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# REPORT ON FINANCIAL STABILITY

June  
2002

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of the National Bank of Hungary  
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Published by the National Bank of Hungary  
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1850 Budapest, Szabadság tér 8-9.  
[www.mnb.hu](http://www.mnb.hu)

ISSN 1419-2926

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# Introduction

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The objective of the *Report on Financial Stability*, a semi-annual publication launched by the National Bank of Hungary in 2000, is to provide a picture of the major issues directly or indirectly influencing Hungarian financial system stability as well as to review and assess developments most relevant to the sector's soundness or vulnerability since the previous issue of the *Report*.

The *Report* is structured similarly to the earlier issues – the three regular chapters (1 Macroeconomic environment; 2 Stability of the banking sector; 3 Position of non-banking financial intermediaries) are complemented with articles focusing on certain important factors of financial stability. However, the chapter on macroeconomic events has been revised thoroughly for two reasons. First, in the past the aim has been to collect and analyse the most recent data for the widest possible range of macroeconomic indicators relevant to financial stability. But up-to-date information on some of the major six-monthly economic variables, requiring fresh analysis, has not been available. Second, some of the data published earlier in the *Stability Report* can also be found in the *Quarterly Report on Inflation* since it has been restructured in August 2001. This is why the Bank's forecasts of the indicators examined are presented in detail in the *Quarterly Report*.

In order to avoid overlaps, the chapter on macroeconomic developments of the *Stability Report* gives an overview of changes in the indicators most relevant to financial stability. Movements significant in terms of exposure to risks are dealt with in more detail. In other cases, analyses are only prepared once a year, conforming to the accessibility of relevant information (e.g. analysis of corporate sector financial stability, the balance of payments, capital movements, etc.).

Closely linked to the revision of the chapter on macroeconomic events, Bank staff have realised the importance of briefly considering the role of macroeconomic indicators in the analysis of financial stability. Analysing the developments of past months, the most important risk factors continue to be the slowdown in demand for Hungarian exports, the reluctance of private sector wage growth to adjust to lower inflation and the real appreciation of the forint exchange rate. These events could result in a deterioration in firms' profitability, most notably in the tradables sector. However, the aggregate data, available at the sectoral level, do not indicate a deterioration in profitability; and borrowing by firms continues to be low. The next issue of the *Report* will contain an analysis of the sector's profitability. By that time firms' tax return data will have been available for the assessment.

The National Bank of Hungary took a number of highly important steps from the perspective of financial stability in 2001. In agreement with the Government, the Bank widened the intervention band of the forint to  $\pm 15\%$  on 3 May. Subsequently, it reduced the devaluation rate of the currency to 0.2%, and then finally abolished the crawling-peg exchange rate regime altogether. On 12 June, the Bank announced the system of inflation targeting; and three days later it lifted the majority of all the existing restrictions on foreign exchange. The forint appreciated vis-à-vis the euro following the band widening, and exchange rate volatility increased considerably. Based on experience since the reform, the Hungarian financial intermediary system has been able to adjust smoothly to foreign exchange liberalisation and the new exchange rate regime.

The positive trends in credit institutions' operations which started a year earlier continued in 2001. The sector saw steady development, improving profitability and broad-based stability. However, cooperative credit institutions' operations are still judged by the Bank to be risky.

Growth in lending by banks was robust in the year under review, as seen in 2000. Rising forint lending was the engine of the pick-up in activity. Banks responded to forint appreciation and increased exchange rate volatility by curtailing foreign currency lending and simultaneously shifting lending activities towards forint loans. Lending activity was particularly strong in the first three quarters of the year. However, firms' demand for bank finance fell back in the final quarter.

As households' and firms' indebtedness remains low, the Bank does not consider the banking sector's credit risk to be too high despite the continued expansion of lending. However, the robust growth in lending to the household sector makes the creation of a reliable credit reference service for individuals an ever more pressing task. Banks have exceeded their limits to large exposures and the existing restrictions on investments significantly, which may be a source of problems. Although these limit overruns are fully covered by regulatory capital, their increasing amount is evidence of a concentration of risks.

The banking sector's exposure to market risks was low in 2001, both in terms of interest rate and exchange rate risks. Currently, there is no reliable information on the volume of banks' derivatives activity, due to the inadequacies of reporting data on derivatives transactions. This is viewed as problematic in respect of banks' exposure to market risks.

The new Central Bank Act, passed by Parliament in 2001, ensured bankruptcy protection for pledged assets and collateral in favour of the National Bank of Hungary. This contributed to stability in the interbank clearing and settlement systems, and improved the safety of both VIBER (RTGS) and BKR (Interbank Clearing System). Protection provided by the new Capital Markets Act reinforced the safe conduct of securities settlements.

The activities of non-bank financial intermediaries in 2001 showed a varied picture by type of institution. The three types of institutional investors managed to increase further their share of the market in channelling household and corporate sector savings. Pension funds continued to grow the most robustly in the year under review, whereas the number of funds fell further. Efficiency considerations motivated the consolidation process experienced by the sector. This is viewed as a positive development from the perspective of systemic stability. The operational and regulatory risks facing pension funds are not negligible. The market of investment funds is suitably regulated – its risks to systemic stability are low. Life insurance reserves rose less strongly than households' financial wealth in 2001. Institutional investors continued to pursue cautious investment policies – risk-free government securities account for 75%–85% of their portfolios. Investment firms' activities narrowed, due to adverse capital market developments. Their market was characterised by episodes of take-overs and mergers into the parent bank. The total capital requirement, calculated on the basis of the trading book introduced in 2001, showed that the sector was facing relatively low risks. The volume of investment firms' leasing and lending activities rose strongly in the year under review. However, the quality of their outstanding loans deteriorated. This was not consistent with losses in value recorded for outstanding claims.

This issue of the *Report* includes three articles. The first of these considers the role international investors' risk perception of emerging-country risk exposures plays in developments in risk premia on forint-denominated financial instruments. It analyses the relationship between emerging-country risk indicators and the spreads on Hungarian foreign currency bonds and forint yields. According to the findings of the article, the exposure of forint-denominated instruments to financial contagion is significant, despite the weak average correlation. Although episodes of financial contagion have had a limited effect on Hungary in the past two years, variations in investors' emerging-country risk perception may threaten financial stability through volatility of government securities yields and, particularly since the band widening, through fluctuations in the exchange rate of the forint. As the case of Greece shows, EU membership and improving credit rating may reduce the strength of financial contagion, but cannot eliminate exposure to contagion on the whole. It can only be eliminated by abandoning the independent national currency.

The second article examines the effect of the band widening and foreign exchange liberalisation on the structure of foreign exchange markets and activity in the spot and derivatives markets as well as on the forint markets, with special regard to the markets of forint-denominated government securities and forint issues abroad. Furthermore, it considers the changes induced by the band widening and foreign exchange liberalisation in the denominational structure of banks' balance sheets and in their foreign exchange position vis-à-vis the household, corporate and non-resident sectors. In accordance with earlier expectations, there was a gradual rise in the proportion of derivatives transactions, and non-residents gained more and more of a foothold in the Hungarian foreign exchange market, simultaneously with the rise in foreign exchange market turnover. In addition, non-residents' demand for short-term government securities strengthened, and the market of forint-denominated issues by non-residents picked up. Risks increasing with the band widening prompted participants to reduce their exchange rate exposures. This was reflected in the fall in the proportion of foreign currency items on both the assets and liabilities sides of banks' balance sheets. The most marked changes were seen in the sector's position vis-à-vis firms and non-residents.

The third article presents an overview of banks' awareness of operational risk and the related risk management practices. Developments in the financial intermediary system have increased operational risks considerably in past years. This makes the issue particularly relevant. Operating losses, occasionally involving large amounts, also directed market participants' attention to the need for managing this type of risk proactively and professionally. The nascent regulations by international regulatory authorities may aid this work. Hungarian banks' operational risk management practices are diverse and multi-faceted. The majority of banks with a dominant share in the domestic intermediary market are already monitoring operational risks in a conscious manner. Their future plans include the further development of operational risk management. In contrast, a much smaller number of small and medium-sized entities have installed independent operational risk management practices so far. The Basle Committee expects to introduce capital requirements for operational risks in 2005. Following their approval, the European Union will likely integrate these recommendations into its internal regulations. After Hungary's accession to the Union, these regulations would apply to Hungarian financial institutions automatically. This increasingly highlights the importance of the work required to implement and develop operational risk management systems.

# I Macroeconomic environment

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The opening section of Chapter 1 on macroeconomic developments relevant to financial stability seeks to settle a long-standing debt of the Bank's staff. It briefly discusses the international experience used as the basis for selecting the economic variables which are regularly considered in the analyses. On the basis of historical data, these variables function as reliable indicators of financial fragility. The section gives a synopsis of the theories which attempt to establish a causal relationship between observed macroeconomic events and developments in financial stability. While perhaps the most important lesson of recent decades has been that the forms and sources of financial crises are constantly changing, and the various theories have only been able to explain such crises with considerable time lags, these theories nonetheless represent the theoretical framework for evaluating economic indicators which exhibit unusual behaviour.

Looking at the developments of past months, there have been no major changes in the indicators of potential threats to stability. The most important risk factors continue to be the slowdown in demand for Hungarian exports, the reluctance of private sector wage growth to adjust to lower inflation and the real appreciation of the forint exchange rate. The next issue of the *Report*, therefore, will take a detailed look at fluctuations in corporate sector profitability and developments in profitability gaps between various groups of firms.<sup>1</sup> The recent decline in corporate sector net external borrowing requirement suggests that, at the sectoral level, firms' disposable income has not fallen recently. Household borrowing has been rising at a brisk pace, but this is not viewed as a source of risk to stability; and *the recent growth of indebtedness is expected to continue over the longer term.*

The current account deficit fell in 2001, closely aligned with turns in the cyclical position of the Hungarian economy. Corporate sector financing requirement was lower, reflecting the decline in investment demand. Higher borrowing by the central government only partially offset this effect. In the event of a further pick-up in economic performance, rising private sector borrowing should be counterbalanced by a reduction in the external borrowing requirement of fiscal policy, in order to retain the country's long-term sustainable external balance.

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<sup>1</sup> Data on companies' financial position are available only once a year, after corporate income statements processed. In other countries, central banks have the opportunity to obtain a picture of developments in the corporate sector by using data in quarterly reports published by listed companies. However, indicators of companies listed on the BSE are not considered as representative, neither for the entire corporate sector nor for individual sectors.

## I.1 The role of economic indicators in financial stability analyses

Periods of financial instability<sup>2</sup> are regularly accompanied by certain *macroeconomic events*. Although there is little agreement in economic literature over the causal links among these developments, empirical tests all unequivocally demonstrate that certain macroeconomic developments are preludes to financial instability. Macroeconomic developments have played an important role in the emergence of financial fragility and banking and currency crises.

Based on the empirical literature, several predictive indicators of financial instability can be identified. These early warning signals must be monitored on a constant basis, as they may help in recognising situations of financial distress. *However, these indicators do not function in a clear-cut, straightforward way, and their shifts do not necessarily signal financial instability.*<sup>3</sup> For this reason, it is important not only to identify developments with potential negative consequences, but also to examine the patterns of economic behaviour which tend to shape these developments. Such an analysis requires an analytical framework which links and systemises various observations and helps identify cause and effect relationships. The

### Early indicators of financial vulnerability<sup>4</sup>

*Currency crises* are almost always preceded by a *reversal in capital flows* – the conversion of domestic currency-denominated assets into foreign currency. In periods preceding such crises, economies show signs of *overheating*, *lending* soars and the *real exchange rate* appreciates significantly. The international reserves-to-debt ratio falls. Asset prices, particularly equity and property prices, rise strongly then fall prior to the crisis. Somewhat surprisingly, economic growth rates do not play a role in the emergence of such crises, similarly to the fiscal deficit. In contrast, the current account deficit-to-GDP ratio increases significantly in the cases examined.

*Banking crises* also begin with an overheated economy. They are preceded by high inflation, large current account deficits, swift expansion of lending and an inflow of short-term capital. The resulting financial fragility may easily lead to a banking crisis if the economy receives a shock, such as a decline in GDP, a deterioration in the terms of trade, a collapse of asset prices or a rise in real interest rates. Banking crises are preceded by a fall in national income and a downturn in equities markets as well as a decline in international reserves a couple of months prior to the crisis. Withdrawal of bank deposits coincides with the period of crisis itself and therefore such withdrawals are a consequence rather than a cause of the problems.

<sup>2</sup> There is no accepted definition of instability, crisis or large-scale uncertainty in the economic literature. These definitions are meant to denote the state of financial markets, in which asset prices or exchange rates change in a way that they jeopardise efficient financial intermediation, payments and the stability of institutions.

<sup>3</sup> If such a relationship existed, then every participant would change its behaviour, and so the indicator would cease to be a predictor of crises.

<sup>4</sup> The experiences of tests evaluating crises have been summarised on the basis of studies as follows: Kaminsky, G. L. and Reinhart, C. M. (1996): 'The Twin Crises: The Causes of Banking and Balance-of-Payments Problems', Federal Reserve Bank, International Finance Discussion Papers, No. 544, Demirguc-Kunt, A. and D. Enrica (1997): 'The Determinants of Banking Crises: Evidence from Developed and Developing Countries', World Bank Wps. 1828. IMF (1998) 'Financial Crises: Characteristics and Indicators of Vulnerability', in World Economic Outlook, Chapter IV. Mór, Cs. (2000) provides an interesting summary of experiences with bank crises in 'A bankválságok okai és indikátorai' (Causes and Indicators of Banking Crises), Bankszemle 11-12, and on currency crises Árvai, Zs. and Vincze, J. (1988): 'Valuták sebezhetősége: Pénzügyi válságok a 90-es években' (Currency Vulnerability: Financial Crises in the 90s) NBH Working Papers, 1998/1.

various crisis theories provide the theoretical framework for analysing the relationships between developments in macroeconomic indicators and financial vulnerability.

Economic literature generally distinguishes between *currency crises* and *banking crises*. The theory of currency crises primarily analyses those cases when the central bank is forced to abandon a previously announced fixed exchange rate. Today, the exchange rate of the Hungarian forint is allowed to fluctuate freely in a  $\pm 15$  per cent band. Within these broad confines, variations in the exchange rate do not result in a loss of credibility of the announced exchange rate regime, and central bank commitments which may potentially become unsustainable do not distort economic agents' exchange rate expectations. However, currency crises can also occur in floating exchange rate systems, for example, if the authorities do not allow the exchange rate to move in line with market expectations in order to avoid the negative impact on inflation. In Hungary, the enterprise sector's and the government's balance sheets have become sensitive to variations in the exchange rate due to high share of forex denominated liabilities. Lessons drawn from the literature on currency crises, therefore, are believed to be relevant for the analysis of Hungarian economic stability, from the perspective of identifying both the factors leading to current account crises and sudden changes in exchange rate expectations.

Changes of *macroeconomic origin* are often behind banking sector instability. In such cases, *numerous financial institutions* may simultaneously experience difficulties due to a deterioration in their asset portfolio.<sup>6</sup> Generally, the cause of financial vulnerability is that borrowers are much too enthusi-

### Triggers of currency crises

In a fixed exchange rate regime, deviation of the announced exchange rate from the fundamental equilibrium exchange rate generally leads to a currency crisis. The fundamental equilibrium exchange rate may be defined as an exchange rate at which the demand for and supply of the monetary base are in equilibrium. In such cases, the emergence of financial vulnerability can be traced to factors causing a *swift expansion of money supply* (e.g. financing expansionary fiscal policies), or a *decline in money demand* (e.g. flight of foreign capital).

Taking a different approach, the fundamental equilibrium exchange rate may be defined as an exchange rate compatible with an equilibrium real exchange rate. The equilibrium real exchange rate is usually defined as the relationship between foreign and domestic price levels which brings the economy into *external and internal equilibrium*.<sup>5</sup> In other words, at a given exchange rate level the economy grows along with the trend of potential output, in a way that the current account balance moves on a path sustainable over the long term. In this approach the factors affecting *developments in the current account balance*, its *financing* and *competitiveness* must be monitored constantly.

However, financial crises can erupt without apparent fundamental causes as well. In such episodes, the crisis is usually caused by an exogenous shock which leads to panic and expectations of an exchange rate depreciation as well as an outflow of capital. The crisis often erupts when monetary policy does not tolerate the costs of high interest rate level necessary to defend the exchange rate. The triggers for this kind of crisis are difficult to foresee. The lesson from these second generation currency crisis models is that economic agents' sensitivity to variations in interest rates and the exchange rate must be followed carefully.

<sup>5</sup> See Black, F. (1994). 'On the Concept and Usefulness of the Equilibrium Rate of Exchange', in Williamson, J. ed. (1994): 'Estimating Equilibrium Exchange Rates', Institute for International Economics, Washington DC.

astic about the outlook for growth in the economy and their own incomes. These false expectations lead to increasing household indebtedness, and often trigger exaggerated rises in equity and property prices. Swift GDP growth and high expected profits on domestic investments encourage capital inflows, and may well result in exchange rate bubbles.

The stability analysis, therefore, attempts to map out the development of unfounded optimistic expectations, primarily by examining the *indebtedness of economic agents* and *asset portfolios*. It traces the emergence of *economic developments deviating from expectations* and their effects on economic agents' disposable income and balance sheets. Chapters 2 and 3 of this *Report* investigate the question of how these changes affect the balance sheet and stability of the financial intermediary sector.

In the future, a further task of the macroeconomic analysis in the *Report* could be to examine the issue of the extent to which monetary policy actions required to achieve price stability are compatible with the reduction in financial volatility.

Traditionally, central banks only react to financial market events if they cause a change in their inflation forecast. Views have emerged in past years which assert that macroeconomic performance may be improved over the long term if monetary policy takes interest rate decisions as well in response to developments in the financial and property markets, beyond prudential regulation. What may strengthen this view is that longer periods of frequent misalignments in assets prices, i.e. deviations from fundamental, sustainable prices, lead to incorrect consumption and investment decisions,<sup>7</sup> and consequently financial cycles aggravate fluctuations in national income. By preventing these distortions from developing or moderating their effects, central banks may reduce the dangers of costly market price adjustments.

Research into the effects of changes in asset prices on economic agents' behaviour is underway at the Bank; however, currently there is no definitive picture of the role these developments play in monetary transmission, except of that played by the exchange rate. For the time being, high-leveraged forms of financing in the domestic currency do not play a significant role in funding property and securities investments. The Bank, therefore, does not have efficient means to control these instruments. Nevertheless, the *Report* follows the developments in those instruments, and attempts to identify economic situations potentially requiring preventive actions.

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<sup>6</sup> Classical banking crisis theories regard panic withdrawals of deposits as a trigger of crises. In cases of banking crises induced by macroeconomic events, the effective cause is generally a deterioration of the asset portfolio. Exchange rate crises are the exception, when depositors withdraw their deposits on a mass scale, in order to be able to convert them before the currency depreciates.

<sup>7</sup> These misalignments should be distinguished from daily or weekly volatility, which is a companion of the normal functioning of financial markets. Misalignments generally last longer, for months and, occasionally, years.

## I.2 The international business cycle and assessments of risk

As a small open economy, Hungary is strongly dependent on the evolution of the international business cycle. From this perspective, the situation has been unfavourable in the past 18 months. Looking into the future, uncertainty remains despite some positive signs. The current slowdown in global economic growth has a special feature – namely that the major economic centres, the United States, Europe and Japan, are experiencing simultaneous declines in economic performance. This has not occurred for decades. The decline has been most marked in the US, but it has affected Western Europe as well, although with a little lag and to a smaller extent. Growth in the EU, Hungary's most important trading partner, fell gradually throughout 2001, and stagnated in the final quarter. This slowdown was coupled with a pronounced drop in imports.

The US economy is the engine of global economic growth. It is now a common view that a recovery from recession in the USA may turn around the current phase of the economic cycle. US growth prospects improved significantly towards early 2002, with the majority of observers expecting an upturn in the second half of the year. However, in March–April the outlook for a near-term recovery was threatened again by increased political uncertainty in the Middle East and the related strong rise in the world market price of oil. This may explain why the very encouraging growth data for 2002 Q1 were insufficient to mitigate the unfavourable turn in expectations. In the euro zone, inflation remains stubbornly above 2% and a few member states have already come close to the limits to fiscal expansion, as defined in the Stability and Growth Pact. These factors continue to raise questions regarding the chances of a near-term economic stimulus initiated either by monetary policy or fiscal policy.

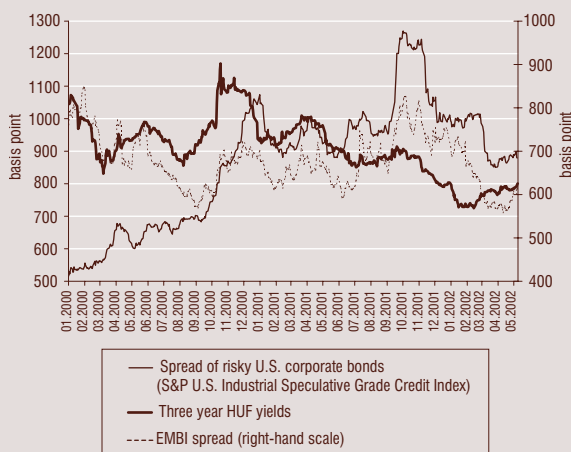
Expectations regarding the global business cycle may have an influence on financial stability through international investors' mood and the risk perception of Hungarian investments. Changes in foreign investors' propensity to take on risks is reflected in developments in the exchange rate of the forint and forint yields as well as in the direction and composition of capital flows.

Sovereign bond spreads of emerging-market economies and high-risk, developed-country corporate bond spreads both rose following the September 2001 terrorist attacks, and remained at high levels up to early November. Since then, there has been a significant increase in demand for high-risk assets. After the large drop in November, risk spreads fell again in February–March.

*The more positive outlook for growth in the US and, to a lesser extent, in Europe, explains investors' more optimistic mood.* These expectations have also been shaping the assessment of emerging-country economies. This view is bolstered by the fact that the Argentinean default has not had a major influence on foreign currency bonds spreads of emerging-country economies.

In contrast to earlier experience, yields on forint-denominated government securities have not closely followed movements in global risk indicators in the past six months (see

**Chart I.1 Global risk indicators and three-year forint yields**



Sources: J.P. Morgan, Standard & Poor's, NBH.

Chart I.1). Changes in the risk spread since the widening of the intervention band of the Hungarian forint have largely been reflected in the exchange rate and to a lesser extent in yields. Especially since December 2001, forint yields have directly been determined by domestic macroeconomic prospects and movements in euro yields.

### I.3 Growth and competitiveness

From the perspective of financial stability, the rate of economic growth is one of the most important indicators. A slowdown in growth, especially if its timing or extent is unexpected, may often result in a weakening of households' and companies' capacity to service their debt. Less prudent lending in the upward phase of the economic cycle may contribute to an impairment of the ability to repay existing debt. In the optimistic phase of the upturn, caution may wane, and many banks may underestimate lending risks when extending loans. This tendency may be amplified by fierce competition among lending institutions in order to boost their market shares.

Currently, the Hungarian economy is experiencing a slowdown in GDP growth, significant forint appreciation in the wake of band widening and a substantial drop in inflation. The latter is attributable in part to the strength of the exchange rate. The extent to which external demand and growth have dropped surprised even analysts, who had expected GDP to grow by more than 5% at the start of 2001 (see Chart I.2).

As far as the rate of economic growth is concerned, a distinction should be made between the cyclical phases in mature economies and the occasional sharp declines in the higher growth rates registered by emerging countries. In small, open economies, sudden declines in exports and GDP may jeopardise financial stability. This is particularly relevant for countries whose exports are lopsided in terms of products and direction.

Exports are equivalent to 60% of Hungary's GDP. As most of these are directed to the EU, European business cycles tend to exert the largest influence on the country's outward trade. *The global economic slowdown has retarded growth mostly through the decline in European demand*; however, domestic demand, in particular general government demand, and household sector consumption expenditure growth, which have registered above 4% rates, have partially offset this effect. As a result of these factors, the 3.8% GDP growth seen in 2001 was still one of the highest in Europe, despite falling by 1.4 percentage points relative to 2000. Market analysts expect 3.5% growth for this year. An upturn is expected to begin in 2003, and growth may be near to 4.5%.

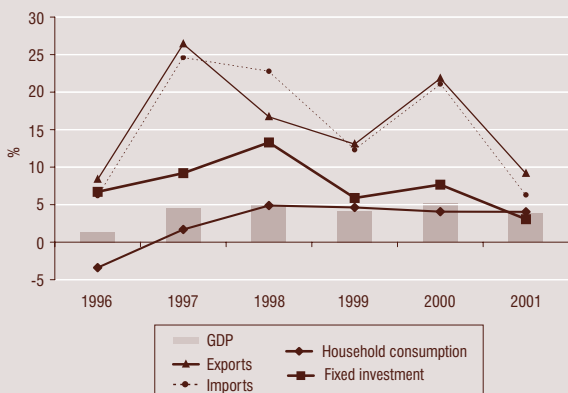
The international economic downturn and the real appreciation of the forint may represent a risk through the declining profitability of the corporate sector. Despite forint appreciation in 2001, the rate at which wages grew in manufacturing did not slow. While lively domestic demand ensures that sales revenue remains level in services, the position of exporting companies as well as those competing with products that may be imported has deteriorated vis-à-vis foreign competitors since the band widening. However, it is also a piece of the puzzle that the export sector produces with a high import content and has significant

Chart I.2 Expected and actual annual real GDP growth



Sources: Reuters poll, CSO.

Chart I.3 Real annual growth in GDP and its components



Source: CSO.

foreign currency debt, so the drop in profits caused by the stronger forint has been smaller than the loss of sales revenue.

Keeping wage growth in check may not have been necessary in services due to the two sectors' different profitability profiles, and so wages could not reflect the drop in selling prices in the tradables sector – *the companies involved appear to have adjusted to the more unfavourable conditions by layoffs rather than by curtailing wage growth*. All this is not viewed as a risk to financial stability. The institutional system of central wage bargaining in Hungary has little effect on private sector wage growth. The bargaining position of trade unions is weak in this sphere and, consequently, wage developments largely reflect companies' decisions. In the Bank's judgement, however, the labour markets relevant for the services sector and manufacturing are segmented, so the driving force behind wage growth is not so much the struggle for scarce labour; the similarities between the two sectors in terms of wage growth may have been caused by demonstrative effects.

Consequently, strong wage growth does not mean that the average profitability of the corporate sector is in danger. However, there are no data available that could directly confirm this view. It should not be neglected that the average may hide significant differences in profitability within the sector. This is underlined by the fact that, simultaneously with the strong wage growth, there was a slight fall in manufacturing employment in 2001 Q4.

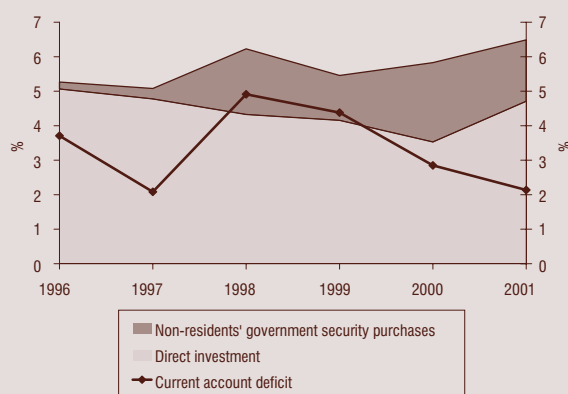
## I.4 Balance of payments and external debt

Financial system stability in small, open economies is largely dependent on whether the current account deficit is sustainable over the long term and to what extent deficit financing is sensitive to shocks. Sensitivity, in turn, is determined primarily by the composition of capital flows – the shorter the maturity of inward flowing capital, the more rapidly it can be withdrawn. Foreign capital inflow may be a source of other risks to stability. Intermediated by the domestic financial infrastructure, capital inflows may cause price increases in the financial, foreign exchange and property markets that are unsustainable over the long term.

The Hungarian current account deficit as a proportion of GDP fell further in 2001 despite weaker foreign demand (see Chart I.4). The primary explanation for this decline is that the slowdown in the expansion of import demand was deeper than that in export growth, as firms curtailed investment spending significantly in the face of gloomier business prospects. The expansionary effect of fiscal policy partly offset the decline in GDP growth, pushing the borrowing requirement of general government significantly higher. The Bank forecasts borrowing by the general government sector to rise by 2.5% of GDP in 2001–2002.<sup>8</sup>

<sup>8</sup> Details of the estimate are available in issue 2/2002 of the *Quarterly Report on Inflation*. The forecast was made with regard to the decisions taken by the government then in office, except those resolutions preparing amendments which it is the Parliament's competence to decide (e.g. 13th month pension, family allowances).

**Chart I.4 Current account deficit, gross direct investment and non-residents' purchases of government securities as a proportion of GDP**



Source: NBH.

With a positive turn in the business cycle, corporate sector external borrowing requirement will likely increase. This may represent some risk to stability. As a consequence, provided that borrowing by general government continues to be high, the current account deficit could rise significantly. It is important to emphasise that the Bank does not expect a swift rise in firms' borrowing requirement over the short term. This could only happen, though, if the pick-up in the sector's fixed investment activity preceded a recovery in exports. As utilisation rates in the corporate sector are currently low, and fixed investment is mainly shaped by the outlook for external demand, the Bank does not attribute much significance to this possibility.

Expressed as a proportion of GDP, the 2%-5% current account deficits of past years have been constantly lower than the around 6% rate of foreign capital inflow on the most stable items of the financial account. Foreign direct investment has amounted to 4%-5% of GDP in recent years. Another dominant and stable item on the financial account has been purchases by non-residents of Hungarian government securities. These have amounted to 1%-2% of GDP in the past four years. Non-residents' holdings of government securities have been rising continuously - they amounted to more than HUF 1,200 billion in May 2002, representing some 8% of 2001 GDP. One characteristic feature of holdings is that in the past the percentage share of short-term papers was generally much higher than it is currently, due to expectations of currency appreciation under the narrow-band exchange rate regime. Since the widening of the intervention band, however, the average maturity of non-resident investors' government securities holdings has risen from 2 years to 3 years. This is noticeable, given that foreigners were allowed to buy discount treasury bills only after full foreign exchange liberalisation was implemented.

The level of international reserves may be relevant from the perspective of exposure to exogenous shocks. Generally, the size of reserves is measured against short-term foreign currency assets of non-residents, amongst other things. If the level of reserves is higher than the latter, then gross debt may be serviced for another year more, without the need to borrow. Another widely accepted yardstick against which the relative size of reserves can be measured is that of monetary aggregates, usually the monetary base or M2. Developments in these indicators are important for the internal credibility of the domestic currency, given that foreign exchange reserves may guarantee its convertibility to non-residents.

Since the band widening, Hungary's international reserves have been less important than under the narrow-band system, as large capital flows may be slowed down by drastic depreciation of the exchange rate. Nevertheless, *Hungary's foreign exchange reserves are at a safe level by international standards* - their amount is twice that of the monetary base and short-term external debt;<sup>9</sup> and the reserves-to-M2 ratio has been fluctuating between 40%-60% for years (see Chart I.6).

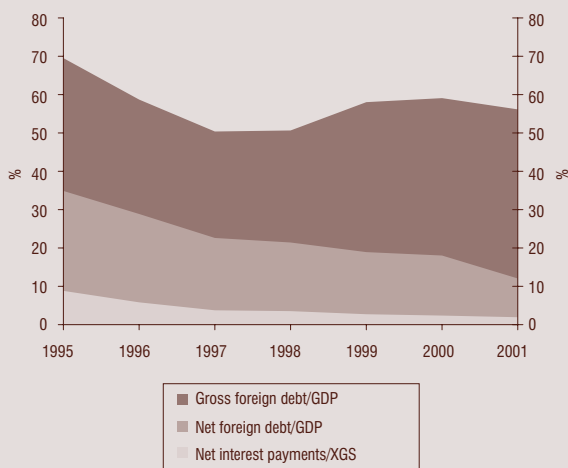
The country's gross foreign debt as a proportion of GDP has remained in a range between 50%-60% in recent years. In contrast, net debt has been falling steadily - from 35% in 1995

**Chart I.5 Hungary's international reserves**



Source: NBH.

**Chart I.6 External debt\* as a proportion of GDP and net interest expenses as a percentage of goods and services exports**



Source: NBH.

\* Excluding inter-company loans.

<sup>9</sup> The balance-of-payments statistics include original maturities. Therefore, the outstanding stocks actually maturing within a year may be much higher.

it fell to 12% in 2001 as a percentage of gross domestic product. Simultaneously with this improvement, *net interest expenses have been falling continuously* (see Chart I.6).

There have been positive developments in the composition of foreign debt as well. First, the proportion of short-term debt has remained unchanged, which is important from the perspective of risk to renewing outstanding borrowing. Second, the denominational structure of debt has changed favourably – foreign currency debt has been falling as a percentage of total debt due to the increasing share of forint-denominated government securities holdings, so the exchange rate risk to Hungary's solvency is now much lower (see Chart I.7).

## I.5 Inflation and real interest rates

Predictable price movements facilitate longer-term planning and proper evaluation of risks. The behaviour of consumer prices provides useful information on the extent to which planning in money and price terms relevant to financial stability is feasible.

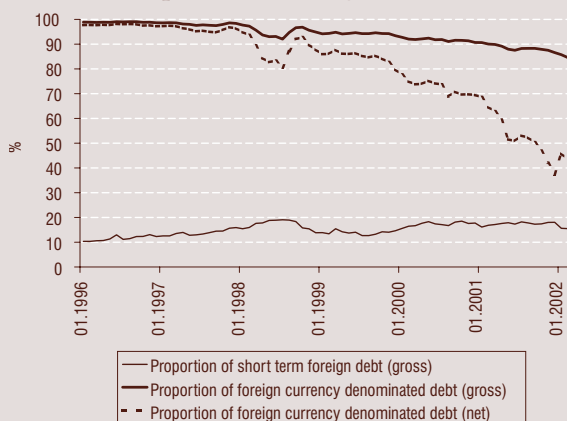
According to international experience, higher inflation is associated with increased volatility and unpredictability of prices. Moreover, the weight of items which are prone to experience large fluctuations (such as foods, for example) is greater in the Hungarian consumer price index than in the consumer baskets of developed countries.

Recent experience has shown that *inflation can be forecast with a large margin of error even at a one-year horizon*. Observers' inflation expectations for the coming 12 months, calculated from the survey conducted by *Reuters*, occasionally deviated from the actual figures by 4 percentage points (see Chart I.9). Consequently, the uncertainty of price movements may be even higher at the pay-back horizon of fixed investments. This, in turn, may result in unforeseeable income shocks between lenders and borrowers.

Past developments in real interest rates are a good reflection of inflation uncertainty and its potential consequences. Whereas the one-year *ex ante* real yield, calculated using government securities yields and the average of inflation expectations derived from the *Reuters* survey, has developed fairly evenly (4%–6% prior to 2000, and 2%–4% since then), the actual values have fluctuated in a wide range in the past 5 years. The stronger-than-expected disinflation in 1998 produced ex post real interest rates of 8%. In contrast, inflation remaining stuck above 10% in 2000, contrary to expectations, produced a negative real interest rate.

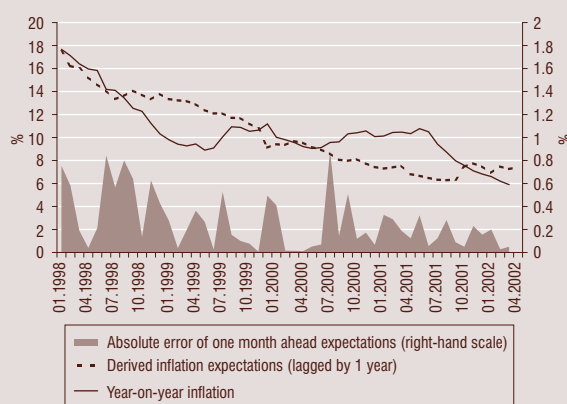
All this indicates that in Hungary *real interest rate volatility has stemmed primarily from the unpredictability of the inflation environment*. However, occasionally a surprise change in the risk spread also contributed to the change in real interest rates. For example, the negative ex post real yield in early 2000 reflected not only the sudden halt in the disinflation process but the drastic decline in the risk spread on forint-denominated investments as well. In a similar vein, expected and realised real interest rates rose by 2 percentage points following the 1998 Russian financial crisis.

Chart I.7 Composition of foreign debt



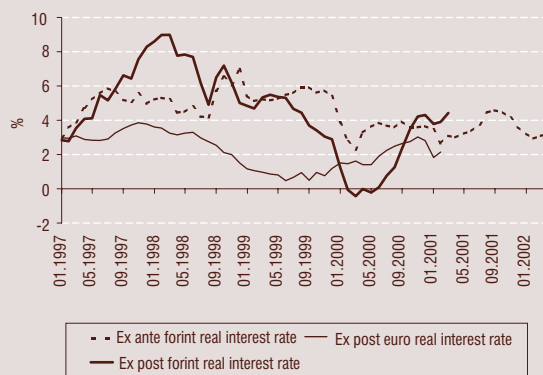
Source: NBH.

Chart I.8 Actual inflation and expectations



Sources: Reuters poll, CSO, Bank calculations.

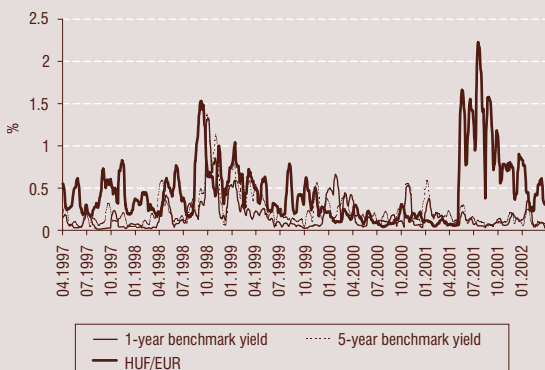
Chart I.9 One-year real forint and euro yields



Source: NBH, bank calculation.

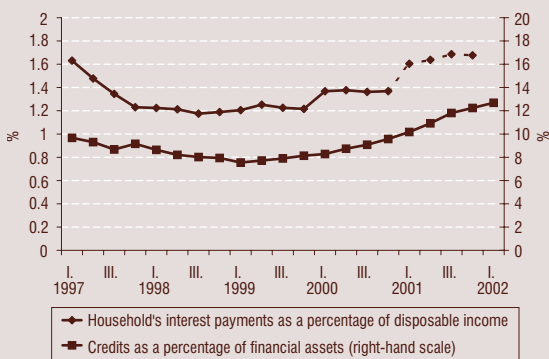
Note: Yields are zero-coupon yields.

**Chart I.10 Volatility of government securities yields and the forint exchange rate using 20-day rolling window**



Source: NBH, Bank calculation.

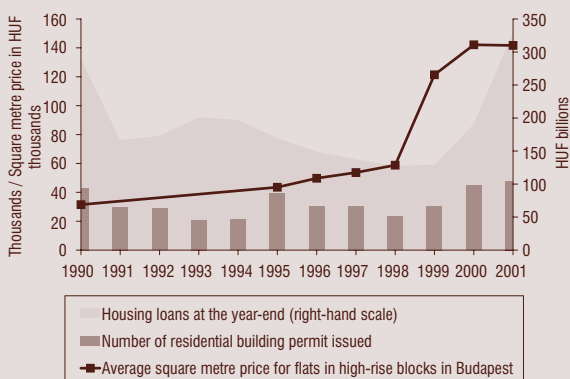
**Chart I.11 Households' indebtedness and interest burden**



Source: NBH.

Note: 2001 data are Bank estimates.

**Chart I.12 Outstanding property loans, home prices and dwelling construction**



Sources: NBH, CSO, Ingatlan és Befektetés (Property and Investment).

In addition to fluctuations, excessively high or low real interest rates may also carry risks. The latter may lead to lending expansion, whereas the former may cause problems with real growth and the capacity to make interest payments. The country's risk perception, international investors' propensity to take risks and expectations of a real appreciation accompanying the catching-up process crucially affect the *level* of Hungarian real interest rates. All these led to an excess *ex ante* real interest rate above euro yields of 1%-3% in the two years preceding the Russian crises, of 4%-5% in the period from the crisis up to the beginning of 2000, and of 1%-2% since then.

The combination of inflation permanently below 10% and monetary policy based on inflation targeting will likely mitigate inflation uncertainty. However, the move to widen the intervention band of the forint allows greater room for adjustment through exchange rate movements. Whereas variations in the risk spread prior to the band widening were largely reflected in changes in yields, *narrower fluctuations in yields have been coupled with greater exchange rate variability since May 2001.*

## I.6 Household sector indebtedness

The most marked change in the financial position of the household sector has been its increasing propensity to build up debt in recent years. As was discussed in earlier issues of the *Stability Report*, the ratio of the sector's financial savings and the outstanding debt to disposable income are both far lower than in developed countries. In particular, the gap is even greater in respect of outstanding debt, so the *recent growth in indebtedness may prove to be a lasting phenomenon over the longer term.*

The low level of households' interest expenses relative to their income allows more room for a further accumulation of debt (see Chart I.11); however, high market interest rates on property loans, and particularly on consumer credit, may pose a hurdle. Market interest rates on house loans fluctuated between 12%-15% and the APRC on consumer credit around 24% in early 2002.

Consumer credit has been dominant in 1998-99, *but borrowing for purchasing and building property has started to rise robustly from 2000 and particularly from 2001.* In March 2002, the government expanded the range of interest subsidies from loans to purchase newly-built housing to those for used homes as well. This may result in a pick-up in the used home market, which has been stagnating since 2000.

## I.7 Asset prices

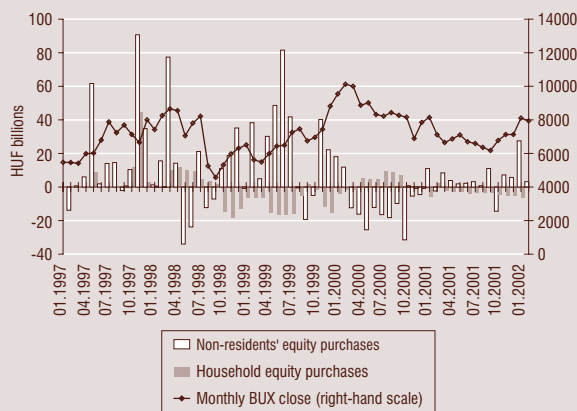
Reliable information on the Hungarian housing market is relatively scarce; however, it is definitely worth an analysis due to 1998-99 developments and the pick-up in mortgage lending in the past two years. The price of used homes hardly increased in the period between 1990 and 1997, and they lost more than a half of value in real terms. *The near*

tripling in prices in 1998–99 suggests that demand was dominated by investment and, occasionally, by speculative motives (see Chart I.13).<sup>10</sup>

Encouraged by the government system of interest subsidies, demand shifted towards new condominium units and detached homes in 2000, as is indicated by the strong jump in the number of housing permits. Used home prices have remained virtually static since then. However, the extension of interest rate subsidies in May this year may breathe life into this segment, and a potential property market bubble may, in principle, pose a threat to financial stability, due to the swift expansion of mortgage lending. Reducing risks significantly, commercial banks are willing to provide subsidised lending up to 50% of the market value of the property and up to 60%–70% in case of lending at market rates. This is not high in international comparison. It should be taken into account, however, that a significant wave of selling and price declines has not been seen in the property market in the past decade, and so it is uncertain whether this could lead to overshooting downwards.

Currently, movements in equity prices have a marginal influence on households' financial wealth, as the value of their shareholdings accounts for just slightly more than 2% of total wealth. At 9%, the proportion of shares reached its highest level in the months preceding the Russian crisis; since then shares have increasingly fallen out of favour. This may be explained by the fact that households sold shares mostly when they offered stable, high returns, and purchased when prices were on a downward trend (see Chart I.13). The value of investment units may also influence households' financial position; however, assets of managed funds which account for 8% of total wealth are mainly comprised of government securities.

**Chart I.13 Foreigners' and residents' share purchases and the BUX index**

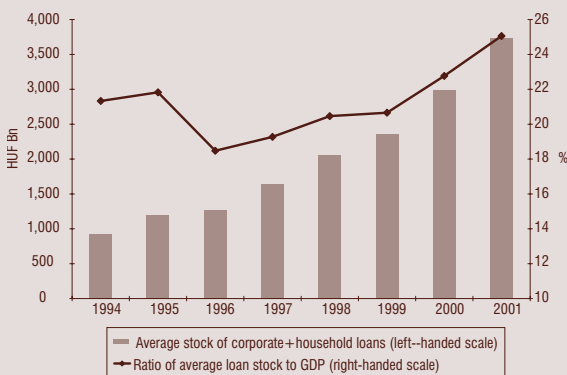


Sources: NBH, Reuters.

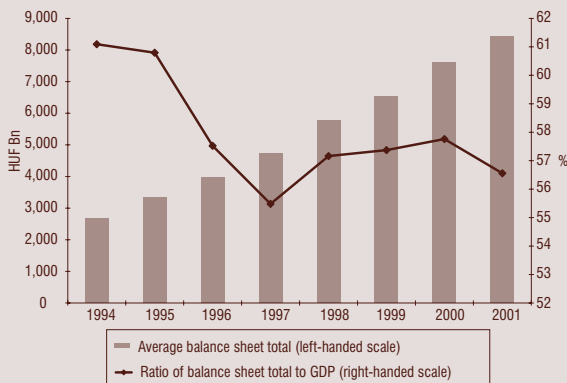
<sup>10</sup> The prices shown in the chart are offer prices for 1 square metre of dwelling space, and relate only to prefabricated block flats in Budapest. However, based on other historical price information they appear to be representative enough to describe price developments.

# II The stability of the banking sector

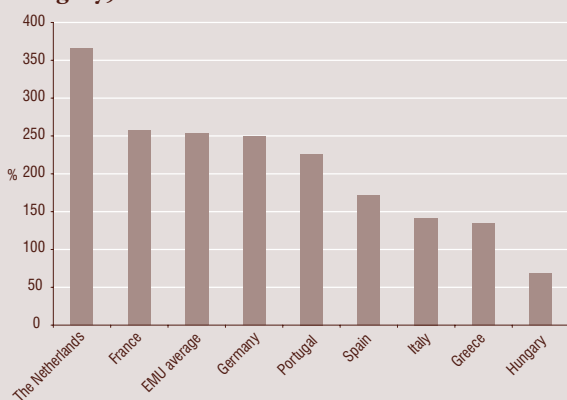
**Chart II.1 Average proportion of household and corporate lending as a percentage of GDP**



**Chart II.2 Banks' average balance sheet total as a percentage of GDP**



**Chart II.3 Balance sheet total/GDP ratio in an international comparison (1999, and 2000 for Hungary)**



Source: OECD, IFS, ECB

In 2001, the banking sector's operations were characterised by stable and balanced development, whereas cooperative credit institutions continued to have higher exposure to risk.

Household and corporate lending by the sector, excluding banks performing state functions,<sup>11</sup> rose by 15.3% in 2001, faster than the aggregate balance sheet total, which increased by 11.3%. The year also witnessed extensive restructuring on the balance sheets, with the aggregate total rising at a much slower pace than did lending during the first nine months, causing banks to fund increased lending by re-channelling some of their liquid assets (primarily short-term central bank assets) into lending. The fourth quarter saw an interruption of this trend, when both household and corporate deposits surged, simultaneously with a downturn in the demand for loans. Thus, due to the pick-up in balance sheet total growth in the final quarter and the slowdown in lending growth, banks stepped up short-term lending to non-residents and channelled more funds to their various financial service provider subsidiaries. As a result of the above developments, indicators of the depth of financial intermediation did not reflect a uniform pattern. Thus, for instance, measuring the data in terms of annual averages, the loans/GDP ratio continued to increase (see Chart II.1), while the balance sheet total/GDP ratio fell somewhat (see Chart II.2).

The depth of financial intermediation remained very low in an international comparison.<sup>12</sup> The Hungarian balance sheet total/GDP ratio lagged far behind that seen in the European Union, and the size of the domestic banking sector is not even half the size of those in South European countries, which have the least developed banking sectors (see Chart II.3).

The Hungarian banking sector seems to be especially small in view of the fact that, like in the majority of the EU countries, Hungarian financial intermediation is based on banks, implying that banks play a considerably greater role in intermediation than capital markets (see Chart II.4).

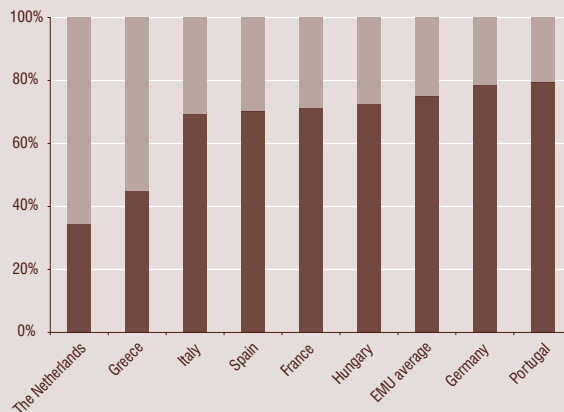
<sup>11</sup> From this *Report*, analysis of the banking sector will be confined to institutions whose assessment is possible and of crucial importance for the vulnerability and stability of the sector. To this end, institutions under special regulatory control and performing primarily state functions, which are not subject to the same conditions of market competition as the rest of the banking sector, are excluded. This category includes two state-owned credit institutions acting on behalf of the state, namely Exim Bank and the Hungarian Development Bank (MFB). As revisions to the credit institutions series have been retroactive, the data in the current *Stability Report* may differ from those in previous *Stability Reports*.

<sup>12</sup> The international comparison is based on data on the banking sector as a whole, including MFB and Exim Bank, since foreign data also include similar institutions abroad.

In terms of market conditions within the banking sector, it should be noted that due to some mergers, the decline in concentration reflected in the market shares of the five largest banks, seen over the previous few years, seemed to turn around in 2001, signalling banking market consolidation in Hungary as well. Nevertheless, the sector still cannot be viewed as highly concentrated (see Chart II.5).

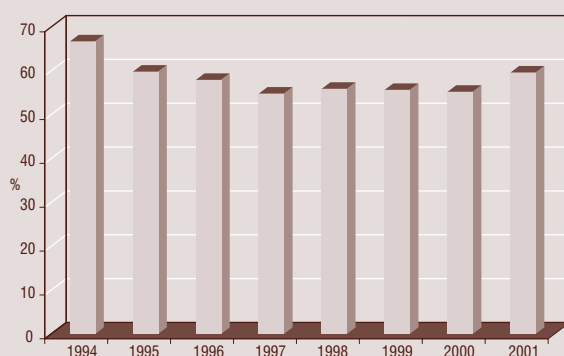
The year 2001 saw a number of landmark changes in respect of the regulatory framework and reporting requirements of the banking sector. These changes (such as the CAD-based determination of the capital requirement of market risks, changes in accounting rules, harmonisation of the sectoral breakdown of data reporting with EU norms, etc.)<sup>13</sup> were crucial for legal harmonisation with the EU, as they are instrumental in promoting stability and transparency. Whenever the regulatory changes had a major impact on banking sector operations and profits, it will be noted in the appropriate section.

**Chart II.4 Proportion of banking and share market intermediation in an international comparison (1999, and 2000 for Hungary)**



Source: OECD, IFS, ECB

**Chart II.5 Market shares of the five largest banks**



### Methodological issues relating to the balance-sheet total/GDP ratio

The literature frequently uses the banking sector total assets to GDP ratio as a gauge of the depth of financial intermediation. The National Bank's regular reports also contain this measure for the banking system and, for the past few years, for non-bank intermediaries as well. However, the use of this ratio raises serious concern both with regard to content and methodology. Measures such as GDP produced by the banking system as a proportion of total GDP and the ratio of banking sector assets to total financial assets seem to be much easier to interpret from the aspect of economic theory. Unfortunately, at the moment these measures can be constructed only with considerable lag and with great difficulty in Hungary.

The methodological difficulty comes from the fact that a stock variable (assets) is related to a flow variable (GDP). If the end-of-year stock is divided by the annual GDP in a disinflationary environment (when the end-of-year rate of inflation is lower than the annual average rate) there may be a drop in the index even though the increase in the balance sheet total exceeds real GDP growth in real terms. This is because the end-of-year balance sheet total can only be deflated with a December-on-December inflation rate. There are two methodological options to correct the index. One method uses annual average stock, meaning that the object of the examination is the increase in the annual average balance sheet total and its ratio to GDP. With the other technique,<sup>14</sup> the average balance sheet total in real terms (calculated using the previous year's price level) is divided by real GDP (that is GDP calculated with the price level for the previous year). The formula for this method is as follows:

$$(0,5 * (FD_{e,t} / CPI_{e,t} + FD_{e,t-1} / CPI_{e,t-1})) / (GDP_{a,t} / CPI_{a,t}),$$

where  $e$  denotes an end-of-term variable and  $a$  an average variable for dates of  $t$  and  $t-1$ .

<sup>13</sup> A detailed review of regulatory changes is presented on pp. 24-25 of the *Stability Report* of November 2001 on the first six months of 2001. No changes were necessary during the remainder of the year.

<sup>14</sup> Beck-Demirgüç-Kunt - Levine (1999): *A New Database on Financial Development and Structure*

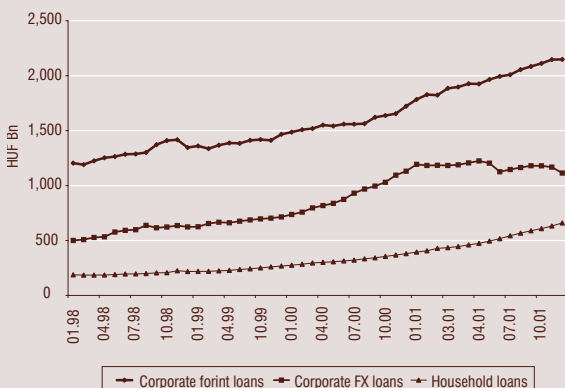
### Changes in the ratio computed by three different methods



The index derived from the end-of-year balance sheet total has been declining since 1997, which can be explained by the steady disinflation process. The other two (methodologically more correct) indices show significant divergence in 1996 and 2000. In these two years, annual average CPI was clearly lower than the arithmetic mean of the inflation rates at the beginning and end of the periods.

Clearly, in Hungary the value and evolution of this widely-used measure depends much more strongly on the selected computation method and the rate of inflation than in a country with a consistently low rate of inflation.

**Chart II.6** Forint and foreign currency loans to households and companies, expressed in forint terms



## II.1 Credit risk in the banking sector

In 2001, the stock of lending by the banking system<sup>15</sup> increased by 17% in nominal terms, much lower than in 2000 (when it grew by 31.5%). The factors to be blamed for this slowdown include the drop in the stock of corporate lending in foreign currency, and is reflected in the evolution of the corporate and household lending to the balance sheet total ratios (see Charts II.6 and II.7).

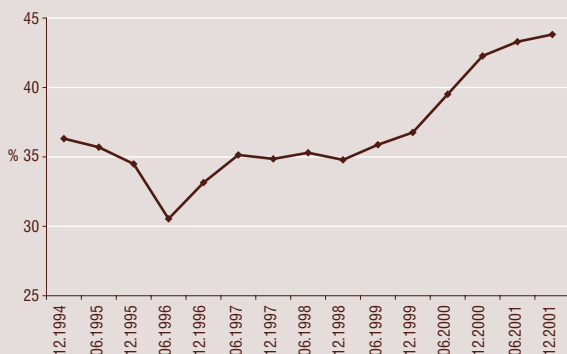
While in the majority of euro area countries the stock of bank lending to households exceeds that of bank lending to non-financial corporations, in Hungary the level of the former is far below that of the latter (accounting only for 24.5% in 2001) (see Chart II.8).<sup>16</sup>

The nearly 15 per cent increase in the value of risk-weighted balance sheet items in 2001 exceeded the increase in the balance sheet total to a much smaller extent than in 2000, as banks were largely able to fund stronger lending to customers with customer deposits, and they had to resort to a reallocation of balance sheet assets to a smaller degree.

The volume and proportion of loans extended against securities as collateral increased significantly within customer loans in 2001, but still fell short of the level seen prior to the Russian crisis. Thus, any risk arising from a potential securities-price bubble continues to be negligible at the level of the banking system (see Chart II.9).

Every EU country has debtor and credit information agencies to assist in reducing risk. These credit reference providers are specialised in various lines of business (such as household or corporate lending). This seems to be a sensible strategy as the type and amount of data and the method of processing the information collected vary widely across legal and natural entities. Recently, several multinational scoring agencies have

**Chart II.7** Corporate and household loans as a combined proportion of the balance sheet total



<sup>15</sup> The stock of lending comprises lending to the central government and other sectors, as well as businesses and households.

<sup>16</sup> For the sake of international comparability, data include figures for the Hungarian Development Bank, Exim Bank and cooperative credit institutions.

entered the market, offering a range of advanced services.<sup>17</sup> European credit reference agencies have established an international association (ACCIS) to promote mutual access to information and promote joint representation. While the conditions for advanced services relating to legal entities are in place in Hungary, the reliability of the information acquired is more uncertain. By contrast, there are many obstacles, arising from the Hungarian legal framework, to providing high-standard services to natural entities. Rapid regulation of this area would be vital, as advanced services could help curb the rapidly expanding risk exposure and hence the associated risk premium. The Bank has already embarked on laying the necessary groundwork. Hungary's forthcoming EU accession also necessitates the harmonisation of related legal provisions, and as the number of cross-border services is steadily rising, there is increasing need for joining international debtor and credit information systems.

### Risk on corporate lending

In 2001, bank lending to companies rose by 8.4% in nominal terms, 3 percentage points below the rate of the balance sheet total. Growth in lending to corporates lost considerable momentum relative to 2000. This was partly because there was a substantial drop in companies' net financing requirement, as there was a sharp fall in investment spending while profitability remained unchanged. Thus, relative to nominal GDP, the corporate sector increased its borrowing less dynamically than reflected in the trend for the past few years.<sup>18</sup>

The restructuring of corporate lending was one of the factors behind subdued growth in bank lending (see Chart II.10). The greatest change occurred in the area of foreign currency denominated lending. The decline in foreign currency bank lending was simultaneous with an increase in the weight of inter-company loans. The stock of inter-company loans was the highest ever both within the total stock of corporate debts and as a proportion of GDP.<sup>19</sup> One of the factors at work in the expansion of inter-company loans has been the more flexible treatment of lending within this category, relative to commercial banks, as well as a single large transaction.

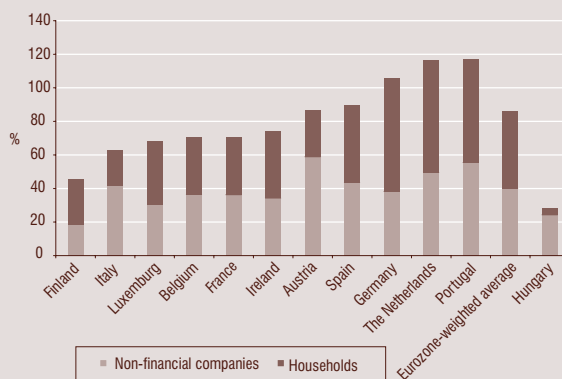
The fact that the growth rate of corporate lending by domestic banks fell sharply was essentially due to the move to a wider exchange rate band in May. Continuing the trend of previous years, forint lending to firms rose rapidly throughout the year, while foreign currency lending began to take a downward trend in May. Due to the band widening and the ensuing strengthening of the forint, lending in foreign currency ex-

<sup>17</sup> In addition to their core services (such as collecting and updating records for a specified period of time), these agencies also have scoring systems to assess risk. Furthermore, they conduct market and financial analysis, assist in tracking down debtors who have disappeared from the view of creditors, issue certificates of creditworthiness to private customers, so that they can apply for credit more successfully.

<sup>18</sup> Due to the revaluation of foreign currency credits, total credit fell somewhat as a percentage of GDP in forint terms, and edged up in euro terms.

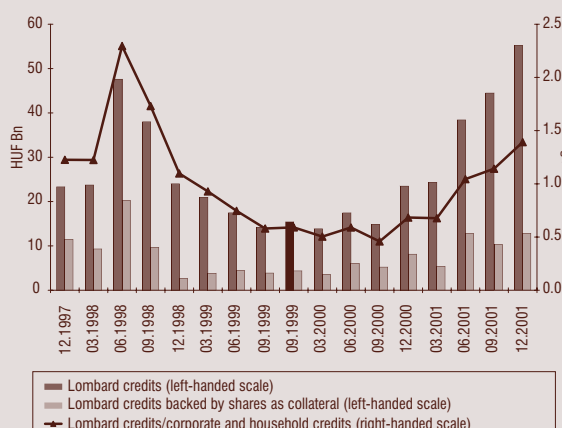
<sup>19</sup> In addition, there was a revision in methodology from January 2002. Liabilities stated on settlement accounts within a corporate group are now stated as inter-company loans rather than other credit, which by itself accounts for the reclassification of EUR 792 million from direct foreign currency credit from abroad to inter-company loans.

**Chart II.8 Bank lending to the private sector in euro-area countries as a percentage of GDP, 2000**

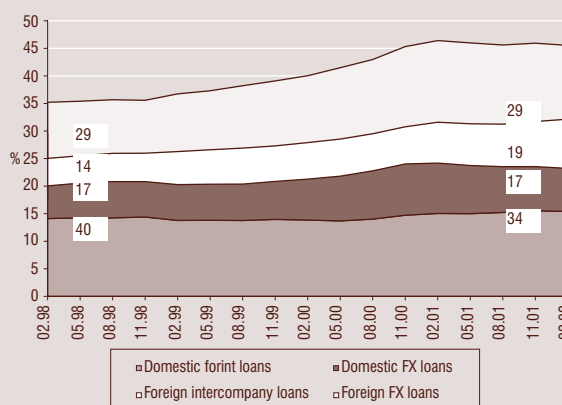


Source: ECB, quoting from p.116 of Annual Report, 2000 of Banco de Espana, and the NBH.

**Chart II.9 Lombard loans**



**Chart II.10 Structure of lending to non-financial corporations as a percentage of GDP and in forint terms\* and its distribution**



pressed in forint terms fell by 6% nominally. This was partly due to the negative effect of the appreciation of the forint, and partly to the fact that foreign currency lending, with cross rate changes and change in the level of the exchange rate eliminated, remained flat following January 2001. In the period after October 2000 market expectations must have dampened growth in foreign currency lending, while in the period after May customers were reluctant to increase their foreign currency indebtedness as there was an actual rise in exchange rate risk. This is because exchange rate management is rather inefficient in the underdeveloped domestic derivatives markets. A further downward pressure on foreign currency lending may have been the strong correlation experienced for the past few years between export growth and growth in foreign currency lending by Hungarian lenders, as large multinational firms usually fund their current assets by borrowing in foreign currency. Thus, the factors to blame for the weaker foreign currency lending also include slower export growth in 2001.

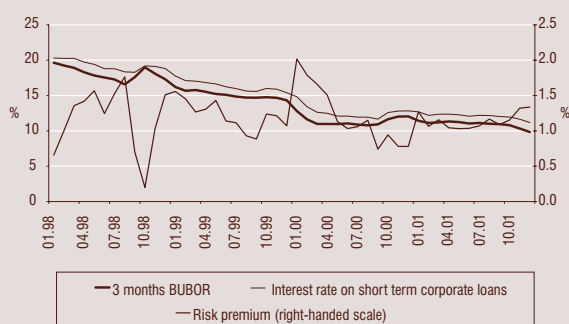
As a result of these developments, the proportion of foreign currency loans within total outstanding corporate loans fell from 39.4% to 34.2% in 2001. Although during the first six months the proportion of long-term foreign currency loans fell within corporate borrowing, figures for late in the year indicated that the long-standing trend, in which long-term foreign currency lending slowly rises in proportion every year, did not break (53.1% in 2000 and 55.1% in 2001).

Forint loans rose by 17.8% in nominal terms during the year. The rise was primarily due to long-term loans, bringing the proportion of short-term forint loans down by three percentage points to 53.68% relative to the previous year.

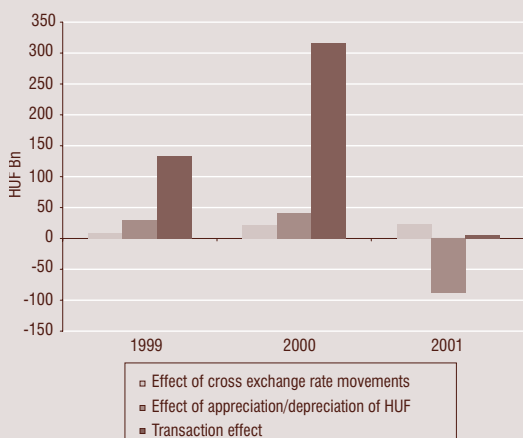
At the beginning of 2000, the spread shrank considerably, by approximately 1 percentage point and has remained stable at around 1.5 percentage points ever since. Compared with the final quarter of 2000, 2001 was characterised by slightly higher risk premia (see chart II.11). It is viewed as a positive development that, thanks to the disinflation process, this was the first year when there were no major fluctuations in the risk premia, marking an end to the strong volatility seen in the previous years. This is clearly a welcome change as it is expected to help market participants in basing their decisions on more accurate calculations. At the same time it should be noted that in the event of a slowdown in activity a risk premium that is 'stuck' at a certain rate due to strong market competition may pose the threat that it cannot adequately cover increased risk.<sup>21</sup>

Corporate lending in foreign currency fell by roughly 6% in 2001. This was basically due to the strengthening of the forint, with the change in the exchange rate level exerting downward pressure of 7.6%, only partially offset by cross-rate changes (+1.97%). The effect of volume change was virtually negligible, in other words, the amount of new foreign currency loans was roughly identical with the amount of terminating loans (see Chart II.12). Due to the May band widening, most of the effect of the appreciation of the forint was concentrated in May and

**Chart II.11 Spread between corporate lending rates and BUBOR<sup>20</sup>**



**Chart II.12 Components of changes in corporate sector foreign currency loans**



<sup>20</sup> As banks use BUBOR instead of the yields on government securities as a reference rate in pricing their loans, it seemed expedient to use BUBOR in calculating the spread.

<sup>21</sup> For more information on this, see Áron Tóth: Pricing Behaviour of Hungarian Banks, *Report on Financial Stability*, May 2001.

June. Long-term foreign currency lending (accounting for two-thirds of total foreign currency exposures) remained unchanged during the year. Thus, only short-term loans were affected by the decline. Hence, the change in volumes was successful in offsetting the effects arising from cross rate changes and the change in the level of the exchange rate. Accordingly, the share of short-term foreign currency lending fell sharply, which was a favourable development in principle.

Forint loans granted to fund investment projects have been on an increase for the past two years. In 2001, they amounted to HUF 470.2 billion, up by 29.4% on a year earlier (investment loans granted in foreign currency stood at HUF 301 billion at end-2001).

The trend of robust growth in commercial property loans was interrupted in 2001 (see Chart II.13), especially compared with previous years (54% in 1999, 84% in 2000 and 9% in 2001). Since, however, loans for office and retail unit development were denominated nearly exclusively in foreign currency (98%), the strengthening of the forint considerably refined the picture. The change in the volume of these loans was able to offset the adverse effects of the exchange rate change, even if only to a limited extent. Accordingly, even with much slower growth, commercial property loans expanded at a much faster pace than total foreign currency loans. As, despite the exceptionally strong growth over the past few years, commercial property loans account for only a negligible share of total lending, they continue to pose no risk to the bank sector as a whole. While concentration of this type of lending fell somewhat, it remains very high, with five banks representing a 87% share of office and retail unit development loans. Due to the size of these five banks, the risk incurred is not significant. Nevertheless, should the oversupply of offices create payment difficulties for the debtors, the banks' profits may suffer.

The sectoral breakdown of lending to corporates remained unchanged. Beneficial to risk exposure, the proportion of loans to agricultural and food industry companies has been on a downward trend for several years now. In 2001, the sector's share within corporate loans fell by 1.2% to 6.7% relative to the previous year. The relative underdevelopment of the sector could pose a considerable credit risk if the banking sector had higher relative exposure. The sector of property and business services increased its share by 1.2% in 2001.

Competition in the corporate market has been sharp for several years now, and this was also the case last year. Nevertheless, thanks to mergers in 2001, there was a substantial rise in the concentration of lending to and deposits by corporates (see Chart II.14). It should be noted, however, that any inference from the measures of the concentration about the actual intensity of the competition can only be drawn cautiously, as the wave of mergers, also experienced by the advanced banking systems of the world, can be attributed exactly to this strong market competition.

The slowdown in economic growth and the real economic effects of the strengthening of the forint, the expected deterioration in corporate profitability and banks' tighter liquidity and the potential deterioration in bank portfolios may cause corporate lending growth to lose some of its momentum over the near term.

Chart II.13 Property development loans

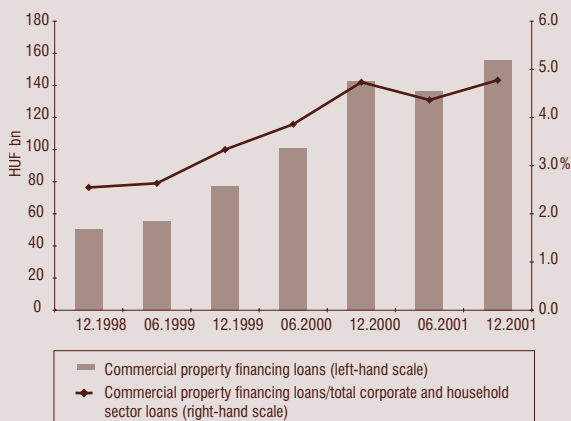
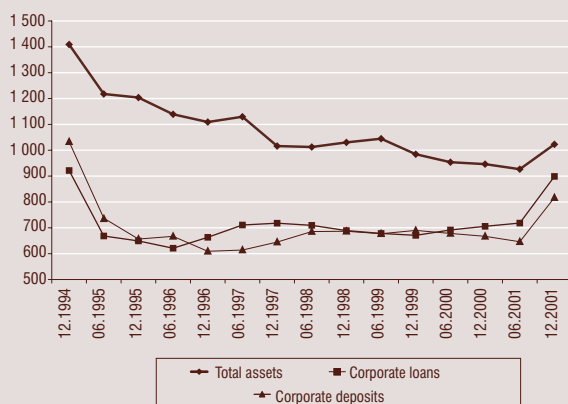
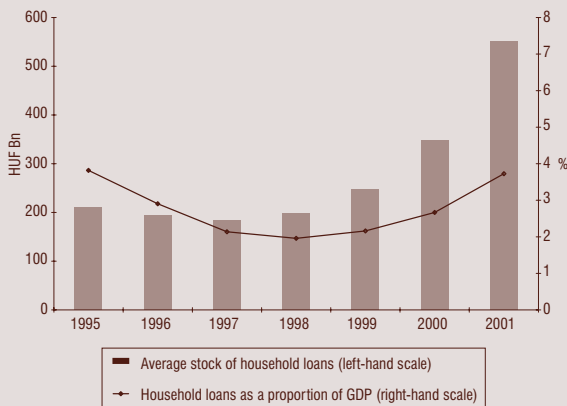
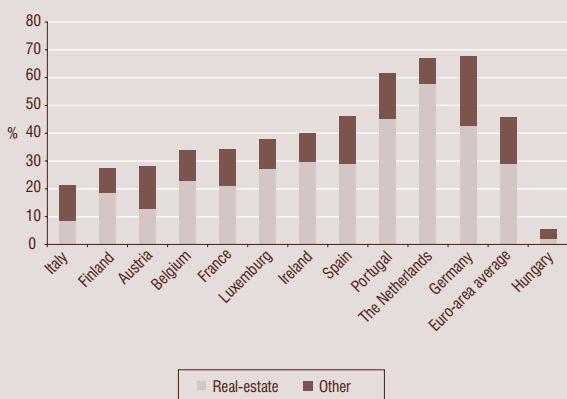


Chart II.14 Lending to and deposits by corporates, and concentration of the balance sheet total (Herfindhal indices)

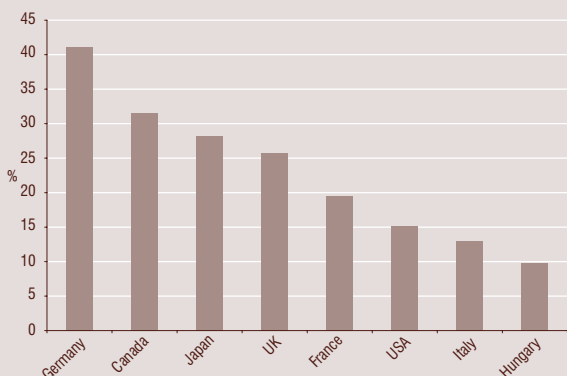


**Chart II.15 Average bank lending to households\* as a proportion of GDP**

\* Sole traders are stated in the same category with households from 2001. Previously they were included with enterprises.

**Chart II.16 Bank lending to households in euro-area countries as a percentage of GDP (2000)**

Source: ECB, quoting p.116 Annual Report of Banco de Espana, 2000 and NBH.

**Chart II.17 Household financial liabilities as a percentage of financial assets in some developed countries (2000)**

Source: OECD.

In view of corporate debtors' low level of indebtedness and the small volume of lending in the market sections most threatened by an emergence of price bubbles, the banking sector's corporate risk exposure is not viewed by the National Bank as excessive.

### Risk on lending to households

The past few years have witnessed the first signs of an upward trend in household consumption and level of indebtedness (see Chart II.15). Lending by the banking sector to households has been growing at an increasingly faster pace, up by 44% in real terms in 2001, compared with 32% in 2000.<sup>22</sup> Nevertheless, the level of households' indebtedness is still on a much lower order of magnitude relative to more advanced countries, where the ratio of financial liabilities to disposable income was in the range of 20% to 130% in 2000, compared with less than 10% in Hungary. The weighted average of euro-area bank lending to households as a proportion of GDP amounted to 46% in 2000, with the comparable rate in Hungary only a fraction of that at 6% at end-2001 (see Chart II.16).<sup>23</sup> This implies that if the relatively benign macroeconomic conditions are maintained in Hungary, household lending will likely enjoy sustained growth. The trend may gain further impetus from the prospective EU accession of Hungary, projecting further improvements in income prospects, continuing disinflation and a lower level of interest rates.

If the Hungarian banking system maintains prudence in its operations, then the stock of lending to households will be likely to grow more slowly than at its current exceptional pace. This is based on the current borrowing capacity of Hungarian households, as the financial liabilities to financial assets ratio (12.5% in 2001) has considerably approximated comparable ratios in more advanced economies (see Chart II.17).

In Hungary, the level of household debt is not only significantly lower than in developed countries, but is also structured completely differently. While in the euro area property loans account for some 63% of household lending, the comparable percentage is merely 38% in Hungary. Expansion in lending in Hungary used to be focussed on growth in consumer and other credit, since the smaller servicing payments and typically shorter terms to maturity impose smaller burdens on debtors. However, thanks to the establishment of the institutional groundwork for mortgage lending and the reduction of interest rates induced by the government's housing subsidy programme, growth in property lending (64% in real terms in 2001) has outpaced non-property-related lending (34% in real terms in 2001) over the last one or two years (see Chart II.18). Growth in household lending was primarily reflected in long-term loans, with their proportion within total lending up at over 90% at the year-end. Household lending is almost exclusively (97%) denominated in forints.

<sup>22</sup> Excluding sole traders, as they are not included in the base period values.

<sup>23</sup> To ensure international comparability, figures include data for the Hungarian Development Bank, Exim Bank and cooperative credit institutions.

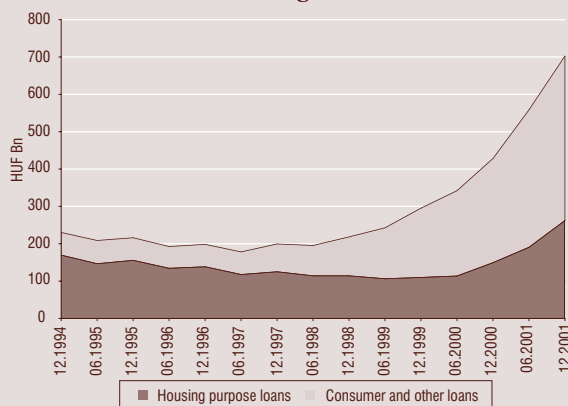
Simultaneously with the expansion in household borrowing, for several years this market segment has been exhibiting a decline in concentration, which nevertheless remains very high (see Chart II.19). Despite significant growth, traditional participants in the Hungarian household banking market have lost significant market share during 2001, predominantly to the advantage of large and medium-sized banks owned by foreign professional investors. Thus, despite the drop in the Herfindhal index, the share of the ten most active banks in household lending fell merely by 1 percentage point in the course of one year (to 83% at end-2001).

Similar to household lending, the bank card business is also characterised by a high degree of concentration. The great majority of bank cards continue to be debit cards, with the credit card business being in its early stages in Hungary. As household lending has picked up pace only over the past few years, banks' household services are essentially uniform, with customer differentiation being untypical. The automatically renewable type of credit has not become widespread yet. Nevertheless, there is evidence that credit cards will rapidly increase in popularity over the near term, and thanks to advance made over the past two years, their proportion rose to 8% at end-2001. Previously, card use was severely hampered by the high incidence of fraud, which has fallen off considerably recently. A few years ago Hungary topped the list of countries with the greatest amount of bank card fraud, but thanks to banks' successful efforts and better statutory control volume-proportionate losses have dropped over the last two to three years to one-tenth, much lower than the EU average. The greatest amount of damage is done by copied cards. The bulk of bank cards currently in use in Hungary carry magnetic strips, which are less safe than chip cards. The costliness of the latter slows their rise in popularity.

Increases in non-property-related lending still involves exceptionally high real rates of interest and Annual Percentage Rates of Charge<sup>24</sup> (roughly 25%), which implies that for the time being demand for credit is not sensitive to the interest rate (see Chart II.20). This may be explained by the impatience of households, who had to postpone consumption due to liquidity constraint as well as by the fact that households have started to spend more, as their underlying real income expectations have increased. On the supply side, sharp competition due to the saturation of the corporate market and lower profitability make banks increasingly more willing to turn to the household market, where they can earn exceptionally high profit margins in their market positions. The medium-term expectation is that interest rates will fall as competition intensifies, which may give further impetus to demand for consumer and other types of credit.

The share of housing-related mortgage-type loans within corporate and household lending is on the increase (see Chart II.21). At end-2001, housing loans accounted for roughly 40% of household lending (compared with 35% at end-2000), and such loans accounted for over 55% of lending by the five larg-

Chart II.18 Stock of lending to households\*



\* From 2001, sole traders have been recorded with households, while previously they were stated in the category of enterprises.

Chart II.19 Market concentration of household lending and deposits (Herfindhal-index)

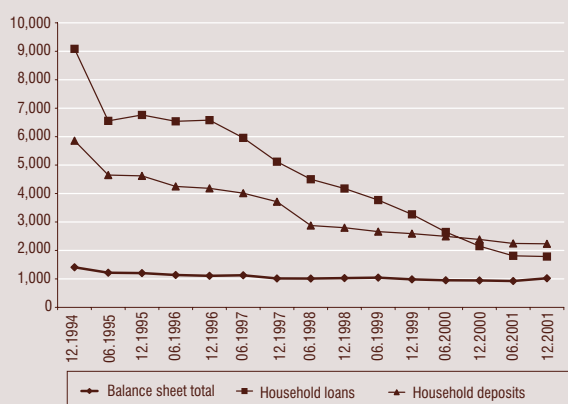
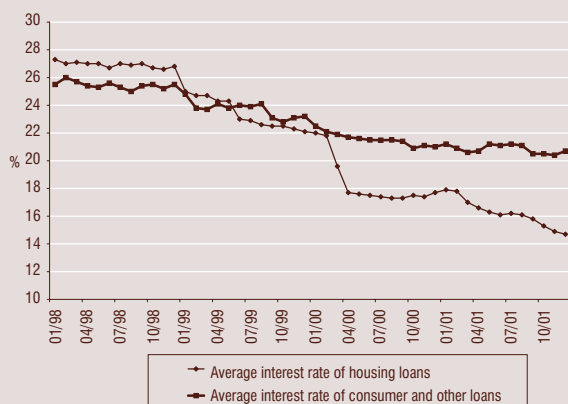
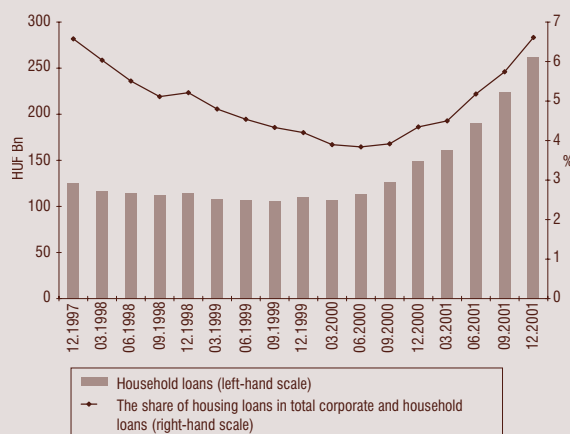
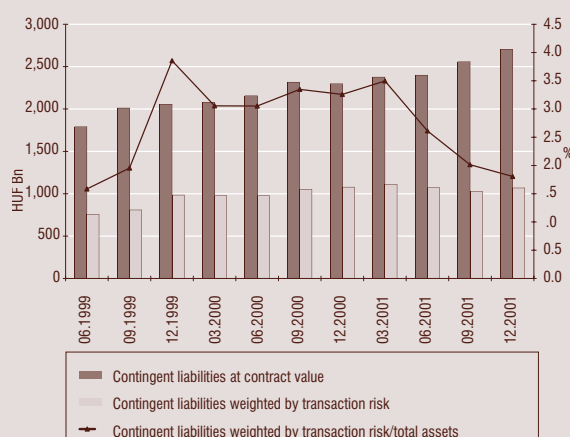


Chart II.20 Average rates of interest on new lending to households



<sup>24</sup> APRC means the total cost of the credit to the customer, expressed as an annual percentage of the amount of the credit granted and calculated in accordance with Council Directive 90/88/EEC.

**Chart II.21 Housing-related (mortgage-type) lending****Chart II.22 Contingent liabilities of the banking sector****Chart II.23 Proportion of classified portfolio within the total portfolio and on-balance-sheet items**

est banks (compared with 52% at end-2000). Over the past two years, competition triggered by the appearance of preferential housing loan facilities exerted significant downward pressure on the interest rate on construction credit granted at market terms, reflecting a reduction in the risk premium. Furthermore, other conditions for market loans have also relaxed, which may entail a weakening of customer quality. In addition, thanks to the government's housing-related subsidies, households in the lower income bracket now also have access to long-term loans. Even minor difficulties in the financial situation of these segments of society may lead to delays in performance or worse yet, default. As the risk premium incorporated in the lower interest rates has become smaller, and as there is danger of deterioration in customer quality, collateral in the form of mortgages is gaining in significance. As competition intensifies, banks are beginning to grant credits up to an increasing portion of the market value of the mortgage property<sup>25</sup>. Although a potential downturn in property prices may be a source of some temporary difficulty, the Bank staff believes that EU accession will exert upward pressure on property prices. However, the risk of a price bubble is expected to be insignificant in the medium term.

Considering that the level of household debt is low in an international comparison, in the Bank's view the banking sector does not incur any excessive risk on household lending. It should be noted at the same time that banks are facing increasing risk in respect of housing-related lending due to the shrinking risk premium. In order to reduce household credit risk, there is pressing need for laying down the conditions for high-standard credit reference services relating to natural entities.

### Contingent liabilities

The increase in the contractual value of contingent liabilities, presumed<sup>26</sup> to represent corporate liabilities predominantly, reached the growth rate of the balance sheet total at the middle of the year, and rose 6.3 percentage points faster at the year-end. This reflects a favourable trend of expanding financial services. As the transaction-weighted value of contingent liabilities remained virtually flat over the course of the year, their ratio to the balance sheet total fell to 11.8% (see Chart II.22). There was no change in the risk perception of contingent liabilities, as the credit equivalent value remained essentially unchanged over the year. There was a small rise of 10.3% in the value of full-risk liabilities (such as short-term non-callable credit lines) and a considerable expansion of 67.6% in liabilities representing risk-free transactions (such as unconditionally callable short-term credit lines). Furthermore, there was a drop in contingent liabilities representing a medium degree of risk (long-term unused credit lines and promissory notes) and especially those representing low risk (including documentary credit). The majority of contingent liabilities (80%) continue to be credit lines and guarantees denominated in forints.

<sup>25</sup> Even currently, there are banks that take into account a 60% proportion of the property, and there are instances of even higher proportions.

<sup>26</sup> The Bank has no specific information on the sectoral breakdown of contingent liabilities, but the proportion of household credit lines and guarantees is presumed to be negligible.

## Portfolio quality

Now that the temporary adverse effects of the Russian crisis seem to have subsided, the quality of the banking sector's portfolio has been on a steadily improving trend over the past few years, and the ratio of classified assets gradually returned to its pre-crisis level. However, during the first six months of 2001, this trend seemed to have been interrupted, with the proportion of the classified portfolio even beginning to rise at the year-end. This trend was typical of both the on-balance-sheet items and the total portfolio, including off-balance-sheet items (see Chart II.23).

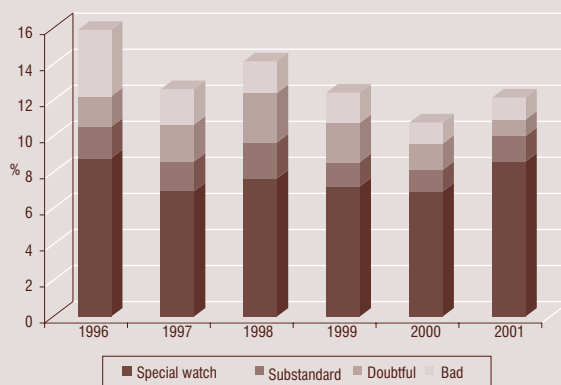
However, it should be noted that the rise in the proportion of the classified portfolio in 2001 was almost exclusively due to an increase in special watch items, which represent smaller risk (see Chart II.24). Assessing portfolio quality of only sub-standard, doubtful and bad assets, viewed as non-performing from the point of view of this analysis, yields a more favourable picture. After falling steadily following the Russian crisis, the proportion of non-performing assets fell to 3.6% at the end of 2001, which was below their pre-crisis level of 4% (see chart II.25). Nevertheless, this improving trend also lost significant momentum in 2001.

Apart from a sharp rise in the proportion of special watch items, classified on-balance-sheet assets changed only slightly in composition. Simultaneously with a slight increase in the sub-standard category, there was an even greater drop in the share of doubtful assets, with that of bad assets remaining flat. All in all, the ratio of weighted classified assets<sup>27</sup> within on-balance-sheet items edged down from 2.3% to 2.2%, reflecting at first sight a reduction in total risk. It should be noted, however, that thanks to buoyant lending, the portfolio quality projects a better picture than reality, as newly granted loans naturally involve fewer problems, introducing a positive bias into the ratios. Taking account of the life cycle of loans and the likelihood of a slowdown in lending growth, banks are likely to incur further losses over the medium term. Thus, banks have a better chance of improving the quality of their portfolios by selling off non-performing loans.

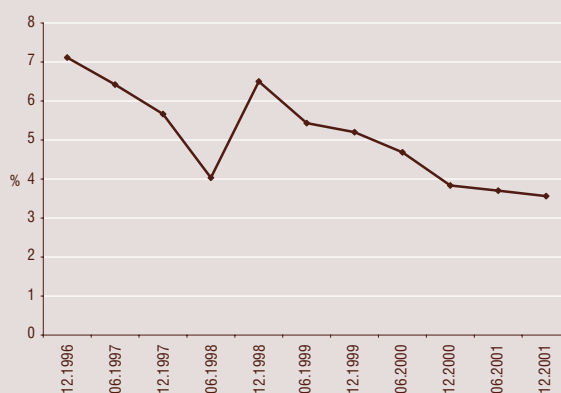
The above reasoning holds especially true for the household lending portfolio, the quality of which is already below average (see Chart II.26). In view of the fact that the pick-up in household lending dates back only to a year ago, and that the majority of housing loans are assumed to be problem-free, the change in the quality of the portfolio was primarily due to changes in the consumer credit category. This is because consumer credits entered a more mature phase of their life cycle, which means that banks automatically record higher losses than in previous years. In addition, international experience suggests that the incidence of default in respect of mortgage-backed loans is much lower. This implies that household mortgage lending is not expected to suffer any significant deterioration in quality over the medium term.

All in all, portfolio quality does not pose any threat to stability within the banking sector at the moment, and as the capital base is adequate, short-term prospects are also benign. Loss in

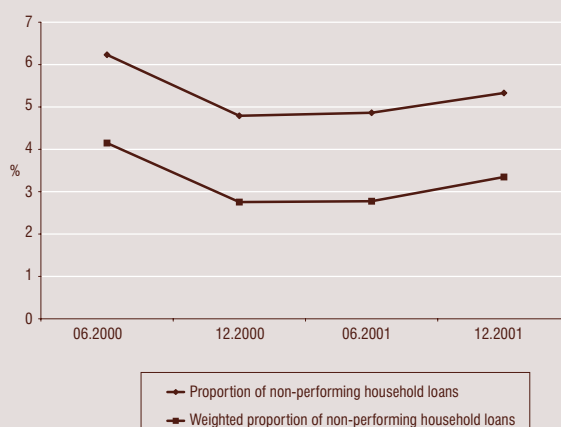
**Chart II.24 Composition of classified on-balance-sheet assets as a proportion of total balance sheet items to be classified**



**Chart II.25 Proportion of non-performing assets within the balance sheet**



**Chart II.26 Proportion of non-performing loans within the household lending portfolio**



<sup>27</sup> The weighting applied to the specific categories are 5% for special watch, 20% for sub-standard, 50% for doubtful and 85% for bad items.

value in lending is also satisfactory, reflecting banks' prudential rating policies. Loss in value in respect of specific classified assets were as follows: 2.7% for special watch, 19.3% for substandard, 50.3% for doubtful and 89% for bad. These figures have remained virtually unchanged compared with a year ago. The danger of problems to be incurred over the medium and long term depends primarily on cyclical conditions within the economy, with special regard to lending.

## ***II.2 Market risks***

### **Banks' operations on the derivatives markets<sup>28</sup>**

The year 2001 can be divided into two terms from the point of view of banks' derivatives operations. Prior to the widening of the exchange rate band in early May, open contracts were in the range of HUF 1,200-1,400 billion (in nominal terms), roughly equivalent with the figures for 2000 (when open contracts exceeded the above figure only in April and May at HUF 1,500-1,600 billion). However, following the band widening and the liberalisation of foreign exchange regulations in June, banks significantly stepped up their derivatives transactions (the decrease in December was due to the closing of positions customary at the year-end), with year-end contracts standing over HUF 1,800 billion.<sup>29</sup> This growth was due to over-the-counter deals, pushing the ratio of OTC transactions from 88% before the band widening (in late April) to 97% at end-December.<sup>30</sup>

Within derivatives operations, the market of foreign currency swaps expanded at the most rapid pace. Open foreign currency swaps exceeded the value of foreign currency forwards at the year-end. Transaction data suggest that the increase of foreign currency swaps was primarily due to banks' transactions with non-residents, although resident customers also appeared in the market, a phenomenon untypical prior to the widening of the exchange rate band.

Prior to liberalisation, non-residents, resident banks and resident non-bank customers accounted for largely equal shares in banks' foreign exchange market (spot and derivatives) transactions. However, the summer of 2001 saw an upsurge in the proportion of non-residents, from 28% in May to 61% in August. Simultaneously with the advance of non-residents, resident bank and non-bank customers nearly halved in their combined relative weight. During the second six months, the proportion of non-residents remained flat at around 64%.

<sup>28</sup> Banks' operations on derivatives markets are discussed in more detail by the paper 'Effects of the band widening and foreign exchange liberalisation'.

<sup>29</sup> In May 2001, there was a major change made to banks' reporting system. Unfortunately, some banks misinterpreted the instructions on how to complete the new tables, and (presumably) stated much lower figures than the actual data. Consequently, aggregated banking sector data for the period May to December 2001 only reflect the trend of the changes.

<sup>30</sup> In the new reporting framework, derivatives transactions must be reported in the following breakdown: transactions for trading and non-trading purposes and transactions for hedging and non-hedging purposes. However, banks' current reporting is unreliable and unsuitable for analysis. Some banks have classified all derivatives transactions within the trading category, others stated all their derivatives deals as non-hedging transactions, etc.

Thus, for the time being it cannot be claimed that band widening and foreign exchange liberalisation have encouraged Hungarian companies to rely more strongly on derivatives transactions in managing risks. This will likely take a longer time, and non-residents' rising interest is a good starting point. Currently, most companies seem to consider the costs incurred on hedging exchange rate risk to be too high.

Interest rate derivatives transactions, with special regard to forward rate agreements (FRA), saw an upsurge in the period from October to November, but this increase was largely accounted for by one single bank. Turnover in options is negligible in Hungary, but banks expect a rise in residents' interest.

### Interest rate exposures<sup>31</sup>

In 2001, interest rates within the banking sector decreased at a subdued rate, slower than inflation, for the year as a whole.<sup>32</sup> The forint re-pricing gap continued to narrow for the banking sector as a whole, although not as fast as in 2000.<sup>33</sup> A more rapid re-pricing of bank liabilities had a positive impact on the banking sector's interest income, due to lower interest rates, just as the slight rise in the spread and improvement in the interest-bearing assets to interest-bearing liabilities ratio (see Table II.A).

In the twelve months to end-2001, the cumulated 90-day forint re-pricing gap shrank by HUF 64 billion, and by 1.3 percentage points as a proportion of the balance sheet total. Corresponding decreases for the 90-day cumulated foreign currency re-pricing gap were drops of HUF 67 billion and 0.9 percentage points, nearly neutral for the banking sector as a whole at the end of the year (see Chart II.27). The on-balance-sheet management of interest rate risk is made considerably easier by the fact that the great majority of interest-bearing assets and liabilities (82% and 87%, respectively at end-2001) are re-priced on a three-monthly basis.

All in all, interest rate exposure as measured by the re-pricing gap remained low for the banking sector as a whole, both in respect of forint and foreign currency items.

### Exchange rate exposure

In terms of denominational structure, the proportion of foreign exchange assets within banks' balance sheets followed a downward trend in 2001. While in the second half of 2000, foreign exchange assets and liabilities accounted for 36%-37% of the balance sheet total, their share dropped to the range of 32-34% over the period following the band widening (see Chart II.28).<sup>35</sup>

<sup>31</sup> Bank reporting on re-pricing gaps, which is the basis for assessing interest rate exposures, continues to be not fully reliable. Due to the shortcomings of the reporting, the National Bank staff has had to use estimates for preliminary data on December 2001, as previously. However, this makes the exploration and assessment of actual tendencies a rather difficult task.

<sup>32</sup> Household property loans granted under market terms are an exception, as their average rates fell by 3.2 percentage points.

<sup>33</sup> The re-pricing gap is defined as the difference between interest-bearing assets and interest-bearing liabilities re-priced within a given period. When the change in the direction of the gap is being discussed, the absolute value of this difference is taken as the basis. Consequently, the narrowing of the gap implies a reduction in the open interest position and, as a result, the interest rate exposure.

<sup>34</sup> The re-pricing gaps have been calculated excluding the off-balance-sheet items of Takarékbank.

<sup>35</sup> The evolution of the denomination structure of banks' balance sheets is described in greater detail in the paper entitled 'Effects of the Band Widening and Foreign Exchange Liberalisation'.

Table II.A Major indicators of banks' interest rate exposures<sup>34</sup>

	December 2000	December 2001
90-day cumulated forint gap ( HUF billions)	-463.9	-400.0
90-day cumulated foreign currency gap ( HUF billions)	-89.2	-21.7
90-day cumulated forint gap/balance sheet total	-5.7%	-4.4%
90-day cumulated foreign curr. gap/balance sheet total	-1.1%	-0.2%
	2000	2001
Average for interest-bearing assets/average for interest-bearing liabilities	108.5%	109.0%
Spread (interest income/av. for interest-bearing assets – interest expenditure/average for interest-bearing liabilities)	3.76%	4.01%

Chart II.27 Banks' cumulated 90-day re-pricing gaps

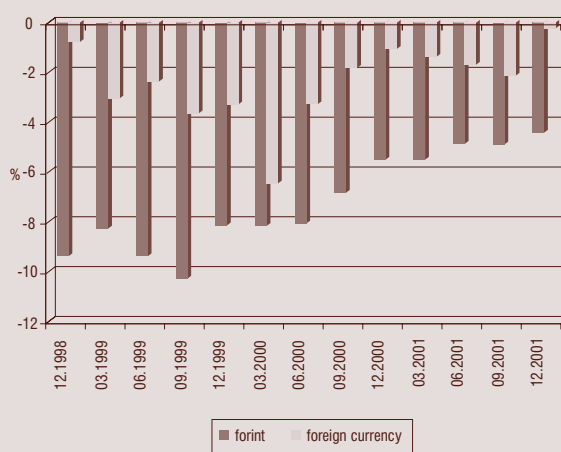
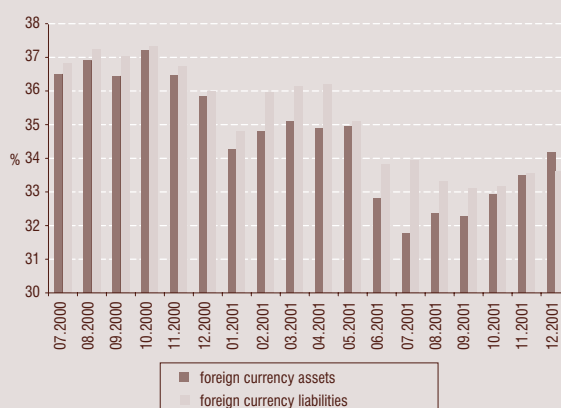
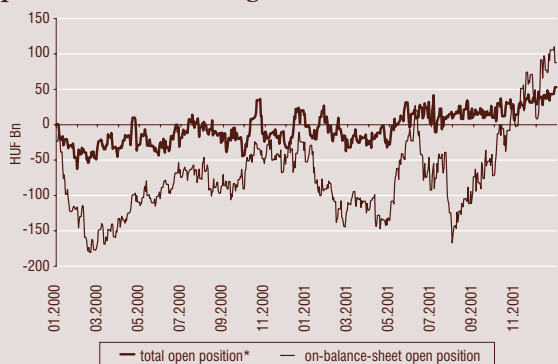
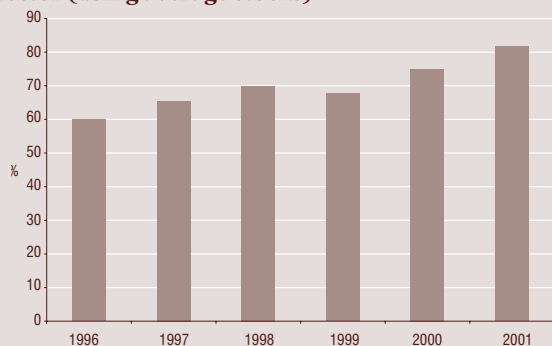
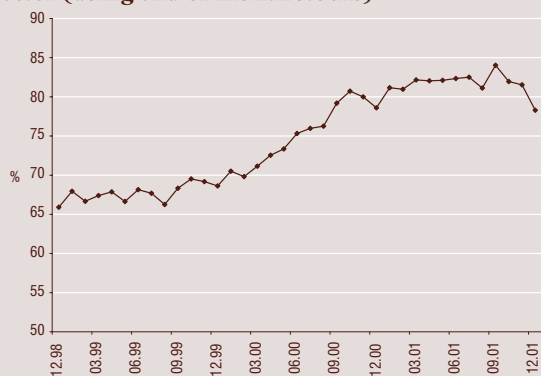
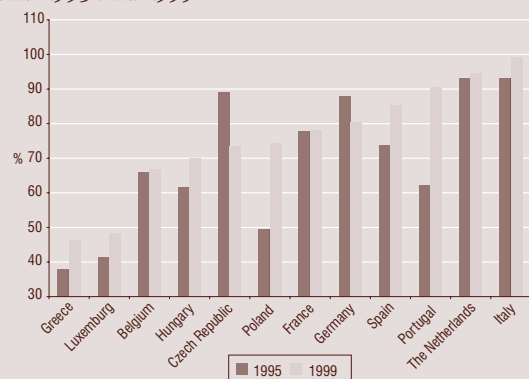


Chart II.28 Foreign currency assets and foreign currency liabilities as a percentage of balance sheet totals



**Chart II.29 Total and on-balance-sheet open position of the banking sector**

\*position value: long FX position

**Chart II.30 Loan-to-deposit ratio within the banking sector (using average stocks)****Chart II.31 Loan-to-deposit ratio within the banking sector (using end-of-month stocks)****Chart II.32 Loan to deposit + bond ratios within the banking sectors of some European countries at end 1995 and 1999 \*\***

\* The data for Greece are from 1995 and 1998.

\*\* In respect of Greece, Luxembourg, Portugal and Hungary, the data refer to commercial banks, in respect of the other countries to the entire banking sector.

Source: OECD.

During the first four months of 2001 banks opened up their on-balance-sheet positions, with their operations in the foreign exchange market aimed at taking advantage of the interest rate premium on the forint. Following the widening of the exchange rate band on 4 May, the steady appreciation of the forint, triggered by non-resident investors' increased demand, caused banks to completely wind up their on-balance-sheet long forint positions by the first week of June. From mid-June, banks again started to open on balance sheet foreign currency positions, a trend temporarily interrupted by the weakening of the forint in the aftermath of the Argentinean crisis. After the impact of the crisis wore off, on-balance-sheet foreign exchange exposures peaked at the end of July. In early August, banks once again started to wind up long forint positions, leading to the appearance of long positions in foreign exchange for the banking sector as a whole during the final two months of the year.

The banking sector's total open position in foreign exchange closed soon after the widening of the band, replaced by a minor long position in foreign exchange. In contrast with this volatility in the on-balance-sheet position, banks' total open positions were relatively stable after the band widening, although long positions in foreign exchange characteristic after the adoption of the new exchange rate system opened up slightly during November and December (see Chart II.29).

To offset the effect of increased volatility in the wake of the band widening, banks kept their exchange rate exposure at a moderate level on the whole.

## II.3 Banking sector liquidity

Due to the expansion of lending, the (annual average) loan-to-deposit ratio<sup>36</sup> has risen sharply over the last two years (see Chart II.30). The market share of banks with customer loan to customer deposit ratios in excess of 100% (on an annual average) based on the balance sheet total rose from 34.2% in 2000 to 46.4% in 2001. Most of the tightening in banks' liquidity occurred in 2000. The downward pressure on liquidity of stronger household lending was offset by a slowdown in lending to corporates, accounting for a major share within total lending, as well as a pick-up in the pace of deposits by households, accounting for the larger share of deposits. The loan-to-deposit ratio was essentially in the range of 81% to 82.5% over 2001, with a temporary decline in December, due to the euro changeover (see Chart II.31).

Apart from some financial centres, in the majority of advanced European countries banking sectors' loan to deposit + bond ratios typically fall in the range of 75-100% (see Chart II.32). Accordingly, in an international comparison, Hungarian banks' comparable ratio of 80% does not reflect an excessive liquidity risk.

Banking sector liquidity on both the assets and liabilities sides continues to give no cause for concern. After a two-year decline as a proportion of the balance sheet total, the share of

<sup>36</sup> Lending to non-financial corporations, auxiliary enterprises and households divided by deposits and securities of non-financial corporations, auxiliary enterprises and households.

banks' liquid assets remained virtually flat during 2001 and is sufficiently high (31%). Furthermore, the proportion of the most liquid money market liabilities has been on a downward trend for several years, and is sufficiently low at 6.7% (see Charts II.33 and II.34).

There was a major reallocation of liquid assets with forint deposits maintained at the National Bank re-channelled into forint-denominated government bonds, due primarily to a 4 percentage point and 1 percentage point reduction in the reserve requirement in February and July 2001, respectively. This was because banks had to spend the funds released by the cut in the reserve requirement on purchasing five-year bonds bearing near-market interest and issued for this specific purpose. There is no regulatory obstacle in the way of the secondary trading of these bonds, but being illiquid, they are currently kept on banks' portfolios.

Transformation of the maturity structure undertaken by the banking sector continued at a rapid pace in 2001, as the funds underlying the increase in long-term household and corporate loans comprised predominantly short-term deposits by customers (see Chart II.35).

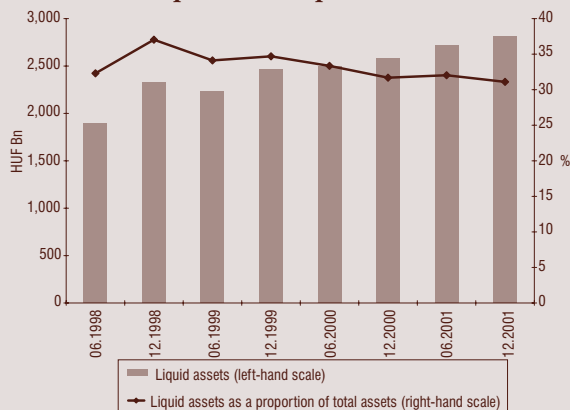
Thanks to robust lending growth, banking sector liquidity has tightened over the past two years, but reflects no excessive risk in an international comparison. In the Bank's view the related risk is still manageable.

## II.4 Banks' capital position and capital adequacy

Banks' capital adequacy ratio (CAR) continued on its long-term downward trend in 2001 (see Chart II.36). As specialised state-owned banks with substantial capital were no longer among the subjects of analysis in 2001, the CAR ratios of around 15% reported in recent years are not directly comparable with the 12.3% ratio for end-2001. The actual drop was merely 1.4 percentage points in respect of the banks included in the new assessment framework. Moreover, if the calculations also take account of net income adjusted for expected dividend payments, not included in the preliminary data due to legal regulations, then the decrease is no more than 0.4 percentage points. It should be noted, however, that the decline could have been larger if it had not been for a number of statutory changes adopted on 1 April 2001, which had a major impact on the method of calculating CAR.

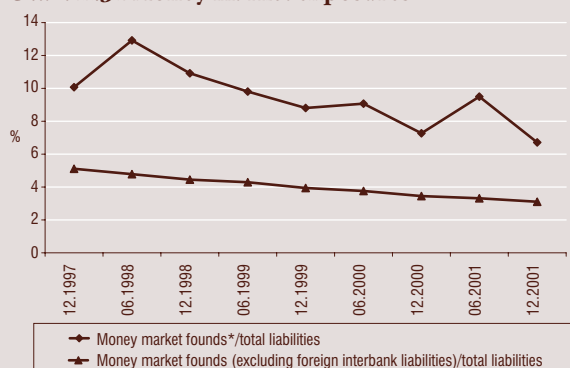
One of the key changes was the inclusion of general risk provisions within core capital elements, implying an approximately HUF 50 billion rise in regulatory capital. While in previous years general risk provisions used to be statutorily specified, minimum limits were cancelled in 2001. Now, provisioning is encouraged by the law recognising this type of provisions among the elements of capital. Despite all these incentives, the value of general risk provisions remained unchanged in nominal terms, an adverse phenomenon in view of the increasing risk in lending. In another negative development, limits on large exposures and investment limits are exceeded by substantial and increasing amounts. The growth in this field

Chart II.33 Proportion of liquid assets



\* Liquid assets comprise cash and settlement accounts, treasury notes and government bonds (excluding consolidation bonds), central bank bills, central bank and interbank loans with a maturities between 0 to 14 days.

Chart II.34 Money market exposures



\*Money market funds: short term interbank liabilities + central bank repo

Chart II.35 The share of long-term assets and liabilities of the banking sector

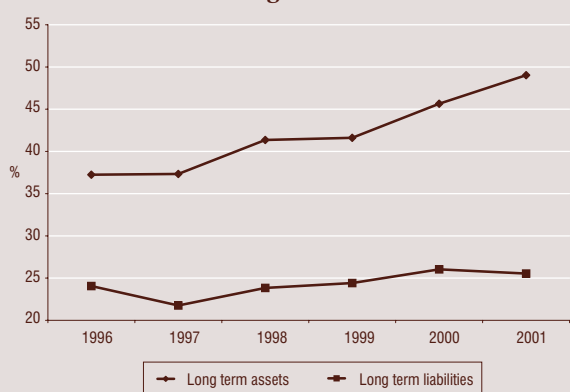
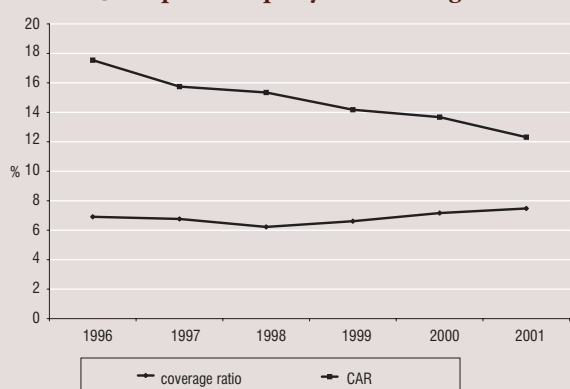
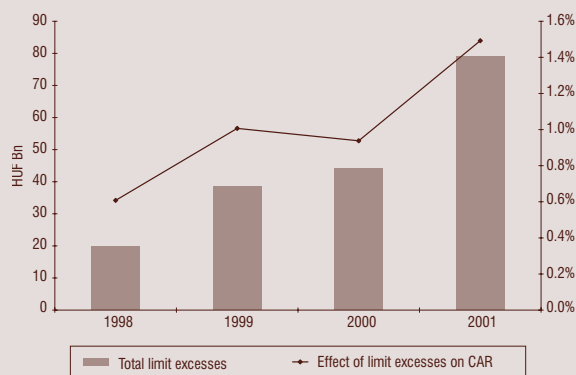
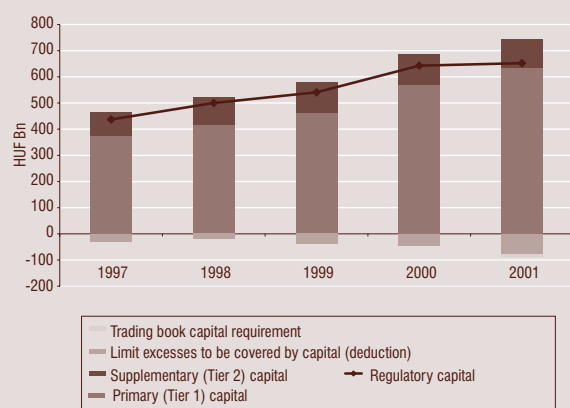


Chart II.36 Capital adequacy and coverage ratios



**Chart II.37 Amount and effect of limit excesses on CAR****Chart II.38 Composition of the regulatory capital****Table II.B Composition of the adjusted balance sheet total**

Weights applied to assets (%)	1999	2000	2001
20 per cent	5.9	4.5	5.0
50 per cent	1.3	1.6	2.4
100 per cent	73.3	74.6	74.7
Weighted assets, total	80.4	80.7	82.1
Weighted value of contingent and other future liabilities	22.6	19.4	17.0
Weighted value of forward assets	1.8	1.3	0.8
Risk provision (-)	1.7	1.4	0.0
Adjusted balance sheet total (HUF billions) = 100%	3 815	4 698	5 298

**Table II.C Breakdown of the ownership structure within the Hungarian banking sector (based on subscribed capital)**

%	2000	2001
Direct state ownership	8.64	6.69
Hungarian companies	8.64	8.74
Hungarian individuals	2.35	2.14
Residents, total	19.63	17.57
Non-resident banks	59.05	61.68
Other non-resident investors	18.34	16.71
Non-residents, total	77.40	78.39
Preference shares	2.78	3.58
Own shares	0.19	0.46
Total	100.00	100.00

was HUF 35 billion. As banks have to cover 100% of the risk over the limit by capital, at end-2001 they had to deduct HUF 79 billion for this purpose from the regulatory capital. These deductions combined reduced the aggregate capital adequacy ratio by approximately 1.5 percentage points (see Chart II.37). The most significant limit excesses occurred in respect of credit institutions' parent companies and subsidiaries, amounting to HUF 54 billion at end-2001.

Another deductible item from the regulatory capital is capital requirement for the trading book and for the exchange rate risk existing in the whole banking operations, but it is of negligible size for the banking sector as a whole at HUF 12 billion.

As a welcome change in the composition of the regulatory capital, the weight of core capital elements increased, thanks primarily to the above-noted regulatory changes (see Chart II.38). The amount of subscribed capital, accounting for the largest share, remained basically unchanged. However, additional capital elements also declined in nominal terms, due primarily to the gradual maturing of subordinated loan capital borrowed previously and the strengthening of the forint, as these capital elements are denominated in foreign currency. The 6 to 1 ratio of core and additional capital elements indicates that the Hungarian banking sector is stable in terms of capital strength, and that there are no administrative restrictions to raising additional capital in the form of subordinated loan capital.

The moderate rate of increase in the regulatory capital was simultaneous with robust growth of 13% in the risk-adjusted balance sheet total. The increase was accrued fully on the balance sheet, with special regard to the proportion of mortgage loans, with an applicable weight of 50% (see Table II.B). The introduction of the trading book also affected the denominator in the CAR formula, as now only banking book items have to be included in the calculation of the adjusted balance sheet total.

The coverage ratio has been on a slightly upward trend since 1998, reflecting adequacy of capital in the banking sector (see Chart II.36). This ratio, which measures banks' capital strength on the basis of an assumed scenario, currently stands at 7.5%. This figure means that even if the existing non-performing loans were fully written off, i.e. the rate of loss incurred on such loans was 100%, the equity to total assets ratio would still be close to 8%. Although the probability of such an extreme event occurring is small, an upsurge in the amount of special watch items, not included in the coverage ratio, is a warning sign over the medium term, as some of the loans in this category will probably become non-performing.

On the whole, capital strength in the banking sector appears to be adequate and consistent with the risks taken. Another factor boosting the sector's stability is that non-resident shareholders, dominant in Hungarian banking, are highly rated professional investors with strong commitment to their Hungarian subsidiaries. The change in the group of banks under assessment also caused the ownership structure to shift, raising the proportion of non-resident investors to approximately 80% at end-2001, with most of them being banks or financial holding companies (see Table II.C).

It should be pointed out, however, that should credit expansion continue at the current rapid pace, and should banks start to cater to new and higher risk customers and market segments, then credit quality could be expected to deteriorate, necessitating measures to stop the further decline in the CAR as well as shareholders' active participation in raising additional capital or providing subordinated loan capital. Currently, there is only one small bank that falls short of the 8% CAR requirement, but there are several rapidly growing medium-sized and large banks that have ratios below 10%. While these banks have a market share of 25% (see Chart II.39), it is a welcome sign from the point of view of stability that they are generally exceptionally profitable, which is a safeguard for capital accumulation. Furthermore, having a strong professional investor background, they have a proper access to additional capital should the need arise.

## II.5 Profitability

The year 2001 witnessed spectacular improvement in banking sector profitability, even compared with the favourable trend in 2000. Net income amounted to HUF 121 billion in 2001, one and a half times higher than a year earlier (see Table II.D). Accordingly, returns on assets and on equity ratios were exceptionally good, with the ROA up from 1.06% to 1.44%, and the ROE from 12.5% to 16.2% (see Charts II.40 and II.41).<sup>37</sup> The return on assets was high in a European comparison, as the average ROA ratio of EMU countries was in the range of 0.3% to 0.4% in the second half of the nineties.<sup>38</sup> When comparing Hungarian banks' profitability with that of banks in advanced European countries, it should be taken into consideration that the ROA of the latter is much smaller, due among other factors, to much deeper financial intermediation and the concomitant stronger competition and lower inflation in those countries.<sup>39</sup>

Part of the improvement in the financial results was due to one-off effects, including a single large-scale business transaction and the positive effect of releasing provisions in the wake of regulatory changes.<sup>40</sup> On the other hand, the mergers that occurred in 2001 imposed significant extra burdens on the banks involved, while the savings on costs expected from winding up excess capacities will only unfold over the next few years.

It should be noted, however, that besides the roughly 50% increase in banking sector aggregated earnings, the number of loss-making banks rose from 10 to 13, although their combined market share is relatively low (18%). In a welcome development, banks producing positive real ROEs exceeded the number of banks losing capital in real terms, with the former rising from 15 to 21 and the latter falling from 25 to 18 relative to 2000.<sup>41</sup>

<sup>37</sup> ROA denotes net income/average balance sheet total and ROE denotes net income/average equity.

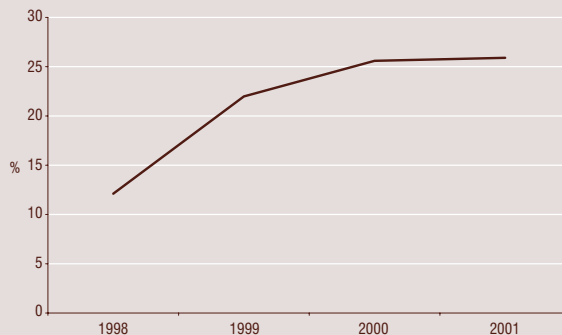
<sup>38</sup> The weights applied in the calculation of the average ROA of the EMU banking sectors have been the balance sheet totals.

<sup>39</sup> It is empirically proven that deeper financial intermediation has a negative impact and higher inflation has a positive impact on banks' profitability.

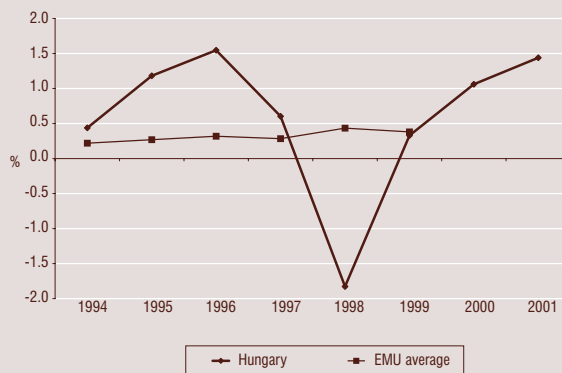
<sup>40</sup> They are the sale of MÉBIT, the insurance line of ABN AMRO, and the release of provisions made for country risk, exchange rate risk and exchange rate loss.

<sup>41</sup> The individual ROEs were derived from after-tax earnings. The calculations for 2001 do not include merging banks.

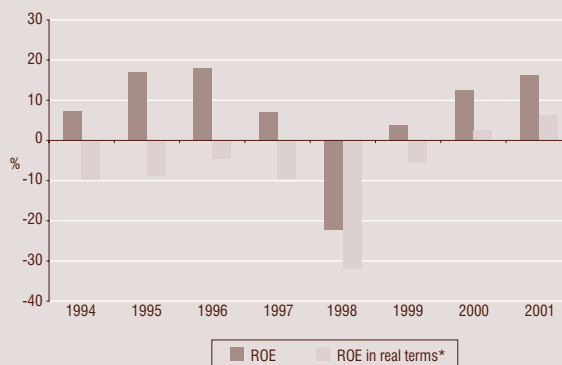
**Chart II.39 Market share of banks with a capital adequacy ratio below 10%**



**Chart II.40 Banking sector ROA in a European comparison**



**Chart II.41 Banking sector ROE**



\*ROE deflated by annual average CPI

Table II.D Banking sector profits/losses

	2000	2001	2001/2000 (%)
	HUF Bn		
Interest income	304,4	355,6	116,8
Change in loss in value/provisions	3,5	-20,6	
Income from commissions*	78,4	102,5	130,7
Profits from financial operations	54,8	62,6	114,1
Other income	-49,4	-38,8	
<b>GROSS PROFITS FROM FINANCIAL AND INVESTMENT SERVICES</b>	<b>397,8</b>	<b>466,1</b>	<b>117,2</b>
Operating costs	289,2	323,8	112,0
<b>PROFIT FROM FINANCIAL AND INVESTMENT SERVICES</b>	<b>108,6</b>	<b>142,3</b>	<b>131,0</b>
Profit from other non-financial and investment services	1,6	1,0	61,7
<b>ORDINARY TRADING PROFIT</b>	<b>110,2</b>	<b>143,3</b>	<b>130,0</b>
Extraordinary profit	-10,6	5,2	
<b>PRE-TAX PROFIT</b>	<b>99,7</b>	<b>146,9</b>	<b>147,4</b>
Tax payable	19,1	25,8	134,7
<b>AFTER-TAX PROFIT</b>	<b>80,5</b>	<b>121,1</b>	<b>150,4</b>

\*While data on 2000 only include income from commissions on financial services, the data on 2001 also include fees and commissions income earned on investment services.

Chart II.42 Spread and its constituents

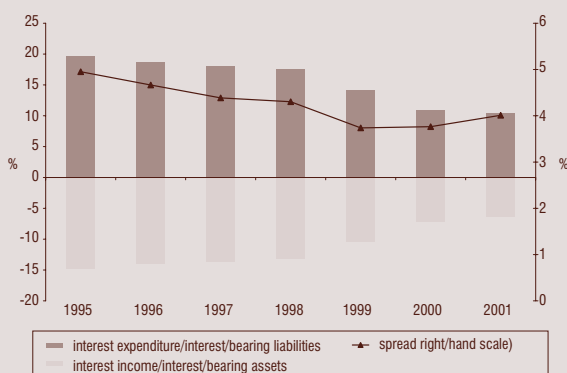
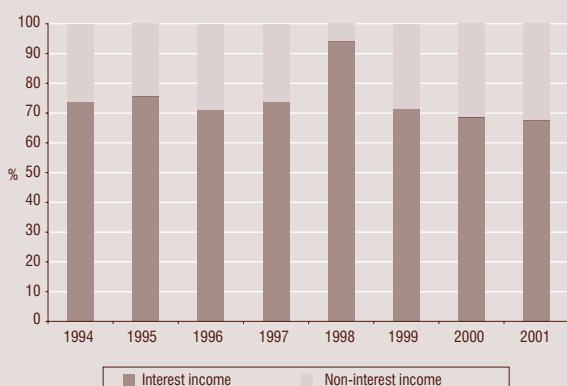


Chart II.43 Share of interest income and non-interest related income within gross operating income



As before, there was significant asymmetry between the distribution of earnings in the first and second six months, with 56% and 44% of the income arising in the first and second half respectively (55-45% in 2000). Nevertheless, banks also performed well in the second half, considering that they faced a sharp drop in corporate lending growth due to negative macroeconomic developments.

To a great extent the excellent results in 2001 were due to the fact that interest income, accounting for the largest share of operating income, rose by 17% in nominal terms and 7% in real terms (relative to its 3% real growth in 2000). The two main factors having a beneficial effect on interest income were the increase in the share of customer loans within assets and the moderate rise in the spread.

The combined share of corporate and household loans within the balance sheet total (based on average annual values) rose from 39% in 2000 to 44%, despite the slowdown in corporate lending growth. Furthermore, lending to other financial intermediaries also rose sharply. Banks' interest income also underwent a positive structural change in that banks were able to increase the weight of household loans within customer loans, which ensure a much higher interest margin with the exception of subsidized housing-related loan facilities, even though the proportion is still rather small (at 15% in annual average terms). The ongoing restructuring of the balance sheet is reflected in the change of the composition of interest revenues, with the share within total interest income of revenues arising on loans rising from 54% to 61%, relative to 2000 (44% in 1999).

Interest income improved as the spread rose by 25 basis points following a steady decline between 1995 and 1999 and a flat period in 2000, (see Chart II.42). It was, *ceteris paribus*, favourable for the spread that the loss of income associated with the reserve requirement was reduced substantially in 2001.<sup>42-43</sup>

Income from fees and commissions earned on financial services, accounting for 90% of total fees and commissions, rose substantially (by 18%).<sup>44</sup> Income on financial operations rose at a 14% rate, not as fast as the interest and commission income. Gains on foreign currency trade and exchange rate changes<sup>45</sup>, accounting for four-fifths of the income on financial transactions, rose by 18%, primarily as the widening of the band and the liberalisation of exchange rate regulations boosted activity in the markets. The sale of MÉBIT exerted upward pressure on the income arising on financial transactions while the losses incurred on securities trading and exchange rate changes exerted downward pressure. All in all, the share of non-interest-related income within gross operating income<sup>46</sup> rose from 31% in 2000 to 32% (see Chart II.43).<sup>47</sup>

<sup>42</sup> In the framework of the reserve requirement regulation, the reserve ratio was lowered from 11% to 7% on 1 February 2001, and to 6% from 1 July 2001.

<sup>43</sup> One of the indirect effects of a cut in the reserve ratio may be that banks can reduce the spread between their lending and deposit rates as the opportunity cost incurred on the reserve requirement is lowered. In the absence of adequate information the existence or extent of this indirect effect cannot be stated for certain.

<sup>44</sup> Due to changes in the reporting framework, the commissions and fees earned on investment services, accounting for 10% of total fees and commissions, cannot be compared with the corresponding values in the base period.

<sup>45</sup> Including the income arising on foreign exchange forwards and the related net provisions.

<sup>46</sup> Gross operating income = gross income from financial and investment services - loss in value/change in provisions - other income

<sup>47</sup> With the effect of the MÉBIT transaction excluded, the share of non-interest-related income would remain unchanged.

In 2001, banking sector profits dropped by HUF 21 billion, due to the effect of the loss in value and provisioning changes.<sup>48</sup> The release of provisions for country risk, exchange rate risk and exchange rate losses due to changes in the regulatory and accounting framework had a one-off positive effect on the profits for 2001, estimated at a total of HUF 12 billion.<sup>49</sup> Further improvement was due to the termination of the minimum requirement on general risk provisions in 2001, resulting in a HUF 10 billion cut in the value of net provisions, relative to 2000.

In 2001, operating costs rose at a slightly faster pace (12%) than average annual inflation. About one-third of this increase is accounted for by substantial additional costs incurred on banking mergers (such as severance payments, IT modernisation expenses, etc).<sup>50</sup> Personnel expenses rose by 16%, and other operating costs (such as rent, depreciation, IT costs, consultants' fees, marketing expenses, etc) rose only by 9%.

On the whole, operating costs rose much more slowly than gross operating income, bringing the costs to income ratio down to 62% from 65% in 2000. At the same time, there was no improvement in the operating costs to balance sheet total ratio (3.8%). However, this ratio might be favourably influenced over the next one or two years by the mergers accomplished in 2001, due to saving on costs by eliminating excess capacities (see Chart II.44).

## II.6 Risks incurred by the sector of cooperative credit institutions

Cooperative credit institutions only account for a 6.6% aggregate market share in terms of their balance sheet totals, while they play a significantly greater role in the household sector. Cooperative credit institutions accounted for 13% of total deposits and 19% of total loans at end-2001. Due to its operation profile, this sector continues to be viewed as carrying higher risk than the banking sector.<sup>51</sup>

Although cooperative credit institutions have increased their balance sheet total faster than the banking sector for a number of years now, they have managed to increase their market share by merely 1.4 percentage points in the course of four years. The year 2001 witnessed losses in market share in the area of lending to households and corporates and taking corporate deposits alike. The growth rate of the sector's own funds lagged behind that of the balance sheet total nearly every year, reflecting insufficient capital accumulation, crucial for the future expansion of this sector (see Table II.E).

At end-2001, every savings cooperative complied with the minimum capital requirement of HUF 60 million set by the

<sup>48</sup> Due to major amendments to the accounting and reporting framework, the effect of changes in portfolio quality on profits cannot be compared with that in the previous year.

<sup>49</sup> The release of the country risk provision has been adjusted for the estimated amount of additional loss in value recorded for these assets.

<sup>50</sup> Excluding the costs incurred on the mergers, operating costs rose slower at 8% than inflation in nominal terms.

<sup>51</sup> The sector's global trends of development, level of risk and potentials are discussed at length in a paper called 'Risks in the Sector of Cooperative Credit Institutions', in *Report on Financial Stability*, August 2000.

Chart II.44 Operating costs to balance sheet total ratio

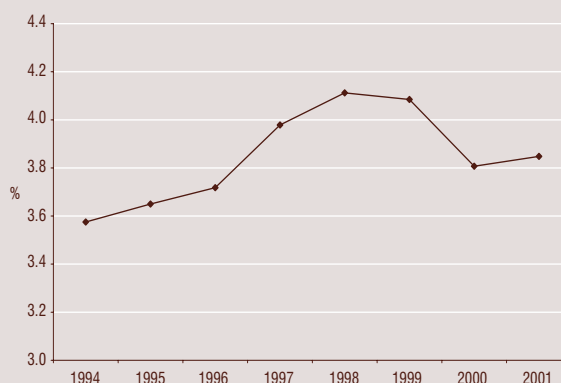


Table II.E Market share of Hungarian cooperative credit institutions\*

%	1997	1998	1999	2000	2001
Balance sheet total	5,18	5,63	5,95	6,15	6,59
Equity	4,62	4,81	5,03	5,14	5,19
Household deposits	11,20	11,98	12,32	12,67	13,33
Household lending	16,41	18,16	18,25	19,79	19,36
Corporate deposits	1,95	2,61	2,95	3,39	3,03
Corporate lending	1,81	2,52	3,37	3,33	2,84

\*Excluding Hungarian Development Bank and Eximbank.

Table II.F Number of Hungarian savings cooperatives by equity

HUF billions	2000			2001		
	OTIVA	other	Total	OTIVA	other	Total
-60	12	1	13	0	0	0
60-100	37	1	38	22	2	24
100-200	77	1	78	83	0	83
200-300	23	7	30	31	5	36
300-	25	7	32	31	10	41
Total	174	17	191	167	17	184

**Table II.G Asset portfolio of OTIVA member savings cooperatives**

OTIVA members	Portfolio distribution %	Share of provisions %	Portfolio distribution %	Share of provisions %
	2000		2001	
Performing	65,07		64,42	
Special watch	28,83	3,0	29,34	2,9
Substandard	2,38	19,6	2,52	19,7
Doubtful	1,36	48,5	1,47	46,9
Bad	2,36	91,2	2,25	90,7
<i>Classified, total</i>	<i>34,93</i>		<i>35,58</i>	
<i>"Non-performing"</i>	<i>6,10</i>		<i>6,24</i>	

**Table II.H Asset portfolio of non-OTIVA-member savings cooperatives**

OTIVA members	Portfolio distribution %	Share of provisions %	Portfolio distribution %	Share of provisions %
	2000		2001	
Performing	73,48		70,19	
Special watch	22,26	1,8	24,06	3,1
Substandard	1,50	23,4	2,34	19,0
Doubtful	1,91	37,2	1,47	36,0
Bad	0,85	93,9	1,94	73,0
<i>Classified, total</i>	<i>26,52</i>		<i>29,81</i>	
<i>"Non-performing"</i>	<i>4,28</i>		<i>5,76</i>	

current regulatory framework. By contrast, the equity of 24 savings cooperatives fell short of the HUF 100 million limit prescribed for end-2003 (see Table II.F). However, the majority of resident savings cooperatives fall short of much more stringent EU regulations (setting minimum capital at EUR 5 million, or subject to certain conditions, at EUR 1 million). At end-2001, average equity per savings cooperative amounted to HUF 211 million in respect of OTIVA members<sup>52</sup> (compared with HUF 135 million at end-1999), and to HUF 379 million in respect of non-OTIVA savings cooperatives (compared with HUF 289 million at end-1999). Unfortunately, the bulk of the increase can be attributed to the mergers prompted by Hungarian regulations rather than the raising of additional capital or the reinvestment of proceeds. Thus, when the coercive effect of the requirement of gradually increasing capitalisation ceases to exist after 2003, the process of capital concentration will likely lose momentum.

In 2001, savings cooperatives increased their lending to corporates by nearly 21% in real terms. The 24% real growth in household lending was comprised of a 48% rise in property loans and real growth of 10% in non-property related loans.

Increased lending by Hungarian savings cooperatives raises a number of concerns. First, most of the increase is accounted for by lending in urban areas, which seems to be in contradiction with the much-quoted argument used to explain why the regulations pertaining to savings cooperatives are more lax than those on commercial banks. The argument claims that savings cooperatives have smaller exposure to risk as they are more familiar with local clients. According to the results of a survey conducted for the 54 largest savings cooperatives, 71% of lending takes place in large towns, of which 35.7% is in county centres and the capital (the comparable ratios for deposits are 57% and 24%, respectively). The shift in lending towards cities is not likely to reverse in the near term as city dwellers usually have better income prospects. As far as the exceptional growth in savings cooperatives' housing-related loans is concerned, there are doubts about the value of the collateral offered in connection with home-building loans, as the houses built in small settlements in certain areas of the country would presumably trade at very low prices.

As far as the quality of the on-balance-sheet portfolio of savings cooperatives is concerned, it appears to be of much poorer quality than that of the banking sector. It should be noted, however, this sector has a much higher proportion of special watch loans than the banking sector average partly because the integrated savings cooperatives automatically classify large and long-term exposures into this class, based on the process of rule integration co-ordinated by their top executive organs. Nevertheless, the proportion of non-performing assets, which does not include the above category, is 73% higher in respect of savings cooperatives than the banking sector. The portfolio

<sup>52</sup> OTIVA (National Fund for the Protection of Savings Cooperatives), the central organisation to promote integration among savings cooperatives, was founded in 1993 with the participation of the state for the purpose of facilitating restructuring within the sector. The key tasks of OTIVA are crisis prevention and crisis management. As the pre-condition of using government funds to consolidate savings cooperatives was their joining an integration scheme, only a handful of sound cooperatives in no need of consolidation opted for staying outside the integration.

of non-OTIVA-member cooperatives may give cause for concern partly because the quality of balance sheet items began to deteriorate rapidly in 2001 and partly because the size of loss in value stated was much smaller than in respect of integrated savings cooperatives (see Tables G and H).

After a worsening trend over the past few years, savings cooperatives were able to improve profitability in 2001, although by a lower rate than the banking sector and it continues to lag far behind banks' profitability (see Table II.I). At the same time, a comparison of OTIVA and non-OTIVA member cooperatives in terms of growth, assets quality and profitability gives evidence of the beneficial effects of the current loose form of integration.

## **II.7 Operation of and risks in interbank payment and settlement systems**

### **Regulatory framework**

The Act on the National Bank of Hungary passed in 2001 provides bankruptcy protection in respect of pledged assets and guarantees offered to the Bank, enhancing security for both VIBER (Real-Time Gross Settlement System) and the Interbank Clearing System (BKR), and boosting stability within the payments system. The source of liquidity for these systems lies increasingly in the intraday credit facility provided by the Bank. The credit risk carried by the Bank in its capacity as a creditor implicitly offers a government guarantee to illiquid banks. The new Act on Capital Markets provides protection for the securities clearing house as well. KELER must specify in its regulations the stage at which the instructions received are nonrecallable. The Act declares that the cash funds and securities deposited with the clearing house serve as security for the clearing house and specifies the payment and settlement systems that enjoy exemption under the Bankruptcy Act. The above changes combined represent partial harmonisation with Directive 98/26/EC 'on settlement finality in payment and securities settlement systems'. Further reinforcement of bankruptcy protection is expected in 2002.

### **Distribution of interbank payment transactions between the major systems**

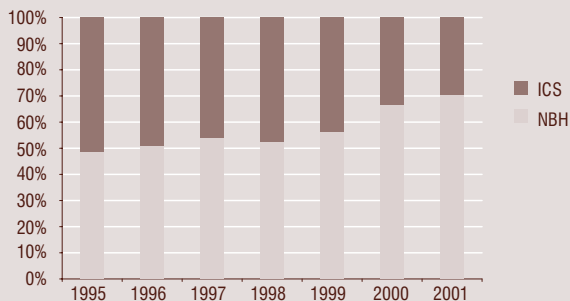
Interbank payments are essentially conducted through two systems, VIBER, the Bank's real time gross settlement system and BKR, the Interbank Clearing System, operated by GIRO Rt. In 2001, forint transactions by resident banks amounted to 13 times the value of GDP (compared with 10 in 2000 and 5 in 1995), still lagging behind comparable ratios of countries with

**Table II.I Profitability of savings cooperatives**

	2000		2001			
	ROE	ROA	ROE	ROA		
OTIVA	174	11.96%	0.82%	167	14.39%	1.00%
Other	17	8.60%	0.56%	17	10.61%	0.72%
<i>Total</i>	<i>191</i>	<i>11.45%</i>	<i>0.78%</i>	<i>184</i>	<i>13.80%</i>	<i>0.95%</i>

<sup>53</sup> Comparable ratios in 1999 included 32 in Germany, 86 in Belgium, 11 in Greece, 58 in France, 38 in Ireland, 31 in Italy, 168 in Luxembourg, 45 in the Netherlands, 17 in Austria, 40 in Finland, 57 in Sweden and 79 in the UK.

**Chart II.45 Distribution of payment transactions between VIBER and the Interbank Clearing System (1995 - 2001)**



advanced money and capital markets.<sup>53</sup> Turnover in 2001 was 47.8% up on a year earlier.

According to the trend seen for the past few years, the National Bank settles an increasing share of total turnover within its own account management system, while the distribution by number of transactions has remained virtually unchanged, with the BKR accounting for over 99%. The two-thirds to one-third ratio in favour of turnover within the Bank's systems in 2000 rose to 77%-23% in 2001, due to an upsurge in transactions carried out through VIBER (see Chart II.45). This reflects, to a certain extent, a reduction in risk incurred on domestic payments, as the Bank is able to oversee its own systems more efficiently and directly than those owned by private entities. Furthermore, the real-time system also offers a wider range of facilities for liquidity management.

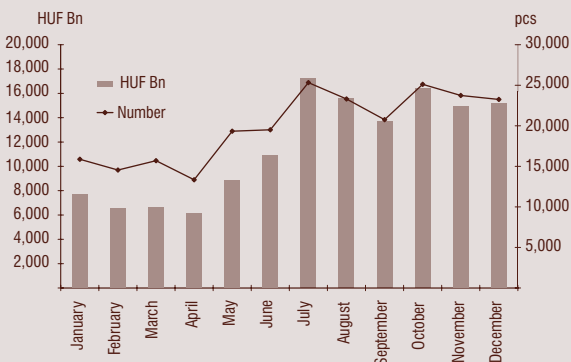
Even though the BKR primarily processes small-value payment instructions, its activity is also significant in the area of large payments. At the same time, VIBER also occasionally deals with transactions involving surprisingly small payments. All in all, 95% of the payments settled through BKR involve payments below one million forints, while 78% of VIBER's turnover falls in the range over 10 million forints.

The proportion of large-value payments within interbank transactions has been increasing for several years, but at a much faster pace in respect of VIBER, due to the specific features of the two systems. This has been beneficial to risk management, as BKR's night-time operation does not enable liquidity to be changed, while this is possible on a continuous basis in VIBER. Furthermore, large-value payments and inappropriately bundled small-value batch payments can also cause a gridlock during overnight processing. A potential way to reduce the risk and liquidity requirement of BKR processing would be to transfer an increasing portion of large-value payments into VIBER (last year BKR settled two to three thousand large-value transactions which, in view of the existing tariffs, customers could have sent through VIBER). The Bank can facilitate this reduction in risks by encouraging the development of transparent fee structures and an adequate information service, in addition to a high degree of automation of the VIBER processing of payment instructions within the Bank.

During the first few months of 2001, the number of payments settled through VIBER remained flat to falling (just as in the previous year), to turn up sharply again from mid-2001. Following the liberalisation of foreign exchange regulations, there was a pick-up in the number of transactions, due primarily to higher demand from non-resident credit institutions opening accounts at Hungarian banks (see Chart II.46).

The upsurge in turnover caught credit institutions by surprise, and a large degree of unprecedented queuing occurred in VIBER. This higher turnover was a source of difficulty in operative liquidity management primarily for the largest forint correspondents of non-resident banks. Moreover, as the liquidity problems appeared typically towards the end of VIBER operating hours, banks were unable to handle them properly. The National Bank, in agreement with the credit institutions, took regulatory and practical measures to tackle the emerging mini crisis. The remedies included amending operational rules and prolonging VIBER operation by two hours (until 4:30 p.m.) per day.

**Chart II.46 Value and number of transactions processed by VIBER in 2001**



The five participants with the largest turnover account for 64% of BKR turnover, relative to VIBER's comparable ratio of 58% in 2001, representing a rise on the previous year. This was essentially due to bank mergers and a further rise in the weight of major market participants. A comparison with relevant data from EU countries<sup>54</sup> suggests that the level of concentration was consistent with the international average. This implies that one of the key functions of the National Bank, in its capacity as an oversight authority, is to control payments management of the largest participants, as any potential malfunction may have serious implications for the entire financial system.

### Securities settlement

KELER operates a securities settlement system for the settlement of equity, government securities and derivatives transactions concluded at the Budapest Stock Exchange (BSE), as well as futures transactions at the Budapest Commodity Exchange (BCE), in addition to interbank OTC trading in government securities (see Chart II.47).

The amount of OTC transactions within securities settlements rose by 33% relative to the previous year (from HUF 14,900 billion to HUF 19,900 billion), a rise from 60% to 81% in proportion. Stock exchange turnover continued to decline (by 60% on 2000) due to poor global sentiment, the recession and the terrorist attacks in the US. Following an upward trend in 2000, turnover in forwards fell off again in 2001 (by 27%), with its share down from 8% to 6%.

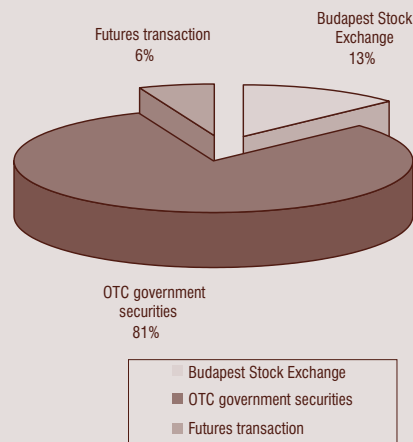
### Management of financial risks

Consistent with an increase in the use of securities for hedging purposes, the method of evaluating securities used as cover for intraday credit was revised at end-2001. While acceptance previously took place at face value, the Bank adopted evaluation at market price and introduced a haircut, depending on maturity. This change was in line with global requirements and reduced the risk incurred by the Bank on changes in the price of securities accepted as collateral.

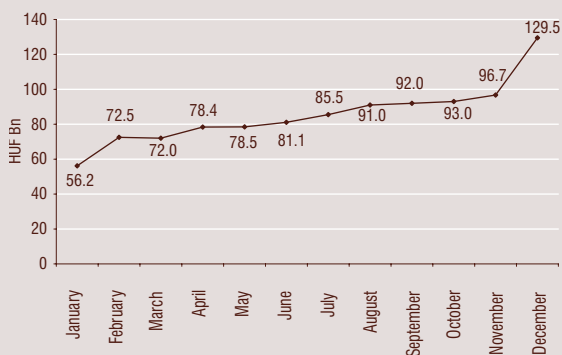
In 2001, the intraday credit line collateralised by securities (an additional security to participants' account balances) started to increase gradually until its average daily amount was threefold that in the previous year. This was primarily due to the cut in the reserve requirement, while there was an upsurge in payment transactions in 2001 (see Chart II.48).

The value of daily payments turnover (through BKR and the Bank's system combined) amounted on average to 0.72 times banks' covering balances available at the beginning of a business day in January 2001 (see Chart II.49). An index below 1 implies that an average bank's every payment instruction is settled even if it does not receive a single payment on a given day. The ratio rose to 1.8% by December, with its value in the range of 0.25 and 15 for individual banks, with the upper and lower extreme values in the range of 0.01 and 63. The higher the

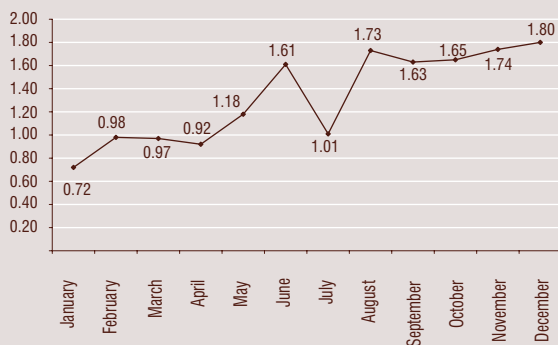
**Chart II.47 Breakdown by market sector of KELER's securities settlements in 2001**



**Chart II.48 Limit on intraday credit generated by banks in 2001**



**Chart II.49 Ratio of banks' intraday debit transaction and covering balances within interbank payments systems (2001)**



<sup>54</sup>Data for 1999 were 50% in France, 51-59% in Spain, 47-56% in Portugal, 26-81% in Greece and a much lower 25-42% in Italy. Concentration was much higher in the other countries at 73-76% in Belgium, 73-79% in the UK, 80-99% in Finland, 79-99% in Ireland and 94-95% in the Netherlands.

value the more attention liquidity managers need to pay to preventing temporary gridlock. The current reserve requirement<sup>55</sup> ensures that there is no liquidity risk incurred on payment transactions relative to available covering funds, but a significant cut in the reserve ratio (which is in the range of 1% to 3% on average in the EU countries) and the steady growth in payments turnover will radically transform banks' liquidity management practices. This was signalled by the upsurge in payment transactions in the summer causing problems. Credit institutions will have to adopt a more flexible and efficient liquidity management framework for the conduct of payments transactions.

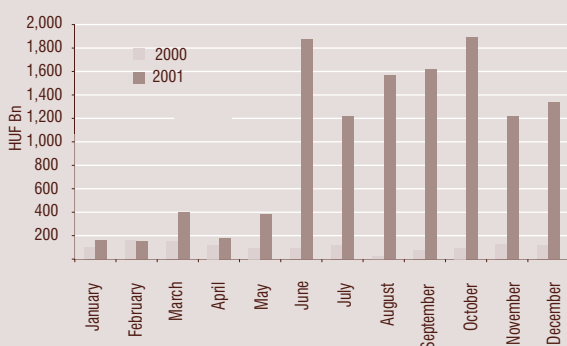
Should a bank's account balances be in the red at the end of the day, which means that intraday credit changes into end-of-day credit, the central bank will grant overnight loans against the collateral of securities. This occurred on merely three occasions in 2000, amounting to HUF 2.1 billion. By contrast, banks received HUF 202.2 billion in end-of-day loans on a total of 33 occasions in 2001, of which HUF 124.1 billion was taken out in the course of December.

Queuing in payment systems occurs when a payment order given cannot be processed due to a lack of sufficient covering funds. When this happens, the system queues up the transaction until there are additional funds provided on the account of the participant involved. Should any bank be queued with an exceptionally large payment, this may lead to a shortage of liquidity within the banking sector, as the queued payment may be missing from other banks' liquidity. A large number and value of queued transactions may eventually cause gridlock throughout the entire network due to the domino effect.

The number and value of queued payment transactions in the BKR's overnight processing in 2000 amounted to 15 and HUF 13.4 billion respectively, with the corresponding figures being 27 and HUF 154.4 billion in 2001, due broadly to errors in calculation. The actual amount of missing covering balances was much smaller at HUF 31.3 billion in 2001. When this occurred, banks had to provide additional funds. The difference is explained by the fact that queuing sometimes occurred not because of real liquidity shortages but because the order or batching incoming transactions was not optimal. (A large-value payment queued up before other smaller value transactions blocked the settlement of the latter, or there were too many transactions in one batch.)

VIBER has much greater mobility than the BKR in managing and dissolving queues. As the system operates during the day, banks are immediately notified when a queue is generated and can reorganise queued transactions or enter additional liquidity into the system, taking advantage of KELER's and the interbank market's simultaneous operating hours. Second, there is an automated central mechanism to eliminate queues, using an algorithm to dissolve queues even when no additional liquidity flows into the system.<sup>56</sup> In general, the same banks were involved in queuing and the number and value of queued transactions rose sharply during the year (see Chart II.50).

**Chart II.50 Value of transactions queued in VIBER in a monthly breakdown (2000-2001)**



<sup>55</sup> Banks' account balances available due to the high reserve ratio ensures ample liquidity for managing payment transactions within the banking sector as a whole.

<sup>56</sup> This mechanism has its limitations, as when extremely large values are queued, the reordering of payment instructions may not be effective.

The information channel between the foreign currency derivatives sections of the Budapest Commodity Exchange and KELER was put on a real-time footing. This enables monitoring of trades and price shifts and the revaluation of positions and calculations of covering balances in real time, in other words risk assessment can take place on a continuous basis.

Simultaneously with the extension of VIBER operating hours in 2001, KELER also extended the operating hours of its real time securities settlement system in respect of OTC transactions until 4 p.m.

In preparation for the introduction of T+3 settlement, KELER started to check the existence of covering funds both on the securities and cash sides of transactions concluded on the BSE in 2001. This measure did not reduce risk by itself, but is a key pre-condition for settlement on T+3.

There were also regular reviews of the value of security requested for the various products, making amendments as consistent with the existing market situation.

Thanks to further developments, the VaR software is now suitable for risk assessment not only regarding the major foreign currencies and equities but also all foreign currency, interest rate and equity-based products.

In the area of international settlements, KELER adopted a DVP-based system also in respect of foreign securities.

### Operating security

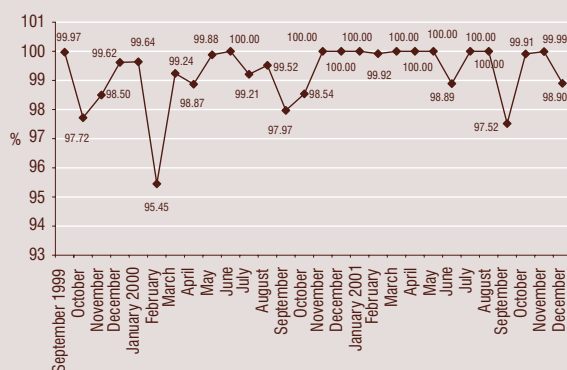
Ever since its introduction, VIBER has been a reliable service, and its availability (measured as the duration of actual operating time as a percentage of the announced operating hours) has also been on an improving trend (see Chart II.51).

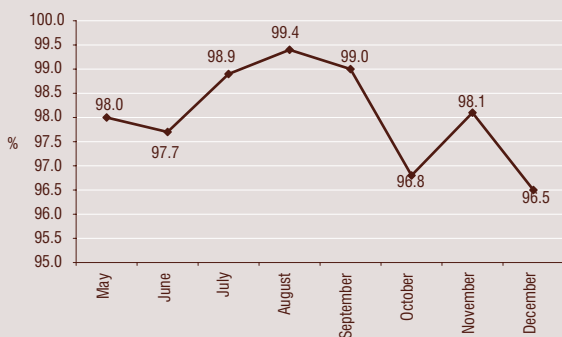
A percentage over 99% implies that less than one hour a month was lost. In 2001 average availability stood at 99.59%, with the longest period of unavailability of three and a half hours occurring in September, after the operating hours were lengthened. According to the annual report of the ECB, the availability of TARGET, the most important real-time payments system of the EU, interlinking member countries' systems, was in the range of 98.5% and 100% in 1999, and did not sink below 99.5% in 2000, which makes the performance of VIBER appear somewhat poorer. The most crucial task of the forthcoming period is to enhance the stability of the system and minimise service unavailability, which would lead to a substantial lowering in operating risk.

Availability should be interpreted in a different light in respect of the BKR where a short stoppage in operation due to batch processing does not really disturb participants' operations during the day. Problems can arise if participants fail to meet the deadline for sending in the instructions to be settled (2:00 a.m.). This will increase the risk of not completing settlement by the prescribed deadline, causing a delay in the opening of VIBER and the processing of transactions received by banks, thus hampering capital market operations. Last year four banks failed to meet the deadline on a total of 21 occasions, with the delay exceeding one hour only on one occasion. There was not a single delay in settlement.

Thanks to KELER's long operating hours, customers can send in payment instructions from 7:00 a.m. to 10:00 p.m. for settle-

Chart II.51 Availability of VIBER (1999-2001)



**Chart II.52 KELER's availability index**

ment on that very day (VIBER 8:00-4:30 p.m.; BKR 4:00 p.m. - 2:00 a.m.). As statistics on availability go back only to May 2001, data for the first four months are not included.

The annual average availability index stood at 98.1% (see Chart II.52).

In 2001, there was no major interruption in the service due to hardware malfunction, which shows that the hardware and software systems, communication devices and routes providing basic operational support were adequate. The reduced availability of the systems in the course of May, June, October and December was associated with a switchover to a new applications software. Eighty per cent of all malfunctions caused periods of unavailability of less than one hour, and not a single loss in service time was longer than four hours. Thanks to the efficiency of help desk staff, every malfunction reported was immediately dealt with and repaired.

A number of measures were taken during the year to improve service availability, including installation of a new system-monitoring device, formulating standard requirements software development must comply with, the creation of an efficient test environment and provision of training for operations and maintenance staff, in addition to a clear designation of responsibilities.

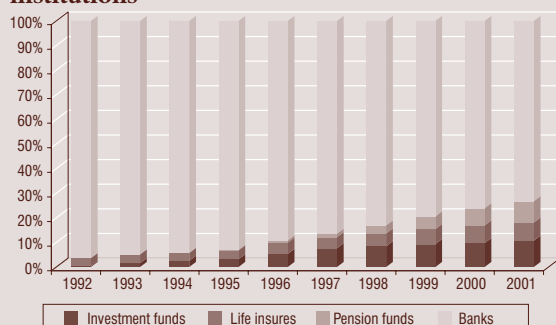
# III The position of non-bank financial intermediaries in 2001

The activities of Hungarian non-bank financial intermediaries varied by type of institution in 2001. In general, the three types of institutional investors, i.e. investment funds, pension funds and life insurance companies, managed to increase further their share of the market in channelling household and corporate sector savings (see Chart III.1). Savings held with non-bank financial intermediaries as a proportion of GDP showed a deepening in their intermediary role (see Chart III.2).

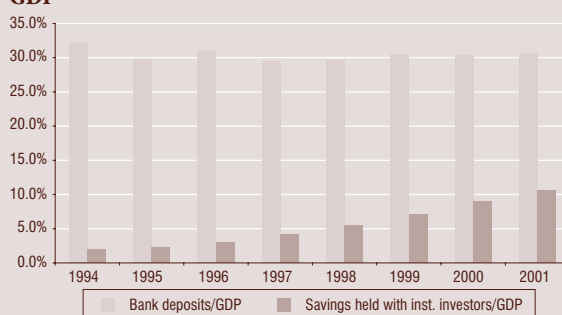
Despite continued growth in the past few years, the depth of Hungarian non-bank financial intermediation still lags far behind that seen in the less advanced EU countries (see Table III.A).

As in earlier years, pension funds continued to grow the most dynamically in 2001, accompanied by a fall in their number. This consolidation process was motivated by efficiency factors, which should be interpreted as positive news for system stability, even if the sector became more heavily concentrated as a result. Within the broad sector of investment funds, money-market and bond funds registered significant increases in asset values, unlike equity and mixed funds, which were faced with a decline, due to the nosedive in share prices. Growth in life insurance reserves lagged behind that in households' financial wealth, primarily on account of a decline in activity in the markets of single-premium and unit-linked contracts. Fall-

**Chart III.1 Distribution of household and corporate sector savings by intermediary institutions**



**Chart III.2 Household and corporate sector savings held with financial intermediaries as a proportion of GDP**

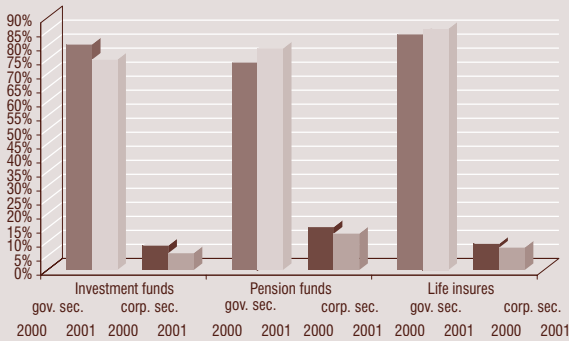


\*\*calculated with annual average stocks

**Table III.A Financial assets of institutional investors as a proportion of GDP**

	1992	1993	1994	1995	1996	1997	1998	1999	2000
Austria	61,6	71,9	65,9	86,2	92,4	105,2	115,6	127,9	131,3
Belgium	47,2	57,6	56	58,1	64,5	73,3	88,1	101,9	
Denmark	55,7	63,9	62,2	65,1	70,6	77,5	84,8	98	
United Kingdom	131,3	163	143,8	164	173,4	195,5	203,6	226,7	
Finland	41,1	43,8	49,3	49,6	61,7	65,6	77,1	92,1	
France	61,9	73,9	71,8	77,7	86,6	97	107,3	125,4	133,3
Greece	3	6,7	8,4	12,8	16,9	26,6	29,9	40,1	
The Netherlands	131,5	149,1	144,5	154,5	167,6	181,9	193,2	212,8	209,6
Luxembourg	1574,3	2119,1	1945,6	2020,6	2057	2612,7	3049	4172,3	
Germany	34	38,9	41,3	45,3	50,6	58,7	66,1	76,8	79,7
Norway	36,4	42	41,4	42,4	43,5	46,6	47,7	53,9	
Portugal	18,3	27,5	29,8	38,3	43,2	53,4	48,7	50,8	
Spain	21,9	29,3	32,3	33,4	44,3	56	66,5	65,4	62,1
Sweden	88,8	105,7	97,9	102,9	118,5	136,8	123,2	137,8	
Turkey	0,6	1,2	1,3	1	1,7	1,6	1,7	3,4	
Czech Republic	22,8	17,3	17,8	21,4	19	16,8	20,3		
Poland	0,6	1,9	1,5	2	2,6	3,2	4,2	5,4	
Hungary	2,5	2,8	3,9	4,4	6,1	7,5	8,9	10,7	12,8

Source: OECD.

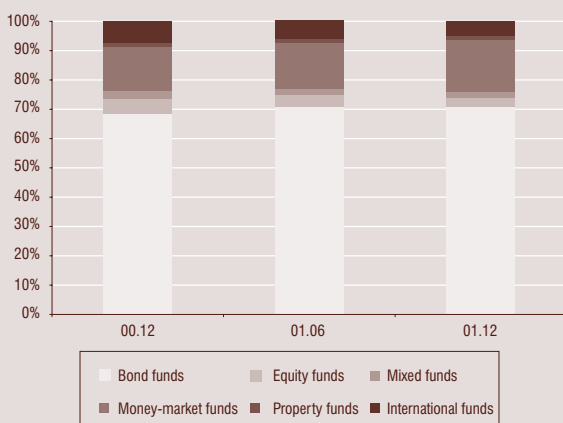
**Chart III.3 Government securities, and corporate shares and bonds in institutional investors' portfolios****Table III.B Institutional investors' portfolios in selected European countries**

		Bonds	Loans	Shares	Other
Germany	1990	39	47	9	5
	1999	40	28	28	5
France	1990	65	4	22	9
	1999	47	3	42	9
Italy	1990	69	2	16	13
	1999	53	0	23	24
Spain	1990	46	4	11	39
	1999	52	1	24	23
Portugal	1990	90	1	2	7
	1999	57	1	18	24
Greece	1990	35	0	46	19
	1999	23	0	43	34

Source: OECD.

**Table III.C Number of investment funds and net asset value**

Investment funds	Dec. 1999	Dec. 2000	Dec. 2001
Net asset value (HUF billions)	447	568	711
Number of funds	94	110	100
of which -Open-end funds	86	107	97
-Closed-end funds	8	3	3

**Chart III.4 Market shares of different types of investment funds, based on the size of assets managed**

Source: Bamosz (funds have been categorised according to their nature; the actual portfolio may differ).

ing premium revenue caused the degree of the sector's concentration to diminish, although it still remained high.

Risk-free government securities continue to account for 75%-85% of institutional investors' portfolios. The proportion of corporate shares and bonds continued to fall in the year under review (see Chart III.3).

Institutional investors' asset portfolios show a fairly varied picture from country to country in mature European economies. Nevertheless, the percentage share of government securities is below 50%-60% (see Table III.B).

Hungarian investment firms suffered from narrowing business activities and falling income, due to adverse market movements. Their market has been undergoing a period of acquisitions and mergers into parent banks. Capital requirements calculated on the basis of trading book rules, introduced in 2001, suggest that risks are relatively low in the sector. Nevertheless, the calculations which reflect the first data reports are not suitable for drawing far-reaching conclusions.

The volume of leasing and lending by financial enterprises rose robustly in 2001. However, their portfolio deteriorated, which was not consistent with the recorded amount of loss in value of their assets.

### III.1 Investment funds

#### General

Total assets managed by mutual investment funds rose by 25% in 2001 (see Table III.C). Almost the whole of this increase was accounted for by flows into more secure domestic money-market and bond funds as well as by the increase in their value. In contrast, assets held in equity and international funds declined (see Chart III.4). Due to wind-ups, revisions of investment strategies and increases in capital, the degree of concentration in capital managed by investment funds rose – the number of small investment funds fell, while that of those with net assets of more than HUF 1 billion increased to 52. The largest investment fund manages more than 50% of total capital, with the market share of the second largest being only 6%. Nine funds have net asset values in excess of HUF 10 billion; and concentration in terms of the size of assets managed is high.

The HUF 143 billion increase in net asset value resulted from the approximately HUF 104 billion inflow of fresh capital (mostly into bond funds) and the roughly HUF 39 billion increase in wealth on account of the revaluation effect. The significant declines in the domestic and international share markets had an adverse effect on net asset values of funds investing in equities. Depressed share prices and withdrawals of capital both reduced the value of equity funds' portfolios. Minor countertrend movements notwithstanding, the direction of yields in the domestic government securities market was downwards. This had a beneficial impact on the financial results of funds investing in the bond market.

Most of the investment fund managers are owned by banks. Investment funds in direct or indirect majority bank ownership account for a 96%-98% share of the market in terms of assets managed.

Investment unit holdings in a breakdown by the main ownership categories did not change much in 2001 – households continued to be the dominant participants, as they held more than 80% of total units outstanding in the market (see Chart III.D). This accounted for 7.8% of the sector's net financial wealth in December 2000 and for 8.7% at end-December 2001.

From the perspective of profitability, investment funds shared the common feature that, apart from a few exceptions, the volatility in their returns was lower than in the benchmark rate in the year under review.<sup>1</sup> This suggests that they successfully exploited the advantages offered by diversification.

Profitability of the various types of funds showed a variegated picture in 2001 – net asset values of domestic and international equity funds, carrying higher risks, fell significantly (domestic equity funds registered higher returns than the benchmark almost without exception; however, none of them was capable to turn out positive results); and all but one of the international bond and mixed funds registered zero or negative results. One of the reasons why international investment funds performed so poorly was the strong appreciation of the forint last year. The winners were undoubtedly domestic bond and money-market funds – their returns were in positive territories without exception, occasionally exceeding the level of deposit rates. Characteristically, these funds registered below-benchmark returns, with a lower volatility in returns than in the benchmark.

## Risks

Investment funds carry low risks to financial stability, as investment unit holders bear all direct risks which may result from a change in the value of the portfolio.<sup>2</sup> The Capital Market Act allows for funds to offer investors a return guarantee scheme, provided that it involves the promise of preserving capital and is backed by a bank counter-guarantee. Taking into account the fact that the Act stipulates stringent reporting requirements for investment fund managers, funds and custodians, investment unit holders can choose to take on the risks in investment funds after considering an adequate amount of relevant information.

Under the Act, different portfolio diversification rules apply to investment funds, depending on their types, which are designed to reduce dependence on the various issuers and markets. Accordingly, the risks carried by funds may be different by type of fund. An important rule for guarantee undertaking is that the fund manager is obliged to trust with the custodianship of the fund managed a credit institution registered in Hungary and with a licence to pursue such activity. The cus-

**Table III.D Proportion of investment units held by the main ownership categories**

	1999	2000	2001
Credit institutions	1.8	2.1	2.2
Other legal entities	14.8	14.1	15.1
Households	81.6	81.5	80.6
Non-residents	1.8	2.3	2.1
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

<sup>1</sup> The reference yields are the BUX (share market index) and RAX (equity fund index) for equity funds; the MAX (government securities index) and MAX Composite for bond funds; and the RMAX for money-market funds.

<sup>2</sup> Naturally, a weakly performing fund cannot stay in the market for long, and in an extreme case it may bring its parent bank into trouble. This poses a potential systemic risk.

**Table III.E** Composition of investment funds' assets (Per cent)

	1999	2000	2001
Domestic assets:	96	93	94
Cash and current accounts	1	2	1
Time deposits	3	0	11
Government securities	52	24	24
Treasury bills	28	21	21
NBH bills	0	35	30
Bonds (corporate and bank)	5	3	3
Shares	5	6	3
Property	1	1	1
Other	1	1	0
Foreign assets:	4	7	6
<b>Total:</b>	<b>100</b>	<b>100</b>	<b>100</b>

odian serves the interests of investors; and, beyond its custody tasks, it controls whether the fund manager observes the investment rules specified in legal regulations and the statutes of the fund manager. If the custodian discovers practices which are contrary to the legal requirements, it calls the fund manager to restore lawful conditions, rejects such assignments and reports the case to the Supervisory Authority. A new element of the regulations is that the custodian bears material responsibility for damage arising from non-compliance with its obligations provided by the Act.

Funds' investments continue to be dominated by Hungarian investments – the proportion of direct investments abroad within the total portfolio was 6% at end-December 2001 (see Table III.E). Low-risk assets, government securities, discount treasury bills and NBH bills account for the majority of domestic investments. Their share of domestic assets fluctuated between 81%–87%. (In 2001, the proportion of bank deposits increased significantly. Their total stock amounted to HUF 75 billion at the end of December. Deposits of one bond fund with a few banks accounted for HUF 50 billion of this.)

## III.2 Pension funds

### General

The number of both private and voluntary pension funds fell in 2001, explained by the continued consolidation process experienced by the sector – due to mergers and wind-ups of funds performing below the level required by economies of scale or ineffectively, the sector's general effectiveness improved. The pension fund market is characterised by a strong degree of concentration – the 5 largest private and voluntary funds concentrate 78% and 43%, respectively, of assets managed.

Capital accumulated by fund members for pension purposes amounted to HUF 574 billion at the end of 2001. This was 43.8% and 34.7% higher in nominal and real terms, respectively, than at the previous year's end. The end-December value of financial assets managed by pension funds accounted for 8.6% of households' net financial wealth, in comparison with 6.7% at the end of 2000. Membership fee revenues of voluntary and private pension funds amounted to HUF 142.6 billion in the year under review, representing a 30% increase relative to 2000 (see Table III.F).

**Table III.F** Aggregate data for voluntary and private pension funds

Description	Voluntary pension funds			Private pension funds		
	1999	2000	2001	1999	2000	2001
Number of operating funds	188	116	98	30	25	22
Membership (thousands)	1102.0	1079.1	1153.1	2064.1	2186.7	2252.7
Assets (at book value, HUF billions)	162.7	224.0	291.5	89.8	175.5	283.1
Revenue from membership fees (HUF bill.)	54.4	47.6	53.1	56.3	61.9	89.5
Operating costs (HUF billions)	2.9	3.2	3.5	4.2	5.4	6.6
Net income on private accounts (HUF bill.)	20.7	13.8	17.3	8.5	7.2	15.0

Membership in private pension funds increase by 3.0%, due primarily to the 82,000 entrants into the job market. Revenues from membership fees rose by 45% during the year, strongly outpacing the increase in the number of members. This was explained by the higher volume of voluntary additions to membership fees, beyond the effect of annual wage increases and the rise in the ratio of higher-income members, in contrast with the trends of previous years. Unlike in the case of private pension funds, the more modest increase of 11.8% in voluntary pension funds' membership fee revenues was accounted for by the 7% rise in membership. Private pension funds registered a total HUF 15.2 billion net revenue from investment activities, 90% higher than in the previous year. Voluntary pension funds' net revenues amounted to HUF 17.1 billion, rising by 22% in one year.

Pension funds registered annual average net returns of 6% in 2001 (the equivalent of a -3% real return); however, there were significant differences among the individual funds. Annual net returns were on a scale between -4% and +15%, with only 30% of funds able to register positive real returns. These, however, account for less than 20% of the sector's total membership. The largest funds booked negative real returns in 2001.

Within the broad sectoral average, funds investing mainly in government securities managed to perform better in 2001, while those taking on risks by buying more shares registered lower returns. Funds were only manage to realise positive real returns which held their portfolios exclusively in government securities in Q1-Q3, and then converted a part of their assets into shares in Q4.

## Risks

Funds continue to pursue conservative investment strategies. Apparently, they do not utilise the regulatory limits on investment alternatives carrying higher risks. Looking at the composition of their portfolios, assets held in government securities rose slightly relative to the end of 2000; however, the proportion of shares fell back, reflecting the unfavourable share market developments during the course of the year under review. The decline in the value of shareholdings relative to the previous year's end must have been behind this (see Table III.G).

Volatile share prices had a significant influence on the market value of funds' assets despite the proportion of shares in the portfolio falling below 10%. Not every fund manages its

**Table III.G** Composition of pension funds' assets

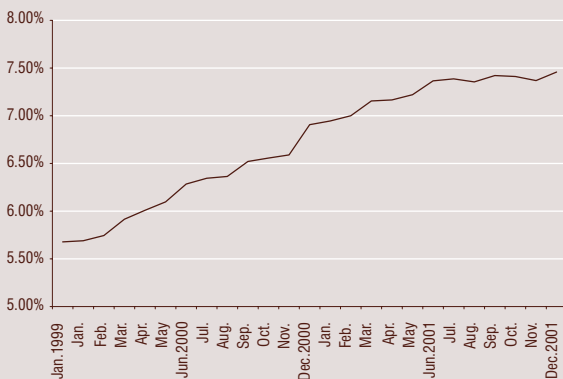
	Voluntary pension funds			Private pension funds		
	1999	2000	2001	1999	2000	2001
Cash and current accounts	3.2	1.1	1.1	2.8	1.6	1.5
Government securities	84.0	78.0	80.1	77.8	69.9	76.6
Time deposits and bank sec.	0.5	0.2	0.0	1.6	2.8	0.3
Shares	9.8	14.0	9.8	10.8	11.5	9.4
Corporate bonds	1.6	2.0	2.3	3.4	3.1	4.8
Foreign investments	0.0	0.7	2.5	0.0	1.4	2.4
Other (investment units, etc.)	0.9	4.0	4.2	3.6	9.7	5
Total	100.0	100.0	100.0	100.0	100.0	100.0

government securities portfolio actively, which in turn affects net revenue from investment activities negatively. This contributes to the exposure of funds' portfolios to interest rate risks. It should be noted that, although in 2001 the statutory limit for funds to invest in foreign assets was raised to 20%, funds did not capitalise on the opportunities offered by international diversification.

The imperfections of funds' recording and information systems exposes them to significant operational risks, which is further aggravated by the difficulties caused by the diverse relationships among funds, asset managers and custodians. Potential disturbances may cause problems to proper record-keeping and accurate, real-time flow of information. The choice of asset managers is particularly important, with special regard to the risks and costs related to their operations.

Funds are faced with regulatory risks as well, given that the ongoing changes in the strategies for a major overhaul of the Hungarian pension system carry a significant factor of uncertainty. Under the amendment to the Funds Act, in effect from January 2002, job market entrants do not become private fund members automatically, but register with the social security system, which exposes funds to the risk of a decline in membership even in the short run. This has a special importance for the smaller pension funds, particularly in terms of economies of scale. The abolishment of job market entrants' mandatory fund membership may lead to a rise in operating costs through the increase in funds' marketing expenses. The abolishment from 2002 of the standard contribution which serves to ensure the minimum level of contributions to private pension funds adds to the uncertainties surrounding the system of private pension funds. Conceivably, primarily members in their 40s will re-enter the compulsory social security system, encouraged by the abolishment of the standard guarantee requirement.

**Chart III.5 Proportion of life insurance reserves within households' net financial wealth**



**Table III.H Aggregate data for life insurers**

	2000	2001
Number of life insurers	18	18
Life insurance reserves (without unit-linked reserves, HUF millions)	323,935	425,877
Unit-linked reserves (HUF millions)	89,357	70,089
Premium revenue (HUF millions)	178,430	172,686
of which: continuous	130,513	141,113
single premium	47,917	31,573

### III.3 Life insurers

#### General

Households held 7.46% of their net financial assets in life insurance reserves at the end of 2001. This represents an increase of 0.55 percentage points relative to the beginning of the year (see Chart III.5). The rise in the proportion of life insurance reserves within household savings had come to an almost complete halt by the second quarter. The definitive factor explaining the more modest build-up in life insurance reserves relative to household savings was the fall in the number of new policies.

Insurance companies' premium revenue was 3.2% lower in nominal terms in 2001 than in the previous year. This was explained mainly by the drop in single-premium revenue and by lower revenue of unit-linked insurance premium (the latter was insurers' flagship product in the previous few years). Not only the fall in the number of new contracts, but in large part losses of existing stocks on account of repurchases as well, were behind the sector's sinking premium revenues. The other branch which contains elements of both risk and saving and gener-

ates important revenues is mixed life insurance products. Although premium revenue from the sale of these increased in the period under review,<sup>57</sup> its size was lower in comparison with the previous year. This was due to the jump in the number of repurchased, paid-up and expiring policies.<sup>58</sup>

The combined market share of the five insurance companies with the largest life insurance reserves fell significantly, by 10.5 percentage points to 71.9%, in 2001 relative to the end of 2000. This was attributable mainly to falling premium revenues. Insurers' higher premium revenues performing in the middle of the league and the faster reduction in concentration are seen as positive developments in terms of risks facing the insurance sector.

## Risks

Insurers continued to pursue risk averse investment policies in 2001 (see Tables III.H and I). They held most of their assets in risk-free government securities.

The amendment to the Insurance Act has been in force since 1 January 2001. Although this allows for insurers to invest a part of their life insurance reserves in mortgage loans, the supervisory authority has not yet issued a licence to pursue mortgage lending activities. Insurers therefore have not yet been faced with risks arising from mortgage lending.

The potential threat of default by re-insurers is also an insignificant counterparty risk to insurers' operations, as Hungarian firms re-insure their existing life insurance contracts mainly with good quality foreign companies. The proportion of risks surrendered through passive re-insurance remained virtually unchanged relative to the previous year – insurance companies surrendered 10.8% of their premium revenue to re-insurers in 2001.

As regards their market risks, insurers may take on higher interest rate and share price risks,<sup>59</sup> similarly to their investments; however, the proportion of these risks is currently low.

Insurance companies' loss ratio, i.e. the ratio of claims to premiums, rose by 15.5 percentage points in one year, reaching 37.1% in 2001. This might be an indication of mounting risks, in addition to the factors noted above. However, the observed significant increase in the loss ratio in the year under review should not be interpreted as a proof of inadequate pricing by insurers, as developments in the life cycle of products and the increasing number of repurchased policies presumably played a distinct role.

**Table III.I Composition of life insurers' investments**

	2000	2001
Cash and current accounts	0,3	0,4
Government securities	85,9	86,3
Time deposits and bank sec.	2,1	1,7
Shares	6,4	5,1
Corporate bonds	2,4	1,6
Investment units	1,1	2,0
Other	1,8	2,9
<b>Total</b>	<b>100,0</b>	<b>100,0</b>

**Table III.J Composition of life insurers' investments for standard and unit-linked life insurance schemes**

	unit-linked		traditional	
	2000	2001	2000	2001
Cash and current accounts	0,4	0,5	0,3	0,4
Government securities	68,1	74,1	91,0	89,7
Time deposits and bank sec.	0,6	0,2	2,5	2,1
Shares	26,9	20,1	0,5	0,9
Corporate bonds	0,1	0,0	3,1	2,0
Investment units	3,7	5,1	0,4	1,1
Other	0,2	0,0	2,2	3,8
<b>Total</b>	<b>100,0</b>	<b>100,0</b>	<b>100,0</b>	<b>100,0</b>

<sup>57</sup> Mixed and unit-linked life contracts accounted for 56% and 36% respectively of life insurance premiums.

<sup>58</sup> In addition to unfavourable capital market events presumably playing a significant role, an increasing number of policies have maturities of ten years, so an ever greater number of policies mature and may be repurchased without losing the tax preference. This has played a role in the loss of existing stocks.

<sup>59</sup> Due to the prohibition of investing actuarial reserves in foreign assets, insurers' exchange rate risk is very much limited. Following the future abolishment of this ban, the adequacy provision of the Insurance Act currently in force will likely put a 20% cap on open position in foreign currency.

**Table III.K** Number of operating investment firms

	1999	2000	2001
Assoc. with financial institut.	26	20	18
Independent	39	28	19
<i>Total</i>	65	48	37

**Table III.L** Balance sheet total of investment firms

	1999	2000	2001	2001/2000 (%)
Assoc. with financial institut.	123,4	146,2	140	95,7
Independent	38,9	29,4	16,7	56,8
<i>Total</i>	162,3	175,6	156,6	89,2

## III.4 Investment firms

### General

The number of investment firms continued to fall in 2001. There were only 37 investment firms in operation at the end of the year. Of these, 18 were associated with a financial institution, and 19 were independent (see Table III.K). Although the 9% drop in the BUX, the official index of the Budapest Stock Exchange, was modest by international standards amid the global decline in share markets in 2001, the dramatic fall in demand for shares traded on the BSE had a negative impact on investment firms' performance. Trading volume on the BSE fell by 60% in the year under review. The shrinkage of trading volumes affected independent firms the most sensitively – there were 9 pull-outs from the market relative to end-2000, and the dominance of entities associated with a financial institution increased further (see Table 3.L). The proportion of these latter within the total rose from 83.3% in 2000 to 89.4% a year later, their share of the market calculated from spot turnover being 93.4% in 2001. Simultaneously with the contraction of the market and the increase in the dominance of firms associated with a financial institution, there was a marked increase in the degree of concentration – the percentage share of the five largest firms within the sector's balance sheet total rose from 53% to 67% in one year.

In addition to the fall in the number and significance of independent investment firms, mergers of an increasing number of securities brokers into their parent bank with the objective to improve efficiency constitute the other major development in the market. In 2001, several of the 10 largest investment firms associated with a financial institution announced their intention to merge with their parent bank, and simultaneously scaled back their activities steadily during the year.

Unfavourable capital market developments influenced investment firms' financial results for 2001 – pre-tax profits fell from HUF 6.4 billion in 2000 to only HUF 2.6 billion in the year under review. Reflecting the impact of negative market conditions, the decline in profits was coupled with a large-scale reduction in operating costs.

### Risks

From 1 April 2001, Hungarian investment firms are mandated to keep trading books. In the following, the analysis relies on end-2001 data derived from firms' trading books.<sup>60</sup> As firms associated with a financial institution have the highest importance from the perspective of systemic risks, the analysis below of trading book risks relies on these firms' data.

<sup>60</sup> The analysis is based on the first year of trading book records. This does not allow to make comparisons over periods, but only to examine the proportion of capital requirements.

## Trading book risks

Investment firms must record and value their positions undertaken in financial instruments and goods exposed to market risks and also to define the capital requirements for those assets. On 31 December 2001, the total capital requirement for the trading book and exchange rate risks of investment firms associated with a financial institution, at HUF 3.9 billion, was insignificant, accounting for around 11% of the HUF 34.2 billion total shareholders' equity. However, because this calculation is based on preliminary data, it does not allow for far-reaching conclusions.

### *Position risks*

Bonds, shares and other securities,<sup>61</sup> exposed to changes in market prices and interest rates, represent specific and general position risks. Based on data of investment firms associated with a bank, regulatory capital requirements set aside for position risk accounted for nearly 30% of total trading book capital requirement. The larger part of this, at more than 15% of the total capital requirement, relates to the general position risk of bonds, 7% of the trading book subject to total capital requirement being set aside for the specific position risk of bonds. Specific and general position risks of shares account for around 7%, whereas those of options and other securities represent an insignificant percentage share.

### *Counterparty risks*

At around 70%, counterparty risks account for the largest share within trading book risks. Here, the capital requirement for counterparty risk of open delivery (commission business) is nearly 45%, and that of proprietary business is also nearly 9%. Despite the apparently high percentage share of counterparty risk of commission business, the fact that the overwhelming majority of risks are taken vis-à-vis large international investment companies reduces risk exposures. In addition to those noted above, counterparty risks of over-the-counter derivative transactions account for a relatively large share within counterparty risks – capital requirements set aside for this are 15% as a proportion of total capital requirements for the trading book.

*Product risks and large risks*, as well as *foreign exchange risks* are insignificant compared with the types of risk noted above – their proportion of total capital requirements is less than 2%.

## Other risks

### *Operating risks*

Inadequate management of operating risks caused the bulk of problems for investment firms in 2001. The most important example of this was the intermingling of proprietary and commission business.<sup>62</sup> The introduction of new computer systems

<sup>61</sup> These include securities underlying forwards and options contracts.

<sup>62</sup> Wilful misconduct also caused serious problems, in addition to inadequate recording.

supporting the keeping of trading books which was not always without problems added to the existing operating risks. Inadequate internal controls carry another significant factor of operating risks. In particular, the very existence and size of position limits on securities brokers' proprietary transactions influence risk exposures. Staff reductions implemented in order to bolster efficiency contributed to the increase in operating risks through higher human resource risk. Finally, continued mergers within the sector also add to the temporary rise in operating risks.

On balance, exposures of investment firms to risks do not jeopardise the safe operations of the financial sector, especially because the investment firms accounting for the vast majority of turnover are supported by a stable background provided by the parent bank.

### **III.5 Financial enterprises**

#### **General**

As seen in the previous few years, the number of financial enterprises continued to grow in 2001 – 193 financial enterprises had the Supervisory Authority's operating licence at end-2001, up from 176 on 31 December 2000.

The sector's aggregate balance sheet total amounted to HUF 520 billion on 31 December 2001. This was less than 6% of the banking sector's total assets.<sup>63</sup> Nevertheless, their importance increased, as is shown by the 4.5% share their balance sheet total accounted for with the banking sector's. Their percentage share of banks' outstanding lending rose from 5% to around 7% in the year under review. Financial enterprises are allowed to play a stronger role only within individual bank groups; and their importance for financial stability largely depends on the market share of the bank group.

The banking sector plays a dominant role in the development of financial enterprises for two reasons. First, banks as owners hold nearly a half of the sector's shareholders' equity. Second, as lenders they provide 78% of total liabilities. But they not only lend to enterprises owned by themselves – bank loans account for around two-thirds of non-bank owned firms' liabilities.

Due to credit institutions' dominant role, the sector can be divided into two distinct groups – one group comprises financial enterprises associated with banks,<sup>64</sup> the other comprising those that are not associated with banks. There are significant differences in their prospects for development, despite both groups being financed by banks.

Market concentration of financial enterprises based on the balance sheet total is high and rising – the 5 largest enterprises account for 32% of the sector's total assets at end-2001 (2000: 28%) and the 10 largest for 51% (2000: 45%). From among the

<sup>63</sup> Firms, mostly state-owned and established to achieve a certain economic policy objective, have not been covered by the analysis from the perspective of systemic risk. Therefore, the *Report* uses the concept of sector in a narrower sense.

<sup>64</sup> A financial enterprise is associated with a bank if it is owned directly or indirectly by a credit institution, or it is a subsidiary of the credit institution's parent.

three major markets of leasing, lending and factoring, the latter's concentration is the highest (see Table III.M).

Based on their balance sheet total and outstanding lease finance, the largest 10 enterprises are all associated with banks. There are two non-bank owned firms among the largest ones in the lending market. The situation is the reverse in the factoring market – there are only two non-bank owned participants in the league of 10 largest entities.

Pre-tax profits of financial enterprises rose by 32%, to HUF 14.1 billion, in 2001 relative to the previous year. The 68% increase in interest income was the most influential part of the increase in profits, resulting from the rise in outstanding finance. There were 40 loss-making entities at end-2001 within the sector. Only 6 of them had significant losses in excess of HUF 100 million, with 4 of them being associated with banks. Firms supported by bank ownership managed to edge up into the ranks of those making the highest profits; however, this group accounts for a smaller share of 48% within total net income, explained by their share of outstanding finance. One reason for this may be that firms with bank background apply the parent's more rigorous risk standards. Consequently, they register higher losses in value.

## Risks

In the Bank's view, lending risks are the most important source of risk facing financial enterprises. Practically, they can develop an equally risky portfolio on the asset sides with banks, but without the upper limits set by regulations on the evaluation and management of risk. Generally, financial enterprises are given operating licence with restrictions on their activities. Most of their assets are therefore concentrated in a handful of areas. Risks emanating from the narrower profile of business decreased in 2001 relative to the previous year, as a number of enterprises active in the market for a long period asked for the lifting of barriers to the line of business or requested for, and received from, the Authority permission to provide new services.

Leasing payment claims and outstanding loans by financial enterprises grew explosively in 2001, by around 60%, to reach a total HUF 423 billion. The rates at which leasing claims and outstanding lending rose were 36% and 64%, respectively. Firms associated with a bank accounted for the major part of this increase. Bank-owned financial enterprises conquered the leasing market several years ago (their share at end-2001 changed little from the 85% at the previous year's end). In 2001, they were the most active participants in lending – their market share rose from 55% to 72%. Only a smaller part of this increase may be attributed to the increase in the number of operating firms from 34 to 38; it is explained mainly by swift growth in the activities of those established earlier.

Portfolio quality deteriorated simultaneously with the increase in claims. Nevertheless, currently it is not seen as critically bad. Overdue claims rose from 3% to 8% in leasing and from 3% to 5% in lending.

Recorded losses in value more than doubled, to reach HUF 6.1 billion. Firms associated with banks and others as well both registered higher impairment in value. This reflected their

**Table III.M Concentration of financial enterprises in 2001**

Enterprises	Total assets	Leasing	Lending	Factoring
Share of the 5 largest	32%	56%	47%	61%
Share of the 10 largest	51%	73%	74%	84%

growing recognition of the importance of risks inherent in the portfolio.

As a consequence of the amendment to the Government Decree on Accounting, from 2001 financial enterprises are mandated to rate their assets and to account for value losses based on their internal rating systems. However, a special decree specifies the amount of such losses only for credit institutions. Similarly to the rules on generating specific provisions in past years, tax rules on recording losses in value now include disincentives for financial enterprises to record impairment reflecting the proper level of risk, as they can deduct only a fraction from the tax base.

Financial enterprises record much higher losses in value than they are officially permitted to consider in order to reduce their tax base, but less than the amount they would have to record if the regulation on credit institutions applied to them. Losses in value, recorded under the regulations on credit institutions, would be around HUF 9 billion, or some 50%, higher. This theoretical gap for enterprises owned by banks is less (HUF 1.2 billion) and somewhat higher for others (HUF 2 billion).

Factoring claims rose by 37%, to HUF 51 billion in 2001. Almost the whole increase was accounted by non-bank owned enterprises, claims of bank-owned enterprises remaining flat. This is the only market segment where non-bank owned enterprises play a dominant and increasing role – their share rose from 73% in 2000 to 78% in the year under review. The vast majority of factoring claims rose due to purchases of claims. These account for one-third of total outstanding factoring claims.

Financial enterprises' data do not reveal significant maturity mismatches – 44% and 53% of the total assets are comprised of short and long-term assets respectively. Within their liabilities, the proportion of bank loans increased in 2001. The role of bonds issued continued to diminish, to be only marginal (their proportion of total liabilities fell to 1% in 2001). Shareholders' equity account for only 7% of bank-owned enterprises' total liabilities. In contrast, non-bank owned enterprises are more reliant on own funds – the ratio of equity to total liabilities is 16%.

There are major differences between the assets and liabilities sides of financial enterprises in terms of currency denomination – foreign currency accounts for 28% and 12% of assets and liabilities, respectively. A significant amount of foreign currency liabilities, most of which are from banks, is financing foreign currency-based leasing and loan claims. Under these facilities, loans are extended and repaid in forint, but the amounts of claims are determined in foreign currency, with the amounts to be paid being automatically calculated in forint. As a result, enterprises have an open position in their balance sheet. This, however, is not actually a source of risk as long as the customer continues to repay debt, given that enterprises pass the exchange rate risks on to their customers.<sup>65</sup>

<sup>65</sup> Under Article 60 (7) of the Accounting Act, items calculated in foreign currency but recorded in the domestic currency must be valued similarly to foreign currency assets on balance sheet dates. Therefore, enterprises are not required to record virtual exchange rate losses.

## **INVESTORS' PERCEPTION OF EMERGING MARKET RISK AND FINANCIAL STABILITY**

*by Judit Krekó*

Risk perception of forint investments has a major impact on the direction of capital flows and yields on domestic financial instruments, and ultimately, on financial stability. Depending on the size of interest rate and exchange rate exposures, volatility in yields and the exchange rate of the Hungarian forint affects financial intermediaries' profitability both directly and indirectly by influencing the financial conditions of households and of the corporate sector. Volatile capital flows arising from shifting investor sentiment may, in an extreme situation, jeopardise balance of payments financing.

Despite the sharp improvement in Hungary's credit rating over the past few years, Hungary is still listed as an emerging country. Consequently, market sentiment about Hungarian investments is often affected by the perception of risk in investing in this particular region or in emerging markets in general. This is reflected in the size of the required risk premium as well as erratic movements in capital flows, often unrelated to the state of domestic fundamentals, which might even endanger financial stability if a strong contagion effect arises.

In the following, this paper will present a general overview of country-specific and external factors bearing on market sentiment about emerging countries. Second, it will examine the role that the perception of emerging country risk plays in the evolution of the risk premium on forint investments. Finally, some inferences will be drawn relating to the exposure of Hungarian financial instruments to contagion.

### ***Estimating the risk premium on emerging country financial instruments***

As investors feel that emerging country financial instruments carry higher risk than advanced market instruments, the yields on the former contain a risk premium. The premium on investments denominated in the domestic currency essentially has two constituents. One is the premium required due to country-specific and liquidity risk, and the other is the premium for exchange rate risk investors demand in compensation for unexpected exchange rate movements, i.e. uncertainty about the future value of the currency.

The size of the risk premium required by foreign investors on the financial instruments issued in the home currency of a particular country is defined as the difference between the domestic yields to foreign yields differential and the expected nominal depreciation of the exchange rate. The fact that the expected exchange rate change cannot be observed directly makes any numerical definition of the required risk premium extremely uncertain. However, it is possible to directly observe the difference between spreads of a country's foreign currency denominated bonds and other bonds in the same currency and with the same maturity. This way one can obtain a good estimate of the size of the country-specific and liquidity premia, as no exchange rate expectations or uncertainty components are involved.

In accordance with the above considerations, the following analysis uses J.P. Morgan's EMBI Global index, viewed as the most widely used indicator of emerging market risk. The index is constructed as the weighted average of USD-denominated sovereign bond spreads of 32 emerging countries on US Treasuries.<sup>1</sup>

Sovereign bond spreads essentially reflect three types of risk. The most important is *credit risk or default risk*, indicating the probability of the bond issuer failing or refusing to service debt. Another risk factor partially related to default risk is market risk, associated with the possible variance in secondary market bond prices. These two types of risk are closely interlinked, as one of the factors behind price change is shifts in perceived credit risk. At the same time, market risk is also affected by other factors, such as investors' willingness to take risk. The final factor is *liquidity risk*, reflecting the possibility that investors can only sell bonds on the secondary market at a depressed price.

It should be noted that although foreign currency bond spreads do not contain any premium for exchange rate risk, this does not mean that shifts in foreign currency bond spreads offer no indications about the risk premium on financial instruments denominated in the home currency. Indeed, the country risk premium reflected in foreign currency bond spreads and the ex-

<sup>1</sup>The current EMBI Global index comprises the sovereign foreign currency bonds of 32 countries, with a face value of minimum USD 500 million and remaining term to maturity of at least 2.5 years (at inclusion). The market capitalisation of the bonds in the index stood at USD 245 billion in September 2001.

change rate premium are closely related. In the event of a currency crisis, the government is more likely to fail to meet its foreign liabilities; consequently, an increase in the exchange rate premium is accompanied by a rise in foreign currency bond spreads. The effect of exchange rate changes on default risk may be crucially important for a small, emerging country. In emerging countries, including Hungary, a high proportion of market participants' balance sheet liabilities is denominated in foreign currency, which may entail major financial losses if the home currency depreciates, increasing the value of foreign currency debt in home currency terms. This seems to coincide with empirical evidence that exchange rate shocks may pose a greater threat to an emerging country than to an advanced economy, and unexpected depreciation in the former is usually followed by economic recession, unlike in the developed countries.<sup>2</sup>

The following section will review internal and external factors bearing on the perception of risk in investing in emerging markets, as well as the causes and mechanisms underlying financial contagion, which shapes sentiment regardless of the state of country-specific fundamentals.

### Country-specific factors influencing spreads

A look at individual bonds included in the EMBI Global index reveals that the group of emerging countries can by no means be regarded as homogenous. The average value of the spreads conceals extremely wide gaps in terms of levels, with spreads ranging from 70 to 5,500 basis points in 2001 (see Chart 1).

The question arises whether this difference in levels can be actually traced back to differences in default and liquidity risks, and what macroeconomic characteristics can describe these risks.

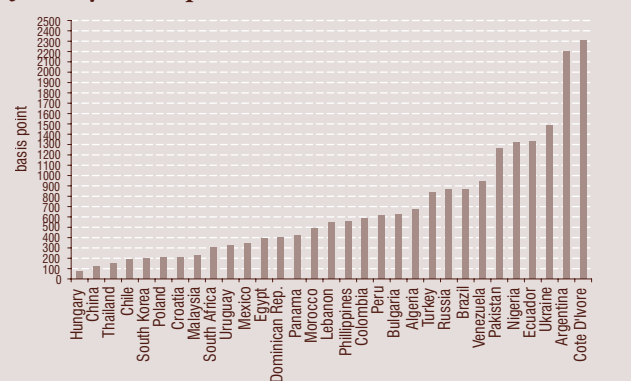
It may be useful to start with a look at the relationship between credit rating and foreign currency bond spreads (see Chart 2). As a country's external debt rating reflects the risk of default, a connection may be expected between credit ratings and spreads. Studies on the relationship between the two indicators suggest that a better credit rating will likely reflect a lower spread both within and across countries. As credit ratings are much less subject to change than spreads, it is not surprising that shifts in spreads can be only partially accounted for by the difference in ratings. At the same time, in one-variable regressions testing the link between credit ratings and spreads both the coefficient and explanatory power of the credit category variable appeared to vary over time.<sup>3</sup>

<sup>2</sup> Calvo and Reinhart (2000) analysed currency crises in 39 countries between 1975 and 1999. They found the decline in GDP in the wake of a currency crisis to be at 2% on average, compared with only 0.2% in the developed countries.

<sup>3</sup> See Amadou, N.R. (2001).

<sup>4</sup> Péter Benczúr (2002), Eichengreen and Ashoka (1998), Min, Hong G. (1998).

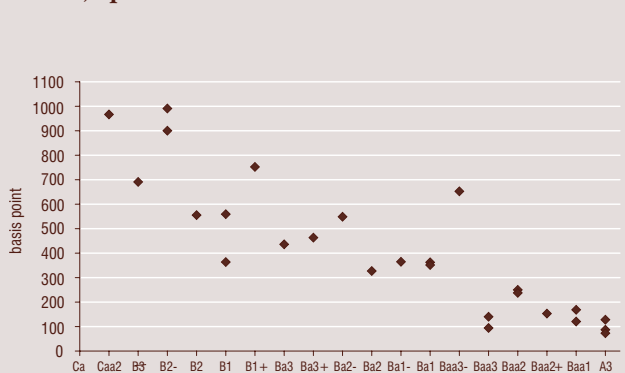
**Chart 1 Average spreads of EMBI Global index bonds, January 2001–April 2002**



Source: J.P. Morgan.

Empirical research<sup>4</sup> on the relationship between country-specific macro-economic indicators and spreads has unanimously concluded that domestic fundamentals reflecting default risk have great explanatory power regarding the evolution of spreads within a country as well between countries. Liquidity and solvency indicators such as the ratios of debt, international reserves, balance of payments to GDP, the debt service to exports ratio, and historical problems with payment seem to have the strongest explanatory power. GDP growth and per capita GDP appear to be crucial as well. Furthermore, Eichengreen and Ashoka (1998) found the quantity issued – as an indicator of secondary market liquidity of a

**Chart 2 External debt rating (by Moody's) and average spreads in respect of countries included in the EMBI Global, April 2002\***



Sources: J.P. Morgan, Moody's.  
\*Excluding Argentina.

particular bond – to have a statistically significant, although small, effect on spreads.

Benczúr (2002) also investigates the ability of economic fundamentals underlying spreads to predict risk. He claims that the explanatory power of fundamentals can be fully described by the role they play in predicting default and liquidity risk probabilities. At the same time, his findings also suggest that *spreads tend to in-*

crease more during a currency crisis than is warranted by the increase in risk probabilities.<sup>5</sup> Eichengreen and Ashoka (1998) also reach similar conclusions. Lower credit risk defined by the state of domestic economic fundamentals results in lower risk premia, yet the above properties fail to adequately account for the short-term fluctuations in spreads, which may be attributable to other market factors.

## Factors influencing the general perception of emerging market risk

Co-movement of foreign currency bond spreads highlights the nature of the shocks affecting emerging countries. The existence of a strong correlation between spreads implies that the risk perception of emerging countries is affected by common shocks, or shocks *investors perceive emerging markets as having in common*. In contrast, a weak correlation between the spreads would imply dominance of idiosyncratic shocks. External shocks may arise as a spillover effect of a shock hitting one particular country or due to some global factor affecting a section or the whole group of emerging countries. One of the key conclusions of the empirical research cited in the previous section is that country-specific macroeconomic characteristics frequently fail to explain changes in the risk premia on emerging country financial instruments, especially at the time of a financial crisis. Thus, the following analysis will focus on external factors which may account for the changes apparently not attributable to the state of domestic fundamentals and the co-movement in market sentiment and perception of risk related to emerging countries.

## Risk appetite

One of the popular explanations for *general* changes in market sentiment not attributable to country-specific fundamentals is that certain events will cause a shift in international investors' risk appetite, and as a result, there will be parallel changes in the risk premia in separate markets. Thus, risk appetite may not only affect emerging markets, but also higher-risk instruments traded in developed capital markets. Indeed, events in these markets often lie in the background of shifting sentiment about emerging markets.

The notion of 'risk appetite' may give rise to some confusion. The yields required on risky instruments relative to risk-free ones are affected by two factors: the views on the probability distribution of expected yields, i.e. perceived risk, and investors' risk-bearing preferences. The term risk appetite may refer misleadingly to the possibility that it is the preferences changing, causing inves-

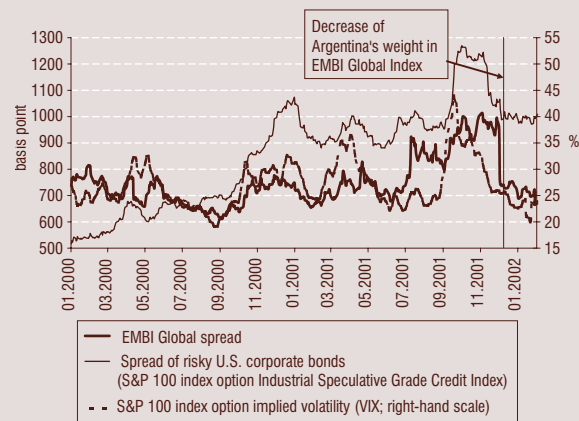
tors to reallocate their portfolios in order to reduce exposure. However, a general change in demand for risky financial instruments does not require the assumption that risk preferences vary over time. Rather, the *perception of risk* associated with the same instruments changes in the various markets.

The effect of global risk appetite over several markets is well illustrated by the strong correlation between developed market risk indicators (see Stability Report 2/2001) and the EMBI spread, especially since early 2000 (see Chart 3). Shifts in global risk appetite over the past two years have been primarily subject to *expectations about global economic growth*. Changes in the outlook for global growth indirectly affect the availability of credit for emerging countries, via worsening export prospects. Some estimates suggest, however, that changes in risk appetite consistent with growth expectations usually exceed the actual extent of shifts in risk.<sup>6</sup> One of the widely quoted explanations for the procyclicality of risk appetite is that investors tend to establish probabilities about future outcomes on the basis of recent events, thus the likelihood attributed to negative outcomes is disproportionately small at a time of an economic boom and disproportionately large during a slowdown.<sup>7</sup>

## Changes in reference rates

There is much discussion about the effect on emerging market spreads of the reference rates on foreign currency bonds, or more generally of developed country interest rates. The theoretical link between the two variables is not clear. On the one hand, a fall in reference rates will mitigate the debt burden of an issuer of foreign currency bonds, exerting direct downward pressure on the risk

Chart 3 Global risk indicators and the EMBI Global spread



Source: J.P. Morgan, Standard & Poors, Reuters.

<sup>5</sup> The paper gives the following definition of a currency crisis: at least a 50% depreciation during the year reviewed, or abandoning a fixed exchange rate regime in favour of a floating rate system (1998).

<sup>6</sup> E.g. Kumar and Persaud (2001).

<sup>7</sup> Kumar and Persaud (2001).

of default. The implication is that the spread will likely narrow. A similar relationship could be expected to the extent that changes in reference rates, including US risk-free rates, appropriately reflect international liquidity conditions. At the same time, the effect may be the opposite in situations when global risk appetite declines, implying that the drop in demand for higher-risk instruments is accompanied by a rise in demand for risk-free instruments, such as developed market government bonds. Developed market rates and emerging market spreads are also expected to be in negative correlation even when the drop in primarily long-term rates reflects expectations of a slowdown in economic growth.

Nor does empirical research on the effect of reference rates on risk perception offer an unequivocal answer. Benczúr's study did not identify any clear-cut relationship between reference rates and spreads. Kamin and Kleist (1997) obtained similar results, finding the coefficient of developed country rates to be either negative in the different specifications or not significantly different from zero, but never positive. An IMF study estimates a significant positive relationship between long-term US rates and the EMBI spread, but finds no correlation between emerging market spreads and short-term rates.

## Contagion

One of the sources of the correlation among the foreign currency bond spreads of individual countries is the spillover from a financial shock from one country to another or to a group of countries. According to a narrower definition, contagion occurs when a shock is propagated, unwarranted by the state of economic fundamentals. It should be emphasised though that transmission of shocks occurs through a number of fundamental channels, which have played a crucial role in the financial crises of the past few years, or which have been only intensified by the other channels.

One such mechanism is the *trade channel*, which may account for the transmission of exchange rate crises. The depreciation/devaluation of a particular currency may undermine the competitiveness of trading partners and competitors, exerting downward pressure on their currencies.

Another mechanism, the *financial channel*, involves international financial intermediation and financial market links. A financial shock affecting one country and the shifts in sentiment towards the financial instruments of that country may be transmitted to several other countries via the channel of international institutional investors, who are induced by the shock in one country to reallocate their portfolios, and in an extreme event, may

be forced by the losses suffered in the first country to liquidate their investments in all the other countries.

*Pure contagion* is used to denote a spread of financial shocks that cannot be attributed to the fundamental channels discussed above. In connection with this, the literature uses the term 'herding behaviour', referring to investors' tendency to follow other investors without adequately evaluating the fundamentals. It should be stressed that herd behaviour does not necessarily imply irrational behaviour by investors. When acquiring information is costly, copying the behaviour of those assumed to have an information edge seems to be a rational response. A psychological explanation for shock transmission is offered by the theory mentioned in connection with risk appetite,<sup>8</sup> suggesting that a shock occurring in one country will prompt investors to re-evaluate their positions in other 'similar' countries. In this respect, the financial crisis acts as a 'wake-up call', alerting investors to the possibility of negative outcomes they did not pay much attention to before the crisis. A third group of models links contagion that cannot be explained by the fundamentals to structure and incentive systems of international institutional investors. Due to high-tech risk evaluation systems, for instance, a rise in volatility in one country will automatically increase the estimated credit and market risk attached to countries displaying similar volatility in the past. Hence, shifts in sentiment towards risk in one particular country will push up risk premia on investments in other countries with autonomous economies.

The trade channel may naturally be a key factor for countries that are trading partners or compete in a third market, while contagion transmitted through the financial channel primarily threatens countries that have a common creditor. Distinguishing between the different mechanisms is not an easy task in practice, but empirical studies suggest that when contagion occurs on a large scale and is widespread, spillover takes place through more than one channel. For example, the trade channel played an important role in transmitting to other Asian countries the contagious effects of the Asian crisis in 1997. By contrast, the main channel of transmission of the Asian financial crisis to Latin America was the financial channel. Due to losses incurred on domestic lending, Asian banks tried to improve their liquidity positions by selling off their Latin-American foreign currency bonds.<sup>9</sup> Nevertheless, when financial contagion occurs on a large scale, such as at the time of the Asian crisis, the spillover of the risk premia is stronger than can be explained by the above channels. An evidence of pure contagion may be that the correlation between the yields on the financial instruments of the countries rises substantially, implying that the fundamental link between these countries is different at the time of financial turbulence than during a calm period.

Correlation between the spreads on the bonds included in the EMBI Global

This section reviews the link between foreign currency bonds included in the EMBI Global index over the pe-

<sup>8</sup> E.g. Goldstein (1998), Mullainathan (1998).<sup>71</sup> Pl. Goldstein (1998), Mullainathan (1998)

riod between January 1998 and April 2002. Intratemporal changes in co-movement between emerging countries is measured in terms of average bilateral correlations between changes in the spreads of the 21 countries included in the index (see Chart 4).<sup>10</sup>

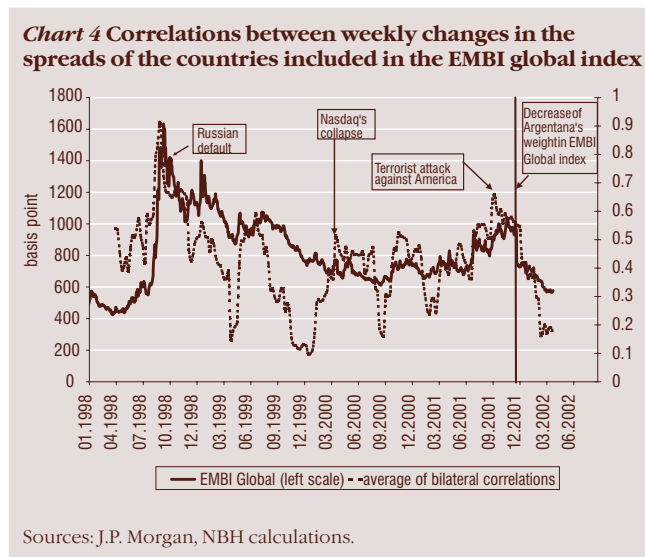


Chart 4 clearly shows that the correlation between changes in the spreads varies over time, but follows no definite trend on the whole. A major increase in the average for the correlations could be largely linked to a significant change in the EMBI index, while all extremely high values could be attributed to some financial crisis spilling over to every emerging country, or a sharp rise in global investor appetite. The Russian crisis in the autumn of 1998 was the most powerful and longest occurrence of financial turbulence, with the contagion affecting every emerging country without exception and the correlation between spread changes amounting to 0.9 during the period of August to October 1998.

Although other financial contagion episodes were not so widespread or powerful, there was a sharp rise in the correlation, for instance at the time of the Brazilian crisis (February 1999) and the collapse of the NASDAQ (March 2000), the Argentine and Turkish crises in July 2001 and the terrorist attacks on the US in September 2001.<sup>11</sup> Also, during the fortnight following the terrorist attacks on the US there was a rise in the spread for each and every country, but contagion did not last long and was far less powerful than at the time of the Russian crisis.

Intriguingly, the correlation between spread changes has been weakening ever since December 2001. After the uncertainty arising in the wake of the events of September 11 moderated, the period since November 2001 has been characterised by a downward trend in international risk taking indicators. At the same time, the escalation of the Argentine economic and financial crises and the announcement of default on government debt were also dated in December. The spread on Argentine foreign currency bonds rose by over 2,000 basis points in

the course of December, but there appeared to be no contagion to other emerging countries, not even in Latin America. Indeed, the index excluding Argentina dropped slightly on average over this period. Apparently, investors had made a distinction between the various emerging markets, and the events in Argentina did not cause a general shift in market sentiment about emerging markets.<sup>12</sup> Another factor behind this weak contagion may have been that Argentine default did not really come as a surprise, as the country's poor macroeconomic and financial situation had been known as early as July 2001, when the deterioration in investor sentiment was also transmitted to other emerging markets, including Hungary.

## *Investors' perception of market risk in Hungary*

At roughly 75 basis points, the spread on Hungary's USD-denominated foreign currency bonds, included in the EMBI Global index, was much lower than the approximately 600 basis point value of the index, with the Hungarian bond spread being the lowest among all the countries covered. The spread over German government bonds of Hungarian foreign currency bonds originally denominated in German Marks and euros was even lower, at about 55 basis points in 2001. This is remarkable as even the government securities issued by euro-area peripheral countries have spreads in the range of 30-40 basis points relative to German government bonds. The implication is that the country risk and liquidity premium represented by Hungarian foreign currency bonds exceeds the value expected following Hungary's accession to the EU and monetary union by as little as 15-25 basis points. This is not to say, however, that Hungary, boasting a much better credit rating<sup>13</sup> than an average emerging country and a low country risk premium, should be treated separately from other emerging countries. Even if Hungarian foreign currency bonds exhibit low spreads, the risk premium on three-month forint

<sup>9</sup> Blöndal and Christiansen (1999).

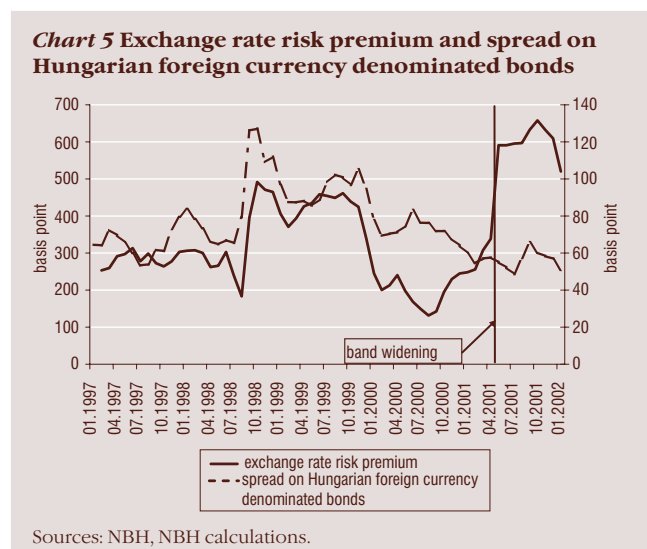
<sup>10</sup> The study includes 21 emerging countries which were included in the index throughout the entire sample period. Correlation changes are calculated with a 13-week, i.e. quarterly, rolling window, using weekly data.

<sup>11</sup> Needless to say, that the listed episodes of financial contagion cannot be viewed as exclusively pure financial contagion, as the state of fundamentals also played a role in the transmission of most of the shocks. In the wake of the terrorist attacks on the US, for instance, the rise in spreads was probably partly due significantly to fears about a slowdown in economic growth, an upturn in oil prices as well as uncertainty about the outbreak of war.

<sup>12</sup> J.P. Morgan's decision to halve Argentina's weight in the index in the wake of the Argentinean state bankruptcy may have signalled the belief that a sharp upsurge in Argentinean spreads would unreasonably distort the EMBI Global index, designed to represent emerging countries as a whole.

<sup>13</sup> Moody's rates Hungary's external debt in the category A3, together with China and Korea. All the remaining countries in the index have poorer credit ratings.

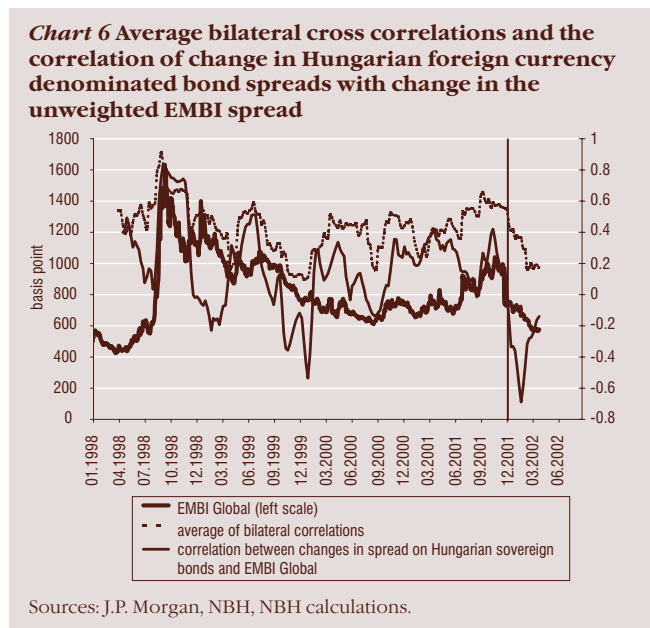
yields was in the range of 400 to 700 basis points in 2001, reflecting a rather high exchange rate risk premium.<sup>14</sup> The foreign currency bond spread and the exchange rate risk premium are expected to be not unrelated, as also supported by relevant data (see Chart 5).<sup>15</sup>



The relationship between investor sentiment towards risk in Hungary and country-specific fundamentals is reflected in the correlation between Hungary's credit rating and foreign currency bond spreads. The credit rating of the country's external debt has been steadily improving since 1996, as foreign currency bond spreads have declined from 200 basis points in early 1996 to around 50 basis points today. At the same time, due to the general worsening in market sentiment about emerging countries in the wake of the Russian crisis in 1998, there was an interruption in the downward trend in the spreads, causing an upward shift in their general level (see Table 1). The following section looks at the relationship between DM bond spreads and the EMBI index, in order to assess the role of external effects in shaping risk perception of Hungarian financial assets.

On the whole, the correlation between changes in Hungarian foreign currency bond spread and the EMBI Global index is weaker (at 0.38) than 'average' emerging

market correlation derived from cross correlations (0.48). On the other hand, intratemporal shifts in the correlation imply that this low value covers erratic co-movements over time (see Chart 6). Hungary's risk perception was in negative correlation with the EMBI in several periods, indicating that country-specific factors were more decisive for investor sentiment in those periods. This was the case in January 2000, for instance, when better-than-expected macroeconomic news (about the balance of payments and the budget deficit) caused sharp drops in DM bond spreads, whereas the EMBI Global rose slightly. Nevertheless, larger shifts in market sentiment and perception of risk in emerging market investments do have an effect on the Hungarian spread. *The chart reveals that despite weak average correlation, exposure to contagion is not to be neglected, and Hungary is not immune to major contagion effects either.* Even though financial contagion has had only a limited impact over the past two years, financial stability may be threatened by shifts in investor sentiment about emerging markets, in the form of more volatile yields, and since the widening of the band, mostly in the form of excessive exchange rate fluctuations.



**Table 1 Credit ratings of Hungarian external debt and average spread on Hungarian DM denominated sovereign bonds**

	Reclassification date	Rating category	Average DM bond spreads within the category
14 Oct. 1996	13.07.1990	Ba1	158
19 Dec. 1996	14.10.1996	Ba1+	78
20 Mar. 1998	19.12.1996	Ba3	67
24 Apr. 1998	20.03.1998	Baa3+	68
18 Jun. 1998	08.05.1998	Baa2	92
8 Sept. 2000	25.06.1999	Baa1	85
10 Nov. 2000	13.09.2000	Baa1+	71
28 Mar. 2002	14.11.2000	A3	56

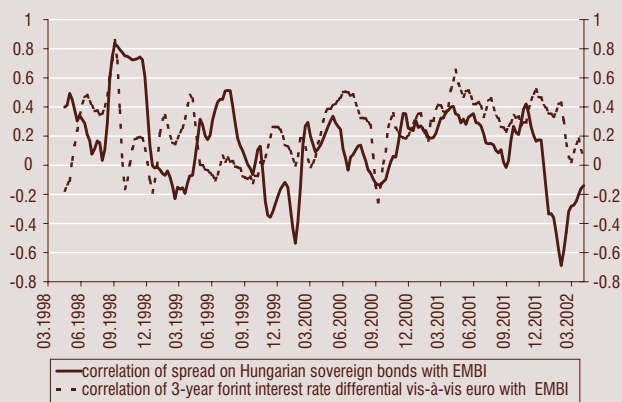
Source: Moddy's, NBH

<sup>14</sup>The chief uncertainty in the numerical representation of the risk premium required on forint yields lies in the estimation of exchange rate expectations, as noted above. Under the narrow-band exchange rate regime, the forint's pre-announced devaluation rate offered a good approximation of exchange rate changes over the short, three-month, horizon. Accordingly, the difference between the three-month forint-euro interest rate differential and the pre-announced rate of devaluation (interest rate premium) was used as an approximate indicator of the risk premium required on forint yields. It should be noted, however, that the depreciation of central parity did not perfectly reflect actual exchange rate changes, as it did not contain expectations of exchange rate movements within the band or a switch in the exchange rate regime. Once the band was widened, it became even more difficult to predict the evolution of the exchange rate. Here the assumption is for constant exchange rate expectations for the period following the band widening in May 2001, in other words, the interest rate premium is assumed to be equal to the three-month interest rate differential.

<sup>15</sup>The foreign currency bond spreads used in respect of Hungary are not those included in the EMBI Global index, but German mark denominated bonds, as they have higher liquidity.

Similar conclusions can be drawn from the correlation between movements in the three-year forint euro interest rate differential and the unweighted average of the bonds included in the EMBI index (see Chart 7).

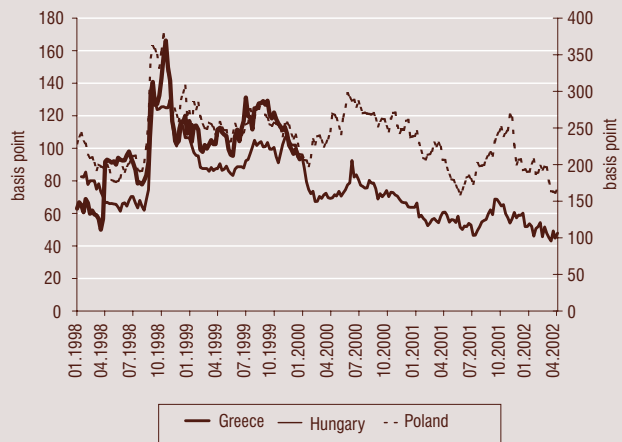
**Chart 7 Correlation of Hungarian DM denominated sovereign bonds and the three-year forint–euro interest rate differential with the unweighted EMBI**



Sources: NBH, NBH calculations.

It may be interesting to study the example of Greece and Poland, the two countries showing the strongest resemblance to Hungary (see chart 8).

**Chart 8 Spreads of Polish, Greek and Hungarian foreign currency denominated sovereign bonds**




Sources: J.P. Morgan, NBH.

The correlation between Polish foreign currency spreads and the EMBI, amounting to 0.74 for the full sample and the differentials, is stronger than that of Hungarian bonds. On the other hand, Poland's credit rating is not as good as Hungary's,<sup>16</sup> which is also reflected in the higher level of the spreads. It suggests regional effects that Hungary correlates more strongly with Poland (at 0.52) across the entire sample than with the group of emerging countries as a whole. This may have something to do with the effect of the trade channel, since Hungary and Poland are, to a certain extent, export rivals in their trade with the EU countries.

Greek USD bonds were only included in the EMBI until end-1999. The correlation between changes in the spread and the EMBI was 0.53 in this period, roughly the same as that between changes in Hungarian DM bond spreads and the EMBI over the corresponding period. Although there is only a short data series available on Greek foreign currency bond spreads, which does not allow far-reaching conclusions to be drawn, it seems clear that investor sentiment about Greece was sharply affected by both the Russian and the Brazilian crises, despite the country's EU membership. It should be pointed out that the Greek interest rate premium increased much more markedly during the Russian crisis, by nearly 500 basis points, than the foreign currency spreads. The lesson to be learnt from the example of Greece is that *even though EU membership and improving credit rating will undoubtedly dampen the impact of financial contagion, they will not eliminate exposure to such effects, as that can only be done via abandoning the domestic currency.*

<sup>16</sup> Hungary's external debt receives an A3 rating from Moody's, while Polish debt falls in the lower category Baa1.

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## ***EFFECTS OF THE BAND WIDENING AND FOREIGN EXCHANGE LIBERALISATION***

***by Flóra László, Szabolcs Vigh-Mikle, Csaba Móré and Zoltán Wolf***

### ***Introduction***

In order to implement a more proactive, inflation targeting monetary policy, in May 2001 the National Bank of Hungary dismantled the controls of the crawling-peg exchange rate system introduced in 1995. Widening the fluctuation band of the forint vis-à-vis the euro contributed to the nominal appreciation of the exchange rate. The favourable competitiveness indicators of the Hungarian economy and the low current account deficit facilitated a more robust currency appreciation and less predictable exchange rate movements than previously.

On 16 June 2001, Hungary completed the process of foreign exchange liberalisation. The restrictions on investments by non-residents in short-term assets and their participation in the derivatives market were lifted.<sup>1</sup> The earlier controls on foreign exchange market activities constituted a consistent system, therefore, their removal required a single policy move.

The changeover to a more flexible exchange rate system not only reduced the risks of liberalising capital flows but made such a liberalisation desirable as well. The wider currency band allowed more room for market forces to develop an appreciating equilibrium real exchange rate, put an end to one-way exchange rate expectations and increased investors' short-term exchange rate exposures. Within the wider currency band, the aggregate exchange rate risk run by private sector participants increased, which boosted the demand for hedging transactions. This required a liquid, competitive market in financial derivatives. The involvement of foreign participants improves the liquidity of these markets, broadens the range of financial products to handle risks and raises the efficiency of asset pricing. With the entry of non-residents, increased aggregate exchange rate risks are shared between residents and non-residents;<sup>2</sup> and divergent expectations lessen interest rate volatility and smooth out fluctuations in market prices.

As a consequence of foreign exchange liberalisation, the improvement in derivatives market liquidity will not only lower the costs of exchange rate volatility by facilitating companies in hedging their natural foreign exchange positions, but will also reduce the danger of currency overshooting.

In the exchange rate regime with a narrow currency band, the National Bank of Hungary neutralised the ef-

fect of excess forint demand (i.e. capital inflows providing excess cover for the current account deficit) by conducting interventions at the upper edge of the exchange rate band. With purchases of foreign currency being almost continuous, banks were free to shape their on-balance sheet open positions. The situation has changed since May 2001, as economic agents' total net forint demand has fed through to the banking system's on-balance sheet open position. This means that, while the components of foreign currency inflow have remained virtually unchanged, the inward flow of foreign direct investment, the current account balance, direct borrowings by companies and the (net) demand for foreign currency generated by purchases of government securities and shares by non-residents have shifted the banking system's on-balance sheet total open position towards a foreign currency surplus. All this has occurred in a period without global capital market crises.

Banks hedge their on-balance sheet positions by off-setting transactions off balance sheet (e.g. swaps, forwards etc.), in line with the existing regulations on holding open positions. Moreover, their financial intermediary function also encourages them to avoid taking on excessive risks. In order to be able to hedge their off-balance sheet positions, banks need external participants (mostly speculators), who anticipate a future weakening of the exchange rate and are therefore ready to sell forints forward. If the derivatives market is insufficiently liquid, a massive rise in the forward exchange rate is required in order for banks to find an appropriate number of speculators to close their one-way foreign currency positions. The forward exchange rate, in turn, strengthens the spot exchange rate in the same direction through the interest rate parity.

In the end, to the extent that the domestic derivatives markets (i.e. swaps, forwards, etc.) are deeper, and the outflow of foreign capital from short-term forint invest-

<sup>1</sup> The favourable effects of foreign exchange liberalisation could have been realised earlier, but it would have been too risky within a narrow-band system. Without restricting short-term investments and derivatives market transactions by non-residents, capital outflows would have been several times higher in a period of heavy speculation, raising unreasonably the costs of maintaining the exchange rate system (high foreign exchange reserves, high interest rate premia and sterilisation costs).

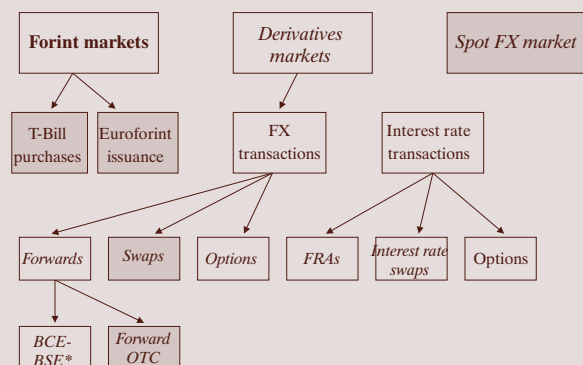
<sup>2</sup> On the aggregate level, derivative transactions between parties constitute a zero-sum game, so eliminating non-residents would have meant that risks could have only been spread across resident agents.

ments and the forward markets as an impact of currency appreciation is higher, the boost of foreign currency inflow to the exchange rate will be smaller. Permitting foreign speculators to enter these markets reduces the room for structural demand for forints (insensitive to the exchange rate and short-term interest rates)<sup>3</sup> to displace the exchange rate and contributes to the forint exchange rate being a better reflection of market participants' exchange rate expectations shaped by monetary policy.

## Effects of foreign exchange liberalisation on the money and capital markets

From the perspectives of the money and capital markets, foreign exchange liberalisation acted as a catalyst for the entire range of derivatives markets (excluding the stock exchange index, which non-residents had been allowed to buy or sell previously), the market of government securities with original maturities of less than one year (T-bills) and issues by non-residents of forint-denominated bonds.

**Chart 1 Major segments affected by foreign exchange liberalisation**



Note: The hatched rectangles denote markets, where foreign exchange liberalisation had a major impact.

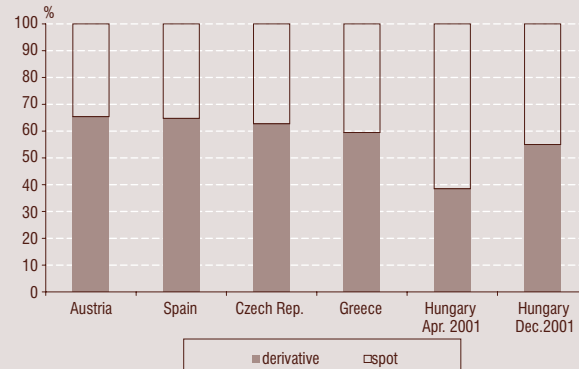
\*Budapest Commodities Exchange, Budapest Stock Exchange.

## The foreign exchange market

### Market structure

According to international experience,<sup>4</sup> derivatives market turnover accounts for 60%–65% and spot market turnover for 35%–40% of total foreign exchange market turnover in countries similar to, or slightly more advanced than, Hungary (see Chart 2). However, from among the more developed countries which may be examples for Hungary in terms of potential future growth, even Austrian derivatives market turnover does not exceed 65%.

**Chart 2 Spot and derivative foreign exchange market turnover\* in selected countries, April 2001**

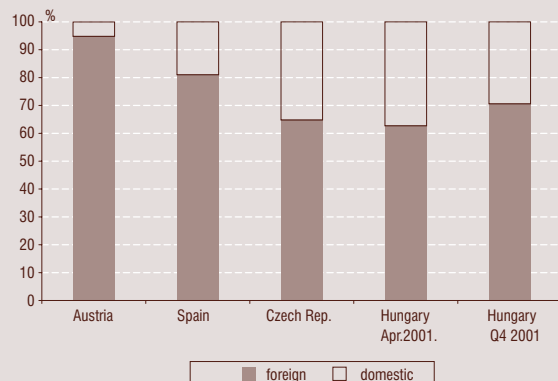


\*FX forward, FX swap, cross currency swap, option

Derivatives market turnover accounted for only 40% of total turnover (HUF/FX, FX/FX) in Hungary prior to foreign exchange liberalisation. The changes following liberalisation suggest that, simultaneously with the increase in total turnover, the proportion of derivatives market turnover increased – relative to April 2001, its ratio to total turnover had risen to 56 percentage points towards the end of the fourth quarter. Currently, the markets of only a handful of derivatives instruments (foreign currency swap, OTC and exchange market futures) are sufficiently liquid in the Hungarian foreign exchange markets, and participants are anticipating a pick-up in options and interest rate derivatives market activity. Therefore, the ratio to total derivatives transactions is expected to increase further in the future. The market structures of EMU member countries examined appear to reinforce this view.

In line with earlier expectations, foreign exchange liberalisation changed participants' percentage shares of the market as well (see Chart 3). The role of non-residents was dominant prior to liberalisation, which the

**Chart 3 Spot and derivative foreign exchange market turnover in a breakdown by counterparty in selected countries, April 2001**



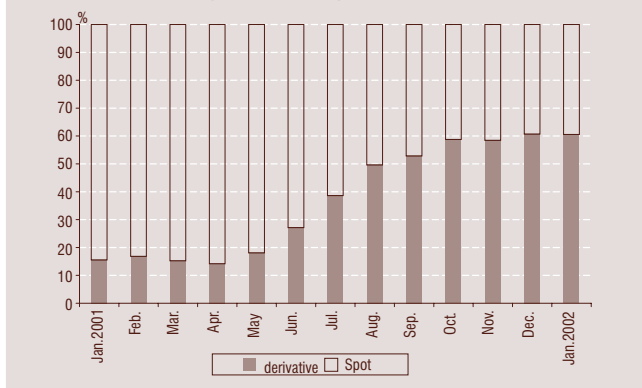
<sup>3</sup> This includes the current account balance, foreign direct investments, net purchases in the share market and, over the short term, the change in foreign long-dated government securities holdings.

<sup>4</sup> The triennial survey of foreign exchange market activity organised by BIS. The latest survey was conducted in April 2001.

complete removal of capital controls further aggravated. In April 2001, non-residents accounted for nearly the same percentage as in the Czech Republic; their proportion rose by 7-8 percentage points in the final quarter of the year, to exceed 70%.

The shift in the relative proportions of the spot and derivative foreign exchange markets was a gradual process following the band widening (see Chart 4). Playing a role in this, turnover in outright forward foreign exchange transactions began to rise even before foreign exchange liberalisation and immediately following the band widening (see below for further details). After liberalisation was accomplished, non-residents also gained access to short-term derivatives products, which raised their propensity to transact in derivatives, given the expectations of currency appreciation following the move to widen the fluctuation band. The growth rate of derivatives transactions within total turnover had stabilised around 60% by October 2001.

**Chart 4 Banks' spot and derivatives foreign exchange turnover, HUF against foreign currencies**



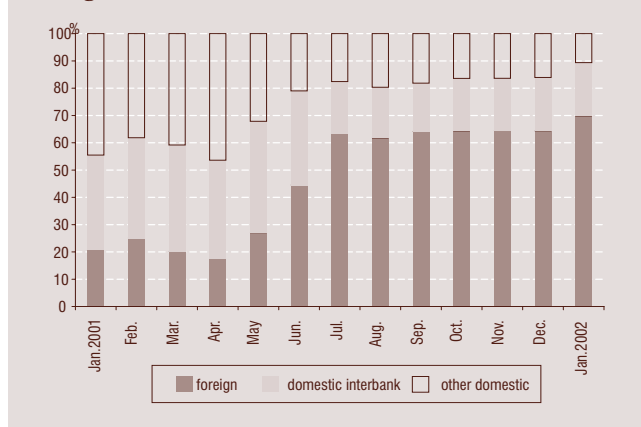
Prior to foreign exchange liberalisation, banks' foreign exchange market transactions in the forint/foreign currency segment were shared roughly equally by non-residents, domestic banks and domestic non-bank counterparties (see Chart 5). However, non-residents' share of the total rose significantly in June-July 2001, from 28% in May to 61% in August. Simultaneously with non-residents gaining more ground, the combined share of domestic banks and non-banks fell to around one-half. Non-residents' percentage share did not rise further in the summer months, fluctuating around 64% in the second half of 2001. Early 2002 saw a further modest increase.

### Spot and derivative foreign exchange markets

Banks and their customers both increasingly recognised the symmetric risks of possible exchange rate movements within the wide band from mid-summer.<sup>5</sup> This is not only evidenced by rising interest in hedging instruments, but by customers showing willingness to transact as well, beyond simply asking for prices.

Although the pick-up in hedging transactions is currently accounted for by non-corporate sector clients,

**Chart 5 Banks' spot and derivative foreign exchange turnover in a breakdown by counterparty, HUF against foreign currencies**



information derived from banks suggests that these clients' appetite for hedging transactions has sharpened, indicating their increased awareness of exchange rate risk. However, it still holds true that the majority of firms find it difficult to swallow the costs of hedging against exchange rate risk.

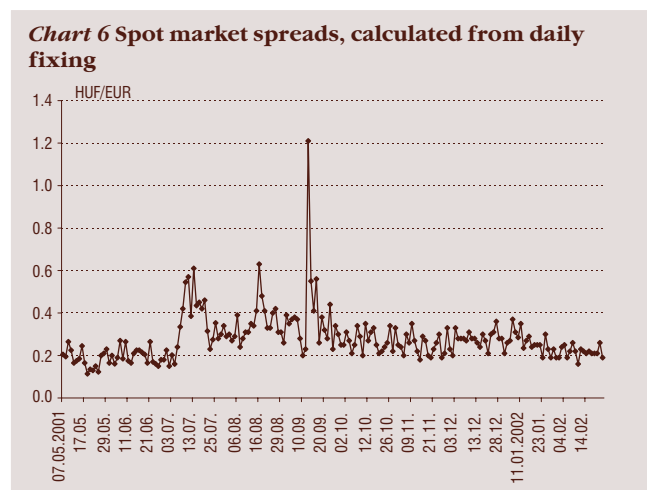
With foreign exchange liberalisation, domestic and foreign forward markets have become increasingly integrated. Price quotes of the earlier non-delivery forward market ceased in London and were replaced by standard delivery forwards and swaps, their volume increasing ever since. However, precise information on HUF/FX derivatives market turnover abroad is not available. Commercial bank dealers' estimates of turnover in the foreign HUF/FX derivatives market differ widely. They estimate turnover abroad to be at least two to three times higher than in the domestic market. This indicates that the market segment which can be precisely monitored by the Bank is small: consequently, it is difficult to present a precise picture of the market as a whole. However, the combined size of the domestic and foreign HUF/FX derivatives markets is probably large enough for banks to hedge vis-à-vis foreign speculators their on-balance sheet long foreign exchange positions which open due to the structural inflow of foreign currency, without high exchange rate volatility. Characteristically, a part of Hungarian banks and large companies satisfy their large-amount hedging needs using foreign banks.

Currently, participants are active in three segments of the Hungarian foreign exchange markets - the spot, forward and foreign currency swap markets. At some banks, the proportion of FX forwards account is now several times higher than earlier, although customer turnover continues to be small. Nevertheless, banks report robust turnover in domestic FX forwards.

The entry of non-residents invigorated the market of foreign currency swaps. Turnover in domestic options transactions is insignificant, but banks expect demand

<sup>5</sup> According to anecdotal evidence, the latter were shocked by currency depreciation during the Argentinean crisis.

for options to increase.<sup>6</sup> Banks have begun to price options on a daily basis for the EUR/USD cross exchange rate and for the HUF/EUR exchange rate. Currently, options contracts enjoy less popularity than FX forwards, due to their high transaction costs and the difficulties in understanding them. Available data reveal that HUF options are scarcely transacted in Hungary. Anecdotal evidence suggests that today such deals are concluded only in London.



Spot foreign exchange market spreads jumped from the earlier average of HUF 0.03 to HUF 0.2 in the immediate aftermath of the band widening. Forward rate spreads at three-month maturity were HUF 0.33 on average in the previous quarter. This equals more than half a per cent on an annual basis (52 basis points). One disadvantage of the relatively high margin is that it raises the costs of financial intermediation and hedging exchange rate risks. Rising spreads indicate that the negative impact on uncertainty of increased exchange rate volatility following the band widening more than offset the mitigating effect of the rise in market liquidity. Although the volatility of spreads was not excessive, their reactions to the events in Argentina and Poland in July and August, respectively, and the September terrorist attacks were quite hectic.

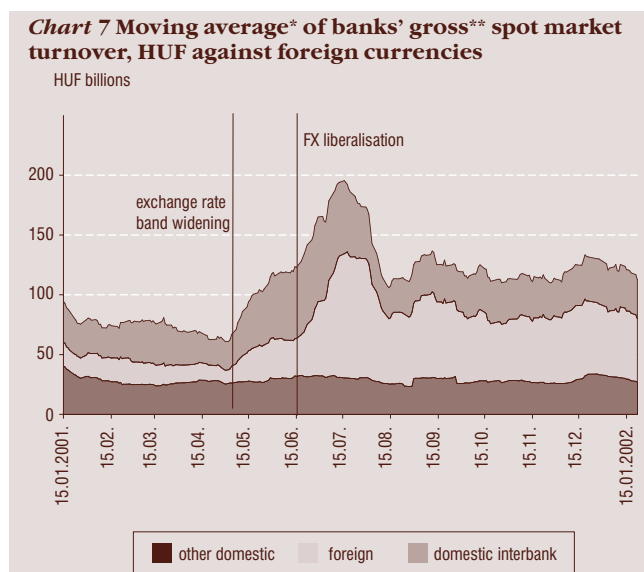
## The spot market

Opening the fluctuation band had a stronger impact on spot market activity than foreign exchange liberalisation (see Chart 7). The band widening exerted its effect mainly through higher exchange rate volatility. Foreign exchange liberalisation, in turn, had an indirect effect – improved derivatives market liquidity influenced spot market liquidity.

Total turnover began to increase sharply in the wake of the band widening. The pick-up in market activity can be explained by increasing derivatives market liquidity, with foreign investors playing a key role. This is indicated by the fact that while domestic interbank transactions accounted for the dominant share of increased turnover in May–June, the entire post-liberalisation surge was ac-

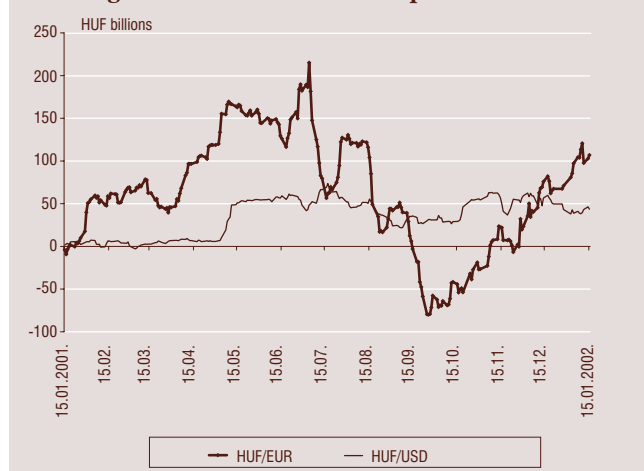
counted for by foreign investors' activity. This upward trend reached its peak during the Latin-American crisis in mid-summer, and subsequently transactions conducted with non-residents fell to the usual level seen at the time of liberalisation. The band widening and foreign exchange liberalisation left domestic non-bank customers' spot market activity broadly unaffected.

Increased spot market activity appears to have affected the HUF/EUR FX segment the most (see Chart 8),<sup>7</sup> i.e. the effect of spot market developments on the banking sector's on-balance sheet position was largely dominated by transactions in the HUF/EUR segment. Following foreign exchange liberalisation, non-residents generally



\* Twenty-day backward-looking moving average.  
\*\* Total sum of amounts bought and sold.

**Chart 8 Cumulative net effect of spot HUF/EUR and HUF/USD transactions by non-residents on the banking sector's on-balance sheet position**



<sup>6</sup> Indicating the wide variety of customer needs, a customer requested its bank to price a very complex option product (an option embedded in a cross currency swap).

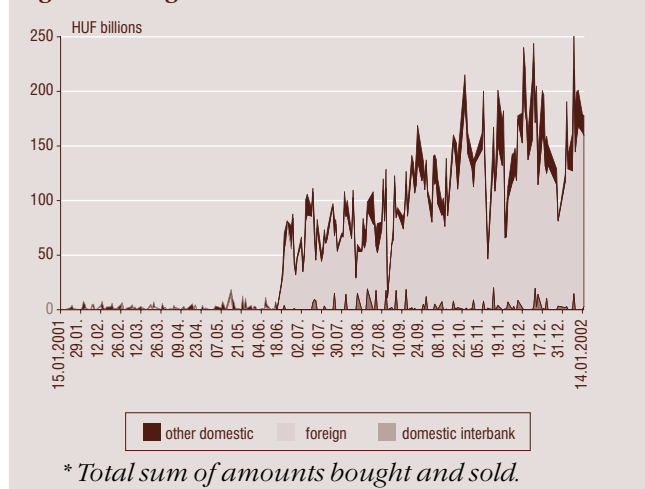
<sup>7</sup> The positive slope of the curves in Chart 8, Chart 10 and Chart 13 indicates that, taking into account the effects of transactions that were entered into and matured on the given day, non-residents bought HUF from the banking system against foreign currencies (a negative slope indicates HUF selling). The curves can be interpreted as a cumulative change in participants' spot and swap positions, and as open contracts expressed in HUF in the case of FX forwards.

went short in the forint in this market; however, they were forint buyers during the period beginning at end-September. In other words, spot market foreign exchange outflows after the liberalisation were once again replaced by foreign exchange inflows from end-September.

## The swap market

There were significant changes in the swap market as well (see Chart 9). Prior to liberalisation, swap market turnover was insignificant. Although swap deals were conducted on a regular basis, their value was an order of magnitude smaller than in the period following liberalisation. The pick-up in swap market activity was clearly due to the entry of foreigners into the market.

**Chart 9 Banks' daily gross\* swap market turnover; new contracts, excluding maturing stocks, HUF against foreign currencies**

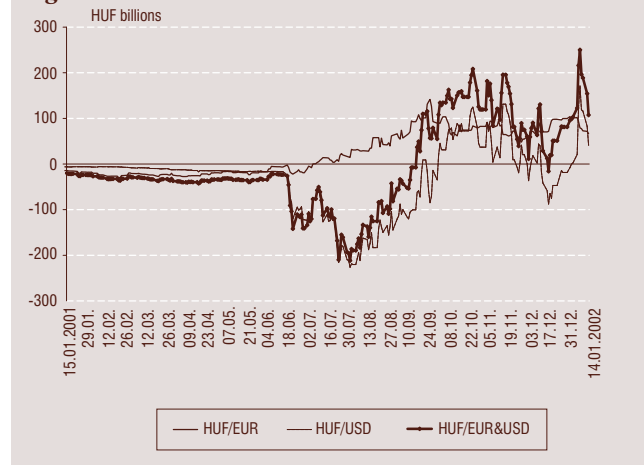


Foreign investors may use swaps for both hedging and speculative purposes. Long-term swaps are widely used for hedging purposes, whereas short-term swaps are motivated by speculative purposes. Foreigners buying Hungarian government securities hedge their exchange rate risk using long-term swaps. Increases or falls in outstanding short-term swaps, in turn, reflect expectations of the future exchange rate of the forint.

Examining swaps according to shifts between currency denominations, non-residents, banks and non-bank participants all actively used transactions for both hedging and speculative purposes following liberalisation. The impact of non-residents on the HUF/EUR and HUF/USD segments is still dominant. And although domestic participants have become more active recently, their role remains less significant than that played by non-residents. The proportion of non-bank participants increased during the first Argentinean crisis relative to earlier periods, but continued to be small within total turnover. It is of note, however, that this pick-up in market activity resulted in the build-up of an approximately HUF 40 billion open position vis-à-vis the banking sector in the HUF/EUR segment from July. This suggests that

banks continue to hedge a portion of their on-balance sheet foreign exchange open positions vis-à-vis domestic firms and non-bank financial intermediaries.

**Chart 10 Banks' cumulative swap positions, corrected for the effect of maturing contracts, HUF against EUR and USD**



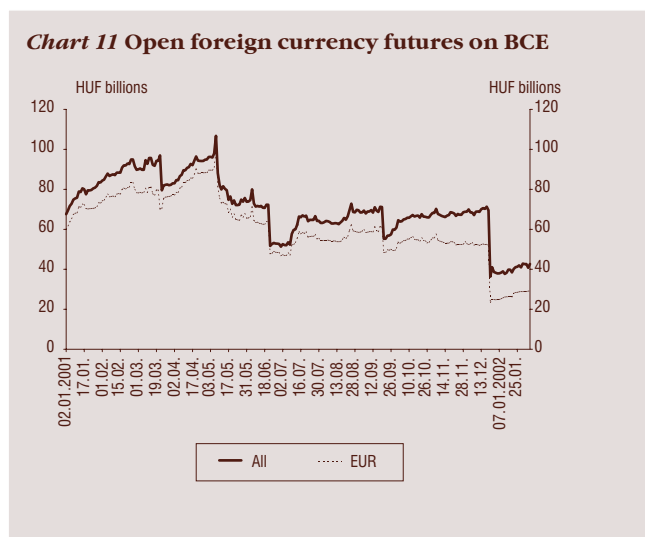
Following the entry by non-residents and up to the Argentinean crisis, banks' balance sheets shifted towards long forint positions due to HUF/EUR and HUF/USD swaps, suggesting that non-residents sold forints to banks under these contracts (see Chart 10). With the conclusion of the crisis, however, the process reversed – inflows of foreign currency continued up to early November. Analysis of participants' behaviour in the spot market and the maturity profile of swaps reveals that, following foreign exchange liberalisation, non-residents rolled over their forint liabilities in the spot market using short-term, i.e. overnight, tom/next and spot/next swaps, delaying conversion of forints into foreign currency day after day.<sup>8</sup> This was reflected in a rise from 35% to 90% in swaps with maturities of less than one week within total swap transactions. The data suggest that the increase in swap market turnover was attributable mainly to the pick-up in transactions with maturities of less than one week, i.e. overnight, tom/next and spot/next deals. In contrast with the developments in the spot market, most of the effect of swaps on banks' balance sheets was accounted for by transactions in the HUF/USD pair.

## The forward market

Most of the recent increase in overall futures and forward activity has been accounted for by the OTC foreign exchange market. Contrary to expectations, the volume of foreign currency futures and the number of

<sup>8</sup>Essentially, this means that the speculator does not convert his HUF claim into foreign currency on the value date of the spot transaction, expecting the further appreciation of the forint, but enters into a swap. The short leg of the swap ensures an opposite cash flow (e.g. selling foreign currency against HUF) to the underlying transaction (e.g. spot selling HUF against foreign currency), the forward leg (selling HUF against foreign currency) ensures a cash flow analogous with that of the underlying transaction.

open contracts on the Budapest Commodity Exchange (BCE) has not increased (see Chart 11). This is also suggested by the rise in the share of OTC transactions within banks' foreign exchange derivatives transactions from 88% at end-April 2001, i.e. the period immediately preceding the band widening, to 99% at end-December.



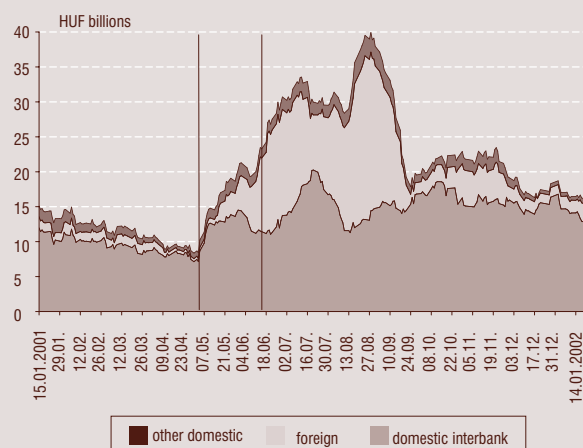
The forward OTC market behaved similarly to the spot market, with the difference that turnover volumes on the former were much smaller than on the latter and that companies, or domestic non-banks, played a greater role than banks.

The band widening, rather than liberalisation, was pivotal in market participants' forward foreign exchange transactions (see Chart 12). Despite this, gross turnover data reveal that the pick-up in market activity was accounted for mainly by non-residents. The rapidly growing participation of non-residents following liberalisation, and the fall in non-residents' activity back to pre-liberalisation levels following the September events, suggest that non-residents were involved in this market mainly for speculative purposes. Also, growth was perceptible in non-bank counterparties' propensity to transact. However, in contrast with swaps, companies did not build up significant one-way positions vis-à-vis the banking sector in the forward foreign exchange market, which indicates hedging motivations behind transactions.

There was a slight drop in the percentage share of forwards with maturities of less than one week, in favour of those maturing within one month. Speculators used forwards with maturities of six months to one year in the spring months of 2000 and 2001. They accounted for a higher proportion of total forward contracts in the two periods. There was no perceptible rearrangement in the period following the band widening. The surge in short-term forwards reduced the average maturity of transactions.

Forward purchases of the forint by non-residents (speculation on future appreciation in the forward market) explained the significant increase in turnover in the

**Chart 12 Moving average\* of banks' gross\*\* forward market turnover; new contracts, excluding maturing contracts, HUF against foreign currencies**

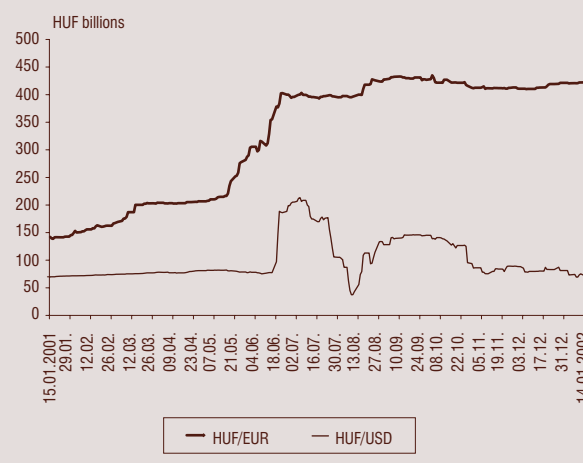


\* Twenty-day backward-looking moving average.

\*\* Total sum of amounts bought and sold.

period following the band widening (see Chart 13). The build-up in positions began following the band widening in the HUF/EUR segment and following foreign exchange liberalisation in the HUF/USD segment. The rapid increase in open contracts paused during the first Argentinean crisis; subsequently, non-residents closed their HUF/USD positions. The second large increase in turnover was attributable mainly to renewed forint purchases against the dollar by non-residents following the Argentinean crisis, and, less importantly, to modest forint purchases against the euro.

**Chart 13 Banks' OTC open forward contracts vis-à-vis non-residents, HUF against foreign currencies**



## The forint market and payment turnover

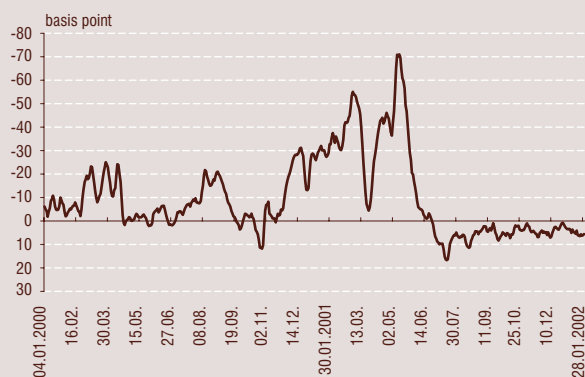
### The money market

In contrast with the foreign exchange derivatives market, the interest rate derivatives market continues to be illiquid overall, although there has recently been some change in this particular market. According to bank reports, total outstanding FRAs rose robustly in the October–November period, but more than half of the increase (and of the outstanding total as well) was accounted for by one bank. Banks have noted that the slight pick-up in activity in the interest rate swap market reflected their attempts to hedge their interest rate risks arising from their government securities holdings in this market.

Prior to foreign exchange liberalisation, foreigners were not allowed to hold discount treasury bills and NBH bills directly; they had access to short-term government paper only through buying government bonds with remaining maturities of less than one year. The Hungarian government securities market experienced a quantitative adjustment following liberalisation – rearranging their portfolios, non-residents bought discount treasury bills and NBH bills both in the secondary market and at auctions. As a result, non-residents' holdings of discount treasury bills and NBH bills had risen to HUF 109 billion by February. This, however, remained below 10% of total holdings.

With the removal of restrictions on investments by non-residents, the integrity of short-term money markets increased in terms of yields. In earlier periods, when the demand of non-residents for short-dated government securities picked up, a gap between the yields on discount treasury bills and government securities with remaining maturities of less than a year opened up. This was a clearly visible phenomenon prior to the June 2001 foreign exchange liberalisation (see Chart 14). Since then, this gap has been fluctuating in a 0–10 basis point band with a little noise, which, taking into account the usual size of buying and selling differentials, is not significantly higher than zero.

**Chart 14 Yield differential of government securities with remaining maturities of less than one year and discount treasury bills; five-day moving average**



### Issuance by non-residents

With the removal of barriers to the convertibility of the forint for both residents and non-residents, activity in the market of forint-denominated bonds issued abroad gained strength as well. Large issues took place in two stages – first, during the months following the introduction of new regulations, and, second, at end-2001–early 2002 (see Table 1).

**Table 1 Euroforint bond issues**

Issuing period	Quantity (HUF billion)	Interest rate (weighted)	Issuer rating
June–July 2001	135	8.9%	A – AAA
November 2001–February 2002	72.5	7.8%	BBB+ – AAA

The effects of Eurobonds and the related transactions feed through to a number of other markets, including the foreign exchange and interest rate derivatives markets as well as the government securities markets. Issuance of Eurobonds started three years ago in the Polish zloty market and six years ago in the Czech crown market. The experiences of these Central and Eastern European markets show that the proliferation of Eurobonds was encouraging for a number of other segments of the market (interest rate and foreign exchange swaps, FRAs, etc.).

Possible motivations behind the issuance of Euroforint bonds are as follows:

- the issuing foreign bank or international institution wishes to obtain forints in order to achieve its refinancing objectives,
- the issuer substitutes for the functions of the practically non-existing domestic corporate bond market,
- by swapping the forint proceeds, the costs of finance for the issuer will be lower than under a direct foreign currency borrowing scheme.

In the first case, the issuer is the parent bank of a domestic bank or an international institution (for example, EBRD, EIB, Interamerican Development Bank), which transfers forint funds to the Hungarian bank. Issuance of these bonds was facilitated by the change to reserve requirements,<sup>9</sup> as a result of which forint-denominated foreign liabilities with maturities of more than 2 years were exempted from reserve requirements on 1 February 2001. One advantage of these funding arrangements is that they represent sources of domestic investment loans without the need to pay the costs of reserves and exchange rate risk.

In the second case, the issuer (or its owner) has an ownership interest in Hungary, but the firm domiciled in Hungary cannot or does not want to fund itself from the domestic bond market, due to the lack of credibility

<sup>9</sup> As suggested by the two-year maturity of a number of Euroforint bonds, issued recently by international institutions.

and rating or because of the narrow domestic market. In such cases, the issuer transfers its forint funds to the Hungarian company, which has access to financing at better overall conditions than directly. Consequently, issuing Euroforint bonds is a substitute for the domestic corporate bond market, and presumably it will continue to restrain the development of this market.

In the third case, the foreign issuer is in need of financing from the onset. Capitalising on its favourable rating and the intense demand for forint-denominated investments, the issuer will gain by offering a forint bond and swapping the proceeds of the issue into foreign currency than by issuing in foreign currency directly. A foreign investment bank will be willing to enter into a swap with the issuer, if it is able to hedge the forints obtained in the swap either by buying government securities or with a Hungarian company that swaps its foreign currency loan. When issuing Euroforint bonds, these investment banks play the intermediary role between the bank/firm issuing in forint and the Hungarian government securities market and/or the domestic company with a foreign currency liability.

### Payment turnover

Payment volumes conducted in VIBER<sup>10</sup> and the number of transactions both rose and stabilised at high levels following foreign exchange liberalisation (see Chart 15). Daily average turnover in VIBER rose by nearly 70% in 2001 relative to 2000 (from HUF 82 billion to HUF 140 billion). The post-liberalisation period accounted for most of this increase. Unlike in VIBER, turnover in the Interbank Clearing System (BKR) did not expand. As a result, the share of VIBER within interbank settlement systems rose from 65% to 75% in one year.

This growth in turnover volumes was not without difficulties. At the core of the problems was the increased number of transfers initiated by foreign banks, which,

taking into account the different time zones, was difficult to accommodate in the limited time frame available for sending customer transfers.<sup>11</sup> This caused problems for domestic banks' liquidity management – it slowed money flows, intraday queuing in VIBER increased and banks often had to fall back on end-of-day liquidity loans, a facility in operation at that time. It also happened that banks disguised customer transfers as interbank transfers, in order to execute client orders on the same day, exploiting the longer operational hours available for interbank transfers.

The Bank quickly solved the problems that arose. As a result of improved communication between the Bank and users, first the rule was modified whereby VIBER members were allowed to send foreign banks' items as interbank messages, but in the time interval outlined for customer transfers. Then, on 17 September 2001 the operating hours of VIBER were extended – VIBER receives customer transfers until 2.30 p.m., instead of the earlier 12 p.m., and interbank transfers until 4.30 p.m.

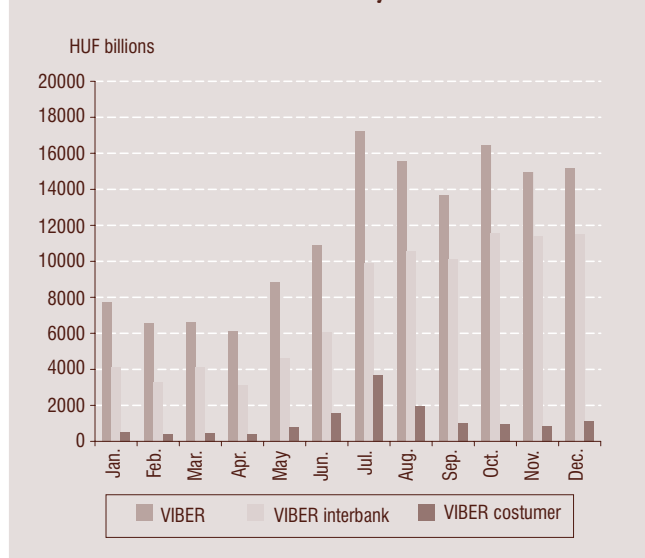
## Effects of the band widening and liberalisation on balance sheets of the banks<sup>12</sup>

### Changes in the currency profile of balance sheets

Looking at the entire period, the relative proportions of foreign currency assets and liabilities both rose on the banking sector's balance sheet under the narrow-band exchange rate regime.<sup>13</sup> Since the reform to the exchange rate system in May 2001, *the proportions of foreign currency assets and liabilities within the balance sheet total* have declined (by 1.1 percentage points and 1.9 percentage points, respectively, from end-April 2001 until end-December), although this process faltered in the second half of the period under review (see Chart 16). It should be noted, that the beginning of the trend reversal occurred earlier than the band widening (in the final quarter of 2000). Looking over a longer period, however, changes of the same scale and direction have already been observed.

Following the band widening and up to the first week of June, banks completely unwound their on-balance sheet long forint positions. Then, from mid-June, positions began to build up, only temporarily interrupted by the forint depreciation due to the Argentinean crisis.

Chart 15 Turnover conducted by VIBER in 2001



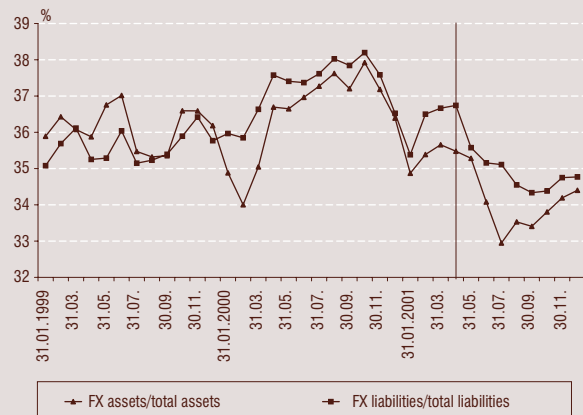
<sup>10</sup> Real Time Gross Settlement System.

<sup>11</sup> A good indication of problems with settlements, the value of payments queued in VIBER rose by an order of magnitude from May (HUF 186 billion) to June (HUF 1,384 billion).

<sup>12</sup> In contrast with the new focus of the analyses in this *Report*, the article relies on data for the entire banking sector.

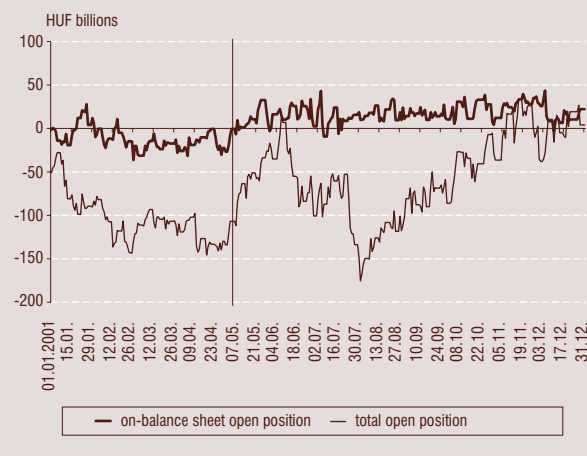
<sup>13</sup> There were different movements in transitional periods of various length. For example, during the period of heavy interest arbitrage activity up to the Russian crisis, between 1997–August 1998, on-balance sheet foreign currency positions opened up markedly, i.e. the proportions of forint assets and foreign currency liabilities rose.

**Chart 16 Ratios of foreign currency assets and liabilities to balance sheet total**



From early August, banks' on-balance sheet long forint positions began to fall again, switching into a short forint position from November. Unlike on-balance sheet positions, fluctuations in the banking sector's total foreign currency position remained confined to a narrow range throughout the period. Shortly after the band widening, the total foreign currency position closed, the sector's overall position being switched into a slight long foreign currency position (see Chart 17).

**Chart 17 Open foreign exchange positions of the banking sector**

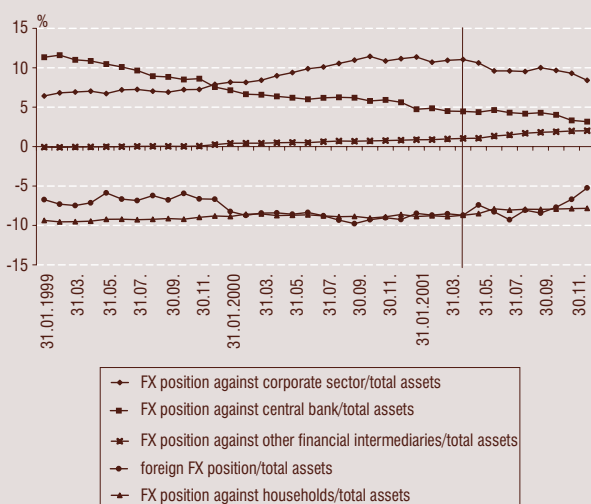


Individual banks' total open positions have been increasingly widely spread since the band widening. This can be explained by the fact that market participants' expectations of the scale and direction of exchange rate movements naturally became more varied in the significantly wider fluctuation band relative to those observed in the narrow-band exchange rate regime. However, some banks played a key role in the sector's overall position changing. Before the band widening, these banks had significant long forint positions. The reduction in these positions fundamentally determined the direction in which the sector's position changed.

Although differently, the banking sector's net foreign currency position vis-à-vis the various sectors narrowed

in the period under review, i.e. in May–December 2001 (see Chart 18). The most marked changes occurred to foreign currency transactions with the corporate sector and non-residents – expressed as a percentage of the balance sheet total, corporate sector net borrowing position in foreign currency and the banking sector's net foreign borrowing position fell by 2.6 percentage points and 3.5 percentage points, respectively. Banks' net deposits with the central bank saw a much smaller change; however, neither the size nor the direction of the change in this item was dominated by liberalisation. The fall in households' net foreign currency deposits picked up speed slightly, relative to earlier periods, on account of the band widening and liberalisation. Other financial intermediaries' net foreign currency borrowing position increased moderately, by 1 percentage point.

**Chart 18 Banks' net foreign currency position vis-à-vis the various sectors as a percentage of the balance sheet total**



An overview of the changes in the currency profile of balance sheet items since the band widening is provided below, in a breakdown by the corporate, household and non-resident sectors. Also, the next chapter attempts to describe the movements that can be explained by the reform to the exchange rate regime and foreign exchange liberalisation.

### Corporate loans

The pick-up in corporate sector foreign currency borrowing which began in the final quarter of 1999 came to a halt in November 2000, and this slowdown in growth continued after the band widening. In December 2001, the outstanding total of domestic foreign currency loans was actually lower than a year earlier. This process was explained mainly by the slowdown in export growth and to a smaller extent by forint appreciation. Outstanding domestic foreign currency loans fell even in nominal terms in May–December 2001, in contrast with forint

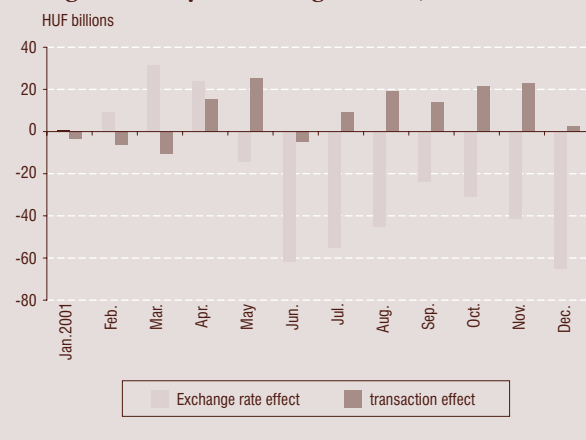
loans, which expanded by HUF 258 billion.<sup>14</sup> Corporate sector outstanding foreign currency borrowings fell from HUF 1,250 billion at end-April to HUF 1,160 billion by year-end, their proportion of firms' total domestic borrowings experiencing a decline from 39% to 34% (see Chart 19).

**Chart 19 Ratio of corporate foreign currency loans to outstanding borrowings and banks' balance sheet total**



Although the fall in the outstanding total of corporate sector foreign currency loans in the period May–December 2001 was attributable primarily to forint appreciation, the cumulative transaction effect was also negative in the period (HUF -13 billion, see Chart 20). By way of comparison, net borrowing by the corporate sector amounted to HUF 244 billion in the same period of 2000, after eliminating exchange rate effects.

**Chart 20 Components of changes in corporate sector foreign currency borrowings in 2001; cumulative effects**



The corporate sector's net foreign currency borrowing position as a percentage of the banking sector's balance sheet total fell from 11% to 8.4% in May–December 2001, due mainly to a decline in foreign currency loans.

Taking into account that the pick-up in derivatives transactions was accounted for mainly by foreign clients, companies appear to have focused their efforts on man-

aging increased exchange rate risks primarily on-balance sheet in the period following the change to the exchange rate regime and foreign exchange liberalisation. One method of managing risks is that the exporting company places its foreign currency revenue in a deposit with its bank, and the bank, in turn, provides the company with forint liquidity. Another wide-spread practice is to convert foreign currency receipts in the spot market at an exchange rate judged to be favourable.

Simultaneously with the nominal decline in domestic foreign currency lending, the build-up in the sector's gross foreign debt slowed considerably in the period under review. Consequently, the percentage share of foreign currency liabilities within total outstanding debt had fallen from 63% at end-April to 60% by end-December.

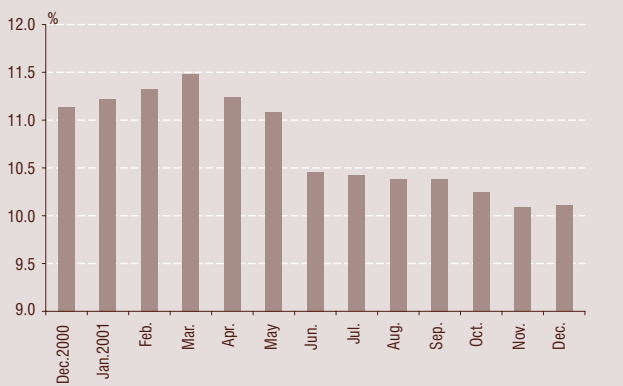
### Household loans

Both the volume and percentage share of household sector outstanding foreign currency debt are insignificant. Although there has been a perceptible rise in foreign currency debt from the second half of 2000, it remains very small (it amounted to HUF 21.5 billion at end-December), accounting for 3.2% of households' total debt and for 0.2% of banks' balance sheet total. Since the band widening, the proportion of households' foreign currency debt has risen only slightly within total debt, probably explained by the surge in motor car purchases.

### Foreign currency deposits of households and firms

The proportion of foreign currency deposits within households' financial assets has been falling as a trend since April 2001 (see Chart 21). Foreign currency deposits fell strongly, by HUF 40 billion in June, exchange rate movements accounting for HUF 30 billion. Although the cumulative transaction effect was positive in the May–

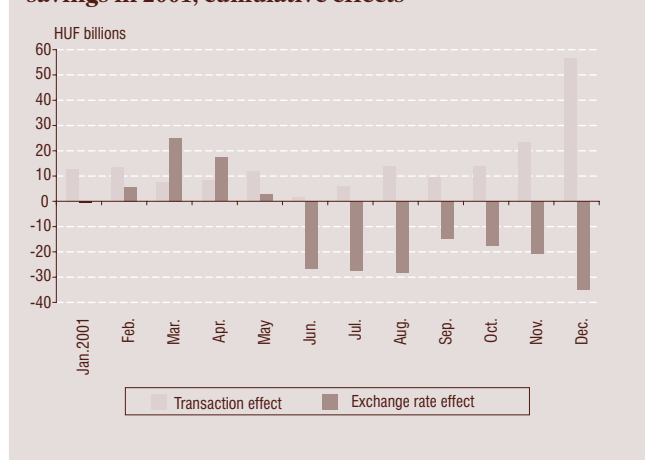
**Chart 21 Proportion of foreign currency deposits within households' financial assets**



<sup>14</sup> Outstanding corporate sector forint and foreign currency loans increased broadly similarly in the comparable period of 2000 (by HUF 260 billion and HUF 285 billion respectively).

December period, it was only a fraction (one-fifth) of that recorded in the same period of the previous year. In December, the value of operational transactions was extremely high, HUF 33.2 billion, due clearly to the changeover to the euro (see Chart 22). The much more modest increase in November due to the transaction effect was also attributable to this factor. The fall in households' foreign currency cash holdings in the final two months of the year was comparable with the increase in foreign currency deposits. Deposits denominated in the dollar and the euro accounted for 45% of total foreign currency deposits at year-end.

**Chart 22 Components of households' foreign currency savings in 2001; cumulative effects**



The proportion of household sector foreign currency deposits within total deposits and the balance sheet total has been falling. Looking at the denominational composition, foreign currency deposits have fallen from 27% to 24% as a percentage in the period since the band widening.

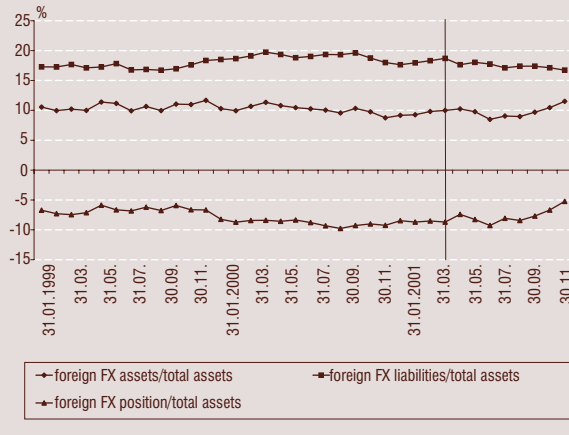
The ratio of *corporate sector foreign currency deposits* to total deposits has been fairly stable for a long time. There were expectations of a possible outflow of firms' foreign currency deposits, as higher returns could have been realised due to the lower costs of required reserves. However, aggregate banking sector data have so far failed to provide evidence for this.

### Foreign currency transactions with non-residents

From early 2000 and up to the reform of the exchange rate system, net foreign currency borrowings by banks from abroad accounted for around 8%–9% of the aggregate balance sheet total. Borrowings in foreign currency abroad fell as a percentage following the band widening. By contrast, lending in foreign currency abroad rose (see Chart 23). As a result, the sector's net foreign currency borrowing position vis-à-vis non-residents had fallen from HUF 748 billion at end-April to HUF 498 billion by end-December.

The drop in interest rate arbitrage activity, widely followed by banks earlier, is perhaps a partial explanation

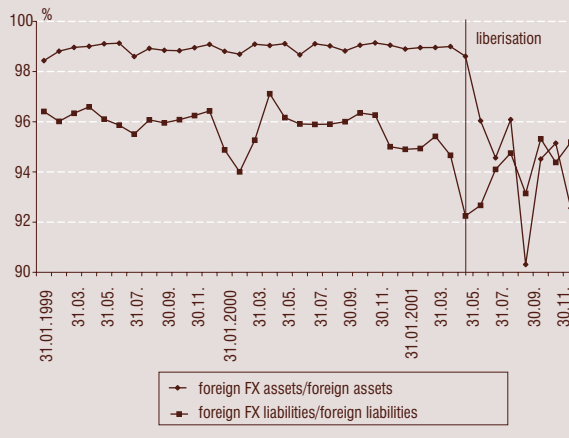
**Chart 23 Banks' foreign currency borrowing position vis-à-vis non-residents as a percentage of balance sheet total**



for the decline in foreign currency borrowing from abroad, as converting these foreign currency liabilities into forints and investing in sterilisation instruments no longer offers a secure opportunity to earn profits, due to the significantly higher exchange rate risk. In addition, foreign exchange liberalisation has facilitated foreign investors in purchasing short-term forint instruments; and eliminating domestic banks from the process has resulted in a decline in banking sector foreign currency borrowings from abroad. The proportion of foreign currency assets held abroad has increased. One explanation for this is that, amidst intense capital inflow, domestic credit institutions have placed foreign currencies purchased from non-residents mainly with foreign banks.

Foreign exchange liberalisation triggered a perceptible shift in the denomination profile of domestic banks' foreign assets – the proportion of foreign currency assets had fallen from 99% prior to liberalisation, i.e. end-May, to 93% by the end of the year, due to the significant increase in short-term forint assets (see Chart 24). Nevertheless, at 0.9%, forint assets continue to account for a

**Chart 24 Percentage shares of banks' foreign currency assets with and liabilities from non-residents**

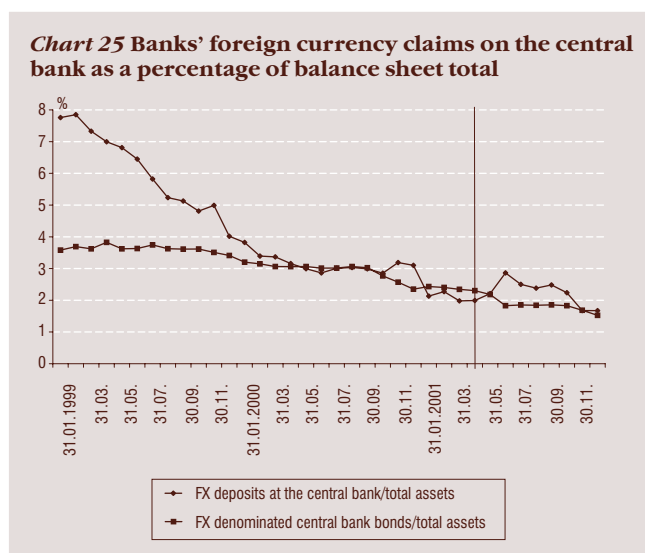


very small percentage share of the balance sheet total. Domestic currency liabilities have not yet increased as a proportion of total foreign liabilities, but forint-denominated bond issuance abroad, encouraged by the change to the reserve requirement system on 1 February 2002, may catalyse a shift in this direction.

Foreign currency transactions with other financial intermediaries and the central bank

In contrast with the decline in foreign currency lending to the corporate sector, foreign currency lending to other financial intermediaries (mainly leasing companies) rose at a rapid pace in the period following the band widening and liberalisation. Outstanding foreign currency loans to the sector doubled relative to end-April, reaching HUF 201 billion. Simultaneously with this, the percentage share of foreign currency within total loans to financial intermediaries rose from 45% to 57%. An explanation for this phenomenon may be that motor car sales, rising significantly in 2001 H2, were linked to a great degree with foreign currency or foreign currency-based lease finance, with parent banks providing surplus foreign currency funding to leasing companies.

The proportion within the balance sheet total of foreign currency claims on the central bank has been falling steadily in the past few years. Band widening and liberalisation have not materially influenced this process – the decline has continued uninterrupted since the reform. As a result, foreign currency deposits and bonds of the central bank collectively accounted for only 3.2% of total assets at the end of 2001 (see Chart 25).



## Summary

Hungary's move to widen the forint's exchange rate band vis-à-vis the euro, and the increased exchange rate and interest rate volatility accompanying the more flexible exchange rate system, required the development of a new approach to scheduling foreign exchange liberalisation. The forint became fully convertible for both non-residents and residents with the abolishment of all foreign exchange restrictions in a single move. By facilitating a greater interpenetration between the various financial market segments and a further deepening of the domestic derivatives market, foreign exchange liberalisation has contributed to more efficient management of money and capital market risks, which increased as a result of the band widening. Consequently, not only did the costs of exchange rate volatility fall, but the likelihood of currency overshooting lessened as well, as the forward exchange rate might evolve on a more liquid derivatives market.

Liberalising the foreign exchange regime and widening the exchange rate band were mutually dependent policy actions. First, in a more flexible exchange rate system, the risks of dismantling foreign exchange controls are lower. In turn, the entry of foreign participants into the derivatives market is a key ingredient in successfully hedging against exchange rate risks.

The forint markets, particularly purchases by non-residents of discount treasury bills and issuance of Euroforint bonds, and the foreign currency spot, swap and forward markets, were affected the most by foreign exchange liberalisation. The changes in the Hungarian foreign exchange market which EMU member country statistics had predicted soon began to unfold – simultaneously with the increase in total turnover, the volume of derivatives transactions picked up. The relative share of domestic counterparties fell to one-half, non-residents gaining more and more ground (their proportion of total turnover rose from 30% to 70%).

The move to widen the fluctuation band triggered a wholesale increase in spot market turnover. Foreign exchange liberalisation proved to be a driving factor through the improvement in derivatives market liquidity. Corporate customers, exposed to exchange rate risks, increasingly directed their attention towards hedging transactions, as suggested by their increased activity in the forward and swap markets. Entry by foreigners clearly boosted swap market turnover. The market of FX forwards picked up, whereas futures turnover experienced a decline. Money markets experienced a rearrangement following foreign exchange liberalisation. Foreign investors' demand for Hungarian short-term government securities strengthened, but their proportion of total holdings remained below 10%. Indicating the increasing integrity of markets, the gap between returns on discount treasury bills and government bonds with short remaining maturities closed. Activity in the market of forint-denominated bonds issued by non-residents also picked

up. The outstanding total of these instruments is now more than HUF 200 billion.

The effects of the band widening were reflected in shifts in banks' balance sheets as well. Higher risks prompted economic agents to reduce their exchange rate exposures. This was also reflected in foreign exchange items falling on both the assets and liabilities sides of banks' balance sheets. In addition to the exchange rate effect, the transaction effect also acted to reduce the size of outstanding corporate loans, following the robust increase in previous years. Simultaneously with the nominal decline in domestic foreign currency borrowings, the build-up in corporate sector gross foreign liabilities slowed considerably. The proportion of foreign currency deposits within households' financial assets fell by 1 percentage point in the six months following the band widening, despite the fall in the sector's foreign currency holdings being accompanied by a record amount of flows into foreign currency deposits towards the end of 2001, closely related to the introduction of the euro. Defying the pessimistic expectations, however, households and firms did not relocate their domestic deposits abroad. Apart from a slight increase in household sector foreign currency borrowings, which otherwise are insignificant within the outstanding total, there was an increase only in lending to other financial intermediaries, e.g. leasing companies, the pick-up in car sales presumably in the background. Domestic banks' net foreign exchange position vis-à-vis non-residents fell nearly to one-half. The reduction in the ratio of foreign exchange liabilities to the balance sheet total and the increase in foreign exchange assets abroad both played a role in this.

## Appendix

### Legal framework of foreign exchange liberalisation

With the removal of foreign exchange controls on 16 June 2001 by means of a Government Decree, the forint became fully convertible for both residents and non-residents. The major provisions of the Decree are as follows:

- the requirement to repatriate foreign currency from abroad has been terminated,
- residents are permitted to open forint and foreign currency accounts abroad without the obligation to apply for permission from the authorities,
- foreign currency, obtained under any title, including revenues from tourism services, may be credited to residents' foreign currency accounts and used without restriction without prior verification of documents,
- residents, other than natural persons, may also hold foreign currency without restriction,
- direct acquisition of enterprises abroad is be subjected to normative conditions or prior reporting,

- irrespective of currency denomination, residents are required to apply for permission from the foreign exchange authorities and to report, for example, on short-term portfolio transactions, including hedging transactions, lending transactions irrespective of maturity, financial guarantees, assignment, debt assumption,
- making gifts to non-residents has been made free,
- residents and non-residents are permitted to import or export domestic and foreign currency to and from Hungary without restriction,
- payments in Hungary between residents or between residents and non-residents in foreign currency are permitted, with the condition that the forint continues to be legal tender in Hungary, and deviation from this rule is only permitted on the basis of an agreement between the parties.

The decision to widen the exchange rate band required rapid measures in dismantling foreign exchange controls; this made it necessary to institute the changes by means of a Government Decree.

Government Decree 88/2001. (VI. 15.) Korm. establishing the full convertibility of the forint 'overwrote' the Act on Foreign Exchange. The Decree terminated all foreign exchange authority functions as well as all licensing, reporting and data disclosure requirements. Although the Act on Foreign Exchange includes the legal grounds for this, a modification of the Act on Foreign Exchange was necessary as soon as possible from a codification perspective. Parliament passed the Act on the Removal of Foreign Exchange Controls and the Modification of Certain Related Acts on 11 December 2001, which entered into force on 1 January 2002. Simultaneously with this, Act XCV of 1995 on Foreign Exchange and Act CXLVII of 1997 on the Modification of the Act were repealed.

#### *The new law*

- establishes, as the most important safeguard rule, legal grounds for the Government to restrict, on the basis of a recommendation by the Bank, international payment turnover for maximum six months in cases of economic and financial difficulties (a significant decline in foreign exchange reserves, particularly, if this endangers the fulfilment of short-term liabilities, or, if the difficulties endanger the operations of the Hungarian economy), with the additional consent of Parliament; these restrictions do not affect the accounts of natural persons;
- confirms that the forint is the legal tender of Hungary, and that it shall be accepted as a means of payment in Hungary;
- stipulates that any payment obligation to the State, or payment obligations established by other authorities or the courts, shall be effected in forint;
- stipulates as a positive rule that legal transactions and actions may be carried out free in foreign exchange, foreign currency or the domestic currency;

- maintains a number of explanatory provisions (e.g. the concepts of foreign exchange residents and non-residents) which facilitate the application and interpretation of law, or which have not yet been implanted, or are difficult to implant, in other legal regulations;
- repeals or modifies a number of acts or chapters of acts directly referring to foreign exchange law.

Within the framework of the new law, the Acts on Compensation, Investments by Non-residents in Hungary, the Criminal Code and the Act on Legal Offences, the Act on the National Bank of Hungary and the Act of the Prevention of Money laundering were amended.

In the Act on Credit Institutions, the concept of money exchange (sales in retail trade against the payment of

foreign currency, i.e. accepting foreign currency and return in forint or foreign currency shall not be deemed an exchange) and the authorisation and control of money changing were amended (from 1 January 2001, the authorisation of money changing, and on-site inspection a year later, were transferred from the Bank to the Supervisory Authority of Financial Institutions).

With the full convertibility of the forint, the provisions of NBH Decree No. 15/1995. (PK. 18.) on Credit Institutions and Financial Undertakings were simplified. Essentially, only a small number of provisions related to financial settlements and data reporting, as well as those on quoting exchange rates remained in force temporarily.

## **MANAGING OPERATIONAL RISKS IN THE HUNGARIAN BANKING SYSTEM**

*by Tamás Balás, Zsuzsanna Dávid and Livia Sánta*

With the objective of promoting stability in the domestic financial system, the National Bank of Hungary constantly monitors developments in the exposures of the domestic banking sector to risks. To aid this work, Bank staff have recently launched a series of studies which take an overview of the various types of risks facing the sector. The latest of these summarises banks' operational risk awareness and risk management practices. This article encapsulates the entire study. It does not consider the international regulations on operational risks, rather presents the risk management practices pursued by Hungarian banks.

What makes this issue relevant is that the events in the financial intermediary system in past years, such as the development of electronic trading, process automation, globalisation, intensifying competition, mergers, take-overs and the proliferation of outsourcing, have increased operational risks significantly.

Shareholders' requirements are increasing and the practice of Corporate Governance is becoming more and more popular. In addition to these, large operating losses suffered by financial institutions in past years, receiving high media coverage, have largely facilitated the recognition of the need to manage operational risks and further develop banks' risk awareness. However, the strongest compelling force for the development of risk management is presumably the regulatory authorities' plans to impose new capital standards on banks.

Faced with the necessity to manage operational risks, the Basle Committee has placed special emphasis on operating risks among other types of risk and set separate capital requirements for them in the New Capital Accord of 1999. Various approaches of increasing sophistication have been developed, in order to define the capital requirements for operational risks. These approaches comprise various risk management standards, measurement techniques and loss databases. But it is at least equally as important that the Basle Committee has developed guidelines for the proper practices of identification, measurement and management of risks.

Although the exact rules on the definition of capital requirements for operational risks have not yet been finalised, it is beyond doubt that banks will have to allocate some capital to operational risks in the foreseeable future. According to the current concept, the Basle Committee expects to prepare the final version of the recom-

mendations in 2002, which would then be introduced in 2005.

After their approval, the recommendations will immediately be integrated into the internal regulations of the European Union and, following Hungary's accession, they will likely apply to Hungarian financial institutions as well. However, even if the joining of new members suffers a delay, it is highly unlikely that the introduction in Hungary of capital requirements for operational risks will be postponed, as the country is expected to adopt them earlier, during the legal harmonisation process.

The Basle Committee has provided the minimum capital requirement only for the simplest case (Basic Indicator Approach) from among the three approaches of different sophistication applicable to calculate regulatory capital, deriving from international bank data. According to the current concept, this would be 17%–20% of gross income.

However, the application of this method in Hungary would set much higher capital requirements for domestic banks than the Basle Committee originally wished to allocate to operational risks. But taking into account that Hungarian banks' capital adequacy significantly exceeds the minimum requirement, the preliminarily calculated capital requirement provides ample coverage for the entire sector.

### **Hungarian banks' operational risk management practices**

The National Bank of Hungary has recently conducted a survey to measure Hungarian banks' risk awareness and risk management practices.

The questionnaires were sent out to 40 banks, and 29 of the entities returned them. Based on their market shares in terms of balance sheet totals, the respondent banks accounted for 83% of the sector. All of the entities with decisive market shares were covered by the survey.

It should be noted that the Hungarian risk management practices considered by the article reflect the market conditions prevailing in 2001 Q3. But this area of the banking industry has been undergoing continuous development internationally and the issue is regularly dealt with at conferences in Hungary. Consequently, some banks have presumably made further progress in mapping out and managing operational risks.

Only five of the respondent banks stated that they had previous experience with managing operational risks. In their own assessment, the majority of them do not have operational risk management systems, while three banks do not classify themselves in any of the categories, as they think they represent a transitional stage.

In evaluating the responses, Bank staff have found that, based on both the responses and international comparison, the Bank's picture is different from the views banks have formulated about themselves. This is particularly so in respect of the question whether or not they have experience in operational risk management. In the Bank's judgement, only one bank's practices may be considered as relatively state-of-the-art; furthermore, eight of them have practices which should rather be treated as being in the initial phase. Responses by the 20 remaining banks suggest that they do not at all satisfy the criteria of operational risk management, indicating that they do not pursue any form of risk management.

*The conclusion that can be drawn for the entire domestic banking system is that the field of operational risk management is most advanced among the dominant participants in terms of size and market share. However, at this stage of development they still lag considerably behind international standards, as the majority of them have only taken the initial steps towards systematically identifying and managing operational risks.*

### **Defining operational risk**

The definition of operational risks constantly changes, and there is no consensus in the international literature dealing with the problem of the term 'operational risk'. This is underlined by the fact that the Basle Committee modified the basic definition in a working document released in September 2001.

Notwithstanding the uncertainties surrounding the definition, a majority of Hungarian banks described the range of operational risks well, apart from a few extreme cases. Nine banks recognised and accepted four of the operational risks, i.e. human factors, processes, systems and exogenous factors, enumerated in the definition issued by the Basle Committee. The larger part of them appears to come close to the definitions announced by the Basle Committee, although the definitions are not fully overlapping with the Committee's.

Bank staff found inconsistencies between the risk factors listed in the definition and the range of operational risks in the responses to the further questions of the survey. This suggests that some banks have not systematically categorised the same elements into the class of operational risks.

Most of these discrepancies were detected in responses by the small and medium-sized banks – the responses of seven of the banks with dominant market shares contained similar inconsistencies.

*The balance of responses has shown that banks have basic understanding of the areas in which operational risk management should be concentrated (at least they*

*are aware of operational risks at the level of definition); however, they lack the expertise required to organise and put operational risk management practices in place.*

### **Identification and organisational framework of operating risks**

#### *Segregating market, credit and operational risks*

Banks agreed in basic terms that there is a close relationship between operational, credit and market risks, and that the various types of risks are difficult to segregate due to their overlapping nature.

However, their views about the relative weights and importance of these three types of risk are significantly different. The majority of those who attempted to rank those risks believe credit risks to have the greatest importance among banking risks. Only three respondents ranked operational risks first, while most of them ranked it as the second most important type of risk. Views about the actual importance of operational risk differ very widely, the values moving between 10%–60%.

*One of the important steps when identifying operational risks is to clarify the relationships, interactions and overlaps among operational, credit and market risks. The responses by banks and the examples presented reflect that banks have already recognised the division lines and interrelationships between the three types of risk, but further information is required to develop a more refined picture. This is suggested by the fact that a relatively low number of banks have attempted to quantify the weight accounted for by operational risks within aggregate banking risks.*

#### *Identifying the partial elements of operational risk*

The areas involved in operational risk management presented by banks are very diverse. This can be explained partly by the wide variety of the types of operational risks and partly by the fact that they can be managed proactively by the special area having understanding of the particular line of business.

Currently, the following specialised areas handle management of the partial elements of operational risk:

#### *– Internal audit systems*

Almost all banks judged that this area plays a key role in discovering and managing operational risks. Risk considerations (operational risks, amongst others) appear in the examinations by independent internal audit units of banks mostly with foreign ownership background. Based on this, they measure and rank the exposure of the various activities to risk; and the frequency of examinations depends on the risks carried by the particular activity.

However, the systematic collection, analysis and regular monitoring of operational risks as well as the development of a standardised methodology of managing the

risks discovered and coordination of risk management by the special areas do not belong to the tasks of internal audit teams. Consequently, this activity does not entirely substitute for the responsibilities of the operational risk management area.

#### – IT systems

The overwhelming majority of banks have an area responsible for information technology management, whose task is to reduce systemic (or technological) risks by ensuring the smooth, safe operation of computer systems. It provides support to reduce risks arising from human errors and process failures, as control mechanisms are built in the systems at the particularly risky administrative areas when developing computer software for recording (two-point or three-point transactions, operations, checklists, warning signals, etc.).

#### – Areas of bank security and operation

At a significant number of medium-sized and small banks, this area is responsible for reducing and managing risks emanating from external sources (e.g. fraud, abuse, catastrophe, etc.).

#### – Legal

At some banks, this unit is responsible for avoiding or reducing losses arising from contracts entered into with business partners or third parties or from inadequate compliance with legal regulations.

#### – Process control

Part of the banks attributes special importance to this area which establishes check points at critical intersections in administrative processes, in order to reduce operational risks. In addition, it monitors their consistency during the control of the processes; and it keeps an eye on the proper distinction between the responsibilities for decision and the accountability for the particular responsibilities during regulation of competencies.

By managing operational risks, the overwhelming majority of banks understand that the organisational units alone or cooperating with other organisational units should try to remedy the problems, deficiencies or errors that may occur in operation. As to the future, they attempt to establish check points as well as regulatory limits (such as business continuity plans, bank security regulations, process control manuals, etc.) which may prevent a problem from reoccurring.

*The need is all the more compelling to set up a central unit subordinated to senior management which would be responsible for (i) identifying and recording losses potentially arising from operational risks; (ii) measuring and continuously monitoring the likelihood and extent of operation risks; (iii) developing methodology of managing and minimising risks; and (iv) coordinating and controlling the risk management activities of these areas. This unit has the obligation to report on a regular*

*basis to bank management on the extent of and changes in operational risks.*

#### *Current organisational framework of operational risk management*

From among the market participants with dominant market shares, four banks had set up their units responsible for managing operational risks prior to the time of the survey.

Taking into account the size and the complexities of banks' organisations, they have inevitably first recognised the importance of developing a central coordination unit.

The other group is comprised of large banks that manage operational risks within a traditional organisational setting. Accordingly, management of operational risks belonging to their activities is the responsibility of every organisational unit of a bank, its internal audit system and central units appointed according to the various types of risk (i.e. human factors, processes, systems and exogenous factors). These banks have not yet developed a standardised framework for coordinating operational risk management.

Two credit institutions in this group plan to set up a separate unit for managing operational risks in the near future.

None of the small and medium-sized banks covered by the survey has a central unit for coordinating operational risk management. However, a large number of small and medium-sized banks with foreign ownership background have already planned or are currently planning to launch projects dealing with operational risks in the not too distant future. However, they will likely continue to manage the identified operational risks using traditional methods (i.e. internal audit system, process control, bank security regulations, business continuity plans, etc.).

From among the banks without foreign ownership background, only two currently have plans to survey operational risks systematically in due course.

The rest of the banks currently do not have plans (or only over the longer term) to develop methods, other than the traditional ones currently in use, to survey and manage operational risks.

The discussion of organisational frameworks should also cover the issue of the location of the organisational unit responsible for managing operational risks within the bank's hierarchy and to whom and with what frequency it is obliged to report on its activities.

In banks where a separate organisational unit is responsible for operational risk management, it is liable to report to senior management (the president or the vice-president responsible for risk management).

These independent organisational units responsible for operational risk management are involved in the process of computer system development. They formulate their opinion on the instructions, plans, recommendations and proposals from the perspective of risks. Moreover, at some banks the evaluation and recommenda-

tions by the unit responsible for operational risk management are included in the proposals.

At these banks, reports on operational risks generally form an integral part of management information systems. In addition, the bank's board of directors or board of supervisors (or the corresponding organisational unit of the parent in the case of a foreign owner) also receive reports on developments in operational risks. Banks have responded differently to the question of frequency (within the interval from daily to annual reporting), depending on the nature of operational risks to which the report pertains.

At banks where there is no separate organisational unit dealing with operational risk management, management bodies, the board of supervisors and the board of directors (or the parent if the owner is a foreign bank) generally derive information about part of operational risks from reports by the internal audit unit.

However, the approach of reports by internal audit to operational risks largely depends on how much special attention is paid by the internal audit unit to risk-based control. (As was noted earlier, there are banks that are increasingly fortifying their internal audit units focusing their activities on risk.) But these reports are not all-encompassing in terms of discovering operational risks; rather they may provide guidelines about those activities, processes, organisational units requiring increased attention which should be placed under more frequent control and monitored in a distinct manner from the perspective of exposure to risks.

## **Systematic identification and measurement of operational risks**

### *Measuring operational risks*

Most banks analyse operational processes in order to map out operational risks, by identifying the most critical points in the various processes. Pre-defined index numbers which can be used to measure the exposure of the given processes to risk are required for identifying critical points. The index numbers are developed based on the characteristics of the various processes. Such index numbers may be, for example, the number of transactions and their average value; the value of assets managed, stability of the activity; dependency rates of the activity and its effects on other systems and processes; the extent to which the process is backed by information technology and its nature; standardisation of inputs and outputs; earlier losses; errors; and the occurrence of customer complaints.

Although it is very important, the business continuity plan is the only first step in mapping out the operational risk of the various processes. In order to mitigate or remedy the risks discovered, developments in risk must be monitored on a constant basis following the preparation of the business continuity plan; and, taking into account the changes in the circumstances and the various busi-

ness processes, newly occurring risks must be evaluated regularly. Collecting data on losses arising from operations on a systematic basis and according to pre-determined methods plays an important role, in addition to monitoring risks. This may be used later to build databases.

*The methods of measurement used by Hungarian commercial banks primarily provide opportunity to be able to rank the various activities in terms of exposure to operational risk, and to define the areas which carry the highest risks and those which carry the lowest risks. However, historical data on operating losses suffered in the past are also required to forecast the likelihood of future losses and the expected amount of such losses.*

### *Collecting loss data*

Databases which compile banks' operating losses have already appeared in international practice. In addition, some banks have started to build their own internal database. What impedes the creation of databases of this type is that it is difficult to define accurately what should be treated as operating loss and to what extent. In addition, attempts must be made to have a complete set of data, in order to be able to use the data stored in databases, which also creates difficulties in an area of such diversity. Prior to developing the data base, the types of losses, together with the types of data to be collected on those losses, which will be recorded should be defined. Collection of data intended for the database requires long and meticulous work; and it is time-consuming and costly, as proper conclusions can be drawn only from historical data series available over an adequately long period of time.

From the answers it can be inferred that collecting and recording data on operating losses has not yet started in the Hungarian banking sector. With the exception of two entities, banks do not possess internal databases of their operational risks.

In respect of collecting loss data, the vast majority of banks do not plan for the future to develop databases. The very high resource requirements and the view that operating losses are extremely difficult to foresee based on historical data appear to justify the lack of will to create databases. Explanation for this is that every viable system has created some sort of technique to prevent losses from occurring, whereas the type of occurrence and the effects of those losses change constantly, and therefore they cannot be forecast. According to this view, events occurring with low frequency and entailing large losses are the most dangerous, for which earlier occurrences do not provide guidance, neither in respect of their nature nor their magnitude.

International experience shows that a database for operating losses could be created at the sectoral level through the joint effort and cooperation of banks, the information contents of which could be accessed and used by all data providing banks, after the data have been

aggregated and individual bank-specific information has been eliminated.

Some Hungarian banks also subscribe to this idea – expected future losses could be forecast with a smaller margin of error, starting from a database built at the sectoral level.

*Creating historical loss databases constitutes the early step and the estimates for measuring operational risks may only be well-founded on the basis of historical time series going back for a 3 to 5-year period. Thus the reluctance to set up loss databases is probably the most vulnerable point of Hungarian banks' operational risk management activities. In the current circumstances, at least 3–5 years will pass before a large proportion of Hungarian commercial banks will have installed their own real operational risk management practices.*

### **Instruments and procedures supporting management of and reduction in operational risks**

In respect of regulating and controlling operating processes, banks have a unanimous view that the most important technique for managing and reducing risks is to develop an efficient internal control system and, within this, build controls in the working process. These are closely related to the adequate process controls, the regular checks of the effectiveness of processes as well as the scheduled re-evaluation and re-regulation of processes, in light of changes in conditions.

The overwhelming majority of banks have **business continuity plans**. All banks were required to develop their own business continuity plans, due to the millennium date change. However, information is unavailable whether and to what extent the plans worked out at that time have been updated and how sophisticated are the methods, systems and techniques designed to ensure continuous operation. These factors significantly influence success with and efficiency of the management and optimisation of operational risks.

Two banks provided information in respect of defining **limits to operational risks**; while one bank gave a review of its limit system currently being phased in. All three banks defined minimum requirements in respect of measuring processes (thresholds, target values). If the benchmarks defined to measure the given process reach these values, then this means that the process has departed from the path defined on the basis of the bank's requirements. Consequently, some sort of intervention is required in order to move the process back to the prescribed path. In addition to keeping the processes on the desired path, these limits represent continuous measurement and feedback as well about the observed systems and activities.

Only three banks belonging to the league of those with dominant market shares have **insurance** which resembles the form of insurance accessible internationally, providing cover for a part of operational risks. In addition to being a cover for losses arising from traditional

exogenous risks (e.g. theft, fraud, damage, software problems), these also cover losses arising from mistakes by senior management and other losses incurred due to other professional errors. In addition to its complex nature, the insurance policy covering especially operational risks is distinguished from the traditional forms of insurance – whereas the period elapsing between the occurrence of damage and the settlement of claims, with insurance against operational risks the insurer undertakes to provide liquidity to cover the damage in a relatively short time.

Presumably, it is mostly in the case of small banks with foreign ownership that the parent institution has been insured against operational risks, but the Hungarian subsidiary lacks information about this, as this type of insurance is handled at the parent.

The responses of the vast majority of banks suggest that they do not have enough information about the type of insurance that can be obtained for a part of operational risk which cannot be diversified within the bank; or they have not recognised the importance of these types of insurance. In addition, these types of insurance are very costly and difficult to access in Hungary. This is another problem for smaller banks.

### **The strategy and regulation of operational risk management**

It is crucial to regulate the process and methodology of identifying, measuring and managing operational risks presented above along pre-determined objectives and basic principles. The rules of operational risk management must include:

- the process of mapping out, collecting and monitoring operational risks, while denoting the areas responsible for these activities,
- the methodology of developing an operational loss database and processes for evaluating such,
- the methods of managing the identified, collected and categorised operational risks,
- those guidelines and procedures which may be a clue for managing, monitoring and mitigating the discovered operational risks for the professional areas,
- those pieces of information which the area responsible for coordinating the management of operational risks request from the professional areas in the framework of regular data reporting, and
- those reports in which the area responsible for coordination gives an account for bank management about developments in operational risks and operating losses incurred.

In respect of regulatory issues, the strategy of managing operational risks must also be considered. The reason for this is that a well-articulated objective, and the definition of the basic principles and the corner-stones of the activity supporting the objective, are the basic elements of a comprehensive and standardised regula-

tion. Banks' experiences show that an adequately deep knowledge of operational risk management as well as a review of a bank's operational risks and its exposure to risks are indispensable for the formulation of such a strategy.

This is underlined by the fact that altogether two banks have written operational risk management strategies. Hungarian banks' initial steps taken in the area of operational risk management appear to reinforce this view. Taking into account the fact that the majority of banks are in the initial phase of developing their own systems for operational risk management, and also that the regulatory authorities have just begun to lay down the regulations on the basic principles and methodology of this activity, the lack of strategy seems acceptable.

Looking into the future, however, it should be stressed that the development of a well thought-out strategy corresponding to the exposure of the bank to risks is the ultimate condition for developing an adequate regulatory environment and for carrying out the activity efficiently.

It is acceptable at the current level of operational risk management that, in addition to a strategy, a standard and comprehensive regulation on risk management is also lacking.

However, the overwhelming majority of banks have already prepared their rules of managing the various types of operational risk, such as business continuity plans, bank security rules, catastrophe plans and process control manuals. These rules play an important role in managing the various types of operational risk.

*The regulations enlisted by banks are designed to serve uninterrupted operation. In addition, they specify the steps to be taken in order to mitigate losses in surprise events, although they apply only to the individual types of operational risk, without providing a comprehensive and standard methodology to manage all types of operational risk that may arise in every area of a bank.*

*When discussing strategic issues it is equally important to stress the relevance of a regulatory environment, which can support efficiently the measurement, evaluation and optimisation of operational risks.*

### **Problems with the introduction of operational risk management activities**

#### *Management's awareness of operational risk at commercial banks*

The steps already taken and those planned for the future in order to discover, evaluate, manage and mitigate operational risks suggest that only a few banks within the Hungarian banking sector have recognised the importance of managing operational risks.

Management does not consider the identification and management of operational risks to be an area of major importance. This approach is explained by the fact that even the international regulations still lack detailed and standardised recommendations in respect of risks which

may cause losses during the operation of a bank. In addition, the methods and statistical models which serve the assessment of risks are also in their infancy.

In real terms, what makes it difficult to test the theoretical methods already developed is that currently neither a database containing the losses arising from operational risks nor an adequately long historical data series needed to make the calculations is available. These deficiencies significantly increase the difficulty of identifying losses arising from operational risks and developing a methodology for risk management.

*The responses suggest that many banks do not always recognise that the losses incurred due to problems in the operation have arisen from operational risks. In addition, the diversity of operational risks also represents a problem. Due to this, banks believe the management of operational problems to be the task of the professional area, and they do not feel it necessary to coordinate this work through a central unit, in order to have standard methods of discovering and managing those risks.*

#### *Difficulties with managing operational risks*

Those banks that have gained more or less experience with managing operational risks are in agreement that measuring and quantifying operational risks causes a significant problem, due to their complexities. Another difficulty is to define the priority of those risks in the emergence of operational disorder. Creating the opportunity for measuring risks objectively requires enormous investment in the computer infrastructure and human resources. Another problem is caused by the difficulties with forecasting the various types of operational risks accurately, and that efficient risk management requires an orchestrated cooperation of the bank's professional areas.

#### *Why is it that some banks do not consider it necessary to develop operational risk management units?*

Smaller banks that have not at all, or only very slightly, dealt with the problem of developing operational risk management, believe that, because of the size of bank, their organisational structure and operations are transparent; therefore, it is not necessary for a separate unit to deal with the arising operational risks.

Some banks do not feel urged to develop their operational risk management system because they believe that the internal audit, built-in controls and the various professional areas have so far been able to adequately manage problems related to operational risks.

The absence of conscious management of operational risks can also be explained by the fact that banks have not recognised losses arising from operations and, provided they have recognised them, they have not judged them to be worth dealing with separately and systematically as a priority issue.

Other factors hindering the development of operational risk management system are:

- the novelty of the issue,
- the lack of proper and accessible academic literature and guidance, and adequate methodology,
- the complexity of calculating risks and
- the time, money and human resources demand of developing a risk management system.

*The experiences of the survey have shown that, in the case of banks becoming more and more cost sensitive, it requires a thorough consideration whether the losses incurred so far make it necessary to commence such a costly investment project.*

*In general, those banks have made the largest advance in developing operational risk management system whose foreign owners or domestic management have realised its importance and, tackling the wide variety of problems, have tried to adapt the systems in use at the parent institution, or, failing this, have perhaps attempted to develop their own systems relying on the available theoretical background and using consultants' support.*

### **Future direction of operational risk management**

*Future development of operational risk management and prospects for the operational risk management area*

Based on international experience, the development of operational risk management can be broken down into the phases as follows:

#### **Phase 1: Traditional approach**

- Built-in control
- Reliance on internal audit
- Separate risk mitigation procedures
- Confidence in human knowledge and organisational culture

#### **Phase 2: Development of operational risk awareness**

- Manager supervising operational risks
- Definition of operational risks
- Regulation
- Mapping out processes and evaluating them from the perspective of risk
- Initial benchmarks
- Starting collection of loss data and developing a framework for evaluation of data
- Top-down capital allocation model

#### **Phase 3: Monitoring**

- Mature ideas and target system in managing operational risks
- Limit system
- Consolidated reports
- Professionals dealing with operational risks in certain areas
- Training

#### **Phase 4: Quantifying operational risks**

- Detailed loss database
- Fine-tuning quantity targets
- Impact studies
- Risk-based economic models
- Functional risk management committee

#### **Phase 5: Full integration**

- Full, integrated system of tools
- Cross risk analysis
- Quantifying the relationship between benchmarks and losses
- Risk-based insurance

According to international surveys, among Western European banks only the larger and more advanced ones have managed to enter Phases 3 and 4, and a large part of banks has only reached Phase 2.

The results of the Hungarian survey show that only a couple of Hungarian banks may be grouped into Phase 2, whereas the majority of banks may be categorised into Phase 1, based on the current level of risk management. A part of banks, in turn, does not even possess the requirements in Phase 1, so they could be grouped into an imaginary Phase 0. Based on this, it could be imaginable that almost all banks currently have plans to take some sort of steps in operational risk management in the future. This view is reinforced by the view shared by the vast majority of banks that operational risks will likely increase in the future, especially in the area of information technology.

Nevertheless, a relatively small number of banks have well-defined, substantive ideas about the steps that should be taken in order to manage and reduce operational risks.

Only six banks plan to implement real changes and investment projects in the foreseeable future in the area of operational risk management.

Some banks are content with the current risk management systems and only plan to develop and update the existing activities. The majority of banks either do not plan to implement development projects, or do not possess a clear idea of how to implement such projects.

*Taking into account the phases of operational risk management over the long term, there is still much work to be done in this area, not only in the Hungarian banking sector, but internationally as well. The increasingly more robust activities of the Basle Committee in respect of this issue will likely have a positive impact on the development of this area. In addition to the planned regulatory changes, the focus will be all the more frequently shifted to operational risk management activities, due to the recent large losses caused by operational risks. This may encourage banks currently showing little enthusiasm.*

*Evaluating the future prospects, it is clearly a positive development that a larger part of banks playing a dominant role in the sector has realised the importance of developing operational risk management in the near future, and has solid concepts and timetable.*

*Some large banks and the vast majority of small and medium-sized banks appear to influence the overall picture negatively, as they do not plan for the future to materially develop their operational risk management systems.*

## Evaluation

The majority of banks with a dominant role in the Hungarian banking sector consciously monitor operational risks. Their future plans include the development of operational risk management activities. This is especially valid for large banks with foreign ownership background – a part of them has already adapted or is currently adapting the system implemented by the parent bank.

There are significantly fewer small and medium-sized banks who have operational risk management as an independent activity. Those banks that have already taken steps to develop the area, similarly to large banks, have started to develop their risk management systems encouraged by their foreign owner, or by taking over the methods used by the parent. Due to the cost intensiveness of risk management and the better transparency of banking operations, these banks are expected to develop a less sophisticated system than their parent; however, they will likely have to prepare themselves for developing risk management procedures meeting certain requirements, based on the recommendations of the Basle Committee.

Taking the banking sector as a whole, the practices of banks dealing with operational risk management are diverse and multi-faceted. This is attributable in part to the standard methodology and regulatory guidelines being only in the early phase of development even in the international arena.

Some banks still explore, identify and manage operational risks separately within the various professional areas, without all-embracing coordination, adequate systematic approach and a cover for all types of risk. The absence of risk management strategies and standard regulations as well as the organisational responsible for the task certainly play a role in this.

It should be taken into account when assessing the inadequacies discovered that the operational risk man-

agement activity has been developing constantly and at an increasingly rapid pace since the survey, as a result of the studies by the Basle Committee about the issue since September 2001 as well the publication of its 'Sound Practices for Managing Operational Risks'.

It is important to note that, in addition to the incentives on the side of the regulatory authorities to develop the area, owners' and management's requirements have been playing an increasing role as they have recognised the need to manage risks arising from operations. They ensure the required human and financial resources to develop this activity more fully.

Developing the database will require probably the strongest effort from the entire banking sector, as currently very few banks have a historical database for past losses. What makes this task even more difficult is that the majority of banks do not possess a straightforward, sophisticated methodology for mapping out, collecting and recording operational risks.

Cooperation among banks for the collection and recording of data through which the required resources could perhaps be reduced, and the utilisation of synergies could encourage development of the area. This could be a major contribution to preparation in this area.

Given that, according to the current concepts, the Basle Committee plans to introduce capital requirements for operational risks, and that the EU will implement them immediately in the internal regulations following their adoption, they will likely apply to Hungarian financial institutions automatically as well following the country's accession to the Union. The resulting tasks for Hungarian banks in the coming period are as follows:

- An organisational unit ensuring the standard coordination of operational risk management should be established, possibly integrated into the standard risk management process, whose tasks would be to identify, measure and consciously manage operational risks throughout the bank.
- Banks should be prepared for the introduction individually of the requirements set in the 'Sound Practices for Managing Operational Risks' issued by the Basle Committee.
- Banks should start collecting loss data related to operational risks systematically.