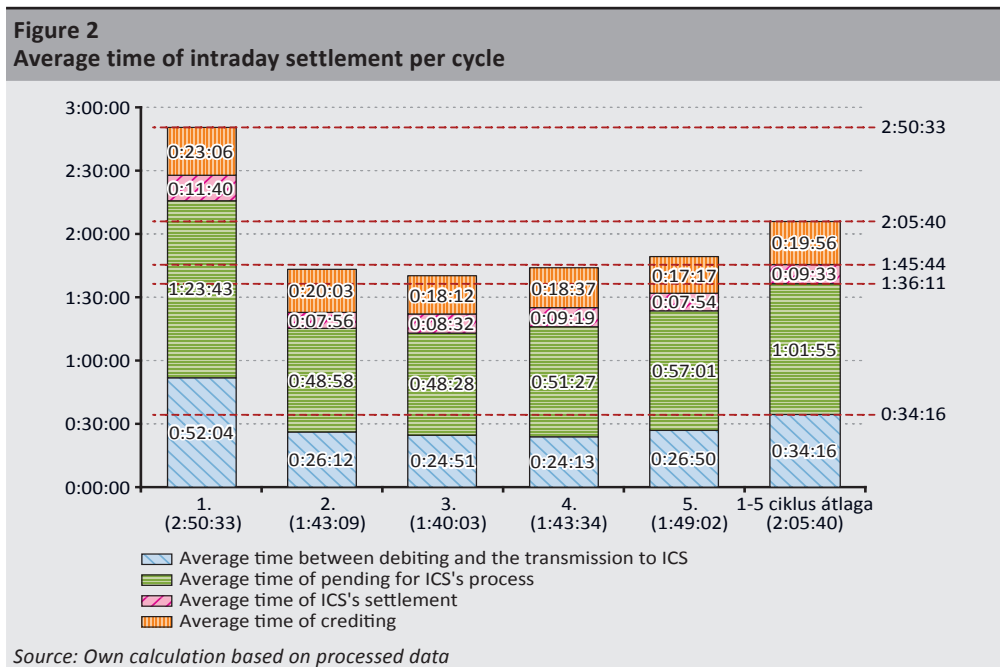
Section 2: the time of waiting for clearing in the ICS, which starts at the closing time of section 1 and ends at the actual starting time of ICS clearing. As an initial time, the “closing time of receipt for ICS clearing” of the actual clearing cycle was taken into consideration. This time section occurs when the payer’s credit institution has completed all of its tasks arising from the execution of the payment order, however, the ICS has not started clearing the subsequent cycle;

Section 3: time section of ICS clearing, which starts at the time of closing time section 2 and ends at the time of crediting the bank account of the credit institutions at MNB. In this time section not only the time requirement of the clearing itself was taken into account, but also the time required for settling the result of clearing;

Section 4: The time requirement of crediting, which start at the time of closing time section 3 and ends at the time of crediting the bank account of the beneficiary client. This time section essentially starts at the point of time, when the beneficiary credit institutions’ “immediate obligation of crediting” commences according to the law and ends when the operation was carried out.

4.1 Average time required for intraday transfers

The lengths of time sections indicated in sections 1-4 are illustrated in *Figure 2* in a breakdown to cycles and also in total (average of cycles 1-5).



On the basis of processed data, 2 hours and 5 minutes is required on average for a transfer to reach the bank account of the beneficiary client from the time of debiting the payer's bank account. Of this, 34 minutes is required for time section 1 (27.3%), and 1 hour and 2 minutes for time section 2 (49.3%) on average. Both time sections depend on the sending credit institution, since it not only determines the timeframe between debiting and sending into ICS needed for the credit institution of the payer, but also, due to the initial times that are essentially fixed points in time, it depends on the sending credit institution how much time the transfer it forwards will be waiting in queue.

The ratio of the two first time sections has an effect on the type of sending process which the credit institution of the payer chooses for forwarding to ICS. In Hungary, essentially two sending processes can be found. In the case of the first one, the credit institution always starts processing transactions and sending them to ICS at a point in time fixed to the initial time of clearing (e.g. 0815, 1015 or 1215, etc.), while in case of the second process, the transaction is processed and sent continuously and is sent independent of whether processed transactions reach a predetermined number (e.g. 500, 1,000, 1,500, etc.). Sending at a fixed time is primarily typical of credit institutions with a small cash flow, while continuous processing and sending is frequently used in the case of larger entities.

After measuring time section 3, it can be observed that the average time requirement of clearing and settlement (depending on ICS and MNB) is less than 10 minutes, that is, 7.6% of the entire time requirement. The crediting time of beneficiary credit institutions is around 20 minutes, which is 15.6% of the entire time requirement measured.

As we noted on several occasions earlier, the process of crediting by the beneficiary credit institution is not part of the 4-hour time window set out in the legislation. Accordingly, if we disregard this time section, then payment transactions reach the credit institution of beneficiary clients in 1 hour and 45 minutes from the time of debiting, i.e. in the course of executing intraday transfers credit institutions do not use up even half of the maximum time window of 4 hours (44%) provided for in the legislation. After assessing cycles 2-5 within the daily average, we get an average execution time of 1 hour and 25 minutes, which is only 35% of the available time window.

4.2 Distribution of time required for intraday transfers

The time when clients submit their payment order compared to the fixed time of the ICS cycle has an effect on the time required for executing transfer orders. *The distribution of payment transactions shows significant differences not only on annual, monthly and weekly, but also on a daily basis (Pál, 2013: 532–533).* It is obvious that a transfer order

submitted at 0700 in the morning (and debited on the payment account) will have a longer time requirement of execution than an order submitted at 0800, since it will have to wait longer until the fixed time of starting clearing (in our case at 0830). The four time sections of transfers could complete even within 20 minutes in extreme cases. This could happen, if the client submits its transfer order a few minutes before the end of the ICS clearing cycle, but at a point of time when its credit institution can send it to the next ICS clearing cycle. This however is not a sufficient condition, as the beneficiary must be the client of a credit institution that credits the amount on the payment account of its client within a few minutes after settling the ICS clearing through VIBER. Naturally, the time requirement for execution can significantly exceed the average time of 2 hours and 5 minutes which is typical of the four time sections in general.

Accordingly, in practice, the timeframe of transfers cleared in one cycle can vary along a very wide scale on the level of the transaction. The question of the amount of time in which transactions are executed was examined in two steps, since an estimation separated for time sections could not be performed for the 4 time sections used in calculating the average. As shown in Section 4.1, the lengths of the first two time sections were independent from each other, since the length of time section 1 is more dominant in the case of credit institutions sending transactions into the ICS at predetermined and fixed points in time, while in the case of credit institutions using a limit number the length of time section 2 was more dominant. In the first step, the distribution of the combined timeframe of the first three time sections (essentially covering the 4-hour rule) was examined, and then the timeframe distribution of the crediting process of the beneficiary credit institution (*Table 4*). The time intervals defined in the two steps are independent from each other, and thus their resulting timeframe data can be added up.

The distribution was defined using a smaller sample from transactions taken into consideration in the course of average calculation at a confidence level of 90%, which shows the time interval in which 90% of transactions were executed. In the course of narrowed sampling, an effort was made to match the average time requirement of the sample with the average time requirement of the total number of transactions processed (6,927,000 sent and 7,327,000 received transactions). The distribution of the first three time sections was measured on the basis of 1,610,000 transfers, where the average run-through time requirement was only 1 minute shorter than the sent transfer specified in Section 4.1. The distribution of time used for crediting by beneficiary credit institutions was measured using a sample of 1,574,000 transaction, where the average crediting time requirement was identical to the average time requirement of all processed credit transactions. In addition, due to the special nature of the first cycle, the distribution of the time requirement of transactions cleared in the first cycle and cycles 2-5 were differentiated.

Table 4
Distribution of credit transfer’s time length

	Cycle	Time slot 1-3			Time slot 4			Time slot 1-4		
		number of sample	lower bound of estimation	upper bound of estimation	number of sample	lower bound of estimation	upper bound of estimation	lower bound of estimation	upper bound of estimation	length of time period
		(number of transactions)	(hour:min)	(hour:min)	(number of transactions)	(hour:min)	(hour:min)	(hour:min)	(hour:min)	(hour:min)
Confidence level 90%	1.	578,398	0:49	2:56	542,730	0:09	0:45	0:58	3:41	2:43
	2–5.	1,031,695	0:29	2:20	1,030,804	0:07	0:33	0:36	2:53	2:17

Source: Own calculation based on processed data

The average time requirement for the first three time sections was 2 hours and 27 minutes as shown in Section 4.1, while in the case of the rest of the cycles it was 1 hour and 25 minutes. The run-through time was between 49 minutes and 2 hours and 56 minutes in 90% of transactions, while in the rest of the cycles it was between 29 minutes and 2 hours and 20 minutes. In the first cycle the distribution of run-through times was tending towards the left side, and hence was not symmetric, as opposed to the other cycles, where the distribution of run-through times followed a single-modus symmetric distribution.

Overall, we can establish that the run-through time of transactions in the first cycle in time section 4 falls within a time interval of 2 hours and 43 minutes (with a confidence level of 90%), between the extreme values of 58 minutes and 3 hours and 41 minutes. This is half an hour shorter in the case of time sections 2-5, and occurs with time interval of 2 hours and 17 minutes, between the extreme values of 36 minutes and 2 hours and 53 minutes.

5 Intraday transfers between direct and indirect participant credit institutions

The legislation sets different execution deadlines for indirect ICS participants, since instead of 4 hours, they had 6 hours to ensure that the amount of the payment order reaches the credit institution of the beneficiary client. The reason for this distinction is that indirect participant credit institutions connect to the ICS through an indirect member (correspondent bank), and thus the additional time requirement is taken into consideration by the regulation, which provides a maximum of 2 hours of additional time to execute the transfer order.

Indirect ICS participants are currently integrated cooperative credit institutions, credit institutions separated from an integrated cooperative credit institution and transformed into a bank as well as mortgage banks.⁸ The common feature of integrated cooperative credit institutions is that their payment account is not managed by the MNB, but rather by the MTB, and consequently they are not in direct contact with ICS, so both overnight and intraday clearing is done via the MTB. The MTB not only performs an intermediary activity (data forwarder), but rather a 'quasi' clearing activity (first processing within the integration). In the course of sending, it first processes the payment orders received from the credit institutions whose accounts it manages (corresponds), then forwards the results of processing to the ICS, or, if the bank account of the beneficiary client is also managed by the MTB, then directly to the beneficiary credit institution. Payment orders falling within the latter group are not forwarded to the ICS's intraday multiple clearing, and consequently those are not subject to analysis in this study.

5.1 Timeframe of a transfer initiated by the client of an indirect participant and credited at a direct participant

We do not have reliable data for the purposes of analysis on intraday transfers initiated by clients of indirect participants. Although we have some databases containing transactions initiated by such credit institutions which include the debiting times of outbound intraday transfers and their sending time to the MTB, there is no accurate information to know the ICS cycle in which the transactions were actually cleared after the MTB has discharged its duties as a correspondent bank. Lacking this however, we cannot precisely determine when these payment transactions reach the credit institution of the beneficiary client.

The MTB announces points in time for the correspondent credit institution until which it undertakes to ensure forwarding to the current clearing cycle. At the start of intraday transfer, the MTB undertook to forward intraday transfers it received by 0730 to the first cycle in case of normal operations. In this analysis, an average time requirement of 2 hours and 16 minutes was measured using the points in time published by the MTB.⁹ Accordingly, the timeframe measured on the basis of processed data was only 11 minutes longer than the time requirement observed for intraday transfers between indirect participants. This is possible because the time requirement of MTB's activity as a correspondent bank is not fully added to the total time requirement. The time section spanning from debiting to forwarding to the MTB was only 15 minutes on average, which is 19 minutes shorter than the period measured from debiting to sending into the ICS in

⁸ Mortgage banks manage special accounts for their clients and transfers initiated from the client account are also special transactions; hence these are not subjects of study.

⁹ The measurement was calculated for a total of 50 outbound transactions of 5 indirect participant credit institutions.

the case of indirect participants. However, in the case of indirect participants, 1 hour and 31 minutes passed from forwarding to the MTB until the commencement of ICS clearing (this joint figure includes the time of waiting at the MTB for clearing in ICS and the internal clearing time of the MTB), while it was 30 minutes shorter in case of direct participants. It is true however that the 1 hour and 2 minutes long period was made up of the time waiting for ICS clearing in its entirety.

The measured data is considered informative, because we had no information on whether intraday transfers forwarded to the MTB a few minutes after specified deadlines were actually cleared before the ICS clearing specified by the MTB. It could not be established explicitly if there were intraday transfers among the processed data which were sent to the MTB in a period between 0731 and 0735 for instance, but made it to the first clearing cycle of ICS nonetheless. But there could have been transfers forwarded to MTB between 0725 and 0729, but were eventually only cleared in cycle 2.

5.2 Timeframe of a transfer initiated by the client of a direct participant and received by an indirect participant

In the case of an intraday transfer initiated by a direct participant and credited at the MTB or the client of any correspondent credit institution, 3 hours and 7 minutes was required on average to have the amount credited at the beneficiary client. This time is 49% longer than the time measure for direct ICS participant credit institutions.

The average time requirement for the transfer is the same shown for time sections 1-3 in Section 4.1, that is, 1 hour and 45 minute in terms of the credit institution of the payer and the ICS clearing, since it does not matter for the credit institution of the paying party at which domestic credit institution the beneficiary client is registered as a client. The process basically differs after ICS clearing, since the result of clearing and its funds is received by the MTB directly from the ICS. The correspondent credit institution then receives this result after an internal clearing operation, which makes the time requirement of intraday transfers much longer as compared to direct participants. On the basis of the data subjected to assessment, an average of 1 hour and 22 minutes lapsed after settling the clearings in VIBER until the payment orders were credited at the clients of the correspondent bank. A significant portion of this time was taken up with the clearing activity of the MTB, and a smaller part was used by the crediting time of corresponded credit institution.¹⁰

¹⁰ The measurement was calculated for a total of 72 inbound transactions of 4 indirect participant credit institutions.

6 Certain features of intraday transfers

The processed data were used to examine how the number of intraday transfers are distributed between each clearing cycle and whether this is in alignment with the distribution compared to the entire volume of transactions. The potential reasons for the lengthening of the first cycle was assessed separately, and the longest time section from the measurement in a breakdown of time sections was examined in detail.

6.1 Number and distribution per cycle of processed transfers

As mentioned before, a total number of 6,927,000 and 7,327,000 intraday transfers sent into the ICS and received from the ICS respectively were examined. There was no significant difference between the number of sent and credited transfers per cycle measured (the two bottom trend lines of *Figure 3*).

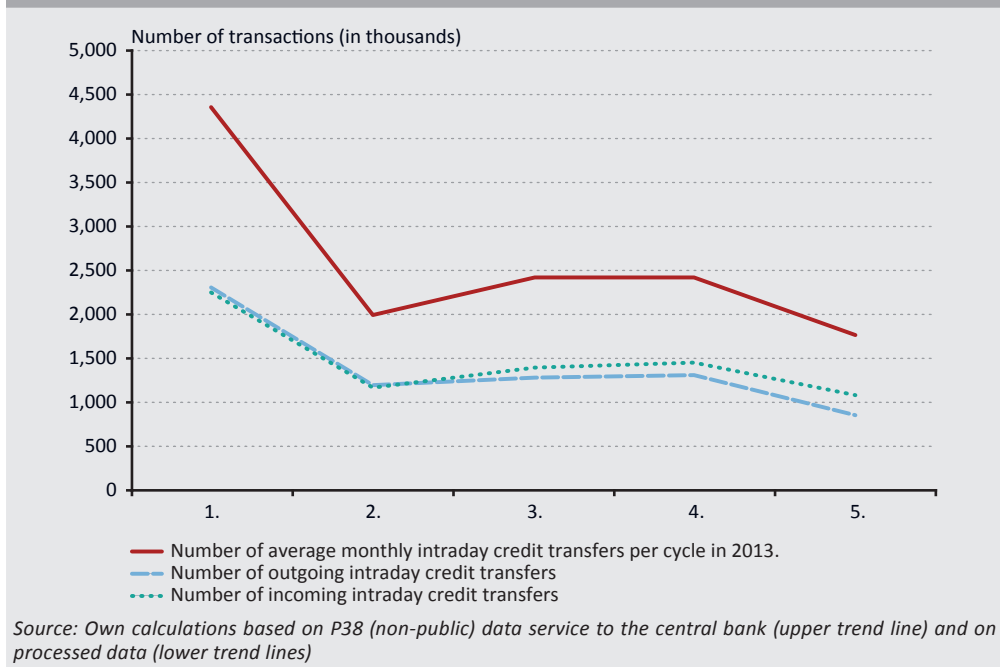
The situation is completely different, however, if the distribution per cycle of the number of intraday transfers is analysed, as the majority of transfers is cleared in the first cycle. This partly due to the fact that the timeframe is the longest before the first cycle, when the clients submit payment orders (from the closing of the previous business day to the opening of the current business day, that is, from approximately 1500-1600 to 0800-0830 in the morning). Furthermore, the length of this period can significantly increase in the event of intermediary business day(s). Moreover, the number of transactions in the first cycle might be increased by transfer orders debited in the morning for which an execution on a later date is indicated by the client and standing orders are also cleared at this time. As a result, on the basis of processed data it can be established that twice as many transactions were cleared in the first cycle as in the rest of the cycles; to be more precise the number of transactions of the first cycle was 199% of the average number in cycles 2-5.

It should also be examined if the volume of transactions of credit institutions involved in the measurement show any significant difference compared to intraday transfer volume. In the case of a significant difference, the confidence level of average time requirement data in Section 4.1 would be lower, since if the volume of the first cycle (with the longest time requirement) is higher in terms of total volume of intraday transfers, then that would mean that the measured data is assumed to show a smaller average time requirement than what is realistic. If the increase of volume in the first cycle is one and a half times the average of the rest of the cycles in the total volume, then the time requirement typical of the total volume is assumed to be shorter than what was observed in the measurement. The top trend line of *Figure 3* shows the share of volume per cycle on a monthly basis in relation to

the total volume of intraday transfers in 2013. Based on the data of all participants (direct and indirect), the volume in the first cycle was double (202%) the average of cycles 2-5.

Consequently, it can be established that the processed intraday transfers involved in the analysis show the same distribution per cycle (trend lines of Figure 3) that is typical of the total volume of intraday transfer, and, ratio of measured and real volume of the first cycle differ to the same extent from the volume of the rest of the clearing cycles, and thus no distortion in the measured time requirement data can be presumed.

Figure 3
Number of intraday credit transfers per cycle



6.2 The reason for extending the timeframe of the first clearing cycle

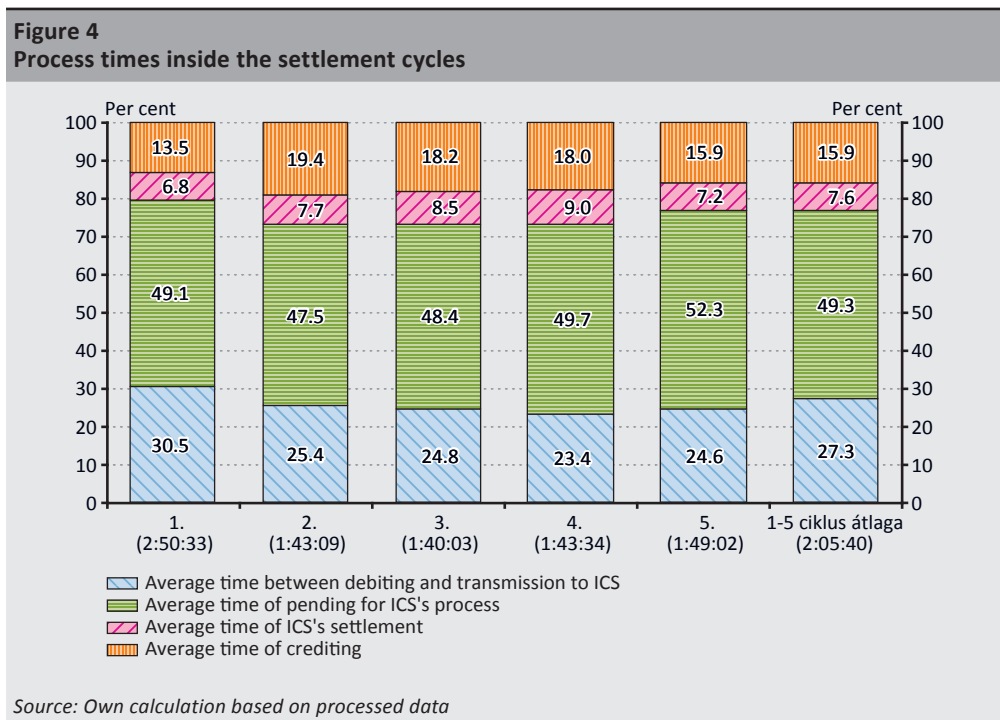
Considering that the length of the first cycle showed a significant difference from the rest, it was important to examine what was behind this. The extension of the timeframe cannot be traced back to issues of infrastructure, since credit institutions use the same IT infrastructure in all cycles, and it does not matter from the aspect of account management systems if a transaction of debiting or crediting of a given number is running on them. If the automated debiting or crediting process was initiated, then there is no significant time difference between the time requirement of debiting or crediting 100 transfers.

Accordingly, two reasons could be identified which might be behind the first cycle's extension:

- a higher number of transactions showed in Figure 3 and typical of the first cycle, or
- a process feature that primarily influences the first cycle.

If the extremely high number of payment orders were to lead to such difference, then its effect should present itself in all 4 time sections shown in Figure 2, and in a nearly equal proportion. The measured data show that the period from debiting to sending into ICS is 27 minutes (105%), the average waiting time for clearing at ICS is 33 minutes (64%), while the average time of ICS clearing is 3 minutes (38%) and the crediting process of beneficiary credit institutions was only 4 minutes (25%) longer on average in the first cycle. In line with measured data, all time sections were longer in the first cycle, however, the degree of extending the time section showed great differences. This leads us to the conclusion that although an extremely high volume of transactions has an effect on the extension of time, but it is not a sufficient explanation in itself.

Since a significant extension of time (79% in total comparison) was observed in the time requirement for the first two time sections, which are time sections depending on the credit institution of the payer as mentioned before, the relevance of a reason beyond the number of transactions was examined (process characteristics).



The conclusion was that the difference in the process could be the timing of the day-opening process. Also, the compliant behaviour of credit institutions should be taken into consideration, since the credit institution must consider several aspects in the course of day opening as a result of the regulation.

One such an aspect may be that many payment orders are considered received at the time of day opening (e.g. transfers submitted previously with the debiting date, payment orders submitted after the closing time of the previous day, standing orders due on the current day), and thus these must reach the credit institution of the beneficiary within 4 hours from opening of the day.

The other aspect is that, in order to observe the order of execution, payment service providers had to develop a process that can ensure that payment orders submitted at an earlier time are received (and debited) earlier than those submitted later. Observing this rule is especially important, if there is not enough funds for all the payment orders of the client. Thus, the process typically means that standing orders (that were submitted long before by the client), or even orders submitted several weeks or months ago, but due on the current day, and payment orders submitted after closing the previous day or before opening the current business day (e.g. early in the morning), are debited in the morning of the business day in separate processing schemes.

By contrast, the processing of payment accounts is continuous at the receipt of the payment order or, in the case of payment orders waiting in queue, at the time of receiving the funds, and processes are not separated as in the first cycle. As a result of the above, debiting takes place 2 hours and 15 minutes on average before starting ICS clearing in the first cycle, while in cycles 2-5 this is only 1 hour and 16 minutes, that is, 59 minutes less (*Table 5*).

Daytime transfer	Number of ICS cycles		Time difference (hour:minute)
	1.	2–5.	
Total	2:15	1:16	0:59
single transfers out of this	2:15	1:17	0:57
regular transfers out of this	2:37	1:17	1:19
group transfers out of this	1:23	1:12	0:11

Source: Own calculation based on processed data

Therefore, a time requirement longer than average at credit institutions in the case of transfers cleared in the first cycle of the day is primarily due to the longer processing time typical of credit institutions and an earlier time of sending into ICS compared to the

rest of the cycles, and the extremely high volume compared to other cycles can only be marginally responsible for that.

6.3 The longest time requirement – the time section of waiting

This study also examined which the station in the payment order the payment order spends the most time in.

If the time interval between debiting the client's bank account and crediting the client's bank account is considered, then half of the entire time requirement (49.3% according to the last column of *Figure 4*) was taken up by the time of waiting for clearing. The length of the time interval of waiting for clearing is even more salient, if it is only assessed from the side of the legal requirement, that is, in how much time the payment order reaches the credit institution of the beneficiary from debiting the bank account of the payer (receipt). Here, waiting time could amount to 58.6% of the entire time requirement in each cycle, in the course of which period essentially nothing happens with the payment order.

Cycles 2-5 can be considered quite homogeneous, not only in terms of total time requirement of execution, but also for each measured time section. The difference (however, not significant) was only observed in one place, namely in the last cycle, where waiting time for ICS clearing was 7 minutes longer than in case of cycles 2-4 and had the same effect on the average execution time of the last cycle as well. It should be noted that the lowest number of transfer orders was cleared in this cycle, which also confirms the argument that the correlation between the number of transactions executed and the length of transfer time is not as close as if a difference in process is present. This difference in process can be traced back to the fact that credit institutions send payment orders into ICS earlier on average in the last cycle compared to the starting of other ICS clearing cycles, in order to avoid risks. This is necessary because if any technical problem occurs in the course of sending in, then the sending credit institution has more time to restore normal business. This risk is lower during the day, since even in the worst case, the clearing of the transfer is postponed to the next cycle, but will be executed within the current day (and does not lead to violation of the 4-hour rule). The last cycle is special in this regard, because if payment orders received on the current day are not forwarded in that cycle, the clearing will be postponed to the first cycle of the subsequent day, leading to violation of the 4-hour rule.

On the basis of the above, we can draw the conclusion that the most time is taken up in the execution of an average transfer when the payment order was received in the ICS and is waiting for the initiation of the clearing process.

7 Differences in time for each subtypes of credit transfer

The aggregate intraday transfer volume is worth assessing for each payment method subtype, and separating single credit transfers, standing orders and credit transfers initiated in batch.

7.1 Single credit transfers

In terms of the number of items, single credit transfer orders are the most frequent ones in intraday clearing, with 79% of processed intraday transfers submitted this way. Although, this ratio is naturally different for each credit institution, these payment orders account for the majority of total intraday transfers at most credit institutions.

The time section and time requirement in each cycle experienced in the case of single credit transfers is very similar to the time requirement of aggregate intraday transfer volume, for which the explanation is that 4/5 of the examined volume was made up of these payment orders if the number of transactions is considered. Of course, due to this high ratio, the features of this payment subtype were heavily influenced by the whole intraday process.

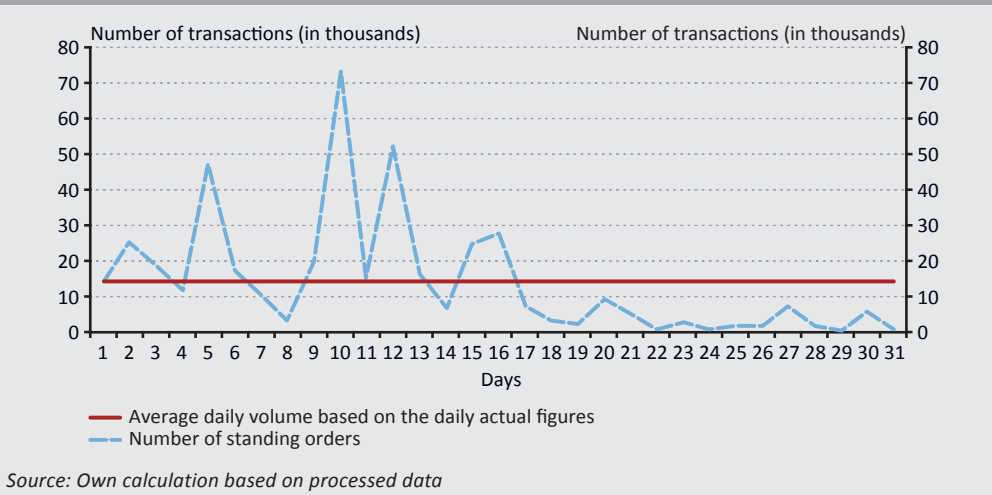
7.2 Standing orders

The average time requirement of standing orders is the highest among the subtypes of intraday transfer (3 hours and 8 minutes on average). 97% of standing were cleared in the first cycle according to processed data. This cycle becomes longer due to this payment subtype, because these payment orders are debited first even within the first cycle (see Section 6.2). The debiting of these in the day-opening process is prioritised on a process level to keep the order of receipt. At large banks (initiating the most standing orders) these processing operations start very early; experiences show that they even start between 0530 and 0600.

Standing orders were only 6.3% of the total intraday clearing volume of the examined credit institutions, however, their share in the transactions of the first cycle was 18.3%.

Standing orders are distributed unevenly not only within the day, but also on a monthly basis (*Figure 5*).

Figure 5
Distribution of standing orders within a month

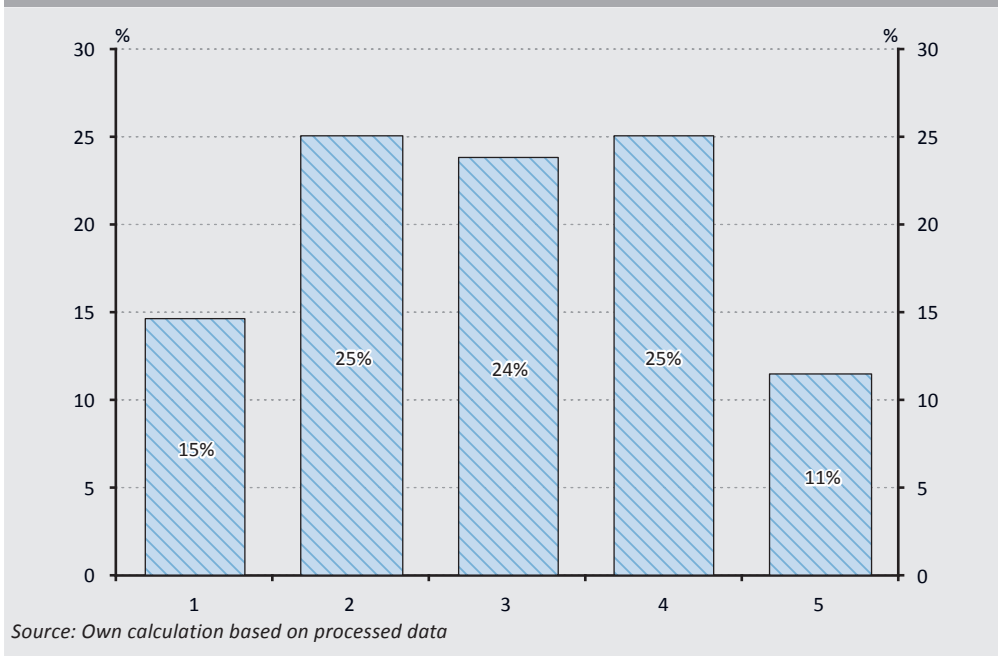


The horizontal line in the *Figure 5* indicates the daily number of transactions according to the even distribution. According to the database, there are days with extreme volumes, e.g. the 5th, 10th and 12th days of the month, when 11.2%, 17.3% and 12.4% of the average monthly transfer volume respectively became due. If periods within the month are considered, the experience was that 73% of transfers were due in the first 12 days of the month and only 6.9% took place after the 20th day, according to the sample. This can primarily be attributed to the fact that the execution time of standing orders of clients are tied to the payment of their salary, that is, clients try to specify a point of time as debiting date when their monthly salary provides funds for the transactions. However, uneven distribution (peak days) has a relatively small effect on average execution times, due to reasons mentioned above, since the number of transactions generally showed a relatively low correlation between the elongation of time (in case of crediting a doubled volume in the first cycle only increased the average crediting time by one quarter of the former average).

7.3 Credit transfers initiated in batch

The average time requirement of credit transfers initiated in batches is the highest among the subtypes of intraday transfer (1 hours and 44 minutes on average). 14.7% of processed intraday transfers was submitted as credit transfers initiated in batch. As shown before, most transactions in the intraday clearing volume were cleared in the first cycle. However, this cannot be said of credit transfers initiated in batch (*Figure 6*), since the majority of volume is concentrated in cycles 2-4.

Figure 6
Volume of credit transfers initiated in batch by settlement cycles



In the background of a distribution differing from other payment subtypes is the fact that this payment subtype is used by companies, local governments and other (non-residential) clients, who submit their credit transfers initiated in batch for execution continuously, typically in the course of the business day. Accordingly, submission occurs at a point in time that is considered working time both for the client and for the credit institution of the payer. Furthermore, clients supposedly pay attention to having the necessary funds at the time of submission, since for instance salaries are typically transferred this way; hence, the receipt and debiting of the bank account can occur immediately at the time of submission. Accordingly, it is less typical that credit transfers initiated in batch are submitted after the closing time of the credit institution or submitted for a later debiting date, in which case these would be received in the morning of the next bank day and executed in the first cycle.

8 Main conclusions and suggestions

Intraday transfers between direct ICS participant credit institutions are executed well within the 4-hour timeframe provided for by the legislation, and, in fact, the average time between debiting the bank account of beneficiary clients and crediting on the bank account just surpasses 2 hours. A little longer time was measured when the payment order was submitted at an indirect participant. According to the examined data, intraday transfers initiated by indirect credit institutions actually do not require or take up the 2-hour additional time provided by the regulation, since transfer orders are forwarded to the credit institution of the beneficiary client well within 4 hours even in case of indirect participants.

It was a well-known fact from previous MNB publications that many more intraday transfers were cleared in the first cycle of the day than in any other cycle. The study also highlighted that the time requirement for execution in the first cycle is much longer than in the rest of the cycles. This is not mainly due to the high number of transactions (although it contributes to it to some extent), but the time requirement of the day-opening process of the bank and, ultimately, to an early time of opening the day at banks.

Analysis of the execution time of transactions within the time sections showed that nearly half of the total transfer time is some sort of wasted time, a waiting time, when the payment order is no longer managed by the credit institution of the payer, but the clearing house has done nothing with it. This leads us to the conclusion that by increasing (concentrating) the number of intraday clearing cycles considerable time savings and an improvement of efficiency could be achieved, since the time spent waiting for clearing could be reduced.

Through the breakdown of transfer transactions by payment method subtypes, the study established that the time required for the execution of single customer transfers making up a large portion of intraday transfer volume is essentially the same as the time requirement of all other measured intraday transfers. In the case of standing orders this time was approximately 1 hour longer, while it means an average execution time 20 minutes shorter in the case of credit transfers initiated in batch.

The focus of the analysis was not the effect the introduction of a new 'zero' clearing cycle would have on bank processes; consequently, this was not covered in the study. Nevertheless, it can be established that if a cycle of this kind was introduced, it would have a beneficial effect on the average time requirement of transfers, if we assume that the current debiting and sending practice of payment orders are not changing. Bringing the first clearing cycle earlier in the day would have a secondary effect; among others, the extremely high number of payment orders observed in the first cycle would be distributed over two cycles, thus making the number of payment orders forwarded in each cycle more even.

References

BALLA, GERGELY PATRIK – BODNÁR, LÁSZLÓ – DIVÉKI, ÉVA – FENYVESI, MIKLÓS – ILYÉS, TAMÁS – LUSPAY, MIKLÓS – MADARÁSZ, ANNAMÁRIA – OLASZ, HENRIETTA – PAPPNÉ KOVÁCS, BEÁTA – PINTÉR, CECÍLIA – TAKÁCS, KRISTÓF – VARGA, LÓRÁNT (2014): Fizetési Rendszer Jelentés. MNB.

DIVÉKI, ÉVA – HELMECZI, ISTVÁN (2013.): A napközbeni átutalás bevezetésének hatásai. *MNB-szemle*, January.

KOVÁCS, LEVENTE (2013): A napon belüli elszámolás hatása a gazdaságra. In PRÁGAY, ISTVÁN (ed.): Napközbeni átutalás projekt (2010–2012). Tanulmánykötet. Budapest: GIRO Zrt., pp. 31–38.

LEGEZA, PÉTER (2013.): Ötlettől a megvalósulásig. In PRÁGAY ISTVÁN (szerk.): Napközbeni átutalás projekt (2010–2012) tanulmánykötet. Budapest: GIRO Zrt., pp. 5-10.

LUSPAY, MIKLÓS – MADARÁSZ, ANNAMÁRIA (2014): A napközbeni elszámolás bevezetésének hatásai a hazai fizetési rendszerek forgalmára. *MNB-szemle*, March.

PÁL, ZSOLT (2013): A bankközi klíringforgalom időbeli megoszlása. *Hitelintézeti Szemle* 12 (6), pp. 515–534.

A brief commentary on József Banyár's OLG-paper

András Simonovits

In his recently published paper *Banyár (2014)* reinterprets, through the modelling of childhood, the seminal consumption-loan paper of *Samuelson (1958)* which led to the evolution of the overlapping generations (OLG) model. In my comments, I touch upon four issues. First, I point out that what Banyár presents as his own model – the OLG model extended to include childhood – already appeared in the papers of *Gale (1973)* and *Augusztinovics (1983; 1992)*. Secondly, based on the idea of *Péter Mihályi*, I describe a simpler model which puts the pension issue in parentheses and evens out the prevailing child-rearing expenses among families. Once we introduce differences in income, however, we find ourselves facing the problem of equalisation. Thirdly, it may well be inopportune wording only, but I must object to being credited with an excessive role in promoting the approach that neglects child-rearing in the Hungarian literature (*Banyár, 2014:175*). Finally, while I agree that *Samuelson (1958)* painted an excessively favourable picture of the pay-as-you-go scheme relative to funded pension systems, taking the opposite position would be overly simplistic as well.

1 Child-rearing and pension in the OLG model

Banyár (2014) provides a coherent description of the 3-generation model of *Samuelson (1958)* (young, employed persons, older employed persons, retired persons), to which he adds a fourth category: children. In this generalised model, the market and non-market costs associated with raising a child are explicitly present. Breaking down the model into families with children and childless households, one may argue, provided that certain non-negligible dimensions are neglected, that households with children should receive higher pensions or pay less contribution than their childless peers.

András Simonovits is scientific advisor at the Institute of Economics, Research Centre for Economic and Regional Studies, HAS and a professor at the Department of Differential Equations of the Budapest University of Technology and Economics. E-mail: simonovits.andras@krtk.mta.hu.

Even though Banyár refers to the non-mathematical paper of *Augusztinovics (1993)* as a forerunner, he fails to mention that the model he calls his own was published in *Gale (1974)* and *Augusztinovics (1983; 1992)*, albeit without the application of the utility function. Compared to these models, the only novelty in the model proposed by *Banyár (2014)* is the fact that it makes the fertility decision contingent upon the pension scheme.

2 Taxation of the childless and its problems

Banyár (2014) himself mentions that in modern pension systems the state assumes a considerable portion of the costs associated with child-rearing. For some reason, however, he refrains from wrapping up the entire issue accordingly, ignoring the pension system altogether. What should be done is simply to introduce transfers in the child-rearing period (ages 20 to 40 in *Banyár*) with a view to equalising the per capita costs of childless couples and those with children. For instance, for the sake of simplicity, let us examine a stationary population where half of the families have no children, and the other half have 4 children. Let us assume that both types of households earn 6 units. In a system with no transfers the per capita consumption of the childless family will be 3 units, and that of child-raising couples will be 1 unit. (At this level of abstraction the decreasing unit consumption of children is negligible). In order to create equilibrium, the state should impose a special tax on childless households, and transfer the proceeds to families with children. As a result of the transfer, the per capita consumption of the two family types will be identical, 1.5 in each case. Thus the tax is 3, and the tax rate is 50 per cent.

At this point, however, we must deal with another problem; namely, where the incomes of the families are also different. Do we want a tax regime that preserves the differences between high-earners and low-earners, but equalises the differences between the numbers of children? To continue our example, let us assume that there are two additional family types: families with 0 or 4 children, with earnings triple the incomes of the families above; i.e. both families earn 18 units. In this case, in a system with no transfers the per capita consumption of the rich childless family will be 9 units, and that of child-raising couples will be 3 units. The level of the equalising tax has also tripled, amounting to 9 units.

We now have to face the problem of childcare support and income redistribution. We take away 3 units from a low-earning, childless family, while allocating 9 units to a high-earner family with several children. Is such a procedure consistent with society's sense of justice? The example above is intended to demonstrate the insurmountable problems that would be generated by the total – or even an aggressive – equalisation of incomes based on the number of children.

3 The role of child-rearing and pension in my writings

Although he makes references to my latest article (*Simonovits, 2014*), a critical analysis of the interconnection between endogenous fertility and the pension system, *Banyár (2014)* unwittingly condemns my previous writing, *Simonovits (2003)*. In his view, my book – consistent with Samuelson's approach – neglects the relationship between child-rearing and the pension system. As the book criticised was intended to be an introduction to the literature on pension, it is true that a relatively small amount of attention was devoted to the relationship between child-rearing and pension. The topic, however, was far from being dismissed, which can be best proved by listing a few chapters and sub-chapters from the table of contents.

Chapter 1: *Lifecycle models*, where the period of active years is 20 to 60, while that of consumption is 0 to 100. Chapter 7: *Demographic developments*, where fertility and mortality obviously play a key role. Chapter 11: *Optimal consumption path*, where, in line with the authors referred to in Point 1, childhood consumption has a crucial role. Chapter 13: *The closed model of overlapping generations* (see *Molnár–Simonovits, 1996*), where one of the most important issues examined is once again the consumption of children funded by loans in households lacking income.

Moreover, in my article *Simonovits (2007)*, I also criticized *Razin et al. (2002)* precisely because the authors surreptitiously lumped children and old people together, which led them to completely false results: in their findings, the aging of the population reduces the size of the welfare state. In my paper *Simonovits (2012)*, for the first time in the Hungarian literature, I analyse an OLG model in which the decline in fertility and the increase in life expectancy at birth impose severe burdens on the public pension system. At the same time, I also demonstrate that the difficulties are mitigated by declining household consumption amid decreasing family size and rising bequests.

4 Which one is better: a pay-as-you-go or a funded pension system?

Banyár (2014) makes interesting historical observations about these two main pension systems and the relationship between them. Starting from the findings of *Samuelson (1958)* and *Aaron (1966)*, he asserts that, in the case of a stable economy and a stable population, the annual internal rate of return of the pay-as-you-go system will equal the

sum of the annual growth rate of the population and real wages. (However, if the unit of analysis is decades or quarters of a century instead of years – for example, it is 20 years in *Banyár's* paper – the factors are to be multiplied).

I fully agree with *Banyár* that it would be a gross simplification to assert that the pay-as-you-go system will increase welfare compared to the funded systems if the internal rate of return exceeds the real interest rate. On the one hand, nowadays, the population cannot be considered stable (but aging) and it is not only true for developed countries but also for China; on the other hand, it is unclear what real yield really means. (For instance, if the UK private pension system phased out annuitisation in 2013, what kind of real interest rates will people, left to their own means, face when purchasing indexed annuities)? *Banyár* correctly described the process that led to the collapse of the private pension systems of the mid-20th century, and I tend to agree that the emerging public pension systems were, occasionally, too generous.

However, I have doubts about how wise it would be to eliminate the existing earnings-related European retirement systems or reduce them to a basic state pension. Finally, I wish to point out that it is extremely dangerous that Hungarian pension experts are only concerned about the admittedly insufficient domestic fertility, while neglecting the opportunities offered by a potential restoration of the flexible retirement age, an improvement in market-based employment bolstered by a good public education system, and the encouragement of immigration.

References

AARON, H. J. (1966): The Social Insurance Paradox. *Canadian Journal of Economics and Political Science* 32, pp. 371–374.

AUGUSZTINOVICS, M. (1983): Emberek és gazdaságok (People and Economies). *Economic Review* 30 (in Hungarian), pp. 385–402.

AUGUSZTINOVICS, M. (1992): Towards a Theory of Stationary Populations. Manuscript, Institute of Economics, Budapest (former version: IEHAS, Discussion Paper, 1991).

AUGUSZTINOVICS, M. (1993): Egy értelmes nyugdíjrendszer (A sensible pension system). *Economic Review* 40 (in Hungarian), pp. 415–431.

BANYÁR, J. (2014): Two scenarios of the evolution of modern pension systems. *Financial and Economic Review* (in Hungarian) 13, pp. 154–179.

GALE, D. (1973): Pure Exchange Equilibrium of Dynamic Economic Models. *Journal of Economic Theory* 6, pp. 12–36.

MOLNÁR, GY.– A. SIMONOVITS (1998): “Expectations, (In)stability and (In)viability in Realistic Overlapping Cohorts Models”, *Journal of Economic Dynamics and Control* 23, pp. 303–332.

RAZIN, A.–E. SADKA–P. SWAGEL (2002): The Aging Population and the Size of the Welfare State. *The Journal of Political Economy* 110, pp. 900–918.

SAMUELSON, P. A. (1958): An Exact Consumption-Loan Model of Interest with or without the Social Contrivance of Money. *The Journal of Political Economy* 66, pp. 467–482.

SIMONOVITS, A. (2003): *Modeling Pension Systems*. Oxford: Palgrave Macmillan.

SIMONOVITS, A. (2007) “Can Population Aging Imply a Smaller Welfare State?” *European Journal of Political Economy* 23, pp. 534–541.

SIMONOVITS, A. (2012): Pension Reforms in an Aging Society: A Fully Displayed Model. *Danube: Law and Economic Review* 4, pp. 1–31.

SIMONOVITS, A. (2014): Child support, pensions and endogenous (and heterogeneous) fertility. A model. *Economic Review* 61, pp. 672–692. (*in Hungarian*), SIMONOVITS, A.: Savings, Child Support, Pensions and Endogenous (and Heterogeneous) Fertility (*in English*), <http://econ.core.hu/file/download/mtdp/MTDP1335.pdf>.

A Europe unifying in the midst of 21st century challenges

Mária Bábosik

Anthony Giddens Turbulent and Mighty Continent – What Future for Europe?

Cambridge, UK: Polity Press, 2014, p. 242

ISBN-13: 978-0745680965

The author, *Anthony Giddens*, is Director of the London School of Economics, member of the House of Lords and Fellow of the prestigious King's College. Several of his works have also been published in Hungarian, including a book on general sociology, political essays on globalisation and papers on the once influential concept of "Progressive Governance" known as "The Third Way". This book is close to the latter in spirit: it is a political essay on the current situation, future prospects, external and internal relations of the EU – focused on political, economic and environmental aspects. It is interesting to gain insight into the viewpoint of the British centre-left, a vision that offers an alternative of further integration and staying in the EU, while the ruling conservatives and the radical opposition, fuelled by hostility towards the EU, are taking stock of the exit options.

Focusing on the welfare model and the aspects of economic, social, environmental and international policy, the book attempts to pinpoint the potential benefits a "new Europe" may hold for Member States, including the United Kingdom, as an alternative to national separation. In the author's opinion, the previously successful EU models and trends need to be revised; the UK and other eurosceptics should be offered a "pro-Europe programme".

By the 60th anniversary of *Churchill's* famous speech in Zurich the EU had been established, the Cold War was over, Germany was united once again, and many of EU Member States

Mária Bábosik is an expert at the Magyar Nemzeti Bank. E-mail: babosikm@mnb.hu.

had adopted the euro as the single currency. All these achievements, however, have created new problems and have drawn sharp criticism over the years, and by now the Eurozone is struggling to preserve the single currency. This is the starting point of *Giddens'* formula.

The title of the book itself is a reference to the author's assessment of the current situation: while Europe is not as mighty as before, it is burdened with turbulent conflicts again. It faces rising unemployment (especially among the youth), a debt crisis and a growing gap between the Northern and the Southern regions of the continent. Support for the EU deteriorated sharply in the wake of the crisis with anti-EU demonstrations and protests taking place in numerous Member States. The patriotism of a common European identity has failed to materialise. All of these developments have given rise to general scepticism.

Giddens asserts that the European Union suffers from a democratic deficit and a lack of effective leadership. Citizens have little contribution to the activities of the institutions. EU elections are mostly focused on national issues and are held with limited citizen participation. According to surveys, the legitimacy of the EU is very poor today.

In order to find a way out of the crisis, the EU needs far-reaching decisions with potentially severe consequences, and such decisions usually result in shocks across the European Union. Indeed, there are two parallel structures in the EU's decision-making practice: "EU1", a formalised system, and "EU2", a more informal decision-making structure of the selected few with actual power. The formal and informal operation of the EU represents two separate structures, with the latter being the truly influential. EU2 is the de-facto driver of Europe with the German Chancellor, the French Prime Minister and the heads of the European Central Bank and the International Monetary Fund at the helm. Only the European Commission and the European Council have some influence in the decisions. Lately, however, we simply refer to the "Troika", but *Giddens* believes, that the real power is vested in Madame *Merkel*.

Besides EU1 and EU2, a third model has emerged: the "Paper Europe" consisting of the future plans, various scenarios and similar projects compiled by various bodies of the EU. However, there are no real tools for their implementation, which undermines the credibility of the EU both inside and outside of the Union.

There are two simultaneous trends in progress in the EU: division and conflicts on the one side and integration on the other. During the crisis the European Union became a community of fate – unprecedented before – as political leaders and citizens began to recognise their interdependence. For the first time in history, the EU acquired a political space. This transformation, according to *Giddens*, is irreversible.

Do these changes imply a positive or a negative scenario for the EU? A positive outcome would be the institutionalisation of an EU-level leadership with a democratic mandate, and creating a spirit of solidarity towards the EU as a whole, not just towards the nations

comprising it. The formation of European patriotism and citizenship is a potential scenario that may help the EU break out of its current predicament.

Giddens asserts that the core of the EU is an independent Eurozone, the implementation of which, however, has become the root of crises and social conflicts. Indeed, the economic discipline and the relevant financial mechanisms that should have been in place from the start were introduced by the Member States only for fear of further problems. Innovations required were implemented by EU2 always with the approval of Germany. It appears that Germany has finally achieved by peaceful means what it had failed to accomplish with military force: control over Europe. This, however, is a disturbing thought for many.

The author calls for a new vision for Europe, one that should be created with the active involvement of citizens. This should start in the Eurozone, but all other Member States should be given a role. Comprehensive, structural reforms are needed not only in countries with poor performance, but EU-wide. The creation of a Banking Union is indispensable for the protection of the single currency, and certain economic policy decisions of the Eurozone countries should be assigned to joint organisations. This requires the acceptance of reciprocity and shared responsibility, and should this effort fail, all steps taken towards integration would be lost.

The system of economic relations has no way forward without further political integration, believes *Giddens*. The solution is to create a federal system in the foreseeable future. This outlook is rather provocative to euroscepticists. Anti-federalism is based on the fear of losing national sovereignty. The EU, however, should not take away further elements of national sovereignty; it should build on an entirely new level, one that the author terms “sovereignty+”. Through coordination EU Member States can achieve a higher degree of influence collectively than they would enjoy individually; thus each individual Member State may become net winner of this process. The EU may play a significant role in global politics, reaching far beyond the potentials of the individual Member States. This may grow into global influence, which may exploit its potential when traditional international institutions are hit by a crisis. For now, international politics are controlled by a handful of influential states, where the voice of a fragmented Europe can be hardly heard.

Giddens argues that the EU may be in the position to facilitate the collective economic development of its Member States. Before the financial crisis, this had its own dynamics, an economic unit – larger than the US – was created, which was able to sign trade agreements that its member states would not have been able to conclude individually. The author envisages an imminent economic reconstruction in Europe. If the Eurozone became an arena of economic growth once again, the attitude of citizens towards the Union would also change, states *Giddens*.

As regards international relations, the EU cannot escape from exercising power, which also includes military power. Of course, this should not be either the rule of Kant’s “good

power” or Hobbes’ “unrestricted power”. The international system today is not based on an equilibrium of powers, but on the overlapping system of diverse cooperation networks between states and groups of states, and this design inevitably entails tensions and divisions. The traditional European notion of peace through negotiations and regulations still holds true, believes the author. In practice, however, peace in Europe is either based on US interventions or ensured by NATO. In this regard, the EU should strive to become a “more equal” partner to the US, at least as far as the ongoing operations in the European Union and its environment are concerned.

Giddens notes that a federal system in the EU would not only be a new international political experiment, but could have an impact on the entire world. We were wrong to believe that the EU could become a forerunner of global governance without states. Exit from the EU and Eurozone membership cannot be a viable choice in a union as globally integrated as the EU. The EU must take a course of joint development.

As regards the future of the single currency, the collapse of the euro would give rise to severe economic problems throughout the EU and the rest of the world. The protection of the euro is key to the progress toward greater economic integration. This requires a thorough reform of the EU institutions, as EU2 is capable of managing crisis, but is not able to ensure permanent governance. If the euro prevails, besides the US and China, the EU may also play a role in re-shaping global economy. The Union is far more capable of handling crisis phenomena than its individual Member States. Change should be geared towards a more uniform and democratic system across the EU. A more integrated Union might become a global power, and the EU still has the opportunity to correct the mistakes of the past, concludes *Giddens*.

Banking Regulation Fine Tuned

Sára Farkas

Anat Admati – Martin Hellwig The Bankers' New Clothes

USA: Princeton University Press, 2013, p. 416

ISBN-13: 978-0691156842

Anat Admati and her co-author *Martin Hellwig* call attention to the fact that, since the onset of the financial crisis in 2008, there has been no system-level analysis or any active regulatory measures to make the banking system more secure and less vulnerable.

As the antecedents to the book, the authors were shocked to see in articles and in policy recommendations published related to the crisis that the contents presented to the public were filled with multitudes of improperly used terminology and misinterpreted fundamental principles; they furthermore point out that many opinion leaders and policy makers do not fully grasp the system of banking processes and their risks.

In recent decades, a non-transparent and extremely risky financial system has developed, in which today no one any longer dares to raise fundamental questions about the operation of the banking system, to clearly consider the risk factors and to point out that in the case of the banking system the “king of banking profession has no clothes”.

In their easy-to-understand writing, the authors intend to explain the current operation of the banking system while simultaneously outlining the route that led to the crisis in 2008. Over the long term, they aim to contribute to the renewal of the banking system by ensuring wider publicity.

As the introduction of their regulatory recommendations, they draw the key lessons from the financial crisis in 2007-2009; among the most important elements, they identified the covering up and understating of the problems of the financial system, especially with

Sára Farkas analyst at the Magyar Nemzeti Bank. E-mail: farkass@mnbb.hu.

regard to statements about the costs of the crisis. This was the case, because most of the time in the international dialogue the crisis was referred to as a mere liquidity crisis, and therefore the focus was primarily on the short-term debts and the banks' investments in money market funds. However, these calming, more comfortable answers only quieted the calls for reforms and delayed the transformation of the banking system in a way that would allow it to operate with lower risks and more securely, and thus to carry lower costs for both society and economic agents.

Starting with an analysis of the current situation, *Admati* and *Hellwig* formulate forward-looking recommendations, which at once serve the more effective operation of the current system, and at the same time – with a view to the future – would amend the regulations towards stability, thus increasing the reliability of both the banks as institutions and the banking system as a whole.

With their theoretical approach, in relation to the operation of banks, the authors call the attention to the more effective corporate governance and the higher level social responsibility with financial considerations, while they highlight regarding the regulation of the banking system the standardisation of global competition terms, the sectoral equilibrium of national economies, as well as the reestablishment of the relations between the state and the banks.

According to the book, the most important measure would be to increase the equity of the banks and in parallel with this to decrease their debts, i.e. to eliminate the source of their vulnerability. Furthermore, *Admati* and *Hellwig* urge defining the rules and the manner according to which the Supervisory Authority should intervene in the case of banks that became vulnerable and are in trouble.

In the interest of strengthening the financial system, as a first step the authors recommend identifying and derecognising insolvent banks even if for the present it incurs greater costs; they furthermore emphasise that the presence of so-called “zombie banks” in the economy represent far larger harm, risk and costs. Following this, they urge strengthening the banks, if necessary by prohibiting payouts as long as the bank does not reach the required capital needs.

In the authors' opinion, the ratios, reference points and time frames set in the international regulation relevant to the banking system – although there has been a positive turn in its logic recently – are still not appropriate. The experts emphasise that Basel III regulation – beyond the fact that it set the period available for the banks to increase their capital far too long until 2019 – made two additional mistakes.

The regulation sets too low capital requirements, and moreover, it does not establish the majority of these requirements in relation to the share of the bank's total assets, but sets only the ratio to the risk weighted assets at 7%. Within this, the international regulation sets the minimal capital requirements in relation to the total assets only at 3%. The authors

argue that, a capital requirement of 20-30% in relation to total assets would make the financial system substantially more secure and healthier. They recommend extending the higher capital requirements to every firm providing banking and payment service, and financial institution that has significant role in terms of the system operation, meaning that their payment difficulties, insolvency or bankruptcy would cause considerable swing or damage to the system.

Regarding the implementation the authors emphasise that we need to move on from the simple duplicity as to whether or not there is enough capital available, and must put larger emphasis on what the Supervisory Authority should do in the case when the capital of a bank has decreased. In this respect the authors, while agreeing with the logic of the Basel III regulation, set also special ratios.

The language of *Anat Admati's* and *Martin Hellwig's* book is easy to understand, however, its message also addresses a wider scope of professionals. One of their key messages is that everyone must assume financial responsibility at their respective level, and for this there is a special set of tools. No matter whether one is a private actor, an entrepreneur, a banking expert or a political decision-maker, as an interesting guide book the writing leads the reader around the special world of banking system, fostering orientation in financial affairs and the global renewal of the banking system.

Following publication of the book the "*Banker's New Clothes*" in 2013 – as a recognition of the global attention triggered by her work – Time magazine named Anat Admati one of the world's 100 Most Influential People in 2014.

East Asian Development: Foundations and Strategies

Dániel Felcser

Dwight H. Perkins East Asian Development: Foundations and Strategies

Harvard University Press, 2013, p. 222

ISBN-13: 978-0674725300

In many East-Asian countries, there has been spectacular progress during the past decades with an influence on all layers of local societies, resulting in an increase of the prosperity of one quarter of the world's population. By means of economic historical and comparative approach, *Dwight H. Perkins*, professor of political economy at the Harvard University, seeks an answer to the questions of how certain East-Asian countries were able to grow at a rarely seen pace, why some managed to perform better than others, and why growth in the richest states has finally slowed down.

The author emphasises that, in order to understand the economic development, one must become familiar with the historical foundations. One common feature of the examined countries is that they started to catch up from a very low income per capita level. In addition to this, they were also more homogeneous in cultural and ethnic terms, than for instance the former African colonies of European nations. Apart from few exceptions, there were no conflicts regarding the national boundaries, and a common history, culture and language of many centuries were characteristic of the peoples of the region.

However, major differences between the North-Eastern and South-Eastern region can also be identified. The South-East-Asian countries used to be European colonies, while the North-East-Asian countries maintained their independence – except for some shorter periods – and Confucian values were strong in that region. This cultural difference manifested itself also in the fact that in the Northern countries larger emphasis was put

Dániel Felcser is an economist at the Magyar Nemzeti Bank. E-mail: felcserd@mnbb.hu.

on education, and the ratio of literacy was high, while the South-Eastern region significantly lagged behind in respect of both the degree and quality of education. Economic research has concluded that in addition to the macroeconomic stability and strong institutions other conditions – such as education – are also required for gradual convergence. In addition to the foregoing, the Northern countries were densely populated and had a temperate climate, while the Southern, less densely populated areas were dominated by tropical climate. The initial level of development of the economies again showed the advantage of the Northern states in terms of commerce, industry and agriculture. Overall, compared to their South-Eastern peers, the North-Eastern states had a more advantageous situation also in historical, educational and business respects.

However, the author explains that even within the East-Asian region significant differences were visible regarding which economic model the individual countries followed. Although Japan was the first to experience industrial development, none of the countries simply copied the Japanese solutions. As a first step, Taiwan and South Korea aimed at boosting the export of industrial products within a wide scope of companies with significant state subsidies. In the next stage, the subsidisation of heavy industry came forth with selected large companies and industrial branches receiving targeted state aid. Finally, the third stage was characterised by the liberalisation of foreign trade and investment. Within the scope of this, market powers gained a larger role, while the government took on a greater role in the build-up of human capital necessary for the further development, for the industrial branches representing high technological level, and subsidized industrial branches of advanced technology by founding research centres, by improving the education and by enticing researchers back home. Therefore, the government played an active role in the industrialisation, however this role has changed over time. By contrast, Hong Kong and Singapore based their development more on market forces, and the role of the government was limited to creating an environment that would support the economy.

In analysing the growth performance, South-East Asia shows a more mixed picture. In the countries of the region, successful economic policy was based on quickly boosting internationally competitive labour-intensive branches. The state subsidisation of heavy industry has led to failure due to mainly the lack of required foundations (for instance skilled workforce). In contrast to North-Eastern Asia, the unfolding of growth was also occasionally hindered by political instability. As compared to North-Eastern Asia, the performance of the South-Eastern region was moderate, but compared to other developing countries in most part of the period growth was still well above the average due to the structural changes that were going on in the economy and society.

As the author highlights, in China due to the soviet-type planned economy even the initial situation differed from that of the other Eastern-Asian countries. Economic reforms launched at the end of the 1970s made their influence felt in many areas; the foreign direct investments (FDI) that started to rise at the beginning of the 1990s ensured access to foreign markets, and the foreign companies brought along with themselves to China

modern production methods and equipment. However, the author notes that at the same time China's results were not the outcomes of a thoughtful economic strategy: the economic model was shaped by the economic policy responses given in succession to the arising problems. Besides the abandonment from the planned economy, a significant role was given to the economic-political environment, and later on to the economic policy addressing the strengthening of the economy and supporting the foreign direct investments.

After having analysed the historical roots of economic development, the author finally mentions the tendencies that can be expected in the future. Based on the experiences so far, it seems that as soon as a high income level is reached, the growth of each economy slows down over time. There may be both fundamental reasons as well as factors that are more difficult to measure behind this. Due to China's weight, it is an important issue when it will enter a slowing stage. Looking forward, the source of productivity growth may be research and development, which on the other hand is a slow and uncertain process, and therefore the previous productivity pace appears difficult to maintain. From the demand side, the shrinking weight of investment may be offset by the gradual increase of consumption. However, deceleration in the double-digit growth will not mark the end of the convergence process.

Inequalities reloaded

Júlia Gutpintér

Thomas Piketty

Capital in the Twenty-First Century

(transl. by Arthur Goldhammer)

London: Belknap Press of Harvard University Press, 2014, p. 696

ISBN-13: 978–0674430006

Initially published in 2013 under the title “*Le Capital au XXI^e siècle*”, the English language edition of *Thomas Piketty’s* book garnered enormous attention in the international economist community and public discourse, and gained remarkable popularity despite its genre. Although the book also elicited strong criticism, it has the undisputable merit of setting off a dialogue on the topic of inequalities, and laying the groundwork for the debate on clear-cut, scientific terms. Indeed, the distribution of wealth (and income) has become an increasingly topical issue, although we still have a limited understanding of its long-term dynamics. “*Capital in the Twenty-First Century*” is based on a decade-long analysis of a uniquely comprehensive, exhaustive data set collected from twenty countries over the span of nearly three centuries. The main focus of the research is the developed world, shedding light, in particular, on developments in Western Europe and the USA. However, the work is not restricted to a complex mathematical and statistical analysis. *Piketty* strongly believes that the inclusion of a broad range of social sciences is indispensable for a more thorough understanding of the processes at hand. With that in mind, his analysis is strongly interwoven with illustrative examples and lessons drawn from history and its reflection, literature, which makes his book, within the boundaries of its genre, an easy read.

The central argument of the book is that the emergence of wealth inequalities can be mainly attributed to differences between the return on capital and the growth rate of the economy. With all else being equal, when the average rate of return on capital is significantly higher than the rate of economic growth over the long term, the result is an inevitable increase in the unequal distribution of wealth, as inherited wealth accumulates faster than output and incomes. This process in itself generates an endless inegalitarian

Júlia Gutpintér is an analyst at the Magyar Nemzeti Bank. E-mail: gutpinterj@mnk.hu.

spiral as it implies a continuously increasing concentration of capital that yields additional income and return, the reinvestment of which will only boost the accumulated capital further. *Piketty* finds that today's economy is so diversified that capital can continue to accumulate practically ad infinitum without a radical decline in return over the long term.

The relationship between the two variables has been shaped by opposing forces which, depending on their number and impact, can shift processes toward convergence or divergence. From the aspect of these processes, the period covered by the research can be basically divided into three distinct phases. Dominated by a lack of, or a very low inflation and a low rate of growth, the trend throughout the period from the end of the 18th century until World War I pointed to divergence. This period was characterised by extremely high and persistently rising levels of inequality, and this pattern was not disrupted until 1914.

The events in the nearly 70 years after World War I, including the physical destruction of the World Wars, economic crises and post-war (economic) policy measures, had a profound impact on capital, both in terms of volume and rate of return. *Piketty* refers to these factors as shocks. The adoption of new taxes on excessive wealth and incomes reduced inequalities in and of itself, but it also allowed for an increased involvement of the state and the establishment of the social state, the instruments of which – such as equal access to education – also facilitate greater equality in societies. The most important force pushing toward convergence, however, was growth itself, which accelerated to unprecedented rates while the return on capital, owing to the factors mentioned above, fell to depths never seen before. This resulted in a period theretofore unprecedented in history: the growth rate of the economy exceeded the return on capital to such a degree that it led to a significant compression of inequalities. As a result of one of the most profound social transformations seen in the 20th century, the “patrimonial middle class” emerged. This process sparked unrealistic optimism and the false illusion that the basic logic of capitalism had become null and void, and that the resulting structural transformation would ensure that the inequalities in income and wealth could never revert to their former trajectory. This, however, is far from the truth. The correlation between growth and the return on capital remains valid, and *Piketty* maintains that the reduction of inequalities observed had strictly political and institutional, rather than structural, reasons.

From the 1970s and 1980s, the persistently falling trends reversed course, and factors pointing to divergence intensified once again. The convergence of the defeated countries after the World Wars came to an end, and as the demographic transition in developed economies advanced further, growth started to decelerate. Economies responded by a radical change in the economic policy environment, first and foremost, in Anglo-Saxon countries. The spread of neoliberal economic policies, in particular, the drastic reduction of taxes imposed on the highest incomes, was a key contributor to the renewed increase in inequalities by widening the gap between the highest and the lowest incomes. The decline in taxes on the highest incomes observed between 1980 and today strongly correlates

with the growing share of GDP of the top decile and centile of the income hierarchy during the same period.

One of *Piketty's* most noteworthy results is the exploration of the reasons behind the sharp, far higher-than-average rise in incomes of “supermanagers”. According to the highly popular explanation, while the outsized compensation of super managers might be attributed to their higher-than-average skills and productivity, it is far more likely – and is backed by statistical evidences – that the growth occurred nearly irrespective of this. The author finds that the drastic reduction of income taxes transformed managerial wage-setting practices nearly completely. The precise and objective assessment of a top manager’s performance is nearly impossible in an economy that has become increasingly “weightless” and “elusive”; therefore, the consideration of subjective criteria in compensation decisions is inevitable. Motivated by falling tax rates, top managers took advantage of their persuasion skills to exert an increasingly strong influence on the predominantly subjective decisions regarding their own pay, and as a result, their earnings and benefits have risen to unprecedented heights.

Forces of divergence have intensified since the 1970s. Rising capital stocks, the deceleration of economic and demographic growth, the widening gap between the highest and lowest incomes, as well as the prevailing economic policy, and the expansion of globalisation and financial capitalism all point to the revival of inequalities. The author finds the emergence of an order similar to that of the 19th century is increasingly likely, where the role of inherited wealth will become increasingly important, wealth becomes more and more concentrated, income inequalities rise sharply and the middle class continues to shrink. Inequalities in income and wealth not only harmful from social and economic aspects, but also undermine the meritocratic values on which democracy is based. Such unsustainable inequalities must not be ignored especially in view of the fact that growth, the natural and the most powerful process that reduces inequalities, is expected to be far slower than any time seen in the 20th century.

Piketty's main recommendation – which attracted plenty of criticism and is considered utopian by himself as well – is the adoption of a progressive annual tax on global wealth. Such a measure would decelerate the inegalitarian spiral, efficiently regulate the global economy, and ensure a fair distribution of wealth in societies, while it would also secure the openness of the economy and the freedom of the market, protect the engine of capital accumulation, and demand, but also ensure a high level of international financial transparency.

The Crisis of the Institutions of Our Time

Zoltán Horváth

Niall Ferguson The Great Degeneration – How Institutions Decay and Economies Die

London: Penguin Group, 2012, p. 192

ISBN: 978-1846147326

In the most recent book by *Niall Ferguson* – the best-known British economic historian today – the author attempts to shed light on the causes of the decay of Western civilisation. The signs of the decay of the West surround us: slowing growth, rising debts, ageing population, increasingly anti-social behaviour. From a historical perspective, the Western countries have now accumulated unprecedented high levels of debts, while the number of active workers decreases. Since 1980, social inequality has been increasing, bureaucracy has been constantly growing and social mobility has been falling. The United States used to be the land of opportunities; today it is controlled by a new aristocracy, a so-called “cognitive elite” (a leading layer with higher education). According to *Ferguson*, the West has now become the “motionless state” explained by *Adam Smith* in *The Wealth of Nations*.

But what are the causes? *Ferguson* argues the answer is that the system of institutions of the West – which ensured its past successes – has come to a crisis. The explanations which try to explain the situation merely by “deleveraging”, globalisation, the IT boom, and financial or political changes are unsatisfactory. In the author’s understanding, after 1500 the success of Western society rested upon four pillars: representative government, free market, the rule of law and civil society. These are the institutions that have deteriorated by today. In accordance with this, the real causes are the democratic deficit, the fragility of market regulation, the erosion of the rule of law and the “uncivil” society.

Zoltán Horváth is an analyst at the Magyar Nemzeti Bank. E-mail: horvathzol@mnbb.hu.

The individual chapters of the book analyse these four causes. The first analyses the crisis of democracy, i.e. the crisis of representative government: following the glorious revolution, the English elite has been transformed and opportunities for betterment opened up, meaning that the society's mobility increased as never before, and the power of crown became subordinated to the parliament. All these paved the way for the development of a democratic institutional system and later the development of British world power. This institutional system was taken over by the West, and today we are experiencing the crisis of this. In addition to a number of mistakes, its greatest sin is that by way of continuously high national debt it consumes in advance from future generations, thus violating the partnership between the generations.

The other strong pillar of Western society, the free market, is also in crisis. In *Ferguson's* opinion, a deceitful debate is going on as to whether more strict regulation or deregulation is needed. Following the catastrophe in 2007–2008 the number of condemnatory judgements was surprisingly low. In fact, the quality of regulation is inadequate: it has no retarding force and does not sanction effectively. The official role of central banks should likewise be strengthened both in the monetary and in the supervisory system.

The crisis of the third pillar, the rule of law, is perhaps the most severe. At the peak of its successes, the judicial body of Victorian England acting on general affairs had only 15 members. Likewise in this era, the foundation of companies, the development of the economy was unconditionally supported – as the society's spearheads – by the legal institutional system and the lawyers. By contrast, today the state exceeds its scope by pleading national security considerations, while the complexity of laws and the increasing costs of the legal system undermine the traditions of the rule of law, making it impossible to enforce the interests of jurisdiction and market economy. *Ferguson* claims that the main reason for the calcification of the legal and political system is that it cannot resist the “rent-seeking” activities of organised interest groups.

The fourth pillar is the civil society, which also shows signs of decay. *Ferguson* reports alarming facts about the decline of the civil sphere. In his view, the reason for this is mainly the increasingly strengthening state which has forced back the civil sphere by promising security. However, real citizenship is based on participation, self-governance, the education of our children, paying attention to the weakest in society, fighting against sin and keeping our streets clean. He contravenes the opinion according to which this task could be taken over by the nowadays popular social community networks on the Internet. According to the author, the reforms must come from outside of the institutions and emerge from the organisations of civil society, i.e. from us, the citizens.

In *Ferguson's* view, the future will be easier for those who are not indebted or who have large raw material reserves. But a number of factors are unpredictable. We don't know which raw material will rise in value or how politics will influence our lives. We cannot predict natural catastrophes, the extent of nuclear threat nor the wars that break out

unexpectedly. He is also pessimistic in respect of whether a technological revolution will promote civilisation. *Ferguson* claims: more and faster information in itself is not good, and nothing guarantees that it will serve good purposes.

Adam Smith had the opinion that the states would reach the phase of motionlessness when the “rent-seeker” elite takes the control over the economic and political processes. *Ferguson* claims that this already has been the situation at the most important parts of the Western world. Today’s generation is spending at the costs of the next and not yet born generations, and the crisis of national debt is nothing else but a symptom, the symptom of the betrayal of future generations. Complicated, but ineffective regulation only increases the fragility of the system. The rule of law or the constitutional state distorted to the regime of lawyers. The lawyers, who should play an initiating role in the renewal of the law and order and in the maintenance of a dynamic society have become the parasites of motionlessness. And the once flourishing civil society is decaying, it shrivels up in the “no man’s land” between corporate interests and overgrown government. *Niall Ferguson* calls these factors collectively as the Great Degeneration.

The great challenge of the time before us is whether or not we can repair our institutions and reverse the Great Degeneration and return to the fundamental principles of truly free society. In his opinion, the civil sphere and the citizens’ initiative could be the depository of this renewal.

Foreign currency loan dependency and consolidation

Ernő Huszti

Csaba Lentner (Ed.)

A devizahitelezés nagy kézikönyve

Budapest: Nemzeti Közzolgálati és Tankönyvkiadó, 2015, p. 616

ISBN: 978-615-5344-62-6

The authors present and address in depth one of the most debated and sensitive topics of our time, which affects hundreds of thousands of bank customers, both retail and municipal: foreign currency lending and the increasing repayment difficulties associated with such loans. Unsatisfactory supervisory regulation and oversight, financial institutions' economically unfounded credit expansion and debtors' reckless borrowing all played a part in this, albeit to somewhat different degrees. Addressing the resulting adverse consequences has become an important state (fiscal) and monetary task. The authors of the monograph present their views on the resolution of this task and formulate recommendations factoring in public finance, legal and European Union considerations. The editor posits that the Hungarian population's foreign currency loan problem cannot be interpreted without taking into consideration the broader international and historic context (*Lentner, 2015*).

The volume is presented by topic, rather than by chapter, moving in the order of the developments, starting from the historical antecedents through to the measures to find a solution.

Government and household indebtedness was already a common phenomenon in post-Trianon Hungary, as the newly established MNB was compelled to adapt to the elevated interest rate on the League of Nations loans, making Hungarian credit demand attractive

Ernő Huszti, honorary professor, Doctor of the Hungarian Academy of Sciences. E-mail: husztierno@t-online.hu.

for foreign capital. Profitability conditions, however, did not allow for realistic returns, and thus debtors used short-term loans to finance long-term objectives, which rendered realistic returns unfeasible to begin with. The credit market collapsed during the 1929–33 crisis, and the MNB introduced foreign exchange management, announced a moratorium on transfers and began gradually cutting the key policy rate to 4.5 per cent (*Schlett, 2015*).

The Governor of the MNB, *György Matolcsy*, argues that the current spread of foreign currency lending created severe economic and social woes by the end of the 2000s, woes that can only be eradicated gradually and at a high cost. The spread of this practice was fostered, alongside reasons of credit demand and supply, not only by economic policy decisions and mistakes, but also by lacunae in financial literacy and lack of knowledge about exchange rate risks. As foreign currency indebtedness affected almost all participants in the economy, it grew into a national issue. Identifying the negative consequences is a serious challenge for the state. The necessary series of measures began with the prohibition of registering mortgages, putting an end to foreign currency lending. Subsequently, the exchange rate cap allowed debtors to repay their foreign currency loans at preferential exchange rates for a period of five years and to benefit from ongoing support in the interest of phasing out foreign currency lending (*Matolcsy, 2015*).

The far lower interest rates on foreign currency loans compared to forint loans at the time undoubtedly made them attractive. In the early 2000s, the interest rate on the Swiss franc barely changed and the population did not expect any significant exchange rate volatility. However, the 2008 financial crisis triggered drastic changes and the forint quickly depreciated by almost 40 per cent against the Swiss franc. This came as a surprise compared to the abundant supply of funding and liquidity that had prevailed before the crisis.

Meanwhile, the expansionary fiscal policy, the lack of necessary capital market knowledge, the uncertainties in the regulatory environment and the indecisiveness of Hungarian economic policy all rendered Hungary more vulnerable.

Economic policy began to curb the further spread of foreign currency lending in 2010. The first measures to be implemented were aimed at reducing government debt and scaling back and discontinuing foreign currency lending. These included early final repayment at preferential exchange rates, a moratorium on evictions and discounted home rental schemes.

Hungary's external balance, current account and trade balance improved and banks' external debt volume shrank in the wake of these measures. This decreased Hungary's external vulnerability, bolstered its foreign exchange reserves and boosted central bank profits, ensuring the sustainability of the external balance over the longer run (*Erhart et al., 2015*).

Taking a slightly different approach, the difficulties arising from foreign currency household lending were triggered by a combination of an excessively expansive fiscal policy and a quite restrictive monetary policy. Members of the Financial Stability Committee set up in 2004 (the MNB, the Ministry of Finance, the Banking Supervisory Authority) had diverging assessments of the situation, preventing consensus-based decisions at a time when the appointment of a responsible macroprudential authority would have been much needed.

As Hungarian banks' strategy was based on rapid volume growth, they often turned a blind eye to considerations of risk. Exchange rate risk, however, became an increasing concern, but this risk was passed on to customers. The fact that interest conditions were not clearly defined paved the way for unethical interest rate hikes. The risk management methods applied were thus often unsuitable for measuring the actual extent of risks; confidence in the system of financial intermediation was shaken and became a broad social issue (*Bethlendi et al., 2015*).

Foreign currency borrowing was and continues to be a source of problems, not only for households, but for local governments as well, although several European countries prohibit the latter from taking out working capital loans, even if certain investments are essential. In Hungary, this restriction is opposed from several aspects, as it fails to take into account the diverging nature of operating and development objectives, the size of local governments and overplanned appropriations.

At the same time, local governments are often bound to loans without having duly taken into consideration the burdens incurred by them or the funds for repayment. The National Assembly passed new legislation on local governments in 2011, which reorganised local government functions and introduced a function-based funding system. As a result, not only did local governments' outstanding debt shrink, the new legislation significantly approached European practice (*Gregóczy, 2015*).

The impact of foreign currency mortgage lending (housing finance) on financial stability differs across countries of varying degrees of development, although its nature and share is not a function of a country's level of development, but much rather of its financial stability. The main participation criteria are: (i) the homes must be affordable; (ii) they must have the direct and indirect institutions necessary for construction; (iii) adequate supervisory and regulatory structure must be in place; (iv) own homes should qualify for tax allowances; and (v) in other places, the construction of homes for rent are preferred (for instance the Federal Republic of Germany).

The crisis led to a deterioration in loan payment discipline and eroded trust in the financial sector even in advanced economies. Reckless lending and borrowing triggered serious consequences in the developed world as well.

The Financial Stability Council was called into existence by the new central bank act in 2013 to monitor the stability of the system of financial intermediation and markets, any

emerging risk factors, the pertaining recommendations of EU authorities, developments in creditworthiness criteria, etc.

Stemming from the foregoing, earlier housing finance decisions must be reviewed, including the application of more affordable lease conditions for low income households, etc. A rule adjusting borrowing and repayment to legal income effective as of 1 January 2015 serves this purpose. The past decade has seen a marked shift between households' funds (cash + deposits) and their outstanding borrowing, with the latter swelling in size. Certain years even saw households' outstanding borrowing outstrip their funds (cash + deposits). The situation not only negatively impacted foreign currency indebtedness, but also households' liquidity position. Although the government tried to alleviate the situation with the fixed exchange rate, various emergency measures, the National Asset Management Agency, early final repayment and an agreement with the Banking Association, and to reduce the ratio of foreign currency loans, the banking system, the Banking Supervisory Authority and the central bank should have identified the problems earlier (*Novoszáth, 2015*).

Foreign currency lending spread not only in Hungary, but in other Central and Eastern European countries as well, although the issues were addressed differently from one country to the next. While the difference between low interest rates on euro-denominated loans and the national currency was substantial in Poland, Hungary and Romania, the stock of foreign currency loans shrank substantially in Slovakia and Slovenia once they had introduced the euro, with this development mainly driven by corporations. In the Czech Republic, the central bank limited foreign currency lending to corporations only.

Finally, the EU also saw a need to reform the banking sector by establishing the European Systemic Risk Board (ESRB), the European System of Financial Supervisors and the Banking Union, elevating risk management to the international scale alongside the national scale (*Buda, 2015*).

The textbook shares broad-ranging knowledge not limited to educational use, but also of relevance to professionals and people interested in the subject.

References

BETHLENDI, A. – FÁYKISS, P. – GYURA, G. – SZOMBATI, A. (2015): A Magyar Állam mikroprudenciális és makroprudenciális szabályozásának és ellenőrzésének jellemzői a devizahitelezés területén. A folyamat hiányosságainak bemutatása. Fogyasztóvédelmi anomáliák. In: Lentner Csaba (szerk.): *A Devizahitelezés nagy kézikönyve*, Nemzeti Közszerkesztési Tankönyvkiadó, Budapest: pp. 87–120.

BUDA, A. (2015): *A devizában dominált hitelek megjelenése az újonnan csatlakozott közép- és kelet-európai tagállamokban*. In: Lentner Csaba (szerk.): *A Devizahitelezés nagy kézikönyve*, Nemzeti Közszerológálati Tankönyvkiadó, Budapest: pp. 511–528.

ERHART, SZ. – KÉKESI, ZS. – KOROKNAI, P. – KÓCZIÁN, B. – MATOLCSY, GY. – PALOTAI, D. – SISAK, B. (2015): *A devizahitelezés makrogazdasági hatása és a gazdaságpolitika válasza*. In: Lentner Csaba (szerk.): *A Devizahitelezés nagy kézikönyve*, Nemzeti Közszerológálati Tankönyvkiadó, Budapest: pp. 121–158.

GREGÓCZKI, E. (2015): *A hitelezés, a devizahitelezés elterjedésének, majd korlátozásának jogi környezete (az önkormányzatoknál)*. In: Lentner Csaba (szerk.): *A Devizahitelezés nagy kézikönyve*, Nemzeti Közszerológálati Tankönyvkiadó, Budapest: pp. 275–298.

LENTNER, CS. (2015): *Utószó A devizahitelezés nagy kézikönyve c. monográfiához*. In: Lentner Csaba (szerk.): *A Devizahitelezés nagy kézikönyve*, Nemzeti Közszerológálati Tankönyvkiadó, Budapest: pp. 601–604.

MATOLCSY, GY. (2015): *MNB elnöki előszó a Devizahitelezés Nagy Kézikönyvéhez*. In: Lentner Csaba (szerk.): *A Devizahitelezés nagy kézikönyve*, Nemzeti Közszerológálati Tankönyvkiadó, Budapest: pp. 13–16.

NOVOSZÁTH, P. (2015): *A lakásépítés finanszírozása és a pénzügyi stabilitás – vissza a kezdetekhez?* In: Lentner Csaba (szerk.): *A Devizahitelezés nagy kézikönyve*, Nemzeti Közszerológálati Tankönyvkiadó, Budapest: pp. 223–274.

SCHLETT, A. (2015): *„A devizahitelezés történeti előképe”. Magyarország külső eladósodása az 1920-as években*. In: Lentner Csaba (szerk.): *A Devizahitelezés nagy kézikönyve*, Nemzeti Közszerológálati Tankönyvkiadó, Budapest: pp. 63–86.

When the music is over

Dániel Módos

Alan S. Blinder

After the music stopped: The Financial Crisis, the Response and the Work Ahead

New York: Penguin Press HC, 2013, p. 496

ISBN: 978-1594205309

In his book, *Alan S. Blinder* discusses the financial and economic crisis which erupted in 2007, describing the antecedents, lessons and consequences of the meltdown. The author reveals the journey that led to this momentous series of events by seeking an answer to three main questions: *(i)* How did we get ourselves into such a predicament? What mistakes were made, who/what was responsible for triggering the crisis and how can we avoid repeating the same mistakes in future? *(ii)* What have we done to remedy the problems and mitigate the magnitude of the damage? Were the economic policy responses adequate, coherent, meticulously planned and sufficiently prepared? Did policy facilitate or impede implementation of the required economic policy measures? *(iii)* Did we draw the correct conclusions from the 2007–2009 crisis? Did the prudential rules adopted in 2010 steer the operation of the financial system in the right direction? What are the potential future threats and do we have adequate defence mechanisms in place to handle them?

In answering the first question, the author presents the road that led to the crisis. There is no simple answer to the question about how we got ourselves into this predicament. It was due to the unfortunate constellation of several factors, the most conspicuous of which was the bursting of the housing bubble in an extremely low interest rate environment. This, however, should not necessarily have led to such an enormous problem in its own right.

In his book, the author identifies seven “culprits”. Number one is the housing and bond bubble, which reinforced the continuous growth of each another. While prices in the US real estate market increased by 0.1 per cent on average between 1890 and 1997, they rose by a stunning total of 85 per cent between 1997 and 2006. Against this background,

Dániel Módos is junior analyst at the Magyar Nemzeti Bank. E-mail: modosd@mnb.hu.

a home seemed like a terrific investment. The collateral value of real property increased, encouraging borrowers to take out more loans and creditors to extend more credit. The sharp upward drift in real property prices led to the accumulation of leverage. This trend was further fuelled by the record low interest rate environment observed in the US after 2000.

The second culprit was the excessive leverage accumulating in the system. In pre-crisis years, the mortgage products offered to households allowed clients to purchase homes with a downpayment of as little as 5 per cent, which translates into twenty-fold leverage. This means that in case of a 5 per cent depreciation of the property, the client will have lost the entire amount of the downpayment. In practice, however, even the downpayment was often paid from loans.

Household lending was characterised by banks' irresponsible lending policy. The market of unregulated securities and derivatives, haphazard credit ratings, conflicts of interests with credit rating agencies and excessively high compensation packages led to unrealistically high profit expectations and hence, irresponsible risk-taking by financial institutions.

Blinder proceeds to present the course of the crisis including, in particular, the reactions of the government and the Fed, both of which are sharply criticised by the author. The USD 3,000 billion balance sheet of the Fed poses excessive risks, as does the practice of bailing out poorly functioning and thus distressed financial institutions. The current situation is absurd: those responsible (bankers) continue to lead a lavish lifestyle, while the victims hit most by the crisis (households) have suffered substantial and thus far irreparable damages.

Blinder also calls attention to several problems to be addressed in future. One of the most pressing issues is how the Fed will manage to phase out its unconventional monetary instruments (quantitative easing, forward guidance, key policy rate held near zero) without triggering unwanted financial turbulence. The other important question is how to reduce the US budget deficit and public debt without impeding the post-crisis recovery.

The author finds there are ten main conclusions to be drawn for the crisis that are worth considering over the long run. (i) We should always remember that people forget: in good times they tend to believe that the good times will last forever, which leads to the inevitable development of bubbles and unforeseen risks. (ii) Self-regulation is unreliable; markets and people need regulation. The notion of "market discipline" is an oxymoron. (iii) The interests of shareholders should be protected at all times; boards of directors must do a better job in protecting shareholders' interests. Accordingly, the leaders of corporations must be made accountable. (iv) The importance of risk management should not be underestimated – decision-makers should improve their risk management departments and heed their advice. (v) Leverage should be cut back. The activities of financial engineers in pursuit of impossibly high profits should be restricted. (vi) Simplicity is an important aspect – complex financial instruments conceal unforeseeable risks. (vii) Derivative products should be

standardised and traded at regulated stock exchanges. Efficiently managed and regulated derivative products can be useful tools in risk management, but they can become financial weapons of mass destruction when misused. (viii) Everything should be kept in the balance sheet – off-balance sheet items reduce transparency. (ix) Compensation schemes need to be reformed. Executives must examine the extent to which their corporate remuneration system encourages risk-taking and penalises the accumulation of losses. (x) More attention should be paid to consumers – exposing clients to non-transparent and misleading lending practices is a threat to the health of the national economy.

As useful as they may seem, it is yet to be seen how these recommendations can be put into practice. Some claim that it is crisis management itself that lays the groundwork for the next crisis. The scope of regulations fails to provide a comprehensive cover, allowing for loopholes which facilitate the accumulation of heretofore unknown or long-forgotten risks. The author notes that crises, along with excessive leverage and lax risk management practices, tend to return, but regulatory expectations are expected to ease. Institutional changes are needed primarily to mitigate the damages from a future crisis. As long as we keep the conclusions of the current crisis in mind and make decisions based on the lessons drawn, the risks of a devastating future crisis may be reduced.

The human decision-making processes

Róbert Rékási

C. Thomas Howard Behavioral Portfolio Management

UK: Harriman House Ltd., 2014, p. 324

ISBN-13: 978-0857193575

Similarly to other fields of study, the theoretical history of capital markets and portfolio management can be viewed as the history of a succession of paradigms; the past 80 years have been shaped by two consecutive schools of thought, with a third one currently emerging. *Graham and Dodd's* 1934 book *Security Analysis* was seminal in laying the foundations of fundamental analysis, the first systematic approach to capital market analysis and investment. *Graham and Dodd* argued that it was possible to build superior stock portfolios using careful fundamental analysis of corporations and by identifying the price distortions caused by emotionally-driven investors.

The ascendancy of modern portfolio theory in the 1970s came to replace this approach, which agreed that there were many emotional investors, but argued that there were enough rational investors to arbitrage away pricing mistakes (by achieving risk-free profit). If the market is ruled by rational expectations, then market prices are efficient, in other words, they reflect all available public information. Fundamental analysis is pointless on efficient markets. In the context of this framework, active portfolio management does not yield higher returns in the long run, and investors are advised to follow a passive, index-tracking strategy, which is cheaper to implement.

A study of human decision-making processes did not corroborate the rational expectation hypothesis and found that emotions and heuristics dominate decision-making. Behavioural portfolio management is an approach that bases its initial assumptions on this observation. Two investor groups can be identified on this basis: the emotional crowd and behavioural data investors, the latter essentially being rationally thinking actors. The emotional

Róbert Rékási, CFA, is a head of department at the Magyar Nemzeti Bank. E-mail: rekasir@mnbb.hu.

crowd consists of investors basing their decisions on emotions and intuition, that is, on *Kahneman's* System 1: automatic and quick short-term thinking with no effort or control, social validation and acceptance, and loss aversion hardwired into us by human evolution. By contrast, behavioural data investors conduct thorough and comprehensive analyses of the available data prior to making decisions, representing the System 2 mode of thought consisting of conscious thinking, where effort and complexity prevail.

The first principle of behavioural portfolio management is that the emotional crowd dominates market price developments, while fundamentals only play a more minor role. The basic difference between modern portfolio theory and behavioural portfolio management lies in their assessment of the efficiency of arbitrage. If arbitrage is not efficient, price distortions may be lasting in nature, in which case active portfolio management can yield superior quality and more profitable portfolios compared to simple index tracking.

The second principle of behavioural portfolio management is that behavioural data investors are able to achieve higher returns. This principle seems to stem logically from the first basic principle, but assuming positions that run counter to the emotional crowd is challenging for investors due to their own emotional barriers. Public opinion holds that an average equity fund is unable to achieve excess return over the long run; research, however, shows that actively managed mutual funds are successful in identifying highly performing individual shares: the most overweight stocks yielded substantial excess returns.

Behavioural portfolio management's third principle posits that investment risk is nothing other than the chance of financial underperformance. Modern portfolio theory uses volatility, that is, the deviation of investment returns to analyse investment risk. This indicator, however, is much more an instrument for quantifying emotions as opposed to investment risk. Instead, investment risk should be regarded as the risk of financial underperformance. The chance of underperformance depends on the investment's time horizon: volatility is a real risk for short-term investments, while short-term price fluctuations are less important for long-term investments.

The author reviews the cult of emotion: the myriad of emotional barriers within us, such as myopic loss aversion, and the fact that modern portfolio theory reinforces these emotions and consists of emotional catering. *Howard* also argues that emotionally driven decision-making is the main obstacle to successful investment and financial decision-making. A common example of this is the volatility trap, in which investors sell their investments when equity prices fall and volatility increases, driven by fear of loss and thus losing out on the profit harvested on subsequently rising prices once the equity market "heals itself". The book includes a practical twelve-step programme to overcome emotional brakes and mitigate emotional costs, in other words, to abandon the "cult of emotion".

The author argues that behavioural data investors, devoid of emotional barriers, are able to invest more successfully by consistently implementing a narrowly defined strategy and by taking high-conviction positions instead of using Markowitz's mean-variance optimisation proposed by modern portfolio theory. The multileveled system of narrowly defined strategies is based on an estimation of unobservable behavioural factors using proxy variables. Taking high-conviction positions refers to implementing the portfolio manager's best ideas as opposed to over-diversification, i.e. emotional catering to customers. Consistent implementation means complying with a dynamic and intelligent classification system instead of the using the current static industry standard style box.

Howard is hopeful that the 2013 Nobel Prize split between *Eugene Fama*, a supporter of the efficient market hypothesis, and *Robert Schiller*, an opponent of the hypothesis (and *Lars Peter Hansen*) will spark debate leading to a paradigm shift that will see rationality replace emotions.

For-profit education in developing countries

Tamás Rózsás

James Tooley The Beautiful Tree

A Personal Journey Into How the World's Poorest People are Educating Themselves

USA: Cato Institute, 2013, p. 302

ISBN: 978-1-939709-12-7 (paperback)

In his book, *James Tooley*, a professor of education policy with extensive on-location experience in numerous developing countries who has been researching the topic for over a quarter of a century, demonstrates the value attributed to learning by the poor through the example of the poorest people of Africa, India and China, and how resourceful the market is in providing the available opportunities in places plagued by poor local public administration and failing support from the developed world and international aid agencies.

The book is based on the author's years of on-location research and experiences in India, Nigeria, Ghana, China, Kenya and Zimbabwe, and addresses the elementary education of these countries' poorest students.

While on an assignment funded by the World Bank to research high-end private schools offering top-shelf education to the Indian elite in 2000, *Tooley* discovered in his free time that a multitude of low-cost private schools served the poor in the slums of Hyderabad at a far higher standard than local state-funded public schools. This surprising discovery spurred *Tooley* to investigate other developing countries to determine whether he was dealing with a fortuitous exception or whether affordable, for-profit private schools run as small enterprises could really be the solution for the world's poorest.

Tooley's research team, comprising local experts, students and a handful of young nuns in India, examined several locations across different continents, initially encountering

puzzlement and resistance everywhere. Not only were local education policymakers and officials completely unaware of the numerous low-cost private schools operating in their country, but they could not even believe their existence was possible. Besides Hyderabad, India, *Tooley* also discovered a number of private schools serving the poor in Nigeria, including the Ken Ade School located in the Lagos lagoon, catering to 200 kindergartners and elementary school pupils, just one of the 26 schools operating in the Makoko slums in Lagos.

The author's research conducted in Ghana came to similar conclusions, where he found private schools in every randomly chosen village around Accra. Likewise, *Tooley* also found a myriad of private schools in China's northwest Gansu province, despite local officials finding the existence of private school logically impossible given the country's official ideology. There were also many schools operating in both large urban and rural areas in Kenya, even after public education had been made free. Free public education has only recently been introduced in many developing countries, but in some places parents still have to pay for public schools.

Tooley was interrogated in Zimbabwe two days prior to the April 2005 elections in a basement cell of the ruling party, as his research on private schools was seen as suspicious and incomprehensible. He was finally released following a phone call from party leaders because the daughter of the party's local president attended the private school run by one of *Tooley's* local assistants.

When local functionaries could no longer deny the existence of private schools serving the poor in the face of the facts, they called the schools' standard of education into question. The general argument claimed that poor, uneducated parents were incapable of assessing educational standard and thus to choose the adequate school for their children and to check the quality of education they provided. However, the author's numerous visits to public and private schools debunked this assertion. While public schools did in fact have more funding and operate in larger and nicer buildings, there was often very little actual teaching going on. Teacher absenteeism, inaccuracy, corruption related to teaching positions and a lack of attention to students' learning and issues were prevalent. Public schools accommodated more children but were located far from their homes, and could only be accessed through crowded and dangerous slums. By contrast, the owners of private schools were strict with teacher absences and requested adequate attention to students, as their own livelihood and business depended on it. These typically smaller private schools were also situated locally, with the owners and teachers well acquainted with the daily struggles faced by the children and parents, and thus better able to adapt to these situations. Another general trait shared by all the investigated locations was that orphans and those even poorer than their peers were allowed to study free of charge.

Besides exploring various regions across the globe, *Tooley's* book also delves into the past. He discusses how the British rule – primarily under Whig politician *Thomas Babington*

Macauley – ruined the traditional public education system in India, a system that had been successfully modelled and applied in England during that period under the pioneering work of the priest *Dr Andrew Bell*. Using historical data comparing the development of the Indian and English educational systems of that period, *Tooley* confirms that the British reforms implemented in the 19th century not only failed to establish the new Indian educational system, but also destroyed the existing and smoothly functioning former system, or using a metaphor *Tooley* adopted from an Indian author, uprooted the beautiful tree.

Finally, the book presents the general opinion of educational development experts working for international organisations and the governments of supporting and supported countries and highlights the underlying factors behind the deeply rooted hostility towards low-cost private education for the poor. The experts' principles do not work in practice, due to the absence of adequate incentives and the severe shortcomings of public administration in developing countries, while affordable private schools offer real solutions in practice for educating the majority of poor children.

Tooley is also involved in this effort. He participates as co-founder in the work of two organisations engaged in establishing affordable, low-cost private schools for the poorest in underdeveloped regions. Omega Schools operates in Ghana and Empathy Learning Systems in Hyderabad, India. *Tooley's* involvement in the work of these two organisations demonstrates that the author not only believes in the success and advantages of the solution presented in the book, but is indeed well versed in the opportunities and advantages of for-profit private education for the poorest.

Earthmoving migration

Orsolya Vida

Paul Collier

Exodus – How Migration is Changing Our World

Oxford University Press, 2013, p. 309

ISBN: 978-0195398656 (paperback)

Paul Collier, a world-renowned British economist and best-selling author, discusses one of the most pressing and controversial issues of our time: migration. The most intriguing feature of the book is the author's refreshing, highly provocative approach to this global phenomenon that, at one level or the other, affects us all. *Collier's* main goal is to crack the migration taboo and demonstrate why this issue must (should) be discussed openly without any of the negative associations shrouding the phenomenon and why effective migration policies building on this foundation must be devised.

Having been selected – twice – by *Foreign Policy* magazine as one of the top 100 global thinkers in the world, the author's chosen research area encompasses an extremely wide spectrum, including the analysis of the relationships between globalisation and poverty. As early as 2007, *Collier* published a book¹ on the effects of immigration policies (measures) encouraging or restricting migration. In *Exodus*, the author attempts to examine the consequences of migration trends from three different perspectives: from the aspect of migrants, the people left behind, and the society of the host country. He takes account of the most important economic, demographic and cultural implications in respect of all three "players". He examines the migration taboo and the reasons behind the acceleration of migration, and provides advice on the action to be taken at the local and global levels, in order to contain migration and ensure the sustainability of the process.

Orsolya Vida, economist, translation and correspondent specialist in foreign trade, is an associate at the International Relations Department of the Magyar Nemzeti Bank. E-mail: vidao@mnbb.hu.

1 Paul Collier (2007): *The Bottom Billion: Why the Poorest Countries are Failing and What Can Be Done About It*. Oxford: University Press

Drawing on extensive research and case studies, *Collier's* analysis found that, in the absence of effective measures, immigration can spin out of control with dire consequences for the poorest countries, which may be left to face mass exodus. There is a risk that both the country of origin and the destination country will lose their national identity with catastrophic consequences for all concerned. Immigration, therefore, should be restricted precisely to ensure that the phenomenon benefits, rather than harms, both the home and the host countries.

Collier argues that the key issue is not whether the impact of immigration is good or bad; we should, instead, focus on determining the extent/limit up to which immigration is still acceptable. Accordingly, rather than dismissing the restriction of migration as a manifestation of nationalism or racism, the author looks at it as an increasingly important social policy instrument in higher-income countries. Although migration may appear to be a simple economic phenomenon, it does not induce remarkable changes in the economy, while its social implications are extremely complex. Mass migration is not an inherent feature of globalisation, but rather a response to extreme global inequalities; a temporary answer to the phase of development in which welfare is not yet universal. The transformation of the social models of poor countries and the local contextualisation of global concepts would be a real step forward.

The migration taboo began to take shape in the 1960s, in the period of large-scale immigration from the former British colonies, and it was not until the 2010s that it began to crack upon the arrival of masses of immigrants from Poland. Regarding the participants of the process and the human side of the phenomenon, the issue is surrounded by so many emotional aspects that there is no consistent position either on migration or possible political solutions. Migration was an over-politicised issue far before it became the subject of scrutiny, which explains the substantial differences between the migration policies of home and host countries. Migration policies tend to be shaped by solidly set value judgements rather than real experience, and the mechanism termed “confirmation bias” only exacerbates the problem. Policy-makers are caught between a rock and a hard place: their constituents and the economists. The former are pressured by concerns stemming from negative preconceptions, while the latter are bogged down by one-sided economic models that relegate the social ramifications of the phenomenon to the background.

The main reason for the acceleration of migration was a drastic change in global economy in the 1960s: the emergence of the world of the rich and the world of the poor. The remarkable differences between the income positions of certain countries can be attributed to a variety of reasons. The capital adequacy of impoverished countries is extremely low, typically coupled with ill-chosen economic policies, dysfunctional social models and ideologies, geographical disadvantages, the legacy of colonisation, the lack of education and a negative attitude to work. State administration is poorly organised with a rudimentary institutional system. The average citizen has little access to information, the level of capability/willingness for social cooperation is low, violence is rampant. The poorest

countries are typically abandoned – for existential reasons – by the very citizens that would be most needed at home (see the phenomena of brain drain and motivation drain). The immigration of new generations is highly supported by the existence of a diaspora: the bigger the diaspora, the easier immigration is. Immigrants are added to the local diaspora, which reduces absorption (i.e. adjustment to mainstream society). The author therefore assumes that the rate of migration will not decelerate and no equilibrium can be expected in the short run.

Collier's volume focuses on three main concepts, the first of which is the “acceleration principle” of migration: a growing diaspora of migrants in the host country tends to ease and speed up migration, while the impact of migration on the income gap is limited and not straightforward. This rule stems from the specificities of the migration process and the acceleration of migration can only be curbed by the depopulation of the country of origin.

It is important to find a happy medium in determining a threshold for migration. The most important impact of migration affects the educated people among those left behind. From the perspective of people remaining in the country of origin, migration is desirable only to the extent a maximum balance can be found between their access to education and remittances.

The effects of migration on the “indigenous” population of the host country are partly economic and partly social in nature: diversity, trust, and redistribution. These may not be the most important effects, but they are undoubtedly the most permanent. Of the direct economic effects, the pressures exerted on wages and social housing deserve special attention as they may be detrimental to the poorer social segments of the host country. In a different context, a number of other effects may also be significant, such as overpopulation or boom-bust cycles. Immigration increases social diversity. Diversity can contribute to the resolution of economic problems and improve living conditions; however, it can undermine mutual regard and dampen the openness to cooperation and solidarity. Accordingly, a compromise should be found between the costs and benefits of diversity.

Migration policies are developed by the host countries, rather than the home countries. For fear of uncontrolled acceleration of migration, policy-makers often resort to the instrument called “the political economy of panic”. This self-generating process has four phases. In the first phase, migration is unrestricted, and keeps accelerating until a balance is found between the migration function and the diaspora schedule, at which point the phenomenon becomes a political matter and the so-called “anxiety phase” sets in. In this phase, the government introduces quantitative restrictions, ushering in the second stage, coined by the author as the “panic phase”. The growth of immigration comes to a halt, but the diaspora fails to reach an equilibrium, as the non-integrated diaspora of the host country keeps growing due to a lack of adjustment to the mainstream, cultural differences and the low level of social trust. Political pressure keeps mounting in the light of increasing

social costs and the burdens imposed on social welfare systems. The government “tackles” the new challenge by further, even more stringent, quantitative restrictions.

This is where the process reaches its third, “ugly phase”. From this point on, the process becomes self-generating: the non-integrated diaspora continues to grow despite restrictions by the host country, generating mounting social costs and political pressure.

Consequently, there is a long journey to the fourth – “diaspora absorption” – phase, which may last for decades. At this stage, restrictions are intended to achieve the gradual assimilation of the diaspora into the society of the host country in a fashion that restores the system of social trust and cooperation and achieves the desired equilibrium.

While migration is a personal decision, migration policies are developed by the governments. If decision-makers are to put forward an adequate and effective migration policy package, they should never lose sight of the complexity of the migration process. They should strive to find the right balance between the interests of migrants, the country of origin and the host country, to make decisions based on facts and knowledge rather than emotions, and to avoid the uncontrolled acceleration of migration not by the ill-conceived instruments of the “economic policy of panic” but by a reasonable “screening” of immigrants, efficient integration of the diaspora and the steering of illegal immigration onto a lawful path.

New Narrative for Europe

A report on the Lamfalussy Conference

István Ábel

The „*Lamfalussy Lectures Conference*” of 2015 strengthened the initiative of the National Bank of Hungary to provide a forum for the leaders of European central banks to discuss new approaches in urgent matters. This year’s event was organized around the theme „*New narrative for Europe and for the monetary union after the crisis*”. The festive atmosphere was elevated by the Gala Concert of the award ceremony preceding the conference, where the winners of the Lamfalussy Prize and the Popovits Prize are honored. Both prizes were established by the National Bank of Hungary and both are awarded annually. Named for the world famous Hungarian economist, central banker and capital market expert, *Sándor Lámfalussy*, the prize was founded by the MNB in 2014. Honoring the legacy of *Lámfalussy*, this prize is awarded to outstanding financial, economic professionals who have internationally acclaimed contributions in economics and monetary policy. This year the prize was awarded to *Benoît Coeuré*, member of the Executive Board of the European Central Bank. The Popovics Prize was also awarded in the Lámfalussy Prize Gala accompanied by a concert in the National Theatre. *Sándor Popovics* was the first Governor of the Hungarian central bank. The prize commemorating *Sándor Popovics* is a recognition awarded to a young Hungarian economist, who has distinguished scientific and practical contribution to the accomplishment of the objectives of MNB. This year the Popovics Prize was awarded to *Dániel Palotai*, chief economist of MNB.

The international conference was devoted to the renewal of Europe. In his introductory lecture *György Matolcsy*, Governor of the central bank emphasized that Europe needs a new narrative today, after the European Central Bank launched its monetary policy programs. He reminded that in 2010 the new Hungarian government had to face the dilemma of choosing between orthodox or unorthodox measures to address the crisis. He believed that Hungary would have failed if only conventional measures had been applied. There are three pillars of the success of crisis management. Job creation is one of them. Structural reforms represent the second pillar. They have crucial importance paving the way to create new jobs. At the same time, the reforms would have been doomed to fail without political stability.

István Ábel is a chief economic expert at the Magyar Nemzeti Bank. E-mail: abeli@mnb.hu

Benoît Coeuré, member of the Executive Board of the European Central Bank,¹ stated that the integration of the euro zone must be advanced. If government debt cannot be curtailed and fiscal policy is not efficient, everybody will be losing, because such tensions accumulated would cause problems not only to the individual countries but also to the entire monetary union. He reminded that significant advances had been made since the beginning of the crisis. The European Stability Mechanism (ESM/EFSF) was established, which is now capable of participating in the management of the debt crisis, along with and similarly to the IMF. The creation of the bank union, the strengthening of the banking supervisory role of the ECB promotes the efficient operation of the European banking system, facilitating the timely identification and addressing of the problems of weak financial institutes. Talking about the coordination of economic policy, he cited the opinion of *Lamfalussy*: “Policy interactions in a monetary union had to be governed by a proper framework, and not just left up to ad hoc coordination and market discipline.”² Economic decision-makers in different policy areas act independently and are at the same time interdependent. We need to pay attention to the indirect effects of our decisions. The independence of central banks is one of the fundamental principles of the monetary union. The euro zone is built on monetary dominance. This has efficiently served the maintenance of price stability. However, after the crisis we had to recognize that monetary policy in itself is not necessarily the most efficient tool for increasing employment and stimulating growth. Monetary policy becomes more effective in impacting the real economy if other policies act in support. If not, it has less impact and expansionary policy has to last longer. This challenge defines important action points concerning the advancement of the European integration. *Lamfalussy* himself recognized this problem: „The combination of a small Community budget with large ... national budgets leads to the conclusion that, in the absence of fiscal coordination, the global fiscal policy of the EMU would be the accidental outcome of decisions taken by Member States. As a result, the only global macroeconomic tool available within the EMU would be the common monetary policy implemented by the European central banking system.”³ *Mr. Coeuré* pointed out that the crisis has made clear the problems of the European institutional system, indicating that we need a system that is more efficient and capable of handling the fiscal and structural policies in an integrated manner.

Ewald Nowotny, Governor of the Central Bank of the Republic of Austria, analyzed the catching-up processes of the region for the last 25 years. As a result of the changes that have taken place, the region has advanced on the development scale. This could open up

1 Benoît Coeuré (2015): Lamfalussy was right: independence and interdependence in a monetary union, Speech at Lamfalussy Lectures Conference organised by Magyar Nemzeti Bank in Budapest, 2 February 2015. <http://www.ecb.europa.eu/press/key/date/2015/html/sp150202.en.html>

2 James, H. (2012), Making the European Monetary Union, p. 248. See also Maes, I. (2011), “The evolution of Alexandre Lamfalussy’s thought on the international and European monetary system”, National Bank of Belgium, Working Paper Research, No. 217.

3 Lamfalussy, A. (1989), Macro-coordination of fiscal policies in an economic and monetary union in Europe, Collection of Papers. Committee for the Study of Economic and Monetary Union, Luxembourg, 1989, January, p. 101.

new opportunities, even though risk ratings had not always reflected the significance of changes: Several investors continued to assign the region to the “developing European” portfolio. Governor *Nowotny* highlighted that despite the progress, the disparities did not disappear and there are still very significant differences even between two neighboring economies. Concerning the upcoming period, he indicated that new opportunities could open up for development, but there is also a high geopolitical risk that Hungary would be relegated to a periphery exposed to war tension.

In his lecture *Erdem Başçı*, Governor of the Central Bank of the Republic of Turkey,⁴ assessed price stability and highlighted that central bank actions against inflation had a diverse and well-known toolset. However, the tools available to counter deflation - which is a current phenomenon threatening several European economies - are not so well-known. Governor *Başçı* expressed the view that the best a central bank can do for the benefit of the economy of its country is to maintain price stability in any case.

Carlos da Silva Costa, Governor of Banco de Portugal, emphasized sustainability in the national and Community level. He noted that the nature of national economic policies and the coordination of these policies across the EU as a whole determine the sustainability of the development model.⁵ He highlighted that every step in economic policy is based on the assessment of risks. We need an outcome that contributes to the permanent solution of the problem instead of one that looks promising on the short run but would lead to social conflict 6 or 8 years later. In order to improve the integrative capacity of the European cooperation, national economic policies must also make sacrifices.

Boštjan Jazbec, Governor of Bank of Slovenia, assessing the experiences of the introduction of the euro in 2007 noted that this step generated a large influx of capital, but the Slovenian economy could not take advantage of this opportunity properly. They only learned slowly how to “use the money of others.” He noted that the high ratio of state ownership in the Slovenian banking system probably contributed to the slow adaptation. In Slovenia now steps are being taken towards the privatization of banks.

Boris Vujčić, Governor of the National Bank of Croatia talked about the paradigm shift of central bank policies. The experience of Croatia indicated that despite the textbook example, exchange rate stability can be sustained in a small, open economy as well, while pursuing an autonomous anti-cyclical monetary policy. Although the methods applied prior to the crisis to moderate lending and capital inflows, including a high required reserve ratio and capital controls, were of questionable efficiency and “rough regulatory tools” in themselves, but they still had the advantage that when the crisis broke out, there was

4 <http://www.tcmb.gov.tr/wps/wcm/connect/tcmb+en/tcmb+en/main+menu/announcements/press+releases/2015/ano2015-09>
<http://www.tcmb.gov.tr/wps/wcm/connect/19ab7e30-6ed6-45dc-a874-cec42e896484/Budapest.pdf?MOD=AJPERES>

5 <https://www.bportugal.pt/en-US/OBancoeoEurosistema/IntervencoesPublicas/Lists/LinksLitsItemFolder/Attachments/89/intervpub20150202.pdf>

a latitude that enabled the easing of monetary policy. In the global economy the efficiency of monetary policy has changed, externalities have played an increasingly important role. Prices are shaped by global factors in an increasingly widening array of products. The cross-border relationships of money and capital markets enable larger swings in the balance of payments and the price-shaping effect of the demand and supply characteristics of the national economy has weakened. Capital flows transmit global monetary conditions and these conditions have an increasing influence on monetary conditions of the national economy, even if the exchange rate is flexible. Central banks must pay attention to this change and draw conclusions accordingly. One such conclusion is that their opportunities in decreasing external vulnerability have narrowed significantly. The other important conclusion is that the monetary policy is only able to boost growth efficiently only if other policies (fiscal, institutional, and structural policies) change in line with it in a coordinated manner.

Erkki Liikanen, Governor of the Bank of Finland warned that⁶ the measures of the European Central Bank and the quantitative easing cannot replace the need for adaptation in national economic policies, although they could temporarily attenuate the pressure for such adaptation. There is a need for improvement in the European institutional system, in order to avoid the risk that additional liquidity resulting from quantitative easing would feed speculative bubbles leading to a new crisis.

The lectures were followed by a panel discussion with the following participants: *Agnès Bénassy-Quéré* (Sorbonne), *Dániel Palotai* (MNB), *André Sapir* (Université libre de Bruxelles) and *György Szapáry*, former ambassador of Hungary in Washington. The discussion was moderated by *Csaba Lentner* (Public Service University). Assessing the new challenges and the efficiency of the responses of monetary policy, the discussion supported the contention that the answer to this question would be decided by growth.

6 http://www.suomenpankki.fi/en/suomen_pankki/ajankohtaista/puheet/Pages/150202_EL_puhe.aspx

What lies ahead for insurance companies?

Review of the V. International Insurance Conference of the Association of Hungarian Insurance Companies (MABISZ)

Katalin Lencsés

The Association of Hungarian Insurance Companies (MABISZ) held its Fifth Conference on 6 November 2015, traditionally and rightfully qualified as “international” in light of the numerous foreign speakers at the event. The presence of decision-making and supervisory organs attests to the broad acceptance of the conference, which provides a platform for high-level, meaningful debate on the current topics affecting the insurance industry.

The conference’s agenda included a discussion of opportunities in the health insurance market, European regulatory changes affecting insurance companies, and the experiences of the period elapsed since the introduction of the tax relief on pension insurance.

Gábor Zombor, Minister of State for Health at the Ministry of Human Capacities, gave the keynote address. The insurance industry was keenly anticipating hearing about the current plans affecting insurance. The Minister of State said that the government areas responsible for healthcare were firmly committed to establishing clear, transparent conditions within the field of publicly funded healthcare. Without prejudice to this criterion, privately funded investments in healthcare were nevertheless welcome. The Minister of State also offered an opportunity for consultation for the insurance industry to discuss the potential further role of private insurance companies.

Dániel Palotai, the MNB’s Executive Director for Monetary Policy, gave an overview of the macroeconomic situation and the role of unit-linked insurance products. The most encouraging assessment for conference attendees from the vantage of the insurance market was most likely the fact that prudential considerations have led to higher savings

Katalin Lencsés is head of the Life Insurance Committee at MABISZ. E-mail: katalin.lencses@mabisz.hu. The presentations of the conference are available on the following website: www.mabiszkonferencia.hu.

than before the crisis and are projected to remain elevated going forward. This may drive sales of pension insurance products, and the MNB has crafted a pension insurance recommendation to foster this objective, the results of which are already apparent. TCI^P (total cost indicator) values have already dipped below the level specified in the recommendation and the TCI^P is decidedly positive for one quarter of pension insurers. As a point of criticism, it was mentioned that the decline in TCI^P was typically not achieved by insurance companies by way of reducing acquisition costs. The insurance industry also confirmed that the TCI system introduced in the context of self-regulation five years ago has by now been legitimised in its own right and has become a reference point for assessing the cost of unit-linked insurance products.

MABISZ President *Anett Pandurics* then gave a brief overview of the current state of the Hungarian insurance market. Although no significant changes have occurred in the past period, there are promising signs looking ahead. These include the rise in revenues on regular premium life insurance in 2014 H1 (+10.1 per cent), the first increase of this kind which has been seen in a long time, and an increase in the proportion of insurance premium reserves in households' financial assets (+4.8 per cent). The sector closed the first six months of the year with premium revenue of HUF 435 billion, a slight increase. The industry is also preparing for the tasks dictated by European regulation, the most important of which is the revision of the IMD (Insurance Mediation Directive) regulating the distribution of insurances, and the regulation focusing on PRIIPs (Packaged Retail and Insurance-based Investment Products). Every member state faces the dilemma of whether it is warranted to go beyond the minimum European harmonisation requirements, factoring in the degree of development of the market in question. In her presentation, the President also emphasised that the Hungarian insurance industry ascribes great importance to communicating the positive social role of insurance and to reinforcing consumer protection. With regard to the latter, the sector operates an increasingly broad toolset (customer service, TCI, MTPL Aggregator, official information, Reference System, etc.) in the framework of MABISZ.

The MNB'S Executive Director in charge of the supervision of financial organisations *Kornél Kisgergely* summed up the MNB's insurance supervision strategy and methods for the audience. The objective of insurance sector supervision is to increase utility for the national economy, to create a transparent range of services, to foster a competitive insurance system, to support modern self-reliance solutions and to create guarantee mechanisms for potential crisis situations. Looking ahead, Solvency II-based supervision will bring new challenges calling for flexible regulation, a new supervisory mentality and individualised supervisory audits. These all call for a new approach, for which the MNB proposes supervision based on Business Model Analysis (BMA) which permits the elaboration of a supervisory programme tailored to the attributes of individual institutions.

The MNB'S Executive Director in charge of consumer protection and market surveillance *András Bethlendi* gave a presentation on current consumer protection issues and discussed

the recently renewed toolset adopted by the MNB's supervisory branch and the ongoing additions to this toolset. An important objective for the near future is continuous market product monitoring and the identification of unfair contract terms, and thus there may be an increasing emphasis on product focus in the context of supervision. The improvement in the number of complaints lodged with insurance companies and their management is a positive development, however the main consumer protection risks affecting the sector remain unchanged: misselling, inadequate information, claim settlement shortcomings and the absence of product transparency. Issues stemming from online sales and electronic administration represent new challenges, which the MNB recommendation on online insurance intermediation and comparison websites that is currently being drafted aims to address.

Following a short coffee break, *Dávid Győri*, managing director of Xallis Consulting, presented the findings of a recent study on consumer attitudes regarding private health insurance. A large proportion of participants in the representative study deemed that the two most contentious factors – lack of funding and waiting lists – could be addressed through for-profit private insurance companies. It was on this note that the conference's first panel discussion was opened, which aimed to define the role of private funded services within healthcare. The panel participants formulated their hopes with reference to the opening presentation: that supplementary elements funded by private insurance companies would have a place in the currently changing health insurance system, in accordance with the aforementioned consumer expectations. However, they confirmed that this would necessitate laying down numerous detailed rules in the future. (Participants: *Patrícia Farkas* Head of Health Insurance Department/Signal, *András Juhos* member of the Management Board /UNIQA Biztosító Zrt., *Zoltán Pál* Deputy CEO/Generali Biztosító Zrt., *Gábor Karai* Managing Director/Advance Medical Hungary Kft., *Zoltán Takács* CEO/Főnix-Med Zrt., moderator: *János Bartók* CEO/MetLife Biztosító.)

Deputy CEO of Qualysoft Zrt., *Zoltán Kővári*, chose a topical subject, examining when online sales would fulfil expectations. The presentation confirmed the widely assumed correlation that more and more customers are obtaining information online, but remain hesitant to make online purchases. In the case of financial products, customers often expressly demand personal consultation prior to making a decision.

The lunch break was followed by a presentation by *Koppány Nagy*, Director of the Directorate Insurance, Pension Funds, Financial Enterprises and Intermediaries Supervision of the MNB, focusing on changing European regulation. The often-mentioned Solvency II regulation still poses numerous challenges for the insurance industry, especially in the area of detailed rules. In the interests of successful introduction of the new system, the MNB is working to support preparation by market participants, holding consultations, coordinating quantitative impact assessments and analysing their findings. In addition, MNB experts are also involved in the elaboration of Hungarian and international regulation, the latter by participating in the EIOPA committees. The speaker also emphasised that – in

response to the requirements of Solvency II – the focus of supervision must necessarily shift to being business model based. The revision of the Insurance Mediation Directive (IMD) is an equally important issue and will redefine the regulation of the market in several respects, in particular through expectations for greater transparency.

Then *Nicolas Jeanmart*, Head of Non-Life, Life & Macro-Economics of Insurance Europe, shared the tasks and dilemmas currently faced by European insurers. Not surprisingly, the current regulatory developments covered in the previous presentations were also addressed (Solvency II, IMD2). A new element compared to the preceding presentations was that the insurance industry must address the challenges arising from new technologies (mentioning the example of self-driving cars) and current issues of environmental protection and pollution.

Hawes Janine, Director of KPMG, gave an overview of the now evergreen issue of Solvency II, presenting the current status of EU member states in the process of adapting, taking into account the fact that on a European scale, this affects 5,300 insurance companies. The presentation also stated that the relevant requirements – referring to the EIOPA Guidelines – have not yet been fully disclosed. During this phase, Pillar 3 involves the most uncertainty, in terms of both resources and timing.

The topic of the traditional international panel discussion was linked to this presentation. Representatives of European sister associations (FFSA, GDV, UNSAR, VVO, moderator: *Gábor Hanák*, Director, KPMG) shared their experiences on the challenges of Solvency II. The international guests did not attempt to hide their opinion – also shared with *Szabolcs Disziter*, representing the EIOPA – that the flood of detailed rules represents a serious challenge for markets.

The next presentation was held by *László Gáti*, marketing and sales director at OTP Alapkezelő Zrt., who addressed the current issues of insurance asset management. All market participants face the challenges stemming from the persistently low interest environment, and the changes in investor mentality and risk appetite in the wake of the crisis. Among the possible responses to the challenges, both domestic and international figures confirm the spread of actively managed portfolios. It remains to be seen, however, whether the choice of asset fund can be left up to customers or whether they will be more satisfied with portfolios optimised for the long term, which are actively overseen by asset managers.

The second Hungarian panel discussion summed up the lessons learned from the introduction of the tax relief on pension insurance. (Participants: *István Csonka* Sales Deputy CEO/Groupama Garancia Biztosító Zrt., *Gyula Horváth* Deputy CEO/Aegon Magyarország Zrt., *András Kozek* Deputy CEO/Allianz Hungária Zrt., *Zsolt Raveczky* CEO/Erste Biztosító Zrt., *Imre Sztanó* Chief Sales Officer/ING Biztosító Zrt., moderator: *Péter Kuruc* Head of the Life- and Bank Insurance Division, K&H Biztosító Zrt.) The competition-

neutral option for receiving tax relief on pension insurance was deemed unequivocally positive by the representatives of the life insurance market. Market participants anticipate a gradual rise of the pension insurance market, which nevertheless hinges on an ongoing educational effort both from the insurance industry and decision-making and regulatory bodies. Panel participants also addressed the sensitive matter of annuity service payments. They concluded that although the broadest possible spread of this form of service would be socially desirable, many questions must still be answered both on the demand and supply side before an optimal solution can be reached.

MABISZ Secretary-General *Molnos Dániel* opened and closed the event. As attested to by the above summary, the conference offered a meaningful and enriching programme for attendees. The Secretary-General expressed his hopes that insurance companies, decision-makers and the representatives of supervisory bodies will continue their constructive common thinking in the best interest of the Hungarian insurance market and customers.

INSTRUCTION FOR AUTHORS

Manuscripts should be submitted in accordance with the following rules.

- The length of the manuscripts should be limited to 40 000 characters (including spaces) but a ± 50 per cent deviation is accepted. Manuscripts should be written in Hungarian and/or English.
- Papers always begin with an abstract which should not exceed 800–1000 characters. In the abstract a brief summary is to be given in which the main hypotheses and points are highlighted.
- At the bottom of the title page a footnote is to be given. The footnote contains every necessary information related to the paper (acknowledgement, relevant information etc.). This is followed by the name of the institution and position the author works at, e-mail address in Hungarian and English.
- Journal of Economic Literature (JEL) classification numbers should be given (three at least).
- Manuscripts should be written in clear, concise and grammatically correct Hungarian and/or English. Chapters and subchapters should be bold.
- Manuscripts should contain the list of references with the first and surname of the authors (in case of non-Hungarians the initials of the first name is required), the year of publication, the exact title of the book, the publisher, the place of publication. In case of papers, the exact title of the journal, the year, the volume, and the pages should be indicated. References in the text should contain the surname and the year separated by comma. When citing, the exact page be indicated.
- Tables and figures are to be numbered continuously (chapters and subchapters should not contain restarted numbering). Every table and figure should have a title and the units of quantitative values are to be indicated. Tables and figures are to be made by MS Word and Excel in Hungarian and English. Notes and sources are to be put directly at the bottom of the tables, figures.
- Equations should be aligned to the right and should be numbered continuously in parenthesis. (Chapters and subchapters should not contain restarted numbering.)
- Manuscripts are to be sent to the Editorial Office of the FER only. Papers are peer-reviewed by two independent and anonymous reviewers.
- Manuscripts should be sent as attachment by e-mail in MS Word file. Figures and tables should be sent in MS Excel file both in Hungarian and English.
- In case of further questions related to the manuscript visit the following website:
http://english.hitelintezetiszemle.hu/szerzoknek/Authors_Guide_EN.pdf

Thank you!

The Editorial Office of the Financial and Economic Review
H-1054 Budapest, Szabadság tér 9.
Phone: 06-1-428-2600
E-mail: szemle@hitelintezetiszemle.hu



www.hitelintezetiszemle.hu