

Foreign currency tenders in Hungary: a tailor-made instrument for a unique challenge

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Abstract

In September 2011 new legislation allowed Hungarian households, under certain conditions, to repay their foreign-currency-denominated mortgages at preferential, predetermined exchange rates. This created an open foreign currency position of significant but uncertain size on the balance sheet of the Hungarian banking system. To close the open position, banks needed to convert Hungarian forints to euros and Swiss francs in large quantities over a short time period. To avoid excessive instability of the exchange rate, the central bank introduced a temporary facility – weekly foreign currency tenders – which in essence was a transparent, targeted, special foreign exchange intervention of significant size. It was designed to prevent speculative front-running on the foreign exchange market, and to provide banks with a hedge against a special type of uncertainty stemming from the unknown quantity of the mortgages to be repaid. The programme supported not only the inflation goal of the MNB, but also the stability of the financial system.

Keywords: foreign exchange, international lending, central banking, intervention

JEL classification: E58, F31, F34, G12, G14

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Introduction

In September 2011 the Hungarian Parliament ratified legislation that, under certain conditions, allowed households to repay their foreign-currency-denominated mortgages at preferential, predetermined exchange rates. This legal act created an open foreign currency position of significant but uncertain size on the balance sheet of the Hungarian banking system. To close the open position, banks needed to convert Hungarian forints to euros and Swiss francs in large quantities over a short time period. To avoid excessive instability of the exchange rate, the central bank introduced a temporary facility – weekly foreign currency tenders – which in essence was a transparent, targeted, special foreign exchange intervention of significant size. It was designed to prevent speculative front-running on the foreign exchange market, and to provide banks with a hedge against a special type of uncertainty stemming from the unknown quantity of the mortgages to be repaid. This paper presents the background and details of the foreign currency tender scheme, and evaluates its results.²

Household borrowing in foreign currency – policy constraints and financial stability risk³

Hungary entered the crisis with significant currency exposure on the balance sheet of the private sector, particularly where households were concerned. By the second half of 2008, Hungarian household debt was close to 40 per cent of the country's GDP, and two thirds of that debt was denominated in foreign currency. Driven by the attractive interest rates, over 90 per cent of the households' foreign currency debt was denominated in Swiss francs, while only approximately 7 per cent was held in euros.⁴

The share of foreign currency lending was also high by regional standards: Hungary's figures were exceeded only in the Baltic States, while in the Czech Republic and Slovakia the foreign-currency-denominated retail debt was below 1 per cent.⁵

The majority of the foreign-currency-denominated debt stock was accumulated between 2004 and 2008. The sharpest increase was experienced after 2006, despite the fact that both the central bank and supervisory authority pointed out the associated risks on a number of occasions and in various forums. Of the new lending on the whole, the share of foreign currency loans had risen to 80 per cent by the end of 2008, and the corresponding figure for mortgage loans was over 90 per cent.

² This paper builds heavily on a previous assessment of the foreign currency tender scheme by Pulai and Reppa (2012).

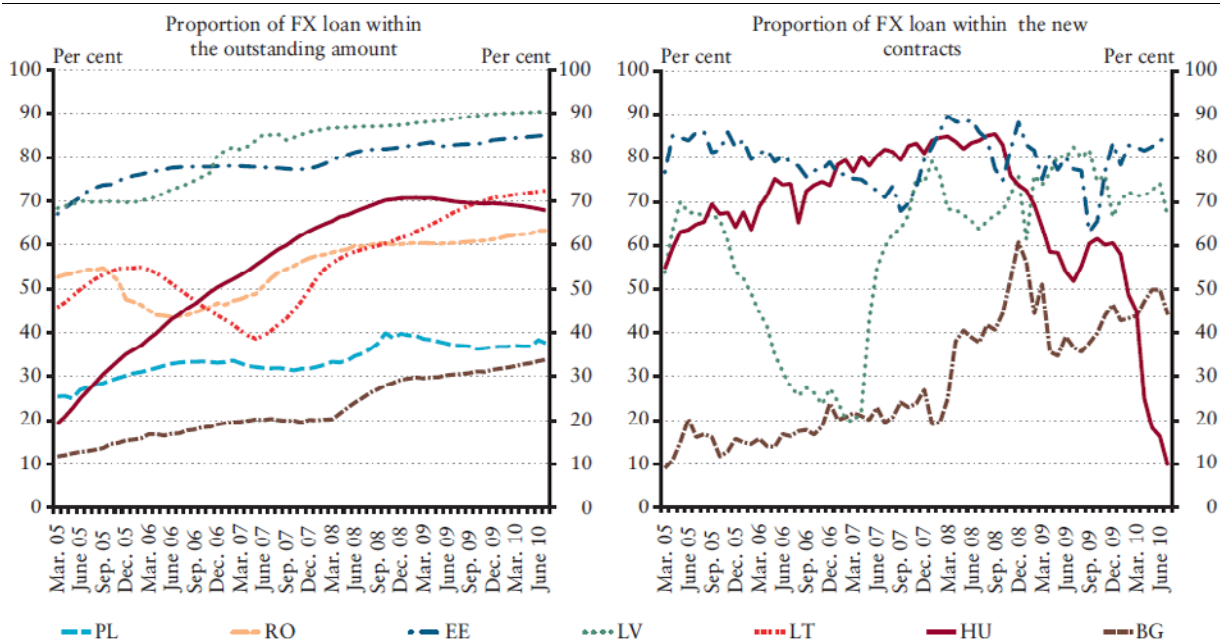
³ A more detailed analysis of the causes and policy implications of liability dollarisation in Hungary can be found in Gereben et al (2011).

⁴ Source: Balás and Nagy (2010).

⁵ The share of foreign-currency-denominated retail loans was 2.7 per cent prior to Slovakia's adoption of the euro.

Share of foreign currency debt versus total and newly disbursed household loans in an international comparison

Figure 1



Note: The "proportion of new loans" curve is based on three-month averages.

Source: National central banks.

In response to the global financial crisis, the growth of foreign currency debt ceased by the end of 2008, and then that debt started to decline. The forces that drove foreign currency lending before 2008 faded significantly after the onset of the financial crisis. Namely:

- The economic downturn led to a worsening in households' income expectations, and thus credit demand declined.
- In parallel with a balance sheet adjustment by the banks, global liquidity was drying up. As a result, although the FX risk was hedged by the banks, the financing of foreign currency loans became more expensive and funds were harder to come by. At the same time, the dramatic portfolio deterioration put an end to risk-based competition.
- A government decree on prudent lending, as well as the action to prohibit foreign currency lending, were also crucial in restricting foreign currency lending from mid-2010.

Although new borrowing in foreign currency practically stopped, the high debt stock remained both an important constraint on macro-economic policy and a significant risk to financial stability:

- Such a high share of foreign currency debt significantly impairs the efficiency of both the exchange rate and the interest rate channels of monetary transmission. As a rule, a weaker domestic currency would improve export competitiveness, and in turn stimulate output. However, in the presence of a large stock of foreign currency debt, a weaker currency could also reduce households' disposable income due to higher loan instalments, while the resulting higher foreign currency debt would lead to a decrease in wealth in the

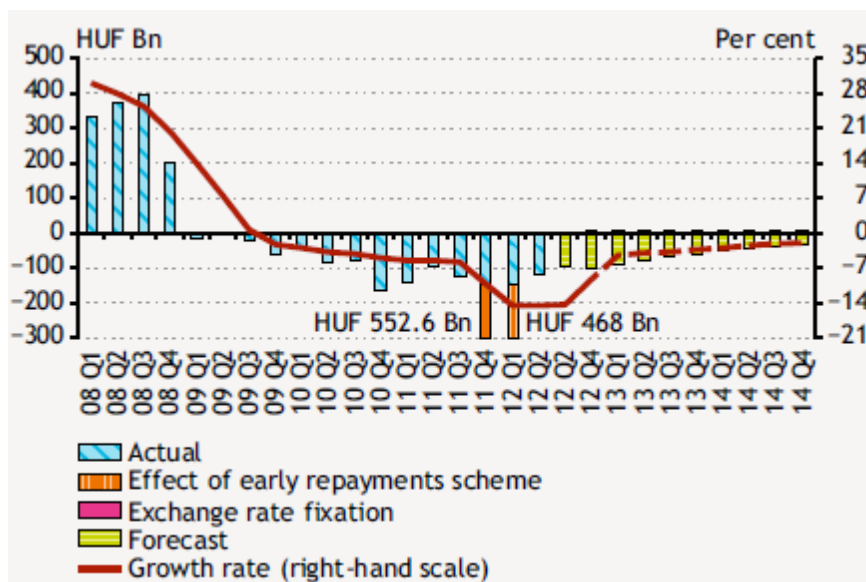
private sector. All in all, the expansionary effect of a weaker currency could be reduced, or even reversed, by the wealth effect.

- Besides weakening monetary transmission, a high proportion of foreign currency loans poses an increased risk to financial stability. Higher instalments weaken debtors' ability to pay and increase the probability of default (PD), which, together with the rising loss given default (LGD) rate, results in increasing loan losses (PD x LGD). A weaker forint also reduces the amount of available capital while it increases the risk-weighted balance sheet total. Overall, depreciation erodes banks' profitability and capital position, which is adverse to financial stability.

The lack of appropriate risk management by banks also contributed to the financial stability risk. Not only were credit risks assessed improperly, but banks' asset-liability management further exacerbated their vulnerability. Specifically, their long-term assets (such as mortgage loans) were financed (and hedged) by short-term liabilities (and off-balance sheet items), which made them subject to a significant rollover risk.

Forecast for net quarterly changes in household loans

Figure 2



Source: MNB.

The Early Repayment Programme and its potential impact on the exchange rate

The Hungarian government that took office in 2010 considered the high foreign-currency indebtedness of Hungarian households and the rising ratio of those unable to pay their instalments to be one of the country's severest economic, financial and social problems. In order to mitigate this problem, it adopted numerous new regulations related to household lending in 2010 and 2011. Some of them aimed to

improve the position of households with foreign-currency-denominated loans; their main objective was to reduce households' debt service burden.⁶

From the central bank's point of view, the most important measure was the so-called Early Repayment Programme, which was announced in September 2011. With this particular scheme the government provided the option of repaying foreign currency mortgage loans at fixed exchange rates. Borrowers with foreign-currency-denominated mortgage loans had the opportunity to repay their total debt at an exchange rate of CHF/HUF 180 for loans denominated in Swiss francs, EUR/HUF 250 for euro-denominated loans and JPY/HUF 2 for loans denominated in Japanese yens. These were far below the prevailing market exchange rates, and thus more favourable to households.⁷ The creditor banks, obviously, were to realise a significant loss from these transactions, as they had to cover the difference stemming from the preferential exchange rates and the market rates.

An important feature of the programme, however, was that only those debtors who were able to repay their total outstanding debt in one lump sum qualified for the programme; in other words, partial repayment was not allowed. Moreover, the government provided this opportunity only on a temporary basis. Interested borrowers were asked to submit their intention to participate by the end of 2011, and 60 days were available to the banks and clients to conduct the transactions.

Besides the exchange rate losses, the programme adversely impacted the quality of banks' loan portfolios, as it was mostly their wealthiest, most creditworthy clients who were able to repay total debt. As a result, banks lost a great share of their lowest-risk clients, while retaining those who were barely able or unable to meet their monthly instalment obligations. From the point of view of the Magyar Nemzeti Bank (MNB), the Early Repayment Programme posed a significant threat to exchange rate stability. By nominally fixing the preferential conversion rates, the parliamentary ratification of the scheme, in a single legal act, changed the denomination of a significant portion of the banking system's assets from foreign currencies to the Hungarian forint, while leaving the denomination of the liabilities intact. As a result, the foreign currency position of credit institutions opened up well before the actual launch of the early repayment scheme, creating unintentional exchange rate exposure for them. The banks thus needed to buy foreign currency – and sell the forint – to eliminate their exposure.

The magnitude of the exposure, however, was not known with certainty: it depended on the number of debtors who were both able and willing to repay their FX loans. In September, only vague estimates of their number were available; the true amount was to become known only gradually during the 4 months of the submission period.

The programme posed an immediate risk to the stability of the forint's exchange rate through two direct factors:

⁶ These measures comprised the exchange rate cap, the possibility of debt servicing at a fixed exchange rate for 5 years, setting up National Asset Management Ltd., and lifting the foreclosure and eviction moratorium with the introduction of auction quotas.

⁷ Market rates at the time of the programme's announcement were CHF/HUF 234 and EUR/HUF 282; therefore the programme was equivalent to 30 and 13 per cent debt relief for the qualified borrowers.

- Had credit institutions simultaneously wanted (with forints) to purchase in the foreign exchange market the large amount of foreign currency necessary for the early repayments, it would have caused an immediate and significant depreciation through a large drop in demand for HUF.
- Moreover, the market received the early repayment programme unfavourably from the outset, as it imposed a significant extra burden on the financial intermediation system, which the market perceived as negatively affecting future lending capacity and propensity. Thus, the early repayment programme itself increased the country's risk premium, thereby contributing to weakening of the forint.

Given the presumable weakening of the forint, two additional, second-round factors could have aggravated the depreciation pressure on the forint:

- With expectations of forint depreciation, banks would presumably have aimed to buy foreign currency in the necessary quantity as early as possible, to minimise the cost; and
- Speculative forint sales by other market participants, who were even not involved in the early repayments, but only wished to realise an exchange rate gain by speculating on forint depreciation, would presumably have increased.

Such speculative "front-running" would have had the potential to significantly increase the volatility of the exchange rate and lead to excessive depreciation of the domestic currency, and thus adversely affect both the outlook for inflation and financial stability – a situation that the MNB wanted to avoid.

Policy alternatives

Considering the MNB's goals, pronounced uncontrolled shifts in the forint's exchange rate were considered to be unfavourable for several reasons. First, a large depreciation could have raised inflation. Second, a significantly weaker forint would have led to a further sudden deterioration of the commercial banks' loan portfolios through an increase in instalment size of the remaining foreign currency loans (presumably those of financially troubled debtors who were unable to effect early repayment), and to an increase in the banks' funding costs due to their worsening capital position. Third, a sudden, large increase in exchange rate volatility might have destabilised the foreign exchange market itself, and could have contributed to a significantly higher expected risk premium on forint-denominated assets.

Given this situation, the MNB had the following policy options:

- To remain passive, and possibly face a potentially self-reinforcing depreciation of the forint of a magnitude and speed that would be clearly harmful in terms of inflation and financial stability.
- To dampen the possible weakening of the forint ex post, if necessary, with ad-hoc exchange rate management instruments such as silent intervention. In this case, however, the risk of spending excessive amounts of foreign exchange reserves to simply satisfy a speculative demand for foreign currency would have been large.
- To somehow provide an ex ante commitment to deliver the foreign currency necessary for the programme from the reserves in an organised, structured

manner, with the aim of minimising motivation for second-round, speculative HUF sales while at the same time conserving foreign reserves.

The MNB chose the third option. However, designing a suitable instrument was not trivial. The aims the central bank had in mind when formulating the specifics were the following:

- The MNB wanted to ensure that banks would be able to obtain the necessary foreign currency coverage for their open currency positions from the central bank, so that they would not be forced to obtain it from the foreign exchange market within a short period of time, which would raise concerns about possible weakening of the forint.
- The instrument must also aim to dispel expectations of a weakening of the forint, thereby reducing speculation. In other words, the availability of the instrument alone was to produce a stabilising effect.
- The central bank also wished to provide the banks a special hedge against the uncertainty stemming from the fact that the number of borrowers that would join the Early Repayment Programme, and therefore the size of the foreign currency exposure, was not known in advance. From this viewpoint, the MNB instrument filled a gap, as obviously no market-based hedging instruments were available for this type of risk.
- Given that a decrease of foreign exchange reserves would have been harmful in terms of the country's external vulnerability, the MNB wanted to specify the instrument in a way that would contribute to stabilising its reserve adequacy indicators.
- It is important to emphasise the MNB did not want to defend any particular exchange rate target; its goal was to avoid market instability that could potentially lead to excessive volatility and depreciation.

The foreign currency tender programme

The MNB decided to offer a regular foreign currency (euro) tender that would allow credit institutions affected by the Early Repayment Programme, under well-specified conditions, to bid for the euro amount necessary to cover their open foreign currency position.⁸

⁸ Although most of the foreign currency mortgages affected by the Early Repayment Programme were denominated in Swiss francs, the MNB decided to provide euros to the banks. On one hand, euro reserves were available in a large amount, significantly facilitating the sales. On the other hand, the aim was to prevent forint sales in the market, irrespective of the purchased currency. The EUR/CHF market was sufficiently large and liquid to ensure that even large conversions by the Hungarian banks would not move the exchange rate significantly. Credit institutions were able to convert the euros purchased from the Bank to Swiss francs in the foreign exchange market without any negative consequences.

A hedging instrument against “early repayment risk”

It was announced that the tenders would be held on a weekly basis between early October 2011 and end-February 2012.⁹ Banks could submit bids every Monday. With the tenders, credit institutions could buy foreign currency up to an overall amount equivalent to the value of their potentially affected mortgage portfolio as of 31 August 2011. The MNB did not specify any preannounced quantity to be allocated to the tenders. All accepted bids were to be settled at the submitted exchange rate (multiple-rate tender). Results were announced on tender days at 12 noon, at which time the MNB published the lowest acceptable EUR/HUF exchange rate. Up to 3 different bids by the same bank were accepted.

One of the particular features of the programme was that settlement of the transaction was not immediate. Credit institutions received the foreign currency allocated to them only after their borrowers actually made the repayments. Until then, the MNB rolled the foreign exchange over in overnight EUR/HUF FX swaps.¹⁰ Thus, although the counterparties purchased the foreign currency in the tenders, and as a consequence their FX position was hedged, every day they technically “lent” the euro to the Bank for one day through a swap transaction, until they became entitled to the use of the foreign currency through the completed early repayments.

Upon termination of the programme the credit institutions were obliged to convert unused foreign currency to forints at the MNB. In other words, if a credit institution overestimated the capacity of its borrowers to use the Early Repayment Programme, and purchased excessive amounts of foreign currency from the MNB, the surplus was to be converted back at the end of the programme. This reconversion was necessary to ensure that the banks used this facility to purchase foreign currency from the MNB only to cover the early repayments, but not for speculative purposes. The conversion rate was the original exchange rate at which they purchased the euro from the MNB; this was to ensure that in the event of over-hedging, they did not assume the risk of movements in the EUR/HUF exchange rate for the excess amount.

Due to these special conditions, the “product” offered by the MNB on the tenders was a special financial instrument: it did not fully correspond to a standard spot market transaction, as other rights and obligations were associated with it (the purchased euro needed to be kept with the MNB in a specific form, it could only be used for a specific purpose etc.). Thus, the comparability of the price established in the tenders and the market price was somewhat limited from the outset.

A major difference between a simple spot transaction and the MNB’s instrument is that in the case of over-hedging, the excess foreign currency was repurchased by the MNB at the original buying rate. The MNB thereby offered banks a product that provided a hedge against the uncertainty regarding the volume of early repayments. In essence, the “product” offered by the MNB was essentially a forward foreign exchange position that automatically became void if

⁹ This period matched the Early Repayment programme, where clients had to announce their willingness to repay their loans by 31 December 2011, and an additional 60 days were allowed to complete the transaction.

¹⁰ The Bank published the quantity of allocated and actually paid amounts in the middle of the month following the reference month (together with the statistical balance sheet).

not needed. In this sense, it has properties similar to those of options. Such a product was unavailable elsewhere in the market.

Pricing issues

Pricing the product had its particular challenges. For example, while credit institutions using the central bank instrument could hedge themselves against the risk arising from possible over-hedging, the MNB did not want to encourage banks to purchase much more foreign currency than the expected demand stemming from the Early Repayment Programme. First, in case of substantial over-hedging, market analysts could have anticipated a large decline in foreign reserves, and might have raised questions about the adequacy of reserves. Second, substantial over-hedging might have had started rumours about a larger-than-actual volume of early repayments, and thus higher losses for banks, which again might have triggered unnecessary speculative trades.

All in all, pricing needed to be determined with respect to the following principles:

- To not discourage banks from applying for the central bank instrument, i.e. not to make it too expensive;
- To charge, however, a cost for expected over-hedging, i.e. so that over-hedging is not too affordable;
- To make the exchange rate bids submitted and accepted in the tenders easily comparable to the EUR/HUF exchange rate observed in the market, to ensure transparency.

To implement these goals, the MNB had to determine 3 pricing parameters:

- The lowest bid accepted for the tenders – to be determined on a weekly basis;
- The reconversion rate for the excess foreign exchange at the end of the programme;
- The pricing of the FX swaps used to hold the purchased foreign exchange until the corresponding early repayment actually happened.

On the tenders, the central bank tracked market rates with the lowest accepted bid. This facilitated the bidding for market participants through transparency.

To discourage excessive over-hedging, the MNB decided that unused amounts should be reconverted at an exchange rate that exactly corresponds to the buying rate. Thus, the counterparty lost the interest rate spread – the “carry” – for the holding period, resulting in a weaker motivation for over-hedging.¹¹ As to the swaps, the MNB eventually decided to price those on the basis of the average market interest rates (HUFONIA and EONIA) of overnight lending/deposit transactions for the previous day, providing banks with a slightly lower implicit return than on comparable market swaps.¹²

¹¹ At that time the forint interest rate was approximately 6 per cent higher than the euro rate, which would have justified reconversion at a higher EUR/HUF exchange rate.

¹² To determine the pricing parameters of the instrument it was necessary to create a quantitative pricing model. From an asset pricing point of view, the product had similarities with currency

All in all, the actual combination of these pricing parameters resulted in a product that was initially priced close to the spot exchange rate and had an additional hedging component, making it attractive for banks. The extra value of this hedge was highest when a bank purchased its expected necessary FX from the central bank. However, hedging beyond the expected FX need became increasingly expensive due to the punitive reconversion rate.

Considerations regarding foreign reserve adequacy

Obviously, the MNB needed to estimate the amount by which such a programme could reduce its foreign exchange reserves. Experts estimated the volume of early repayments (including those funded by taking loans in forints) to be equal to 20 per cent of the foreign-currency-denominated mortgage loan stock, as, on one hand, some debtors did not have sufficient savings, and on the other, banks' propensity to lend was rather low. The MNB expected the early repayment of loans to be approximately EUR 3.3 billion out of the total EUR 16.7 billion in foreign currency loans within the banking system. This ratio, however, showed significant variations at the level of individual banks, and it was not clear, either, as to which banks would apply for the instrument of the MNB and in what proportion to their loans. It is important to note that although the amount was substantial, it did not even reach 10 per cent of total foreign exchange reserves – that is, there was no threat of a significant decline in the level of reserves as a result of the programme.¹³

Market participants and analysts take into account numerous indicators to measure a country's foreign exchange reserves. Although the MNB also considers a variety of indicators to evaluate its level of reserves, in small, open, emerging economies such as Hungary market analysts most frequently use the Guidotti-Greenspan rule, and therefore it has a particular importance in maintaining investor confidence.¹⁴

To ensure that the decline in foreign exchange reserves would not significantly hamper compliance with the indicator, the MNB required participating credit institutions to initially reduce their short-term (i.e. within one year) external liabilities if they repaid liabilities towards non-residents – either parent-institution funding or wholesale cross-border borrowing – using the received foreign currency. As a result, not only did the foreign exchange reserves decrease, but the short-term external debt of the country also declined, which reduces the need for reserves based on this indicator.

options. However, the payout function of the product depended on the amount of foreign currency loans repaid by households – a risk not traded on any market. Due to this incompleteness of the market, pricing could not be based on the principle of no arbitrage, and assumptions about the banks' risk preferences had to be made. Details of the pricing model can be found in the appendix of Pulai and Rappa (2012).

¹³ According to the official statistics, international reserves equalled 37,554 million euros in August 2011.

¹⁴ According to this rule, foreign exchange reserves should provide cover for the given country's short-term debt, i.e. they should provide sufficient liquid assets, in the event that the country is unable to renew its maturing external debt, for a period of one year. On foreign reserve adequacy in Hungary in general, see Antal and Gereben (2011).

Data and reporting

Before the launch of the programme, neither the MNB nor the Hungarian Financial Supervisory Authority had the data necessary to monitor the programme in general, especially to ensure that banks were fulfilling the commitments that they agreed to by participating in the foreign exchange tenders. A new reporting system was set up to fulfil these needs, and all participating banks had to make a commitment to submit the necessary data.

For the purpose of monitoring early repayments, credit institutions were required to provide data relating to the early repayment applications submitted to them, and the amount of early repayments effected, as a condition for participating in the programme. In addition, credit institutions were required to provide data on forint-denominated loans that they provided to households so that they could repay the foreign currency loans. Also, data on external wholesale funds repaid as a result of the early repayments were to be reported. Provision of data on changes in foreign funding was necessary, as credit institutions participating in the tender were also required to first repay their short-term (i.e. less than one year) external funds. The counterparties met this requirement, according to the data provided.

Implementation

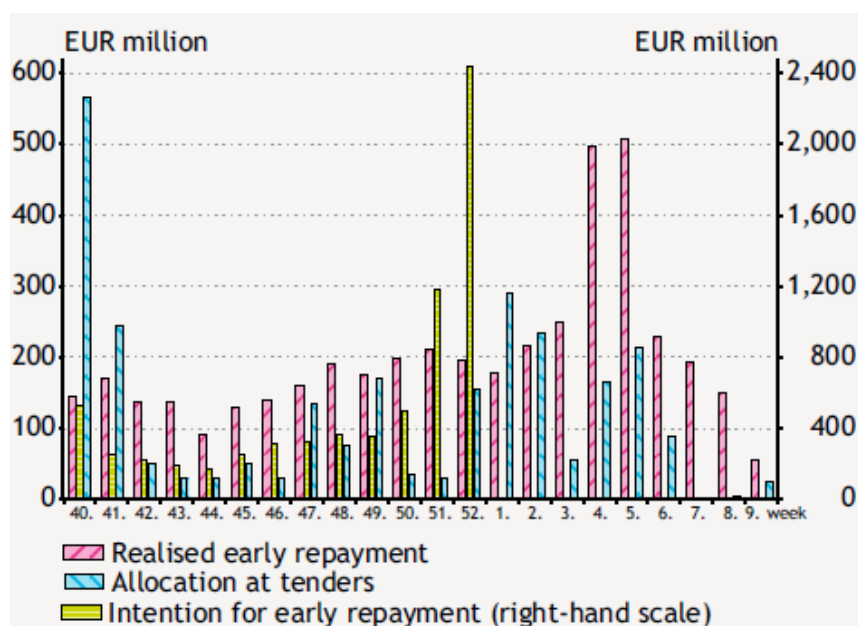
At the beginning, quick and efficient communication about the programme was crucial to prevent overreactions and to avoid a build-up of potentially damaging self-fulfilling exchange rate expectations. A few days after the government's plans about the Early Repayment Programme became public, the MNB's governor indicated at a press conference that the foreign reserves may be used to counteract the impact of the early repayments. This announcement in itself already helped stabilise the exchange rate. The details of the foreign currency tenders were finalised by late September. Together with its public announcement, the MNB held several consultations with the affected banks' senior management and treasury officers. By the time of the first tender, the banks' asset-liability management units and foreign exchange desks were already familiar with the technical details and intricacies of the scheme.

The MNB conducted a total of 22 tenders between early October 2011 and the end of February 2012. The vast majority of bids submitted approximated the market EUR/HUF exchange rate. In each case, the MNB determined the minimum accepted exchange rate close to the prevailing market EUR/HUF rate (average rate during the 15-minute tender) – that is, the Bank did not in any case sell foreign currency at an exchange rate that was more favourable for its counterparties than market rates.

In the course of the tenders, the MNB accepted bids from eight counterparties with a total value of EUR 2,679 million. However, not all of that was actually paid out, based on the actual early repayments reported to the MNB (see below). Of the ten banks with foreign currency loan portfolios of over EUR 100 million, only two institutions decided not to participate in the tenders of the MNB, and another bank obtained only one-third of the foreign currency related to its early repayments through the MNB's instrument. None of the credit institutions with a portfolio of less than EUR 100 million used the central bank instrument. These credit institutions presumably purchased the necessary euro amounts from the market or from their parent banks.

Amount allocated through the tenders and amount of reported and actual early repayments in a weekly breakdown

Figure 3



The counterparties of the MNB reported actual early repayments totalling EUR 4,353 million. On the basis of the above, a total of EUR 2,586 million was actually paid out of the currency allocated through the tenders, i.e. the MNB's instrument covered approximately 60 per cent of total foreign currency demand. The remaining 40 per cent was purchased by credit institutions from their parent banks or in the foreign exchange market; the related forint sales may have contributed to the weakening of the national currency observed in the autumn of 2011.

Amount of bids accepted in the tenders and amounts actually paid in a monthly breakdown

Table 1

	Amount of accepted bids on the euro selling tender		Amount of actual foreign currency payments related to the realized final repayment	
	EUR millions	HUF billions	EUR millions	HUF billions
October 2011	890	262	235	69
November 2011	320	98	291	86
December 2011	390	119	336	101
January 2012	744	232	707	216
February 2012	335	99	921	279
March 2012	0	0	97	29
Sum	2,679	810	2,586	781

Source: Press release on the preliminary statistical balance sheet of the MNB for March.

At the end of the programme, a total allocated amount of EUR 93 million remained with three counterparties, which they were unable to use, as the amount of early repayments by their customers was lower than the amount of foreign currency purchased through the tenders. The MNB repurchased this amount – in accordance with terms announced in advance – at the EUR/HUF exchange rate at

which the counterparties had purchased the foreign currency in the last tender(s), following the FIFO principle.

Assessment and conclusions

Overall, the programme was favourably received and positively assessed by market participants. This was confirmed by the opinions expressed by the banks' representatives, but also by the reasonably high use of the product. Besides, both the banks and other market commentators seemed to understand the goals of the programme well.

The programme also contributed to avoiding any excessive instability of the forint. On one hand, it is true that a sizable (approximately 12 per cent) depreciation of the forint was observed over the course of the last four months of 2011, and we cannot rule out the possibility that market conversions related to the Early Repayment Programme contributed to that. However, the depreciation happened in an orderly manner, without any large-scale front-running observed, and the weakening was more likely associated with other domestic and international factors. All in all, the programme supported not only the inflation goal of the MNB, but also the stability of the financial system, in that it curbed deterioration of commercial banks' loan portfolios stemming from increased instalment payments for the remaining foreign currency loans (presumably associated with financially troubled debtors who were unable to effect early repayment) and curbed an increase in the banks' funding costs as a result of their worsening capital position.

From the point of view of foreign reserves, although obviously the program diminished the MNB's reserves, market commentators have not questioned their adequacy in relation to the tender scheme. Rather, the consensus of the comments was that it was "money well spent". The programme's conditionality, designed to reduce the banking system's short-term liabilities, and thus improve the Guidotti indicator through the denominator, performed well. During the time span of the Early Repayment Programme, the banking system's short-term external liabilities decreased by more than EUR 3bn, a figure that is actually slightly higher than the reserves allocated to banks.

Without any counterfactual, it is very difficult to make any objective assessment of the foreign currency tender scheme's performance relative to the alternative solution of "plain vanilla" silent, ad hoc intervention on the spot foreign exchange market. However, it is likely that such an ad hoc strategy could not have successfully prevented front-running and speculation. Also, regular intervention could not have provided a hedge against the uncertainty stemming from the unknown amount of early repayments, and consequently it would not have reduced the banks' incentive to over-hedge themselves right from the beginning. Given these factors, achieving similar results through "plain vanilla" intervention, if feasible at all, would have resulted in significantly larger sacrifices in terms of reserves.

It is fair to say that foreign exchange intervention is an area which is still surrounded by much secrecy, and into which most central banks' efforts to increase their transparency have not seemed to filter much. This programme has demonstrated that a great deal of transparency can actually pay off, sometimes even in the case of interventions.

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