



Monetary Policy in Hungary

**MONETARY POLICY
IN HUNGARY**

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Monetary Policy in Hungary
Second, revised edition

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Magyar Nemzeti Bank**

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**This publication provides an overview of Magyar Nemzeti Bank's monetary policy.
However, certain chapters may contain the authors' personal views which do not
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FOREWORD TO THE SECOND EDITION

The Magyar Nemzeti Bank first published 'Monetary Policy in Hungary' some two years ago. Feedback from the general public interested in the subject has reinforced the authors' view that this handbook helps to fill a void in the genre. The authors have managed to give an authoritative but easy-to-understand account, with an adequate level of detail, of the Bank's history, the legal environment of its operations as well as the instruments and framework of monetary policy.

The periodical revision and updating the contents of the manuscript was decided simultaneously with the publication of the first edition. The authors believe that the time has come for implementation.

Hungary has made further progress towards obtaining membership in the *European Union*. The Hungarian Government and the Bank's management are committed to making every effort in order for Hungary to become a full member of the *Economic and Monetary Union* in due course following the country's accession to the EU, i.e. for the Hungarian forint to be replaced by the euro as the official currency upon meeting the criteria of membership.

To this end, a series of important changes affecting both the Bank and the conduct of monetary policy was implemented in 2001. Parliament adopted the new Central Bank Act, which now almost fully complies with the EU's legal requirements. This development implies more than just meeting the formal legal criteria. The fact that the new Act defines the *achievement and maintenance of price stability* as the Bank's core purpose and, moreover, that it provides for supporting the implementation of economic policy without jeopardising the achievement of the primary objective, has enlarged monetary policy's room for manoeuvre considerably and has added to the responsibility of the Bank's decision makers.

A number of the provisions of the new Act, discussed in detail in this publication, contribute to strengthening the *autonomy* of the Bank and its decision-making bodies. The *transparency* of the Bank's operations has increased. Credibility attained so far or waiting to be attained plays an increasing role in fulfilling the objectives of monetary policy and reducing the costs of disinflation.

In 2001, the intervention band of the exchange rate was widened, pre-announced devaluation of the currency was abandoned, the existing restrictions on foreign exchange were lifted and the system of *inflation targeting* was introduced. Owing to these measures, the further reduction in inflation and disinflation policy received a new impetus.

Importantly, although the Bank's set of instruments serving the conduct of monetary policy was also developed further, the substantial reform of the legal environment and the framework of monetary policy did not require a complete redesign of the instruments adopted in earlier years – they are equally suitable for the practical implementation of monetary policy within the framework of the inflation targeting system.

Another factor deserving special mention is that the recent modifications of *reserve requirements* have contributed to an improvement of the competitiveness of banks operating in Hungary.

All these changes provide a thorough argument for publishing the second edition of this booklet and suggest that a revised 'Monetary Policy in Hungary' will be useful not only for those attracted to the subject for the first time, but also for those who have found the first edition a store of useful information.

Werner Riecke
Vice President

I. CENTRAL BANKING IN HUNGARY

A BRIEF HISTORY OF THE **MAGYAR NEMZETI BANK**

Although historically Sweden's Riksbank, established in 1668, is the oldest central bank, institutions acting as the bank of the state came into being all over Europe, modelled in general on the Bank of England, which was founded in 1694. On the continent, the Austrian central bank was one of the first to be established and, owing to the political framework, its scope of authority also extended to the territory of Hungary.

Founded in 1705, Wiener Stadtbank was to the first institution to issue paper money from 1762. In order to strengthen customer confidence, the bank maintained its **independence** throughout the decades, while it became a major lender of the Hapsburgs. Its legal successor was the Austrian National Bank, established in 1816. Although legally the bank's scope of competence did not include the territory of Hungary, in practice it did, at least to some extent. Hungary's political significance, which increased within the Empire as a result of the historic Compromise of 1867, was also expressed by the dual structure of the central bank, in accordance with the dualistic principles of the structure of the state. An independent Hungarian central bank came into being only after the break-up of the Monarchy.

THE AUSTRIAN NATIONAL BANK AND THE AUSTRO-HUNGARIAN BANK

The Hapsburgs regarded Hungary as a land conquered by arms while fighting the Turks

and, in conducting their economic policy, they focused primarily on the interests of the Austrian hereditary provinces. The Napoleonic wars went hand in hand with **inflation**¹ and an erosion of the value of money across Europe, hence the Austrian government attempted to keep the state debt and the issue of paper money under control by setting up an independent bank of the state.

*The Austrian National Bank (ANB), established by the Emperor's patent on 1 June 1816, was 'a patented private institution under the special protection of public administration'*² whose business relations with the state were very close and secret. During those hard times, the Austrian National Bank regarded providing assistance to the state 'as its obligation' and these 'highly important services' were 'acknowledged with gratitude' by the monarch.³ The ANB enjoyed a monopoly position regarding issuing banknotes and setting up branches in the territory of the Austrian Empire. In addition to lending to the state, *discounting* commercial bills of exchange and *lending on collateral security* grew into important lines of business. Uniquely among European central banks, the ANB also pursued mortgage lending and debenture issuing activities, owing to a mixture of central banking and commercial banking functions.

The Banking Act of 1862 was intended to regulate the relationship between the state and the central bank, not least with a view to

¹ For an explanation of the terms printed in bold in the text, see the Glossary in the Appendix.

² 'A Magyar Nemzeti Bank Története' (History of the National Bank of Hungary) Vol. I, KJK, Budapest, 1993, p.155.

³ Expressions used in the Emperor's patent of 20 June 1849; source: 'A Magyar Nemzeti Bank Története', Vol. I, KJK, Budapest, 1993. p. 157.

reducing the state's vast accumulated debt. According to the spirit of the Banking Act, the Austrian National Bank could be regarded as more independent than the Prussian Bank or even the Banque de France of the Second Empire in those days. The Emperor's right to appoint the bank's governor and the government commissioner was merely formal. According to the intention of the legislators, the bank could take action only as a commission agent handling the state's transactions and was under the obligation to discount only the bills regularly presented by the state. The acceptance of government paper as collateral for credit (**collateral loan**) was excluded. This autonomy was maintained with minor modifications until 1878, when the Austro-Hungarian Bank was established.

From the very beginning, the Hungarian Estates disputed whether the Viennese bank's issuing powers extended to Hungary in terms of public law. The Batthyány government attempted to issue its own currency through Pesti Magyar Kereskedelmi Bank (Hungarian Commercial Bank of Pest). However, this experiment failed together with the 1848–49 War of Independence. The question of an independent Hungarian central bank was raised during the negotiations of the Compromise. Eventually, the issue was resolved with the establishment of the dually structured central bank of the Dual Monarchy under the name of *Austro-Hungarian Bank (AHB)*. The bank held its statutory meeting on 30 September 1878. The AHB's Deed of Foundation also bore this dual nature – while it functioned as the central bank of the Monarchy covering its entire territory, Budapest, like Vienna, acquired rights of administration and possibilities of influence, in the spirit of equality in organisation and management.

Owing to the dualistic state establishment, the *organisation of the Austro-Hungarian Bank* was complex. The bank's management was divided into decision-making and executive arms, the lower levels of which were dualised. Of the decision-making bodies, the Supreme Board, the Governor and the committees of the Supreme Board were centralised, while there were two Boards of Directors functioning at each of the two headquarters, both headed by a Deputy Governor. The Supreme Board performed general supervisory functions over the entire banking operation. Each of the countries elected two representatives to the Supreme Board, who were also members of the Boards of Directors. The representatives of the Boards of Directors and even the government commissioners of the state participated in the meetings of the Supreme Board. The government commissioners were also members of the committees, increasing in number as time passed (Executive, Mortgage, Administration and Foreign Exchange Committees). Of the executive bodies, management and the central service functioned in Vienna with local services present in both capitals within the framework of a head institute in both cities.

At the time the Austro-Hungarian Bank was set up, *the coverage system* inherited from the practice of the Austrian National Bank was in operation with *silver coins in circulation*. Owing to the stocks of silver accumulated, compliance with the coverage requirement did not impede increasing the volume of banknotes, aligned with payment needs, at first. However, in addition to silver coins and banknotes, government notes were also in circulation and conversion on demand was not typical, hence it cannot be regarded as an unadulterated silver standard.⁴

⁴In precious metal based monetary systems, it is the central bank's obligation to convert money substitutes in circulation into monetary precious metal on demand. Conversion on demand was suspended on 29 April 1859 and this remained in force in the course of the subsequent history of the Monarchy, even after the introduction of the gold currency system (the *aranykorona*) in 1892.

After 1878, European countries migrated towards the **gold standard** one after the other and, in addition to the rise in the output of silver, this also led to a decline in the price of silver. By 1878, the premium on silver vis-à-vis the paper currency disappeared; moreover, a disagio of the silver florin evolved, which meant that the face value of the silver florin exceeded its intrinsic value. Minting of coins by individuals for speculative purposes began to take on substantial dimensions, which was subsequently suspended.

It was under these conditions that the new monetary system of the Monarchy, the *aranykorona* (gold crown) system, was developed. Due to the absence of conversion on demand and the use of silver coins as legal tender, it could not be regarded as a pure gold standard (*limping gold currency*). Following the example of the German Reichsbank, a 5 per cent *banknote tax* was introduced as an indirect instrument. With this transformation of the **coverage system**, the Austro-Hungarian Bank set out on the path of becoming a genuine central bank, the bank of banks.

The Deed of Foundation of the Bank was suspended in the middle of 1914 after the outbreak of the First World War, and lending to the government began. The principles of coverage for the gold currency were gradually softened. The Austro-Hungarian Bank accepted war bonds as collateral up to 75 per cent of their face value, whereby the central bank covertly financed the government's military expenditure. The continuous deterior-

ation in the exchange rate of the *korona* (crown) and the depletion of the stock of precious metals necessitated the setting up of the *Foreign Exchange Centre* on 1 February 1916, following the similar German example with a delay of one month. At first, the intention was but to maintain a registry of demand and supply and an organised, transparent market of foreign currencies. Hence those acceding to the Institution had to make their receipts of foreign currencies intended for sale available to the Centre and to obtain their foreign exchange and currency needs from the Foreign Exchange Centre, indicating the purpose of use. Foreign currencies required for the purposes of the state were handled separately from the Foreign Exchange Centre.⁵

After the First World War, the authorities of the Council Republic wanted to introduce a new currency in Hungary; consequently, given the unsuccessful efforts to inflate the Monarchy's currency artificially, two currencies existed until the fall of the soviet government. The monetary system was only re-established after the Council Republic.

The successor states of the Monarchy, falling apart in the wave of revolutions following the Great War, created their independent currencies one after the other. The Hungarian economy was facing difficulties. Investments fell back, foreign exchange reserves were depleted and the sources of foreign capital ebbed away. **Inflation** ran high, as the war was financed by running the banknote presses and heaps of banknotes flew in from the successor states.

⁵The Institution existed from 1 January 1916 until 25 November 1925 within the framework of the Magyar Nemzeti Bank. The Austro-Hungarian Bank was given the management of the Foreign Exchange Centre. The Bank agreed to make available cash it had from export transactions to the Centre and also to satisfy the needs of its clients from the Centre. As the Foreign Exchange Centre was already running a deficit in the first months of its operation, the AHB used its own stocks, and later borrowing from abroad also became necessary. Central exchange rates broke away from market rates (for greater detail, see 'A Magyar Nemzeti Bank Története', pp.373–377). By a decree, issued on 23 December 1916, trading in foreign currencies was made subject to official licensing and the independence of the Foreign Exchange Centre was abolished. On 8 August 1922, the Foreign Exchange Centre was once again reactivated in order to bring down foreign currency trafficking and stop the depreciation of the korona.

THE INDEPENDENT HUNGARIAN CENTRAL BANK

Preparations

In the wake of the Great War, European bankers felt that the political powers of the European Reparations Commission greatly impeded the recovery of the financial system; hence they made efforts to curb its political influence in general and to reinforce the **autonomy of central banks in particular**. It was in this period that the Magyar Nemzeti Bank was founded with substantial international, particularly British, support.

By the mid-1920s, the victorious west European states had overcome the economic and political crisis following the war and stabilisation of the entire continent became their primary concern. One of the preconditions of the loan to be granted by the League of Nations to promote stabilisation in Hungary was the setting up of an independent Hungarian central bank.

The Austrian peace treaty, signed on 10 September 1919, provided for the liquidation of the Austro-Hungarian Bank. The Hungarian peace treaty took over the relevant part *verbatim*. The temporarily extended licence of the joint central bank ultimately expired on 31 December 1919. The Austrian and the Hungarian management of the joint bank were separated as of 1 January 1920 and banking operations were pursued separately, even in accounting terms, with headquarters in Vienna and in Budapest, albeit retaining the name of Austro-Hungarian Bank. *Magyar Királyi Állami Jegyintézet* (Royal Hungarian Note Issuing Institute) was established in August 1921 with

Dr Sándor Popovics, the former finance minister of the third Wekerle government and head of the financial mission of the Hungarian peace delegation, at its head. According to the idea entertained by Minister of Finance Lóránt Hegedűs, the Note Issuing Institute was called upon to prepare for the changeover from the *korona* to the new legal tender in support of the consolidation. The Note Issuing Institute took over the assets, employees and part of the business of the former joint central bank.

From the foundation of the MNB until the Second World War

In February 1924, the Reparations Committee accepted the Hungarian reorganisation programme and, in order to re-establish the creditworthiness of the Hungarian State, released the rights of pledge for reparations. As part of the legislation package on reorganisation, *Act V determined the establishment and scope of operations of the Magyar Nemzeti Bank on 26 April 1924*. In this Act, the state conferred the exclusive right of issuing banknotes on the MNB until 31 December 1943. The *statutory meeting* was held in the Ceremonial Hall of the Academy on 24 May 1924; Sándor Popovics took the position of President and Béla Schróber was appointed Director General. The Bank began its operation on 24 June 1924⁶ and published its opening balance sheet on 30 June.

The state was the largest of the Bank's founders with its 39.5 per cent holding. In addition to the community of the Budapest-based financial institutions – *TÉBE: Takarékpénztárak és Bankok Egyesülete* (Association of Savings Institutions and Banks) – Austrian, Swiss, Dutch, Romanian and Czechoslovak

⁶The base rate was set at 10% and the *korona* was pegged to the British pound (1 pound sterling = 346,000 paper *korona*, 1 *aranykorona* (gold crown) = 17,000 paper *korona*).

financial institutions and companies subscribed to the Bank's shares. The Bank's shares were introduced to the Budapest Stock Exchange on 21 September 1925.⁷ The Magyar Nemzeti Bank took over the *management of the state's account and the national debt*. It has been a shareholder in and an active member of the Bank of International Payments (BIS) right from the foundation of the latter (1930).

By the summer of 1924, inflation had declined significantly. In April 1925, the gold standard was adopted again for the pound sterling, consequently the *korona* again became a gold-based currency. The new currency, the *pengő*, which was founded on the stabilisation of the *korona*, was introduced in November 1925, although it entered circulation only on 27 December 1926.

The stabilisation of the 1920s relied to a great extent on foreign funds. Short of fundamental structural reforms, the Great Depression, which exploded in the autumn of 1929, hit a Hungarian economy deeply in debt and non-competitive in many respects. The financial crisis reached Hungary in July 1931 and there was a run on the banks by deposit holders. To protect reserves, *foreign exchange controls* were reintroduced and maintained over the long term.⁸

With the shift to a wartime economy, announced in the 1938 Győr Programme, there was a sudden upsurge in printing banknotes and the national debt began to mount. In order to finance the budget, the autonomy of the MNB was curtailed and the Bank was

obligated to finance the state. With the declaration of war, the state became the most important consumer and a major portion of industrial output was put to satisfy the state's needs. Lending by private banks was also made subject to state control. War spending was financed by issuing short-term government paper, which was discounted by the central bank. Increasing the money supply in this manner fuelled inflation from 1941–42, resulting in unprecedented acceleration and **hyperinflation** from 1944.

With the conclusion of the armistice agreement, the tasks of the MNB were taken over by coalition committees set up on political grounds; all the Bank was allowed to do was to run the banknote presses.

Shift to a command economy

With the rebuilding of the economy in the aftermath of the war, industrial output increased gradually and agriculture also became more organised. Using the country's returned gold stocks and **short-term** foreign loans, there seemed to be a chance of *stabilisation*. To support this, lending was made subject to close control and companies were instructed to accumulate stocks of staple goods. Accumulating stocks was intended to provide goods coverage for the forint. By limiting the amount and the period of lending to the state, the MNB contributed significantly to the successful introduction of the new currency, the *forint*⁹ on 1 August 1946. A banknote ceiling was set at Ft 1 billion and strict compliance with the ceiling also supported the strength of the new currency.

⁷ The consideration behind taking the Bank's shares to the stock exchange was that the state should divest itself of the shares it had received in exchange for transferring assets of the Bank to private hands as soon as possible, thus guaranteeing the autonomy of the central bank from the state.

⁸ Foreign exchange controls were fully lifted in 2001.

⁹ The exchange rate of the forint was determined on the basis of the consumer prices of the last peace years, 1938–1939; on that basis, one dollar was equivalent to 11.739 forints.

THE BANK IN THE ERA OF SOCIALIST COMMAND ECONOMY

The artificial shortage of money, created by restricting banking activity and lending, aimed not only at keeping the money supply and inflation under control, but also at restraining stock exchange and commercial banking activities in preparation for the subsequent nationalisation of the banks and the large companies held by them (Act XXX of 1947). During 1947–48, the MNB was turned practically into an absolutely new organisation subject to the supervision of the Ministry of Finance. The Bank was given exclusive rights to control the financial activities of plants accounting for 80 per cent of the country's industrial output. The MNB supervised lending and the management of state-owned companies, which contributed half of the product turnover. Companies were obligated to manage their financial and lending activities through their MNB single account. Investments originally planned to have been financed by credit soon became gratuitous (i.e. financed by budgetary funds).

In the *single-tier banking system* thus established, in addition to the commercial banking functions performed by the MNB, additional specialised financial institutions were set up (Investment Bank, Cooperative Credit Institution, National Savings Bank, and Foreign Trade Bank) in the spirit of profile clean-up.

The MNB reorganised its functions of foreign exchange authority, managed the pre-war debts as well as the obligations of war reparations. Although it aimed at prudent loan appraisal to protect the stability of the forint, in 1947–48 the political criteria of the agencies

of public administration prevailed to an increasing extent over the views of the Bank's experts.

During the period of the first five-year plan (1950–54), the Bank's monetary policy had to support investment projects, the forced military development programme of the Cold War and the reorganisation of agriculture. The MNB had but an *administrative*, mechanical role in implementing these. Pursuant to the 1949 Constitution, nominally, the MNB retained its legal form as a company limited by shares, while it was placed under government control.¹⁰ Because of its commercial banking activities, the Bank's branch network expanded substantially – by 1952 there were 134 MNB branches operating all over the country (as against the 21 branches functioning at the time of nationalisation), while the number of its employees reached 9,000.

Executing and licensing foreign exchange operations became an exclusive right of the MNB from 1950. At the same time, the new management of the MNB, in contrast with the Soviet example of 1917, endeavoured to repay its foreign loans and to compensate the foreign owners of nationalised assets, which was implemented by 1970.¹¹

With the establishment of the CMEA, the MNB was made responsible for the execution of financial transactions between the member states. Although in the course of the consolidation of the economy after 1956 the separation of the tasks of the central bank from commercial banking functions was raised on several occasions, this was never implemented. However, the economic reforms enhanced the significance of the monetary policy instru-

¹⁰The post of the President was abolished, the Director General was appointed upon the recommendation of the Minister of Finance by the Council of Ministers. The posts of the President, Vice President and Managing Director were re-established by a law-decree of the Presidential Council in April 1956.

¹¹The process of compensating the foreign shareholders of the MNB was completed somewhat earlier, by 1968.

ments available to the MNB and, with the recovery of foreign trade in the 1960s, the Bank expanded its domestic foreign exchange market activities.

In the last quarter of 1960, the network of regional directorates was gradually dismantled and 19 county-based directorates were set up.

To find a way to improve the alignment of the command economy and the market, the experts of the MNB also participated in the development of the *New Economic Mechanism* of 1968. The monopoly rights of the MNB awarded after 1948 concerning issuing,¹² the regulation of payments, account management and foreign exchange management were reinforced by a decree. This decree clearly separated the central banking and other national economic functions of the Bank, leaving the **single-tier banking system** and the principle of government supervision of the MNB intact. Once again, the Bank's legal form of operation was that of a company limited by shares. However, this corporate form was completely symbolic. Finances were subjected to the control of the natural command economy; and, although the MNB retained its accounting function, the credit lines were actually apportioned to companies by the National Planning Office.

Under the New Economic Mechanism, *credit policy guidelines* were developed annually by the newly established Credit Policy Council of the MNB. The Bank had a responsibility for the implementation of the guidelines and supervised their execution. This meant greater scope for making decisions based on economic rationality and profitability. Supervision by the Bank, which, in practice, meant intervening administratively in the management of companies and levying fines,

was abolished. Steps were also taken towards liberalising foreign trade by slightly streamlining import licensing and by adjusting the forint/dollar exchange rate. The organisational units responsible for central banking functions were more markedly divorced from those in charge of commercial banking functions.

The historical events of 1968 constituted a turning point for the Hungarian economic reform, which was reflected, *inter alia*, in *endeavours to re-centralise the economy*. From January 1972, the MNB had exclusive responsibility for financing the fixed and the current assets of business organisations. The role of the State Development Bank was restricted to financing specific major investment projects from the state budget. The deterioration in the terms of trade due to the oil crisis narrowed the latitude for implementing the reform, which was limited in any case, and the *debt crisis* of the early 1980s was an unmistakable sign of economic tension. The MNB financed the external disequilibrium by borrowing from abroad and issuing bonds, which was far from being general practice in an east-central European country of those days.

Simultaneously with borrowing abroad, the MNB developed its network of international representative offices in the major financial centres of the world (1967–1995: Paris; 1970–1995: Zurich; 1973–1995: London; 1973–1998: Frankfurt; 1974–1975: Beirut; 1977–1996: New York; 1983–to date: Tokyo). The MNB provided a channel for continuous communication with developed countries and it was partly due to this that Hungary acceded to the International Monetary Fund and the International Bank for Reconstruction and Development in 1982.

¹² Unlike the right to issue banknotes, the MNB only had a monopoly right to issue metal coins from 1968.

TRANSFORMATION OF THE MAGYAR NEMZETI BANK AND THE BANKING SECTOR IN 1987

In the 1980s, the country had to adjust to a different international economic environment. As a result of this, the inflexibility of the financial system was also softened – new institutions came into being, debt securities in the form of bonds appeared, a trade law was enacted, credit lines were extended and factoring was launched. The artificial boost to growth led to significant additional debt accumulation in the short term. It was the recognition of the unsustainability of this process that led to reform of the banking sector.

The basis for the change was provided by a shift in the approach of economic policy – in the 1980s, when genuine steps were taken to develop market conditions, it became evident that a radical transformation of the banking sector was also necessary. The inflexibility of the single-tier banking system and the absence of lending based on business criteria under ‘quasi market’ conditions obviously impeded the development of the market elements of the economy. In its December 1984 resolution, the Central Committee of the Hungarian Socialist Workers’ Party declared that the central banking and commercial banking functions would have to be separated within the MNB and preparations for the establishment of a **two-tier banking system** would have to begin.

The Hungarian banking sector was transformed into a *two-tier one* as of 1 January 1987. Under the new regime, the Magyar Nemzeti Bank was designated as the central bank, that is, the bank of issue.¹³

Under the new system, the MNB became the bank of the banks and of the state; it was subject to the control of the President of the Council of Ministers. Its responsibilities included influencing the money supply and facilitating the achievement of the economic policy objectives of the government using the traditional instruments of monetary and credit policy (interest rate policy, reserve policy, refinancing, **open market operations**).¹⁴ The MNB continued to be responsible for managing the state’s account and lending to the Budget and it retained the licensing of foreign exchange turnover. The Bank regulated and controlled the activities of commercial banks. Three of the five commercial banks established with the transformation of the banking system into a two-tier one (the Hungarian Credit Bank, the Hungarian Commercial and Credit Bank and Budapest Bank) were founded by separating the General Credit Directorate, the Pest County Directorate and certain branches of the MNB.

The commercial banks were founded without providing them with a regional or sectoral character (even though the predominance of one or the other sector could be observed in the case of the newly established banks), which implied the possibility of genuine competition among them. Foreign examples of banking systems organised on a sectoral or regional basis showed that companies were faced with banks enjoying virtual monopolies, and the differing needs of the sectors and regions impeded the establishment of uniform and

¹³The term ‘bank of issue’ was used extensively in the Hungarian banking literature even before the implementation of the two-tier banking system, which arose from a decisive classical function, i.e. the monopoly of issuing banknotes, instead of the term ‘central bank’ used mainly in other languages.

¹⁴For more details on the MNB’s policy instruments, see Chapter III.

normative regulation. After the original central distribution, banks were free to develop their customer base. Those established with nation-wide scope were founded as companies limited by shares with the state being their majority shareholder, represented by the Ministry of Finance. Companies and cooperatives held minority portfolios.

With the institutional reform in the second half of the 1990s, non-central banking functions were abandoned. As part of this process, foreign representations and stakes were liquidated with one exception. In November 1996, the 18 county-based directorates were wound up to be replaced by eight regional directorates. As of 1 January 1999, the number of regional directorates was reduced to four, with their seats in Debrecen, Győr, Kecskemét and Székesfehérvár.

After the 1990 elections, in the spirit of the transition to a market economy, Parliament enacted *Act LX of 1991 on the Central Bank* and *Act LXIX of 1991 on Financial Institutions and Banking*. The Central Bank Act of 1991 re-established the autonomy of the MNB and re-regulated its operations. The Bank had an obligation to report to Parliament and became independent of the Government. The Bank

autonomously developed and implemented its monetary policy.

The original text of the law was amended on several occasions. For example, over the years the term of senior officials, the method of their appointment and the method of accounting for profits/losses changed. A number of non-central banking functions were severed from the Bank, and the instruments of monetary policy became fully conforming with market conditions. Operations broadly met the **independence** to be satisfied by modern central banks under the Act, and were compatible with EU laws. Despite this, the amendments, decision-making and experience with practical banking operations as well as the need to harmonise with EU laws in full made it necessary to re-adopt the Central Bank Act.

While maintaining the old structure, the act was re-codified, and *Act LVIII of 2001* was passed and entered into force on 13 July 2001. The Act redefined the primary objective of the Bank, strengthened its operational independence and placed the operations of the Bank under the supervision of the State Audit Office (SAO), in addition to operationalising its decision-making system and strengthening the regional character of its operations. This legal framework now enables the MNB to prepare successfully for the tasks lying ahead, particularly for accession to the euro area.

THE ROLE AND FUNCTIONS OF THE MAGYAR NEMZETI BANK IN THE FINANCIAL SYSTEM

A comparative analysis of the central banks of different countries reveals that, beyond a number of similarities, central banks strongly differ from one another in terms of their powers and structure. The explanation for this is that their established tasks may vary on a wide scale. In respect of the functions of European central banks, the European System of Central Banks (ESCB) which covers a wider geographical region provides another important guidance. Therefore, in drafting Act of 2001 on the Magyar Nemzeti Bank, Hungarian legislators also kept in mind the requirement of legal harmonisation.

The *monetary policy* of a given central bank implies its powers which it uses in order to achieve its **ultimate goal** (usually protection of the purchasing power of the national currency). Traditionally, central banks own the monopoly of issuing money. Through this function, all central banks exert influence on the supply of credit and money and, closely related to this, on market interest rates as well as on the exchange rate of the currency. Central banks may be responsible in full or partially for managing the exchange rate as well. They manage commercial banks' settlement accounts and hold banks' compulsory and free reserves. In addition, they play an important role in maintaining the country's payment system. In the majority of cases, they are also responsible for payment system stability – first by performing the role of controlling and overseeing banks' and other financial institutions' activity and, second, by acting as the ultimate providers of credit (lender of last resort function). Generally, a central bank is also the banker of the government – it manages the central accounts of general govern-

ment and in some countries it also handles a part or all of the government's debt. For a central bank to perform its tasks at high-level standards, it needs a staff of economic analysts and researchers, as well as an adequate information background (for collecting and processing statistical data).

In Hungary, the central bank's core purposes are stipulated at the highest level by the Constitution, which states that the central bank's task is to *issue legal tender and protect the value of the national currency* and also to *regulate payment transactions*.

Provisions of Chapter VI of the Constitution relevant to the MNB

Article 32/D (1) The Magyar Nemzeti Bank is responsible for issuing legal tender, maintaining the stable value of the national currency and regulating the circulation of money, in such a manner as specified by a separate law.

The Constitution delegates the detailed definition of the fulfilment of tasks to a separate law (Act LVIII of 2001). In harmony with EU law, the Central Bank Act defines *the achievement and maintenance of price stability as the primary objective* of the MNB. This definition is identical to the task laid down in the Constitution – in the interpretation of the Central Bank Act, the value of the national currency can be protected through maintaining price stability. The explanation for the difference in wording is that the text of the Act is based on the text of the Maastricht

Treaty. One of the MNB's tasks is to support the implementation of the Government's economic programme, without jeopardising the achievement of the primary objective. This provision ensures that the independence of the MNB remains unimpaired in respect of achieving the primary goal, while the Bank, using all its powers, supports the implementation of the Government's economic programme.

Stemming from the requirement of legal harmonisation, the definition of the MNB's primary objective is practically identical to that of the **ESCB**, whereas the primary objective is maintaining price stability¹⁵ and supporting the economic policy of the European Community, without jeopardising the achievement of the goal of price stability.

In many countries, there may be other macro-economic goals among the targets (economic growth, promoting employment), in addition to the price stability objective provided for by law. A central bank is only transparent and accountable if one of the objectives is given priority. Giving priority by a central bank to one of the objectives may change over time – today they mainly concentrate on maintaining price stability.

The Bank of England's primary objective is safeguarding the value of the national currency, and it attempts to achieve this goal through implementing the **inflation** target set by the government. Maintaining price stability is a precondition for achieving a more generally formulated economic goal – sustainable growth and employment policy. Other functions of the Bank of England are maintaining stability of financial systems, both domestically and internationally, and improving efficiency in the area of the country's financial services.

The United States Congress founded the Federal Reserve System in 1913 with the objective of creating a more flexible money supply and more secure monetary and banking systems. This objective has been modified by now as follows – the Fed's task is to conduct monetary policy, the primary objective of which is to ensure economic growth, supervise and regulate banks, ensure financial system stability and to provide certain financial services (for example, to the government, public institutions and financial institutions), in addition to delivering price stability.

Legal status and primary objective of the MNB Chapter I of the Central Bank Act

Article 1 The Magyar Nemzeti Bank (hereinafter referred to as 'the MNB') is the central bank of the Republic of Hungary. (...)

Article 3 (1) The primary objective of the MNB shall be to achieve and maintain price stability.

Article 3 (2) Without prejudice to its primary objective, the MNB shall support the economic policy of the Government using the monetary policy instruments at its disposal.

The MNB's *most important task* has a macro-economic nature – *operating monetary policy* with the objective of maintaining the value of the national currency. Under the Central Bank Act, preserving the national currency's value can be achieved through maintaining price stability. Since May 2001, the Bank attempts to implement this prime objective within the system of **inflation targeting** (the following

¹⁵ There are only marginal differences between the primary objectives of the MNB and the ECB – whereas the ECB's primary objective is maintaining price stability (Article 105 of the Maastricht Treaty), that of the MNB is both achieving and maintaining price stability as, under the Central Bank Act.

chapters provide an overview of the objectives and instruments of monetary policy).

In addition to its core objective, the MNB performs a number of other, 'classical' functions influencing the conduct of monetary policy, including

- supporting financial system stability and the formulation of **prudential** supervisory policy,
- ensuring the undisturbed operation of the domestic payment and settlement systems,
- **currency issue**, i.e. the monopoly of issuing banknotes and coins,
- managing foreign exchange and gold reserves,
- managing the government's account, 'the government's banker',
- statistical activity,
- issuing central bank orders, regulatory activity
- without prejudice to its primary objective, the MNB shall support the economic policy of the Government.

The following sections provide an overview of the tasks of the MNB pursuant to Act LVIII of 2001 on the Central Bank. The subsequent chapters will discuss the functions which serve as the basis for pursuing monetary policy in greater detail, focusing on the objectives and the set of instruments of monetary policy and its impact mechanism.

THE MNB'S ROLE IN MAINTAINING FINANCIAL STABILITY

*The MNB has a key role in the maintenance of financial stability and the **prudential** supervision of the financial system. By financial stability it is understood that the financial institutional system is capable of withstanding external and internal **shocks**. The Hungarian economy has by now become an open economy, and so global economic events can have a significant impact on the Hungarian money and capital*

markets, even at very short notice. Domestic institutions are incapable of directly influencing episodes of instability arising from domestic sources or those triggered by foreign events, and they can only take preventive actions. They may have a role in making the necessary preparations, risk management and, once they occur, in minimising the domestic effects of external **shocks**. Safeguarding financial system stability is one of the most important macroprudential issues today. Financial soundness, the efficiency of financial intermediation and a stable financial institutional system all facilitate a more balanced economic growth over the **long term**.

In cooperation with a number of Hungarian legislative and law enforcing institutions, the MNB contributes to the creation of financial stability. These active participants include, for example, Parliament; the Ministry of Finance (MoF); the Ministry of Economic Affairs and the Ministry of Internal Affairs; the Hungarian Financial Supervisory Authority (HFSA); the State Audit Office (SAO) and courts. The deposit and pension insurance funds and self-governing organisations (for example, the Hungarian Banking Association and savings cooperatives) also have a leading role in maintaining financial stability. In the preparatory phase of the legislative process, the Bank cooperates mainly with the MoF and the Government. And, in the regulation and control of the financial intermediary system, the HFSA is the Bank's most important partner.

Ensuring financial stability has important implications for monetary policy as well – a *predictable economic environment is strongly conducive to reducing inflation, maintaining price stability* and achieving other central bank objectives. The reason why modern central banks attempt to prevent episodes of instability from developing is that these potentially reduce the effects of monetary policy actions, impair the efficiency of financial intermedia-

tion and mar the **long-term** growth prospects of the economy.

A major part of monetary policy instruments exert their influence in a way that at the same time they contribute to maintaining financial stability (for example, regulation of **minimum reserves** or central bank tools activated at the edge of the **interest rate corridor** – see the chapter on monetary policy **instruments**). The MNB publishes the Report on Financial Stability, a comprehensive six-monthly evaluation of the external and domestic factors of financial stability.

Whereas monitoring institutions individually and controlling on an individual basis falls within the competence of the HFSA, *controlling systemic risks* is primarily the task of the Bank. *Cooperation between the regulatory and prudential authorities* greatly improves the efficiency of financial markets.

The role played by the MNB in maintaining financial stability is built on a number of functions provided by law. These are as follows:

- managing banks' settlement accounts as the 'banker of banks',
- operating and overseeing the **payment and settlement systems**,
- conducting central bank examinations within a certain range of institutions,
- participating in the formulation of prudential regulations and in the legislative process,
- acting as a **lender of last resort**.

In addition to providing assistance to the regulatory activity of public administration and monitoring the development of the domestic and international financial systems, the MNB publishes its analyses and continuously con-

sults analysts and senior executives of the financial intermediary community.

Banker of banks

The special position of the Magyar Nemzeti Bank and that of other central banks arises from the fact that commercial banks depend to some extent on **central bank money**. First, banks need *cash* in order to repay deposits placed with them by their clients and loans they receive, which they are only able to obtain from the Bank. Second, the Bank manages credit institutions' settlement accounts,¹⁶ whose balance is comprised of **required reserves** (these funds are reserves generated as a percentage of bank liabilities; for more details, see the chapter on instruments), plus free reserves available after compliance with reserve requirements. Credit institutions are able to use this balance to settle their cashless payment transactions.

Basic tasks of the MNB: Account management by the MNB Chapter II of the Central Bank Act

Article 21 (1) The MNB shall manage the current accounts of credit institutions, unless it authorises another credit institution to do so.

Article 21 (2) The MNB shall manage the current accounts of clearing houses.

Article 21 (3) The MNB shall manage the current accounts of the National Deposit Insurance Fund and the Investor Protection Fund.

The factors noted above, i.e. currency in circulation plus banks compulsory and free

¹⁶ Reserve accounts and settlement accounts existed separately up to 1994; however, with the introduction of the Giro system, the two accounts, i.e. the reserve and settlement accounts, were merged.

reserves, comprise the **monetary base**, over which the Bank exercises control. By influencing the quantity and price of these stocks, practically through changes to the **key policy rate**, the Bank may have an influence over the quantity of money (*money supply*) as well as over lending and deposit rates (see the sections on **transmission** and the monetary aggregates).

Not all banks depend directly on funds provided by the MNB. Central bank money does not necessarily constitute the only source of adequately sized balances. Those banks which have temporary or permanent surpluses of central bank money (**liquidity**) above the required amount lend to those with temporary liquidity shortages in the **interbank money market**.

Regulatory function

Drafting and expressing its opinion on regulatory recommendations relating to institutions operating in the money and capital markets as well as licensing issues requiring operative actions belong to the regulatory activity of the Bank, and they are closely related to the functions of the MNB in terms of ensuring financial stability.

Miscellaneous provisions: Authorisations Chapter V of the Central Bank Act

Article 60 (1) Within the framework provided for by law, the MNB may issue binding regulations for financial institutions, legal entities providing auxiliary financial services which are not qualified as financial institutions, investment service providers and clearing

houses in central bank decrees. Such regulations shall govern:

- a) the rate and calculation of required minimum reserves, and the method of allocation and placement of such reserves;
- b) the scope of information to be provided for the performance of authority tasks and statistical duties, and the method and deadline for data submission;
- c) data to be made public and the method of publishing such;
- d) financial service, investment service and clearing house activities conducted in foreign exchange, or conducted in forints with non-residents for the purposes of foreign exchange regulations;
- e) the circulation of payments; and
- f) performance of financial services and auxiliary financial services falling within the MNB's scope of the licensing authority, and the material conditions for such.

The regulatory role may be serviced in two ways: the MNB may issue *central bank orders* and, in respect of the fulfilment of its tasks, it may define the general contractual terms for the civil right relations between itself and its customers in *codes of practice* (these are authorised by the Bank's President).

In respect of activities performed in the money and capital markets, the *authorisation power* is traditionally shared by the HFSA and the MNB. Therefore, despite the fact that the provision by financial institutions of financial and auxiliary services is authorised by the HFSA, based on the legal provision in force since 1997, judging the request for authorisation and preparing requests for decision-making is the MNB's task in respect of certain services

(for example, issuance of cashless payment instruments and the provision of related services, money processing and clearing and settlement activities).

Although the MNB's independent regulatory powers only cover the issues related to central banking tasks taken in the narrow sense, **prudential regulation**, aimed at the safe and healthy functioning of money and capital markets which have high importance for the MNB in respect of the entire community of domestic financial markets, and particularly the banking sector, is crucial for the successful implementation of monetary policy. In order to reduce systemic risks, the Bank participates in drafting and evaluating the proposals for **prudential regulations** and the related supervisory activity.

The MNB has an important part in *codification work* – in revising existing legal regulations, preparing proposals for amendments and in drawing up new concepts. In this respect, analysing the relevant EU regulations, harmonising the related areas of the domestic legal system and using publications in the academic literature and the regulatory recommendations of various international institutions are of key importance. Under Article 36 of the Central Bank Act, the MNB shall be consulted regarding the drafts of decisions and legislative provisions related to the tasks of the MNB and the operation of the financial system.

Implementing the full convertibility of the forint, Act XCIII of 2001 provides for the lifting of foreign exchange controls and promoting the free movement of capital, in the spirit of Hungary's accession to the European Union. As a consequence of legal changes following full foreign exchange liberalisation, *the MNB's powers as foreign exchange authority ceased*. However, the obligation of banks, and of companies in certain areas, to provide data

concerning foreign exchange transactions and forint transactions abroad has remained. The MNB collects these data for statistical purposes, among others, to compile Hungary's **balance of payments**.

Bank supervision

Two institutions are empowered to supervise whether credit institutions are operating in compliance with the law: the Hungarian Financial Supervisory Authority, directly reporting to the Government, and the MNB, the latter with an obligation to report to Parliament.

Under Act CXII of 1996 on Credit Institutions and Financial Undertakings, *the HFSA exercises supervisory control over institutions of the financial intermediary system*, including credit institutions, investment companies as well as funds and insurance companies. (In the case of banks, for example, the HFSA supervises compliance with regulations concerning capital adequacy ratio, asset valuation principles, requirements related to bank management, profitability, liquidity and solvency, etc.)

However, the efficiency criterion of monetary control postulates that the MNB may have the right to ascertain whether and in what manner the relevant legal provisions and central bank regulations, issued on the basis of authority provided by the law, are complied with by credit institutions in their everyday business practice. This task is performed in the course of *central bank inspections*.

Central bank inspection means primarily monitoring compliance with the reserve requirements, the obligation to report information in the framework of the central bank information system as well as legal regulations relating to payment transactions and central bank regulations. The Central Bank Act defines the actions

to be taken and legal consequences in cases of non-compliance with legal and central bank regulations discovered during inspection.

Examinations by the Bank are carried out fundamentally on the basis of the Bank's data collection system, i.e. data provided by credit institutions. The opportunity for *off-site inspections* by the two supervisory authorities is provided by the requirement of daily, monthly, quarterly and annual data reporting by credit institutions. The order of reporting set forth by regulations provides the basis for the Bank, whereby it can monitor the operation and health of the financial intermediary system. In the course of inspection, however, the MNB is entitled to request supplementary data, reports, balance sheets, vouchers and other audit materials.

On-site inspections are performed by a Bank department established for this purpose. In the course of an on-site examination, it is examined whether the reserve requirements are met, the rules on payment transactions and money processing are complied with, and whether the various types of reports are accurate as well as whether the payment transaction and data reporting activities are adequately controlled by the institutions.

In order to develop uniform requirements as well as to avoid duplication, the HFSA and the MNB reconcile and harmonise the specific supervisory tasks. The head of the HFSA is regularly invited to participate in the discussion of agenda items at the meetings of the Board of Directors of the MNB which may affect the functions of the Authority. The HFSA may issue various licences required for the foundation and operation of credit institutions only in possession of the approval of the MNB obtained in advance. Regular exchanges of information are held – the two authorities make available for one another data and

information, obtained on the activities of financial institutions and the issue of and trading in securities, on a mutual basis and inform each other of the findings of their inspections and, if necessary, they may initiate procedures by the other entity.

Lender of last resort

If a *credit institution is struggling with a liquidity shortage* and it is unable to have access to sufficient funding in the interbank money market in the normal course of business, then the Bank, in relation to its **lender of last resort function**, may have the possibility of providing the given credit institution with **central bank money**, under an extraordinary procedure.

Basic tasks of the MNB: Emergency loans to credit institutions Chapter II of the Central Bank Act

Article 14 In the event that circumstances arise which jeopardise the stability of the financial system due to the operation of a credit institution, the MNB may extend an emergency loan to the credit institution. The MNB may make the extension of such a loan subject to performance of actions by the Hungarian Financial Supervisory Authority (hereinafter referred to as the 'Supervisory Authority') or performance of actions by the credit institution, at the proposal of the Supervisory Authority.

The question may arise why the MNB should rescue an ill-functioning bank struggling with liquidity shortages, attributable perhaps to mistakes in conducting business. The primary reason is that the crisis may spill over, leading to a series of runs on banks and causing a wave of insolvencies, which in turn may paralyse a

part or all of the banking system. This may undermine confidence in the banking system and the currency, discourage financial savings and put economic stability in jeopardy. The Bank, therefore, as the lender of last resort, may offer protection against financial market distress and economic crisis caused by bank failure. However, the Bank, as the ultimate source of funding, does not wish to intervene in order to rescue a credit institutions under other circumstances, *only if the crisis of a given institution could presumably undermine confidence in the entire financial intermediary system*. It is not the Bank's task to protect depositors. This is the reason why the institution of **deposit insurance** has developed with the aim of handling individual events. In the event of a large number of bank failures, the deposit insurance fund could not provide cover for all losses, despite the fact that deposits are *only insured up to a certain limit*, and these low-amount deposits only account for a small portion of the total deposit stock.

Generally, central banks are reluctant to intervene automatically, as the promise of such an intervention alone may lead to banks *taking on more risks than could be safely managed* in various business areas, particularly in lending. This threat, known as **moral hazard**, is stronger among larger banks, as they may believe that they are too large and important for the central bank to not lend a helping hand. (The explanation for this belief is that the likelihood of the crisis spreading over is much stronger.)

The MNB's **standing facilities** which provide continuous sources of borrowing (for example, the collateralised lending facility to which counterparties may have unrestricted access), or open market operations affecting liquidity of the whole market do not belong to the **instruments** of the last resort function. The last resort function, with the help of *instruments having conditions other than those in the nor-*

mal course of business, serve to handle credit institutions' crisis situations in a special manner. Judging and managing the issue of solvency requires *continuous cooperation* and assessment of situations between *the MNB, the HFSA and the MoF*.

Tasks related to the payment and settlement systems

Payment transactions among the various agents of the economy, i.e. households, firms and general government, are administered largely through the transfer of funds between bank accounts. In addition to changes in the balances of clients' accounts, turnover in account money also results in debits and credits being generated between the banks involved. Credits and debits arising in inter-bank clearing turnover are settled through the settlement accounts of credit institutions held with the Bank. Settlement is preceded by clearing, that is, sending payment instructions to their destination and the calculation of mutual debts and claims within the framework of *interbank clearing*.

Basic tasks of the MNB: Tasks related to the circulation of payments Chapter II of the Central Bank Act

Article 26 (1) The MNB shall develop the national payment and settlement system.

(2) The MNB shall regulate the circulation of payments.

Article 27 (1) The approval of the MNB shall be required for the entry into force of the General Terms and Business Conditions of the clearing house for credit institutions which operates the transfer system for clearing transactions, as well as for any amend-

ments thereof. The clearing house for credit institutions shall publish its General Terms and Business Conditions and any amendments thereof in the Financial Gazette.

There is a close relationship between the clearing system and the efficient operation of financial markets. The **payment system** is a medium through which financially unsound credit institutions may pose a threat to the stability of the entire financial system. Consequently, the MNB's tasks and purpose are *to facilitate the safe and efficient operation of the domestic payment system, and to develop a nation-wide payment and settlement system which satisfies the needs of the economy.*

This is reflected in both the Constitution and the Central Bank Act, according to which the MNB is responsible for the development and smooth operation of the systems of payment and clearing, thereby ensuring that the insolvency of any institution may not spread in the **payment system**. This systemic risks based approach is different from the traditional institution oriented approach, as its focus is not on the individual institutions but rather on the contractual relationships between them and the supporting infrastructure. The Bank's functions in respect of data collection, analysis and regulation, closely linked to the payment systems operating with the participation of clearing houses, are known as oversight. This suggests that this activity is aimed at systems of relationships rather than institutions.

In respect of payment turnover, the President of the MNB may issue instructions which also extend to individuals. Central bank instructions specify the modes of payment that may be applied in domestic payments as well as the essential rules of their administration. The

Bank authorises the business of clearing houses operated by credit institutions and supervises their activities.

The constituting parts of the payment and settlement system are clearing house(s), institutions performing tasks related to financial intermediation as well as the ultimate settlement account manager (usually the central bank). The MNB has a dual role in the settlement system – first, it clears and records positions arising in the course of the overnight operation of the Interbank Giro System (IGS), second, as an account manager, *it transacts and records day-time payments by its own account holders (mainly credit institutions) vis-à-vis each other.*

The *Central Clearing House and Depository (KELER)*, supervised by the HFSA, processes securities market transactions. In view of the fact that there is a close interrelationship between the payment system and the securities clearing system, the MNB is fundamentally interested in the smooth operation of the securities clearing system as well. The MNB may enforce its rights partly as the largest stakeholder of KELER and partly as a participant.

KELER

KELER was founded on 12 October 1993. Its owners include the two domestic exchanges (BSE and BCE) and the MNB. KELER's main function is *to facilitate safe, rapid and cheap clearing and settlement of securities market transactions in Hungary.* KELER, therefore, acts as a central depository and provides related securities account management and other services. Under its clearing house functions, it not only provides services to the spot and forward markets

of the Budapest Stock Exchange (BSE) and the Budapest Commodity Exchange (BCE) in **forward transactions**, but, from 13 May 2002, it also operates as the central -contractual partner to spot transactions. In addition, KELER provides clearing services for the over-the-counter (OTC) government securities market and performs banking functions as well (account management for stock exchange trading, interest payment, technical lending related to clearing, treasury activity, etc.). KELER's functions as a provider of banking services are also reinforced by the Capital Markets Act, given that a clearing house subjected to the effect of the Act may only operate as a specialised credit institution. The operation of the payment and the security clearing system satisfies the principle of Delivery versus Payment (DVP). Accordingly, securities are only delivered when the countervalue is paid.

A large portion of domestic interbank payment turnover is administered by two payment systems – the **Real-Time Gross Settlement System** (RTGS, or, in its Hungarian abbreviation, VIBER) and the Interbank Clearing System.¹⁷ Typically, VIBER serves to execute urgent and large-amount individual transfers. Small-amount payments are generally cleared in the IGS.

Interbank Giro System, IGS

The Interbank Giro System is operated by *GIRO Elszámolásforgalmi Részvénytársaság* (Giro Clearing House Ltd.), founded in 1988, currently owned by the MNB, credit institutions and KELER. By implementing an electron-

ic system for money turnover among banks, the IGS started business on 18 November 1994. It is a gross system of batched data processing in which orders are not executed immediately at the time of receiving the orders, but rather they are processed late in the afternoon of the day of transaction and at night. Orders are only cleared in the interbank clearing system, if the principal credit institution owns the required collateral (this may be the balance on the settlement account held with the central bank or securities held with KELER in favour of the MNB). If the required collateral is not available at this time, the order is cleared after proper collateral is provided next morning. If, however, no collateral is provided, the order is not cleared.

Real-Time Gross Settlement System, VIBER

The MNB introduced the **Real-Time Gross Settlement System** (*VIBER*) on 3 September 1999. The essence of Real-Time Gross Settlement System (RTGS) is that the moments of clearing and settlement are not separated in time, and that booking is effected item by item continuously and in real time. Payment orders sent for settlement are executed immediately and irrevocably by the MNB, provided that there is adequate cover.

Direct members of VIBER are those banks and other institutions which keep their accounts with the MNB, KELER, the Hungarian State Treasury and the Hungarian Post Office and the MNB. *The MNB is a direct member as an agency which manages accounts, provides correspondent banking services and acts as a regulatory and supervisory agency and also as a system operator.*

VIBER's message communication network is SWIFT (Society for Worldwide Interbank

¹⁷In addition, three different clearing systems are in operation to clear payment transactions related to the use of bank cards.

Financial Telecommunications), a multi-country message communication system. The MNB defines VIBER's opening hours in conformity with the money market's needs. The system operates from 8 a.m. until 4.30 p.m., and it receives customer items until 2.30 p.m. It is expected that VIBER's operating hours will have been adjusted to that of TARGET¹⁸ (7.00 a.m.–6.00 p.m.) at the latest by Hungary's joining the EMU.

ISSUE OF BANKNOTES AND COINS

Under the Central Bank Act, the Magyar Nemzeti Bank has exclusive authority to issue domestic legal tender – forint banknotes and coins – to determine its denominations and to withdraw them from circulation in Hungary. This role is reinforced by Article 1 (1) of Act XCIII of 2001, which states that any payment to be effected in legal tender in Hungary may not be rejected.

One of the Bank's fundamental tasks is to *fully satisfy the cash needs of turnover* by up-to-date banknotes and coins in an adequate series of denominations. The principal factors influencing the cash needs of turnover are GDP (gross domestic product), **inflation**, the velocity of money and the extent to which cashless payment forms have proliferated.

Legal status and basic tasks of the MNB Chapter II of the Central Bank Act

Article 4 (2) The MNB shall have the exclusive right to issue banknotes and coins. The banknotes and coins issued by the MNB shall be the legal tender of the Republic of Hungary.

In order to prevent money counterfeiting, the technical development of banknotes using up-to-date security features is an important part of the Bank's **issuing** activity. A programme of the full replacement of Hungarian legal tender started in 1993. By August 1999, the MNB had withdrawn all denominations of its old banknote and coin series. The issue of the new banknote series, comprising 7 denominations from the 200, 500, 1000, 2000, 5000, 10 000 to the 20 000 forint note, as well as of the coin series is likely to be Hungary's last forint coin and banknote issue programme prior to the country's joining the euro area.

Banknotes and coins are legal tender up to the final deadline of withdrawal. After the deadline, however, the obligation to receive notes and coins as means of payment ceases. The Bank converts banknotes and coins being withdrawn up to the date of lapse into Hungarian legal tender. After the date of lapse, the Bank does not accept withdrawn banknotes and coins. The value of coins and notes remaining in circulation and not converted into legal tender is recorded as seigniorage income and, under the Central Bank Act, it must be used to reduce outstanding public sector debt.

With the introduction of the new banknote and coin series, the denominational structure of the currency is now similar to that used in issuing the euro notes and coins and, satisfying the requirements of turnover, it has shifted towards an increase in face value. The face value of the largest denomination quadrupled and that of the smallest denomination doubled relative to the earlier series, and fillér coins were eliminated from circulation. In recent years the volume of notes and coins in

¹⁸TARGET (Trans-European Automated Real-Time Gross Settlement Express Transfer) is a joint European payment system introduced in Stage III of EMU, established in order to integrate and harmonise the national payment systems.

circulation has fallen, coupled with a robust increase in the value they represent.

Banknotes and coins in circulation had a total value of HUF 1,138 billion in December 2001. Within this, notes had a percentage share of 98% and coins one of 2%. Credit institutions currently hold around 10% of currency in circulation, 90% being held outside of the banking system (by households, retailers, corporate treasurers, etc).

FOREIGN EXCHANGE AND GOLD RESERVE MANAGEMENT AT THE MNB

Foreign exchange reserves include the central bank's liquid foreign currency assets which the **monetary authority** may use directly if payment difficulties arise and which represent a cover for **interventions** in the foreign exchange market conducted for exchange rate policy purposes. One of the important tasks of central banks all over the world is to *manage the government's foreign exchange reserves*.

The main reason for maintaining reserves is *to support monetary policy in the implementation of its exchange rate policy goals*. This may include the protection of the exchange rate (intervention goal) and reducing excessive fluctuations of the exchange rate. In addition, foreign exchange reserves may contribute to maintaining the stability of the domestic financial system. Reserves may be useful for **liquidity management** and *asset accumulation*. In the ultimate case, when economic agents are for some reason (such as natural disaster, crisis or liquidity **shock**) no longer able to do so, foreign exchange reserves of the central bank may serve to meet the government's needs for foreign currency and to satisfy non-residents' claims (e.g. imports) as well (*transaction goal*).

Several of the purposes of holding foreign exchange reserves are characteristic in Hungary. At the two extremes of the ± 15 per cent wide official intervention band below and above the central parity, the MNB assumes, in principle, an unlimited commitment to purchase or sell. In order to satisfy this obligation, the Bank must have an adequate amount of foreign exchange reserves. Repayments of principal and interest on borrowings by the MNB and the Government are also directly effected from reserves. A sufficiently high amount of reserves augments foreign investors' and lenders' confidence in the Hungarian economy, and it eases and makes it cheaper for all economic agents to borrow funds from abroad.

The *source of an increase in reserves* is **intervention** by the central bank. The Bank conducts interventions if, due to the positive balance on the **current account** or foreign capital inflows exceeding the **current account deficit**, the exchange rate appreciates to an extent which is no longer consistent with the objectives of monetary policy. Investments by non-residents in Hungary and the foreign exchange liabilities of the domestic private sector are converted into forints in the inter-bank foreign exchange market. In the event that the Bank does not conduct foreign exchange operations in the market, the current account of the private sector and capital inflows into the private sector are in balance. In such cases, the level of international reserves are exclusively determined by the Government's foreign currency transactions with the Bank (arising primarily from debt management) and its policy of borrowing in foreign currency.

The *foreign currency structure of reserves* generally reflects the exchange rate regime (the currency of intervention), the direction of the

I. economic integration and the composition of foreign currency debt of individual countries. As a general tendency, the role of gold has diminished in reserve management. The MNB's foreign exchange reserves are dominated by the euro, although dollar-denominated assets also play some role.

Based on their *investment guidelines*, central banks are known as the world's largest and most conservative investors. Generally, central banks place the main emphasis on *security* within the safety-liquidity-yield triad – they mainly seek to invest in securities with the highest credit rating in the market. The *liquidity* criterion is important because, in the event of **intervention** or crisis, reserves may be deployed immediately and without incurring substantial losses in value. Bearing in mind these two criteria, reserve managers aim at investing the reserves in assets promising the *highest possible yield*. The foreign exchange reserve management guidelines of the MNB are in line with international central banking practice – only the largest commercial and investment banks and securities houses are listed as counterparties licensed for trading.

There is no generally accepted formula, reinforced by theory, which could be used in every country to determine the *optimum amount of reserves*. According to the most frequently used rule of thumb, foreign exchange reserves must cover *3 months of imports*. The basis for the rule regarding the monetary aggregates is that foreign exchange reserves should ensure the intrinsic cover, or convertibility, of the **monetary base** or a broader aggregate (e.g. M2). Under the *Greenspan (Guidotti) Rule*, foreign exchange reserves are sufficient if they provide cover for residents' (and not only general govern-

ment's) total short-term gross debt service vis-à-vis non-residents. However, the desired level of foreign exchange reserves also depends on the existing exchange rate regime, the country's ability to draw in funds, its degree of economic development and openness and the volatility of the **balance of payments**.

The need for Hungary to maintain foreign exchange reserves has developed differently during the various stages of accession to the European Union. At the time of meeting the Maastricht convergence criteria, member countries must keep their currencies within an exchange rate band determined vis-à-vis the euro. Hungary's membership in the Economic and Monetary Union (EMU) will likely reduce dramatically the country's reserve needs, given that exchange rate policy and liquidity management are the tasks of the **ECB** (European Central Bank).¹⁹

RELATIONSHIP WITH GENERAL GOVERNMENT

There are several aspects of the relationship between the MNB and general government. First, the MNB as the bank of the state manages the *Unified Treasury Account* and other government accounts specified by the Minister of Finance. Second, in relation to the account management function, central banks may have a financing relationship with the Budget. Earlier, there was a limited opportunity for financing the Central Budget by the central bank. This, however, remained a theoretical opportunity, as such transaction has not taken place since 1995. But the Budget Act entered into force in early 2001 and the Central Bank Act rule out even the possibility of providing direct funding.

¹⁹The member countries adopting the euro are required to transfer reserves to the ECB on the basis of their ratios represented in ECB's registered share capital.

Basic tasks of the MNB: Relations with general government and maintenance of accounts by the MNB
Chapter II of the Central Bank Act

Article 15 (1) The MNB shall manage the Unified Treasury Account as well as other government accounts as specified by the Minister of Finance. (...)

Article 16 (1) The MNB may not extend loans to the State, to local government authorities, to other government institutions, nor to economic organisations operating under the dominant influence of the State or a local government authority. Furthermore, the MNB may not purchase securities issued by such institutions directly from the issuer.

The financing relationship between the state budget and the central bank has long traditions in most advanced European countries. In view of past experience, however, legislators have set strict limits for this activity so as to prevent the infringement of the rights of central banks to pursue autonomous monetary policy. Pursuant to the Treaty establishing the European Union (the Maastricht Treaty), neither the ECB nor the central banks of the member states may extend overdrafts or other types of credit to community institutions or agencies, central, regional or local authorities or other central agencies or publicly owned companies of the member states; it is also *prohibited for them to directly purchase debt securities* from these institutions and agencies. The intention of this provision is to reinforce budgetary discipline in the member states while eliminating one of the main sources of inflation – increased supply of central bank money due to the budget deficit. The prohibition on the dis-

bursement of direct credit by the central bank to the government *is an important factor with regard to the independence of the national central banks and the European Central Bank.*

The Hungarian regulations are consistent with the principles laid down in the Maastricht Treaty. A sophisticated domestic capital market was instrumental in prohibiting the provision of direct financing by the Bank, as now the Government has the opportunity to finance the deficit directly – without involving the central bank – from the securities market by issuing government securities. If the MNB purchases securities directly from the government, i.e. from the **primary market**, then it may crowd out other participants, and increased demand in the auctions may force yields lower (i.e. the Bank may finance the government at a price lower than the market's). If, however, the MNB, keeping an eye on its monetary policy objectives, buys government securities in the **secondary market** in the framework of open market operations,²⁰ it does not influence the level of yields to be paid by the Central Budget.

Changes in lending to general government from the 1990s

There were major changes in the financing relations between the MNB and the Government in the 1990s. In 1990, lending by the Bank to general government exceeded 70 per cent of its total assets (balance sheet total). Although the Central Bank Act of 1991 still reflected the practice that the MNB financed the Central Budget on the basis of loan agreements, it puts a ceiling on the increase of loans to the central budget,

²⁰ For more details, see the chapter on the MNB's policy instruments.

declaring that, after a transitional period, the ceiling of an increase in outstanding debt should be reduced gradually to three per cent of the estimated revenue of the central budget in the given year.

The *1994 amendment* to the Central Bank Act enabled the restricted financing of the current fund of the Budget – today termed as the Unified Treasury Account (KESZ) – in the event of a transitory liquidity shortage lasting for a few days, in order to ensure continuous money supply. This loan, which may be extended *up to 2 per cent* of the annual revenue estimate of the Central Budget, may be outstanding for no more than 15 days in any month, either on several occasions or on end. Over the past few years, the combined balance on the KESZ and the account of the ÁPV Rt has always been positive. In respect of loans to the Central Budget, the central bank base rate has been the benchmark rate, i.e. one which was close to that of the market.

The *1996 amendment* to the Central Bank Act prohibited lending by the MNB to the Central Budget, with *liquidity credit* being the only exception. This exception was terminated by Act CXXXIII of 2000; and Act LVIII of 2001 on the Central Bank fully *prohibited* direct lending by the Bank to general government.

STATISTICAL ACTIVITY OF THE BANK

The Central Bank Act defines the collection and publication of statistical information as one of the Bank's basic tasks. The Act also defines the range of institutions providing

financial services which the MNB may oblige to perform direct data reporting.

However, the MNB must collect information from a wider range of institutions in order to be able to perform its duties. This collection of data is carried out under Act XLVI of 1993 on Statistics, in the framework of the National Statistical Data Collection Programme (OSAP). This programme is coordinated by the Central Statistical Office (CSO); however, the MNB develops its methodology of collecting data and operating its information system in agreement with the CSO.

The MNB collects and processes data in relation to the monetary statistics, the **balance of payments** statistics and the financial accounts (the system of accounts recording economic agents' financial assets and liabilities and changes therein). Using these as a basis, the Bank issues monthly press releases²¹ on the statistical balance sheet of the MNB, the aggregate balance sheet of monetary financial institutions, Hungary's balance of payments, the monetary aggregates, financial savings of households, and on non-financial corporate and household sector as well as interbank forint interest rates. In addition to these, a quarterly press release is issued on the distribution of securities holdings by sector, whose data are required for the compilation of financial accounts.

Basic tasks of the MNB: Central banking information system Chapter II of the Central Bank Act

Article 28 (1) ...The MNB shall operate a central banking information system.

²¹ A calendar of statistical releases on the Bank's website contains the dates of release fixed six months in advance.

Financial institutions, legal entities providing auxiliary financial services which are not qualified as financial institutions, investment service providers and clearing houses shall be required to disclose the information specified by the MNB to this system. (...)

(2) The MNB shall publish all important information related to the operation of the banking system and to the financial situation of the country. (...)

The press releases as well as the time series databases of monetary statistics, the **balance of payments** statistics, of the statistics on households, securities holdings related to the financial accounts and of price and exchange rate statistics have been published on the MNB's official website since the summer of 2000, in order to meet users' requirements in a

more up-to-date manner. The statistical tables of the Monthly Report, the publication of which ceased in May 2002, are also accessible in electronic format.

Statistical work in the MNB makes it indispensable to maintain close cooperation with domestic fellow institutions, mainly the Central Statistical Office, the MoF and the Financial Supervisory Authority, in addition to international institutions.

One of the major conditions for Hungarian accession to the European Union is to adopt the statistical methodology of the Union and to meet the data and information dissemination obligations. The MNB attempts to adopt the methodological principles, already harmonised by international institutions, in compiling statistical data. It performs statistical data reporting both to the statistical office of the European Union (Eurostat) and the **ECB** on a regular basis.

ORGANISATION AND DECISION-MAKING

I.

The bodies of the MNB, as defined by law, include the Monetary Council, the Board of Directors and the General Meeting.

The *Monetary Council*, as an operative decision-making body has been placed at the head of monetary policy decision-making, replacing the Central Bank Council. There have been profound changes in the composition and responsibilities of the *Board of Directors* – from its earlier advisory role, the Board has been promoted to a decision-making organ. In respect of its fundamental conditions of operation and management, the supreme decision-making body of the MNB is the *General Meeting*. Its powers include the definition and amendment of the Bank's Statutes as well as the establishment of the Bank's registered capital and its balance sheet and profit and loss account, as well as the appointment of the Bank's auditor and the determination of the auditor's emolument.

Tasks related to supervising the operations of the MNB are performed by the State Audit Office (SAO). The SAO checks whether the MNB's operations are in compliance with laws and regulations as well as the Statutes and resolutions of the General Meeting. The SAO's powers extend to all of the MNB's activities and finances, except the fulfilment of its basic duties and their impact on the MNB's financial results. The SAO makes a proposal for the auditor of the MNB, and it may initiate the recall of such. The auditor may be appointed for a maximum of 5 years, and may not be re-appointed within 5 years after expiration of the mandate.

The Magyar Nemzeti Bank has various standing committees whose responsibility is to

organise issues for decision-making. The *Banking Committee* assists the MNB in making decisions and formulating its standpoint in respect of the operations of credit institutions. The *Assets/Liabilities Committee (ALCO)* manages and orchestrates reserve and debt management. In addition to these, the Bank has an Investment and Costs Management Committee and an Owner's Advisory Committee.

The *Monetary Committee (OMC)* which is responsible for implementing the decisions taken by the Monetary Council within the scope of authority delegated by the Board of Directors is the most important standing committee from the perspective of monetary policy conduct. Its duties include the regular overview of monetary conditions and, based on this evaluation, preparing operative monetary policy decisions within the confines of its powers as well as the coordination of the domestic foreign exchange and forint market operations. The OMC's scope of authority extends to the preparation of all monetary policy decisions in respect of which the Monetary Council has retained its right of decision-making. The chairman of the Committee is the President of the MNB, and its members are other members of the Monetary Council and other guest members.

ORGANS OF MONETARY POLICY DECISION-MAKING

The Monetary Council

The Monetary Council is the MNB's main decision-making body in respect of its core func-

tions, exchange rate policy and role of lender of last resort, as defined by the Central Bank Act. The Monetary Council may be convened at any time if necessary, but it holds its meetings at least twice a month. The MNB publishes on its website the dates of Council meetings six months in advance, and it issues concise statements about decisions taken at the meetings. The Bank's President or the Vice President with general responsibilities have the right to inform the public about the Council's views. Members of the Monetary Council are the President and the Vice Presidents of the MNB and other members, who are appointed by the President of the Republic at the proposal of the Bank's President and with the consent of the Prime Minister for a term of six years. The Council is composed of at least seven but at most nine members. Hungarian citizens with outstanding theoretical knowledge and practical experience in issues related to monetary policy, finance and the activities of credit institutions may be appointed members of the Monetary Council. The representative of the Government may attend the Council's meetings without a right to vote (i.e. with the right to be consulted) and the Council's secretary may also attend as an invited guest.

The Monetary Council's exclusive competence includes the choice of monetary regime; formulation of the Bank's standpoint in respect of the choice of exchange rate regime; taking decisions on currency replacement and the introduction of new denominations; the formulation and introduction of guidelines for foreign exchange and gold reserves management; the development and implementation of the basic principles of the operation of the domestic payment and settlement system; the development of, and decision-making about, the basic principles of lending in emergency; and the definition of the range of statistical information required for the MNB to be able to perform its functions. In addition, the

Monetary Council discusses all issues and it makes decisions about all issues which the Council declares as its own concern within the parameters defined by the Central Bank Act.

The Board of Directors

The Board of Directors is the Bank's operative executive body. It is *responsible for implementing the Monetary Council's decisions and managing the MNB's operations*. The Board is an organ composed of at least four but a maximum of six members, including the President (as the Chairman of the Board) and the Vice Presidents. The Minister of Finance or the person authorised by him represents the Government without a right to vote at the Board meetings; however, the Chairman may invite other persons with a right of being consulted. The Board's meetings are not public.

The Board of Directors manages the *performance of the MNB's core functions*; it makes proposals for the MNB's balance sheet, profit and loss account and asset and liability statement, as well as the appropriation of the Bank's profit. In addition, the Board decides about the draft reports on the conduct of business, the MNB's financial position and business policy to be submitted to the General Meeting, as well as about issues associated with the MNB's organisation and internal management. The Board is also responsible for drawing up drafts and programmes about the Bank's operations and performance of its tasks, and for discussing the results of internal audits and major amendments to the Bank's collective agreement. In addition, members of the Board may submit formal requests to the President to put other issues on the agenda.

SENIOR MANAGEMENT OF THE MNB

The Bank is headed by the *President*, who governs the Bank and decides about all matters

I. which have not been referred to the authority of Vice Presidents, other executives or committees, except issues which are the competence of the Monetary Council or the General Meeting. The MNB's President is appointed or dismissed by the President of the Republic at the proposal of the Prime Minister. The President's mandate is for a term of six years. The President represents the MNB at the meetings of the government and the Economic Cabinet and, in matters of paramount importance, vis-à-vis other agencies, including the meetings of international organisations of which the Bank is a member.

The MNB has at least three and at most five Vice Presidents, who are appointed and recalled by the President of the Republic. The

recommendations are made by the President of the MNB, which are, if agreed, submitted by the Prime Minister to the President of the Republic. The recommendation must indicate the functions of the Vice President to be appointed. The mandate of the Vice Presidents of the MNB is for a term of six years. The Vice Presidents participate in the governance of the Bank, including strategic decision-making; they supervise the Bank units subordinated to them, govern and control the lines of business subordinated to them and take action to have the necessary internal and external measures made that are required for performing these tasks. The Vice Presidents represent the Bank vis-à-vis other agencies within their competence.

CENTRAL BANK AUTONOMY

A central bank is regarded as autonomous when it does not have to submit to either the direct or indirect pressure or the expectations of any body, organisation or person outside the central bank in the course of pursuing monetary policy and, if it refuses to submit, its action has no detrimental consequence of any kind whatsoever with respect to the central bank.

The **autonomy of the central bank** is a highly important criterion with respect to the economic stability and external rating of individual states, because political cycles are relatively short and, in some cases, are not suitable for enforcing the **long-term** interests of the monetary economy, which a strictly professional institution without any political ties is able to implement more efficiently.

The primary role of central banks lies in driving inflation down to a low level and keeping it there in the long run in the interest of the optimal and smooth development of the real economy. In periods of parliamentary elections, however, governments frequently experience great pressure to raise nominal incomes particularly because, based on the principle of **monetary illusion**, a political organisation may benefit from the fact that a nominal increase in incomes may be followed by a rise in the price level only after an election (wage inflation).

It has been demonstrated that autonomous central banks have been relatively successful in

curbing inflation. Analyses reveal a strong negative correlation between the degree of autonomy of the central bank and the rate of inflation and a slightly reversed correlation between the autonomy of the central bank and the rate of unemployment.²² Autonomy, however, has no demonstrable impact on changes in national income.

In order to be able to call a central bank fully autonomous, a large number of criteria must be examined. In the case of central banks, *de jure* and *de facto* independence must be distinguished. Legally independent central banks in many developing countries cannot be considered *de facto* independent. It frequently happens that the leadership of the central bank, whether voluntarily or upon request, also leaves when there is a change of government or a change merely at the head of the ministry of finance.²³ In the case of states enjoying a stable legal system, legal independence and *de facto* autonomy coincide.

When examining autonomy, there are three areas worth examining – autonomy in operation, personal independence and financial independence. Their criteria are meaningful only in countries where the foundations of the legal system are secure and are widely accepted and honoured. A central bank can be regarded as independent or autonomous only if it proves to be such in all three of these areas.

²² Full reference to the analyses by Alberto Alesina, Lawrence H. Summers and Alex Cukierman, Steven Webb and Bilin Neyapti is presented in the Bibliography.

²³ In Argentina, for example, vice presidents of the central bank have a guaranteed four-year mandate; however, between 1950 and 1989 they spent one year in office on average, as the president also resigned at every change of government or a change of the Minister of Finance.

PERSONAL INDEPENDENCE

A central bank is regarded as having personal independence when the persons involved in the bank's management cannot be influenced in their decision-making on political grounds and their attitude is professionally impeccable. Of course, when viewed from this aspect, it is not only the president (or governor) of the bank who needs to be independent but any other person or member of any body involved in decision-making.

From the perspective of personal independence, it is important that the mandate of the central bank's senior executives should be longer than a parliamentary cycle and that the members' mandate should not expire at the same time. These two conditions guarantee that the decision-making bodies of the central bank do not become captive all at once and collectively to the same allegiances even after the expiration of their members' mandates. The possibilities for recall must be specified and limited. This rules out the possibility of recall for political reasons.

It is an important precondition for personal independence that there should not be any conflict of interest between the functions of decision-makers' of the central bank and their other positions. They should neither request nor accept instructions from any organisation or person while discharging their functions and they may not be interested in political or economic institutions (for example, they may not be members of parliament, municipalities or public administration, political groupings, etc. and also they may not have a stake in business either as shareholders or as employees).

As a governing principle, neither the government nor its representative may participate in the decision-making bodies; and even if they do, they cannot have a right to vote. The gov-

ernment agencies, parliament or political forums of any kind should not be allowed to override the decisions taken by the central bank in respect of monetary policy.

The MNB meets the criteria of personal independence noted above. The mandates of the President and the Vice Presidents of the Bank exceed the four-year parliamentary cycle by two years, and the Monetary Council members' mandate is for a term of six years as well. The President of the Bank is appointed by the President of the Republic upon the recommendation of the Prime Minister. For the appointment of the Vice Presidents and the additional members of the Monetary Council by the President of the Republic, the proposal of the President of the Bank and the agreement of the Prime Minister are needed. The President of the Bank designates the Vice President substituting for him. Under the Central Bank Act, the President and the Vice Presidents may be recalled only in well-defined cases.

The members of the governing bodies of the MNB having the right to vote may not hold any office in any political party and may not undertake a public role in the interest of any political party. According to the rules governing conflicts of interest as set forth in the Central Bank Act, the Bank's employees may not become members of any entity, have an employment relationship or any other legal relationship concomitant with the performance of work, or serve as senior officials or be members of supervisory boards of credit institutions, investment firms and the National Deposit Insurance Fund. Members of the Monetary Council, the Bank's supreme decision-making body, are also in an employment relationship with the MNB. The Government's representative may attend the Monetary Council's meetings without a right to vote, only with a right to be consulted.

OPERATIONAL INDEPENDENCE

A central bank has operational autonomy (or independence in action, functions or in the monetary field), if it makes its decisions on the objectives of its monetary policy and the development and deployment of its instruments independently of any external institutional or personal factor and, in doing so, it is not under any obligation to accept requests or instructions from any entity whatsoever. (Autonomy in the choice of targets and the use of instruments.)

The most important elements of operational autonomy include the following:

An important criterion is how the objectives of a central bank specified by law relate to one another and what is the relationship between the **ultimate goal** and the other objectives. The ultimate goal of independent central banks generally relates to **inflation**. If this is not the only ultimate goal, it is necessary to examine how this and the other objectives are interlinked. If they contradict one another or may become contradictory in certain situations, the priorities between the ultimate goals must be scrutinised. If, for example, supporting the government's economic policy or reducing unemployment are stronger (or perhaps identical) objectives of the central bank than curbing inflation, the pursuit of an autonomous monetary policy may be endangered.

Another essential element of operational autonomy is the institution which develops monetary policy. If the government has the possibility of interfering with monetary policy issues,²⁴ the given central bank cannot be regarded as autonomous.

In the case of central banks regarded as the most autonomous, there is a characteristic right to give advice to the government concerning current economic issues, to participate in the meetings of the government or individual departments in an advisory capacity and to have a say in legislative activities. This right is not a precondition for autonomy, but precisely by virtue of the autonomy of the central bank there may be a demand for it.

According to the independence criteria developed by the European Monetary Institute (EMI), the prohibition of seeking and accepting instructions by an outside party are the elements of *institutional independence*. Naturally, prior consultation or the exchange of views on matters of central bank competence are permitted. Thus EMI identifies the criteria, discussed in the literature as the elements of operational independence, with institutional independence.

The Central Bank Act specifies the achievement and maintenance of price stability as the MNB's primary objective, but it clearly establishes a hierarchy of goals. The MNB, using the monetary policy instruments at its disposal, shall support the Government's economic policy, *without prejudice to its primary objective*. This guarantees that the major criterion of central bank independence may be satisfied.

A major provision of the Central Bank Act is that the Government may not instruct the Bank in the course of performing of its activity. Consequently, the Government is unable to have a direct influence on the conduct of monetary policy, and it may only have an indirect influence in the reconciliation process or, by virtue of its natural role, in the appointment

²⁴ For example, when the central bank is organisationally subordinated to the government or the ministry of finance; when the minister of finance may veto the decisions of the central bank; or when the representatives of the government participate in the decision-making bodies of the monetary authority with the right to vote.

I. of the Bank's officials. Given the authorisation of the Government's representative to attend the Monetary Council's meetings with a right to be consulted, the MNB may have the opportunity to be informed about the Government's views on various economic matters without impairment of its autonomy. In addition, the MNB is also authorised to express an opinion on decisions and legal rules relating to the operation of the financial system and the Government's budget bill.

FINANCIAL INDEPENDENCE

A central bank enjoys financial autonomy if it can obtain the funding necessary for performing its tasks in the course of its operation automatically, without depending on the government's approval or the central budget. Financial autonomy, therefore, means that the central bank always has the authorisations required for the discharge of its tasks as well as the financial assets underlain by its equity.

Another important element of financial independence is that a central bank should in no way be obliged to provide finance to general government in any form. Under the Central Bank Act and in accordance with the EU requirements, the MNB may not provide direct finance to the units of Government (including purchases at primary government securities auctions) and it cannot be obliged either to buy government debt securities in the **secondary securities market** (for more details, see the chapter on the relationship between the MNB and general government).

The Central Bank Act provides for the financial sources designed to ensure the conditions of the MNB's operations. The Bank pays its profits, remaining after the amounts retained for development, provisioning and other purposes, as dividend to the Central Budget and the Budget reimburses the MNB for the losses it

incurs. Currently, the MNB must pay dividends on current year's profits corresponding to the average of the second, third and fourth year preceding the current year. The amount of this, however, may not exceed the combined amount of the current year's profit and retained earnings. If the amount of the current year's losses exceeds the amount of retained earnings, then the Central Budget reimburses the differential to the profit reserve.

THE REQUIREMENT OF TRANSPARENCY

An important expectation vis-à-vis an autonomous central bank is transparency, i.e. the requirement that the *tasks and objectives of the central bank, their performance and the instruments used to achieve them be well delineated and information about them be available to all*. The condition of meeting this requirement is that the central bank publish its objectives, the decisions made to achieve them and the grounds for its decisions. The requirement of *controllability vis-à-vis* central banks is designed to guarantee that the entities responsible for all of the institutions of economic policy (parliament and government) have an adequate overview of the operation of the central bank.

Pursuant to the Central Bank Act, the President of the MNB reports to Parliament on the activities of the Bank annually. Parliament may also request *ad hoc* information. In respect of transparent and reasonable business management, the SAO exercises the right to control the MNB.

The expectation set against the Bank to disclose its decisions and their motives is important not only because of the controllability of the Bank's activities, but also because it assists in the efficiency of the **transmission** mechanism (the impact of the Bank's interest rate and other measures exercised on the real

economy through market yields).²⁵ Disclosure of the objectives and the arguments laying the foundations for decisions elucidates the Bank's policy and leaves no uncertainty among market participants about the motives behind the Bank's decisions. They can learn how the Bank assesses the market events which have taken place and, perhaps even more importantly, the Bank's forecasts and expectations of future economic developments. Information of this kind speeds up the adjustment of market participants to changing circumstances and central bank decisions, suitably guiding their expectations, which, in turn, *greatly improves the effectiveness of monetary policy.*

In the system of **inflation targeting**, the role of central bank communication is clearly highlighted. The wide-ranging publications issued by the MNB represent one of the most impor-

tant channels of communication. The regular publications (*Quarterly Report on Inflation, MNB Background Studies, Report on Financial Stability*), press releases (about Monetary Council meetings) and periodical releases (prior to the launch of the *Quarterly Report*) assist in understanding the Bank's decisions, policy, expectations and operations. In addition to publishing decisions about official interest rates directly affecting the money markets and other policy actions, as well as shedding light on the background to those decisions, it is essential that the policy changes should be communicated to the electronic data providers as well, so that market participants may get access to those through various channels (e.g. Reuters, Internet). In the spirit of transparency, the MNB regularly organises consultative forums with market analysts, which support observers' work and represent an important feedback for the Bank.

²⁵ For a precise definition of the concept and a description of the mechanism, see the relevant sub-chapter.

II. MONETARY POLICY OBJECTIVES AND THEIR EFFECTS ON THE ECONOMY

MONETARY POLICY OBJECTIVES

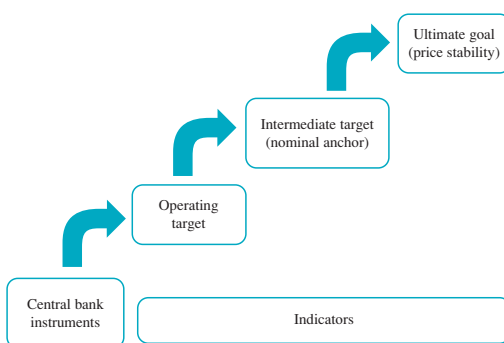
HIERARCHY OF OBJECTIVES

There has been a centuries-long controversy among economists about what kind of powers and restraints a **monetary authority** (the central bank) faces. International experience suggests that a national economy should optimally choose the achievement and maintenance of price stability as its final objective. However, with the instruments at its disposal, a central bank cannot make a direct and immediate impact on the price level. First, there is a rather indirect relationship between the final objective and the instruments in a central bank's possession, and second, external factors are also at work. In addition, monetary policy decisions taken now make their impact only after some lag, often only after some years. Due to the intricacies of the relationship between instruments and the final objective, it seems worthwhile for monetary policymakers to take account of variables which can be directly affected by monetary policy and which facilitate the achievement of the final objective via a transmission mechanism. These variables can be classified as *intermediate targets*, *operating targets* and *indicators* (see Chart 1).

Based on the relevant literature and international practices, this chapter introduces the types of objectives available for central banks at the various levels of the hierarchy of objectives. As most central banks aim at price stability as the final objective of monetary policy, we also describe the advantages and shortcomings, as well as the decisions (such as the choice of a price index, the optimum level of inflation and the inflation target band), which

a central bank has to make when its final objective is to achieve price stability and reduce inflation.

Chart 1 Monetary policy objectives



Each section is followed by a description of relevant Hungarian monetary policy procedures. Under the system of **inflation targeting**, adopted in 2001, the Magyar Nemzeti Bank has undertaken a commitment to reduce inflation. Under the system, the role of intermediate target is played by the Bank's inflation projection. The final section of the chapter deals with the inflation projection process and the operating variables monitored by the Bank.

THE FINAL OBJECTIVE OF MONETARY POLICY

Economic policy primarily aims at attaining sustainable and rapid economic growth and higher employment, the raising of living standards and a catching-up with the developed countries. Monetary policy has to work towards these objectives as part of economic

policy. Economic theory seeks the answer to the question whether it is possible to influence real economic developments (such as economic growth, unemployment, etc.) by monetary policy instruments, or whether they can only affect the price level (inflation) and other **nominal variables**.

History of economic thought

'Classical' economic theory, prevailing at the end of the 1800s, asserts that money is neutral and cannot be influenced by real variables. Classical economists assume that prices and wages adjust instantly. They claim that supply and demand is necessarily in equilibrium on every market of the economy. Changes in the money supply will immediately affect the price level; in other words, there is no link between **nominal variables** (such as the money supply and the price level) and real variables. This is known as the 'classical dichotomy', which asserts that output is exclusively determined by productivity and factors of production, and monetary policy can only influence the price level.

Classical macroeconomic theory could not account for the events of the Great Depression of 1929–33, the prolonged recession and ensuing persistent unemployment. The historical turning point in economic thought dates back to the *Keynesian school*. Keynes and his followers went beyond the classical notion of self-adjusting markets. They assumed that due to wage bargaining and **long-term** work contracts, nominal wages were incapable of adjusting to deviations between demand and supply

over the **short term**, leading to prolonged imbalances in the labour market. Hence, any stimulation of **aggregate demand** (by either monetary or fiscal instruments) would cause real wages to fall via the rising price level and due to fixed nominal wages. Lower real wages will increase firms' demand for labour, which will in turn exert upward pressure on production. Ultimately, the economy reaches a new stage of equilibrium where both prices and output and employment are at a higher level. Thus, in terms of the Keynesian model, monetary policy can influence not only the price level, but also the level of output and employment. The Phillips curve represents the trade-off between the change of the price level (that is inflation) and employment, suggesting that when inflation is higher, unemployment is lower and when inflation is lower, unemployment is higher.

Another turning point came in the late sixties with the emergence of the *monetarist school*. The monetarists question Keynes's short-term view and the assumption that nominal wages adjust slowly. In the monetarist model, wage bargaining is about future real wages in contrast to the Keynesian assumption under which 'short-sighted' unions only negotiate about nominal wages. The underlying problem is that one needs to know, or at least project somehow, the future price level in order to determine future real wages. The monetarist theory asserts that economic agents' **inflation expectations** adjust adaptively to actual price changes, in other words, historical forecasting errors are being continuously corrected.

In the monetarist model, monetary policy can only temporarily influence real developments. Although larger money supply and a higher price level can lower real wages for some time, exerting upward pressure on employment and output, wage demands will later adjust to the higher price level, causing nominal wages to increase and real wages to return to their previous level. Although output and employment will return to the level before monetary stimulation began, prices will settle at a higher level. Therefore, monetarists reject monetary policy as an instrument of economic expansion, due to its transient effectiveness. Monetarists assert that the economy benefits most if the central bank expands money supply evenly and proportionately with economic growth.

New-classical macroeconomic theory, emerging in the seventies, further weakens the relationship between monetary policy and the real economy. Neo-classical theory returns to the notion of a self-regulating market, while adopting an assumption of rational expectations. Rationality of expectations means that when anticipating future economic developments, economic agents make use of the information available at any given moment in the most efficient way possible. Neo-classical economists argue that rational agents have all the information on which monetary policy decisions are based. Accordingly, they can predict prospective central bank measures with a great degree of certainty and adjust their inflation expectations accordingly. Thus, monetary policy that can be anticipated will also be neutral vis-à-vis real developments in the short run.

Theoretical debates among the various schools have led to the formation of a position that appears to be acceptable to most economists. Monetary theory has today reached a clear-cut consensus on the **long-term** goals of monetary policy. It is widely agreed that *monetary policy cannot influence real economic developments in the long run*. In contrast, there is continued controversy about the **short-run** effectiveness of anti-cyclical policy (aimed at reducing periodical fluctuations in economic output). Followers of the activist theory argue that market imperfections and the rigidity of wages and prices enable monetary policy to influence **real variables** in the short run, and the need for smoothing economic cycles is justification for this role of monetary policy. Opponents of this view, however, claim that due to long and unpredictable lags in the **monetary transmission mechanism**, there is a great danger that monetary measures will achieve the opposite of the desired effect. In addition, rational economic agents will incorporate expected central bank measures into their expectations, eliminating thereby the anticipated effects.

The theoretical controversies of the past few decades have also made a mark on central bank policy-making. Central bankers in both developed – and increasingly in developing – countries are now inclined to regard **price stability** as the **ultimate goal** of monetary policy, in the wake of advances in theory and failures experienced in practice. Also, emphasis has shifted away from the task of ensuring a certain level of output and employment, and the smoothing of **business cycles**. *Monetary policy makers have come to embrace the view that central bank policy can most effectively pro-*

mote economic development and economic growth by giving price stability primacy among monetary objectives. By maintaining price stability, a central bank creates a predictable economic environment for economic agents, who will not, or only to a lesser extent, have to deal with the uncertainty arising from price changes when making their decisions about the future.

Nevertheless, in the effort to reduce **inflation** and achieve price stability, a central bank should take account of the limitations arising from a country's economic environment, as well as the need for maintaining external and internal equilibrium. A drop in inflation generally entails a rise in **real interest rates**. If a country has a large internal public debt burden, an upward shift in real interest rates will increase the interest burden of general government, which will in turn exert upward pressure on the public debt. Second, an anti-inflationary policy will temporarily worsen the economy's international competitiveness under a floating exchange rate regime and because of the real appreciation triggered by the higher real interest rates. This may be a disadvantage primarily for countries with a huge foreign debt, since weaker competitiveness may lead to a deterioration on the current account of the **balance of payments**, and a further rise in foreign indebtedness, which will become unsustainable after some time. Third, **disinflation** usually goes hand in hand with a temporary slowdown in economic growth, which may trigger a fall-off in incomes and create social tensions. In order to avoid these dangers, any programme aimed at reducing inflation should also pay attention to the limitations and designate a disinflation path that appears to be the most optimal for the economy and society in question.

Price stability versus economic growth

Accepting the proposition that monetary policy cannot influence the real economy in the

long run, the best way a central bank can foster sustainable economic growth is reducing high **inflation** and the associated social and economic costs. An artificial stimulation of demand and monetary expansion are not feasible over the long term. It should, however, also be considered that in the short run **disinflation** may entail considerable real economic costs, especially if the central bank's anti-inflationary commitment lacks credibility.

A rate of inflation above 8-10% will definitely undermine the economy's growth potential. In addition, reducing inflation also brings a one-off gain in welfare, in other words, not only does it foster long-term growth, it also raises the level of GDP. *While curbing inflation will bring lasting gains, the costs of disinflation are temporary.* Thus, in any analysis of the welfare effects of price stability, the one-off cost of disinflation should be offset against the long-term lasting gain in price stability. In general, this will tilt the balance towards reducing **inflation**.

Long-term benefits of price stability

The key argument in support of achieving and maintaining **price stability** is the existence of economic and social costs incurred by inflation. A discussion of the costs of inflation should distinguish between anticipated (*expected*) inflation and unexpected or *surprise inflation*. Surprise inflation refers not only to higher-than-expected inflation but, in a more general sense, to any inflation diverging from expectations. The majority of the costs of inflation also materialise when economic agents have highly accurate inflation expectations. However, not only is perfect foresight non-existent in reality, but even providing an accurate inflation forecast is not commonly available. The greatest cost of unanticipated inflation is that it distorts and obscures the information role of the price system, leading to bad financial and investment decisions.

Inflation entails a great variety of economic costs. When economic agents correctly foresee inflation, costs will essentially depend on the stickiness of price and wage settlements and commitments, as well as the degree of **indexation**. Financial and real asset holders will incur losses if they have to account for the total price increase as income and pay taxes accordingly, even though some of the increase – the higher the rate of inflation the larger the portion – accounts for maintaining the real value of a particular asset. Businesses are adversely affected as they cannot take account of inflation when **depreciating** assets. The higher inflation is, or the faster the price of a particular asset rises, the less accurately depreciation reflects genuine economic costs of production and the less coverage is provided for replacing capital assets. Finally, if tax indexation is non-existent or is applied with a lag,²⁶ accelerating inflation will push up capital costs, causing the investment rate to fall below the optimum. A higher general tax burden will, in turn, result in an inefficient allocation of capital among the various sectors.

Inflation is also harmful as it causes investment to flow into non-productive areas,²⁷ such as the financial sector and real property, reducing thereby *efficient resource allocation*. A higher rate of inflation will enhance the profitability of financial intermediation relative to that of productive activities. This allocation distortion is estimated to be considerable even at very low rates of inflation. For example, for every 10 percentage point rise in inflation there is a one-percentage-point rise in the financial sector's share of GDP.

When inflation is high, the cash flow of a loan made at a given **real rate** will be higher, reducing thus *the debtor's borrowing ability*. This has been, and may continue to be, a cause for concern with respect to Hungarian property loans, as the majority of dwellings are owner-occupied, and owner borrowers cannot realise the inflation-related increase in the value of their property.²⁸ At the same time, the nominal rate of interest on a loan takes account of inflation and the debtor's nominal income also rises in accordance. As a consequence, the decline in inflation is expected to cause a major upsurge in the stock of lending for consumption and house purchase purposes as well as in property prices.

The inflation-induced increase in *transaction costs* is usually regarded as being of a lower order. When inflation is at a high level, firms will have to reprice goods frequently, so 'menu costs', such as the costs of adjusting cash registers, re-publishing catalogues, etc., will increase. Inflation also boosts the need for transactional money, as people tend to bring their purchases forward in time to get rid of cash. Due to inflation, asset portfolios have to be rearranged more frequently, which will further add to transactional costs. This is referred to as '**shoe leather costs**'.

Unanticipated inflation will impair the role of the price system as a conveyor of information. In fact, the main problem with the absence of price stability is that economic decisions about the future will become more difficult and uncertain to make. Should producers notice an increase in prices in the market, they

²⁶ Although it has happened that tax brackets were adjusted for inflation only after a lag, tax indexation is also applied in Hungary to offset the negative effects of inflation.

²⁷ Although during times of high inflation fixed-interest financial investments are forced into the background, there may be an upsurge in the volume of investments linked to flexible short-term rates or the rate of inflation, as they are adequate protection against inflation. By contrast, higher inflation is usually associated with greater uncertainty and, consequently, higher real rates, which will undermine the expected profitability (Net Present Value) of productive investment.

²⁸ The mortgage market started to pick up as late as 2000, and there are as yet no facilities which provide for a parallel increase in the amount of the mortgage loan as the value of the property increases.

will not know for certain whether this signals a nominal increase in demand or whether real demand has also gone up. However, it is crucial to decide which is the case as a rise in real demand will warrant the re-channelling of resources towards production of certain goods. By contrast, an increase in nominal demand occurs merely as a compensation for higher inflation. When inflation is at a high level, it becomes difficult to predict not only the expected average level of prices, but also *relative prices/wages* economic agents rely on as a source of information. All this will increase the risk of wage agreements and corporate production and investment decisions. As a consequence, the duration contracts and the planning horizon will also shorten. The most conspicuous example is the shortening in the expiry dates and repricing periods of savings and loans. (In Hungary, for example, bank deposits and loans are predominantly short term and the average **duration**, weighted with the **present value** of cash-flows in the most advanced and sophisticated of financial markets, that of fixed interest bearing government securities, is around three years.)

Those lending at fixed rates (such as holders of fixed-interest securities, for instance) sustain a loss when there is an unanticipated jump in inflation, as at higher rates of inflation a given nominal yield represents lower real yield. Of course, this will appear as a gain from the perspective of those borrowing at fixed rates of interest. As governments are typically major net debtors and they can directly influence the level of inflation, a rise in inflation will raise major concerns about the **credibility** of economic policy. Due to the uncertainty of real interest rate expectations, borrowers have to pay a **premium**, which will lead to a higher level of interest rates.

The social costs of inflation primarily appear in the form of effects on income distribution. However, these effects are difficult to quantify in numerical terms. The greatest victims of inflation are the layers of society in the greatest need and least capable of asserting their interests. As social transfer payments and other benefits making up the social net keep pace with inflation typically with a lag, the layers of society (such as old age pensioners, unemployed people, etc.) that depend most on these services will suffer a loss of income when there is a rise in the level of inflation. A sudden upsurge in inflation generally hits harder those living on wages and salaries²⁹ than entrepreneurs capable of more flexible adjustment, lenders than borrowers and financial savers than those investing in real goods. The widespread **indexation** of prices and wages helps reduce, but cannot eliminate, this type of risk. Moreover, indexation using backward looking inflation may significantly hamper disinflation.

Short-term costs of disinflation

Empirical research in many countries has found that the **short-term** real economic costs of disinflation exceed the short-term gains in growth attained by raising inflation. The underlying reason is that economic agents take a shorter time to correct their **inflation expectations** when inflation rises than when it declines. The consensus view and international experience suggest that reducing inflation will indeed cause a slowdown in growth over the short term, but the extent of this slowdown is strongly influenced by the central bank's credibility.

An economic policy seeking to reduce inflation faces the problem that economic agents

²⁹ Taxation, through which inflation has a major impact on social welfare, is a good example of the case in point. Under progressive taxation, if the personal tax brackets are not continuously adjusted for inflation, nominally rising incomes will fall within a higher marginal tax bracket even when disposable income is declining in real terms.

view the change in monetary policy makers' priorities with some suspicion. It appears that the longer the period of high inflation is, the longer it will take to convince the public and generate lower inflation expectations. Monetary policy is faced with the task of curbing inflation in measures that are both sufficiently large to be able to divert expectations in the desired direction and not overly excessive relative to society's expectations, and of a nature that will not lead to any major sacrifice in growth. The meaning of 'sufficient' and 'excessive' depends on the speed at which expectations adjust.

Besides reviewing the costs and benefits of curbing inflation, social and economic policy preferences should not be ignored. No single country has attempted to break a moderate rate of inflation at immediate notice. All the countries with explicit inflation targeting regimes, such as Israel, New Zealand, the UK or Sweden, have voted for the gradual approach. The inflation conditioning of society and the relatively high level of inflation have also necessarily called for a step-by-step approach in Hungary. Employees suffering great losses in terms of real wages in 1995 and 1996 are in favour of the step-by-step approach even if forward-looking **indexation** is accepted, because this provides a safeguard against the large-scale worsening of their situations.

Price stability – the ultimate goal of Hungarian monetary policy

Under the Central Bank Act, the Magyar Nemzeti Bank views the rapid achievement and maintenance of price stability as its primary objective. As shown by the estimates of pre-

ceding sections, the Hungarian economy can benefit substantially from lower inflation, which is by itself an important objective regardless of the convergence process. However, unlike the need for price stability, the ideal speed of **disinflation** is affected by the date set for entering Economic and Monetary Union (EMU).

Inflation targeting is a monetary policy framework in which the central bank undertakes an explicit commitment to maintain the rate of inflation within a specified target range.

The strategic goal of Hungarian economic policy is to join the European Union and EMU at the earliest possible date. This can only be done if the country satisfies each of the Maastricht criteria. In order to be a member of EMU in 2006 or 2007, the inflation criterion has to be met by 2004 or 2005, respectively. With this in mind, the Bank and the Government set the disinflation path to be followed over the next few years. To achieve the disinflation programme, the Bank has set the targets of 4.5 ± 1 per cent at end-2002, 3.5 ± 1 per cent at end-2003, and the Maastricht rate of (below 3 per cent) by 2005 the latest.³⁰ These targets relate to the twelve-month change in the Consumer Price Index compiled by the Central Statistical Office.

Inflation targeting has proved to be an effective anti-inflation device in a number of countries. The Hungarian system is different from that adopted by the champions of inflation targeting, such as the UK, Canada and New Zealand,³¹ in that the Hungarian system is not aimed at maintaining price stability, but at bringing down inflation and achieving price stability. At the time of adopting the new mon-

³⁰ Under the inflation criterion of the Maastricht Treaty, for a one-year period specified by the convergence report, the annual average harmonised index of consumer prices (HICP) in Hungary should not exceed by more than 1.5 percentage points the simple mathematical average of the inflation rates of the three best performing member states in terms of price stability calculated for the same period.

³¹ At the same time, it is similar to the frameworks adopted by developing and transitional economies, such as Poland, for instance.

etary framework, the Magyar Nemzeti Bank presumably enjoyed greater **credibility** than the central banks of countries such as Sweden, the UK, the Czech Republic and Brazil, which had been forced to adopt **inflation targeting** after an exchange rate crisis. Credibility in Hungary was created by the success of the crawling peg and it was further boosted when the system was *voluntarily abandoned*.

Inflation in theory and practice

Inflation refers to a persistent and steady rise in the level of prices. At the same time it is not clear what is meant in reality by the price level, or how to measure change in this abstract and directly unobservable gauge. It is common practice all over the world to express the change in the level of prices as the change in the price of a basket of consumer goods. This is called the consumer price index. As all kinds of economic activity, including production, investment and saving, is ultimately directed at consumption, it seems reasonable to identify **inflation** with a (steady) rise in the price of consumer goods.

Compilation of an appropriate price level (price index) requires an aggregation (averaging) of prices of individual consumer goods. This is commonly done by compiling a basket of goods and services that represent an average consumer's consumption. The composition of this basket and the weights assigned to the individual components are crucial for the measure of inflation.³² Changes in the relative price of the components affect the aggregate CPI to

differing degrees, as determined by the system of weights. As the consumer basket has to keep track of the changes in 'average' consumption, it is necessary from time to time to review and adjust the weights. From a theoretical point of view, a change in the price index arising from using new weights is not regarded as inflation. As consumers, in general, try to substitute cheaper goods for more expensive ones, the proportion of goods which has increased in relative price in the meantime is always higher than in reality, which introduces an upward bias into measured inflation.

A source of another upward bias in measured inflation is improvement in quality. When the consumer buys a higher quality, but more expensive, new product, the rise in price resulting from the consumer's deliberate choice cannot be viewed as a rise in inflation.

In addition to the theory-related problems of measuring the CPI, there are also a number of practical and technical difficulties, such as the selection of the site and duration of price collection, the errors and technical difficulties involved, the problem of accounting for the alternative cost of second-hand goods and services arising from owner-used assets, etc.³³

From a monetary policy perspective, the CPI is only one of many possible, and not necessarily the most appropriate, approaches to measuring inflation. Nevertheless, it seems reasonable to choose total CPI as the ultimate goal

³² Official inflation, core inflation and pensioners' inflation measures are based on three different kinds of consumer baskets. The European Union also requires its member states to publish a uniformly weighted, harmonised consumer price index.

³³ For an in-depth discussion of the subject, see Allen (1999) and Haldane (1995), pp. 235–238.

since – as mentioned above – consumption is the ultimate objective of the economy and business activity. Hence the importance of stability in the CPI. The *producer price index* or *core inflation* can also give a true picture of the monetary and inflation developments within the economy. The former is intended to represent the average rate of price change experienced by producers, while the latter is calculated by removing from the total CPI groups of goods characterised by hectic price changes, such as energy and food. This helps significantly reduce volatility in the price of remaining goods.

The Hungarian CPI is estimated by the CSO at a monthly frequency. Weights of the consumer basket are altered once a year, based on the composition of consumption expenditure of two years before. With all its shortcomings, the CPI is regarded all over the world as one of the most reliable time series of economic statistics, due to the frequency of data collection and the sophisticated and standard methodology involved.

Optimum level of inflation

The goal of monetary policy is to achieve and maintain price stability. Price stability refers to a sufficiently low level of **inflation** which economic agents do not have to take account of in every-day decision making. Despite variations across countries, a level of inflation below 3 per cent is generally considered to satisfy the definition. There may be significant advantages relative to the more logical zero-inflation in a small positive rate of inflation which does not yet compromise central bank **credibility** or cause **inflation expectations** to destabilise. Despite its costs, the **long-term** optimum level of inflation is other than zero. The advantages of a small positive rate of infla-

tion are partly associated with the characteristics of **real interest rates** and nominal wages, and partly with the possibility of deflation.

As the nominal interest rate is non-negative (economic agents can always choose to hold their wealth in cash), the lower limit to the **real interest rate** equals minus one times the rate of inflation. In other words, under conditions of zero inflation, the real interest rate cannot be negative either. The question is whether there may be circumstances that potentially *need a negative real interest rate*. To the extent that consumption and saving decisions are determined in accordance with the life-cycle model, the equilibrium real interest rate may be negative. The rapid ageing of society experienced by advanced countries also points in this direction, as the rise in the number of savers also exerts downward pressure on the real rates of interest. There have also been instances of negative ex post real interest rates in the past. Negative ex ante real interest rates are much less typical, which may suggest that the negativity of ex ante real interest rates reflects mistaken expectations rather than the market equilibrium. Without regard to its origin, a negative real interest rate may be a crucial instrument of stabilisation, increasing the adaptability of the economy at times of recession while not causing a loss in welfare.³⁴

Assuming that **nominal wages are rigid downwards**, when there is a drop in labour demand, an excessively low level of inflation will hamper the adjustment of real wages or increase the costs of adjustment. Accordingly, if inflation is zero, the rigidity of nominal wages will feed through to real wages, obstructing efficient allocation of resources among the different sectors and possibly leading to a rise in the natural rate of unemployment. As, however, the rigidity of nominal

³⁴ See Haldane (1995), pp. 136–148.

wages has not yet been empirically proved, and as inflation can in itself distort resource allocation by reducing the information content of nominal wages, this line of reasoning has only limited plausibility when setting a long-term inflation target.

The most convincing argument against a zero inflation target is that it increases the chance of the economy entering a state of **deflation**, a potential cause of financial instability and an impediment to monetary decision making, as **short-term** interest rates fall to zero. Thus, the costs of undershooting the inflation target are much more significant than those of overshooting. Undershooting the inflation target may result from theoretical and statistical problems associated with the calculation of inflation, due to substitution among products and retail outlets, quality improvement and the introduction of new products (see previous section). At a zero rate of inflation these errors would actually lead to deflation.

A point or a range?

Individual countries vary greatly in terms of whether they set the inflation target in terms of a point rather than a range, as well as in what emphasis is laid on the central section of the target range.

A common argument in favour of using a point target is that it can focus expectations more strongly than a range. Setting a range may pose the danger that market participants will regard the upper limit of the range rather than the central rate as the genuine target. On the other hand, setting a point target may raise issues of **credibility**, as a central bank is only very rarely capable of meeting the target precisely, that is to have the actual rate of inflation correspond to the target with decimal accuracy.

Setting a target range essentially amounts to an admission of the fact that monetary policy instruments can only influence inflationary developments to a limited degree, affecting the target with long and variable lags. Methods used to forecast prospective inflation are inaccurate and involve significant uncertainty. The most common practice is setting the inflation target in a 2-3 per cent range. A target range may also be important as it allows the central bank greater leeway in taking account of the development of **aggregate demand** in its decisions, and in responding to short-term **shocks**.

Selection of the range-width depends on how strong a central bank's anti-inflation commitment is. A narrower range reflects greater commitment, helping to cool expectations, but leaving the central bank with less discretionary leeway while enhancing its accountability. It is possible that the central bank occasionally fails to meet a very narrow target range, and if this happens frequently, that may undermine its credibility.

A wider target range will, in turn, increase flexibility of monetary policy, while impeding the assessment of short-term performance and potentially questioning the central bank's anti-inflation commitment.³⁵

The lower limit to the inflation target range bears the message for economic agents that should **aggregate demand** fall, the central bank would be ready to ease **monetary conditions**. At such times the central bank can help dampen the recession without compromising the inflation target. This function of the central bank is generally also recognised statutorily as a secondary objective. This is especially important in the case of economies that have already attained price stability, while the

³⁵ See Debelle (1997), pp. 14–17.

assessment of the lower limit is not so unequivocal in the phase of disinflation. Then, in principle, it would not be a problem if disinflation received a major impetus from a positive supply shock, enabling an adoption of 'opportunistic disinflation'. However, the existence of a lower limit makes the accommodation of positive supply shocks difficult, significantly impeding central bank communication of the primary goal and the secondary goals.

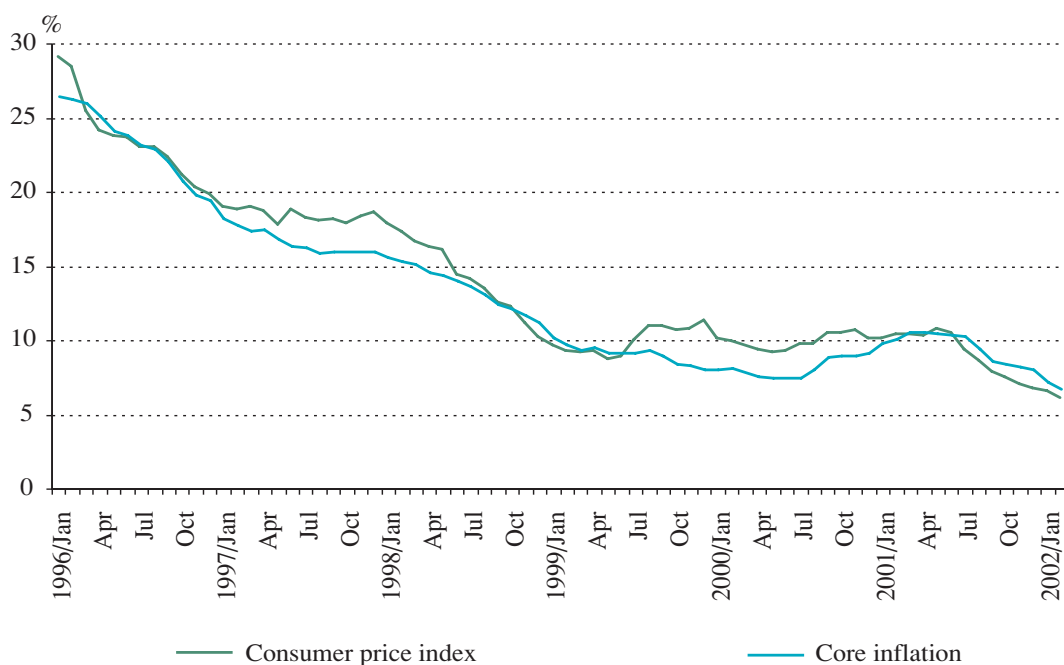
Why the total CPI?

The MNB's inflation target relates to total CPI. Some countries that have adopted **inflation targeting**, such as the Czech Republic initially, base their targets on a narrower measure of inflation. Targeting **underlying core inflation** has in principle the advantage of greater stability and smaller vulnerability to shocks. Using

core inflation will reduce the danger of missing the target due to products with volatile prices, that is for reasons outside the scope of monetary policy. The same reasoning applies when the effect of tax changes and price regulation is removed from the price index.

The problem with using core inflation indicators is that they reach a much smaller public than official price indices. *Core inflation has less transparency* even when it is calculated by an institution independent from the central bank using a known methodology, as it is not intuitive for the general public. The reason for this is that core inflation can be regarded much less as a cost-of-living measure than total CPI. In particular, should the two types of indices change in the opposite direction, a central bank response to core inflation could also be given a political interpretation (see *Chart 2*).

Chart 2 The CPI and core inflation in Hungary
Year-on-year changes



When adopting **inflation targeting**, the MNB considered and then rejected using core inflation as a target. One reason for this is that core inflation indices have not proved to be more stable than total CPI, even though stability is supposed to be their principal advantage. Second, the considerations of transparency have been crucial for the Bank. Third, of the convergence criteria to be met if Hungary is to enter the EMU, the one on inflation has to be satisfied in terms of the HICP, which is much closer to the CPI than the CSO's or the Bank's earlier indicators of core inflation.

INTERMEDIATE TARGET

The *intermediate target* is an economic variable, which is closely related to the **ultimate goal** but can at the same time be relatively well influenced by the instruments of monetary policy. In general, the growth rate of the money supply in the economy or the exchange rate is chosen as such a target. Central banks tend to determine target values for the intermediate targets with respect to the future. The level of the target values is determined so as to be optimal from the viewpoint of the ultimate goal; then the central bank attempts to influence the intermediate target variable with the instruments available to it so that it should meet the designated target value. A properly chosen intermediate target can be better controlled by the central bank than the ultimate goal itself; at the same time, the intermediate target reflects the changes in the external factors (that is, factors, outside the control of the central bank) influencing the ultimate goal even before they would actually influence the price level. With the help of a well selected intermediate target, the central bank can, for instance, introduce measures to stabilise the price level even before the unfolding of an inflationary **shock**.

In general, the **intermediate target** serves as a *nominal anchor* for economic agents. The

nominal anchor is an economic variable capable of stabilising the expectations of economic agents (producers, consumers, employers, employees, etc.) with respect to future inflation. When the nominal anchor is credible, i.e. economic agents have confidence in the capability of the **monetary authority** to meet the intermediate target, they will form their inflationary expectations in accordance with that anchor. This can be of tremendous assistance to the central bank, particularly when it sets out to establish price stability after a prolonged inflationary period. By using a credible nominal anchor and cooling overheated expectations of inflation, the monetary authority may substantially mitigate the economic and social costs of reducing inflation.

Traditional and modern intermediate targets

One of the possible intermediate targets is the amount of money available in the entire economy and its growth rate. According to the tenets of classical economics, there is an unambiguous congruence between the money supply and the price level, hence the central bank is able to control the price level through influencing the money supply. The use of the money supply as an intermediate target was a popular instrument among central banks until the 1980s. In the course of that decade, however, many a central bank saw that the causal relationship between growth in the money supply and **inflation**, which used to function well previously, was upset and this made them unable to control the price level through the money supply. This failure could be attributed primarily to financial innovation: paying interest also on sight deposits and the increasingly intensive use of the various means of cashless payment (e.g. credit cards) led to an erosion of the boundaries between cash and non-cash type instruments; thus central banks were less and less able to influence broad money. Consequently, central banks in several coun-

tries (including the United States and the United Kingdom) gave up the system of monetary control based on the money supply.

In the case of countries running a fixed exchange rate regime, the *exchange rate* plays the role of the intermediate target. Pegging the exchange rate is generally applied by countries with a **small, open economy**. By pegging its currency to that of a large country enjoying a stable price level, the central bank practically 'imports' the low rate of inflation of the large country. In addition, pegging the exchange rate substantially reduces the risks arising from exchange rate fluctuations, which may facilitate the development of foreign trade as well as international investments. In return for these advantages, fixing the exchange rate presupposes adjustment to the monetary policy of the large country, which is not advantageous when the two countries are subject to different economic shocks.

The use of the nominal exchange rate or exchange rate course as the intermediate target has several advantages. The exchange rate course directly influences the price of traded products. In addition, the announcement of the rate of devaluation and its reduction in advance – provided that the exchange rate target is credible – may be an efficient instrument for influencing inflationary expectations and the prices of non-traded products and services. When the exchange rate target is credible, it implies that the *exchange rate course is foreseeable*, that is, economic agents are able to calculate with the announced course in advance (which assists in the calculability of investments). The exchange rate course as an **intermediate target** has yet another advantage, namely, that it is *transparent*: all economic agents are able to continuously observe it and the relationship between the exchange rate and the rate of inflation is widely known among the agents, so it is capa-

ble of orienting expectations. As in this case the central bank's target and its implementation can be observed day by day, the exchange rate course as an intermediate target is something the MNB can be held accountable for, and this enhances the confidence of economic agents and the credibility of the central bank and economic policy.

The definition and management of the exchange rate as the intermediate target does not necessarily mean the maintenance of a **fixed exchange rate regime**. Several countries pursue an exchange rate target even with formally more flexible exchange rate regimes (**floating**, wide-band exchange rate regimes) so that they attempt to maintain some kind of implicit exchange rate band or to limit the actual movement of the exchange rate through managed flotation. A **fixed exchange rate** or a narrow exchange rate band, however, means a greater commitment to implement the exchange rate target. Consequently, its role in orienting expectations is stronger.

Despite the noted advantages, exchange rate targets are used by fewer and fewer countries today. At the same time, countries that still maintain an exchange rate target seek to institutionalise and statutorily reinforce it. This is primarily because an exchange rate target and the policy implemented in support of the target (central bank **intervention in the exchange rate market**) can lead to underestimation and mismanagement of the exchange rate risk in every field of the economy. The private sector is inclined to view the fixed exchange rate as something guaranteed by the authorities, even though there may be a turn of events, such as an international crisis, in which a central bank is no longer capable of maintaining the exchange rate target. If there is any unhedged exchange rate risk, giving up the exchange rate target will cause enormous losses, including insolvencies and bankrupt-

cies, to each sector of the economy, resulting in major recession. This is, indeed, what happened at the time of the Asian crisis in 1997.

From the end of the 1980s, several central banks switched to the system of direct **inflation targeting**, thus undertaking an explicit commitment to maintain the rate of inflation within a given target range. Here, the inflation forecast produced by the central bank plays the role of the **intermediate target**. The inflation forecast meets the characteristics expected from an intermediate target because it is closely related to the ultimate goal and it can be influenced by the central bank.³⁶

The intermediate target of the MNB

From the exchange rate to inflation projection

Although international and historical experiences point to a number of potential intermediate targets, it was the *nominal exchange rate* which best met the characteristics expected from an intermediate target during the period of transition of the Hungarian economy. The relative popularity of the exchange rate target (particularly in emerging countries) is frequently also substantiated by the absence of the conditions of alternative monetary control systems. In Hungary, for instance, the lack of stability in the money demand function in the period of the transition prevented money supply-based regulation. It was therefore no accident that after the birth of the **two-tier banking system**, the MNB used the exchange rate as the intermediate target of its monetary policy.

During the initial years of transition, until 1995, the Bank pegged the exchange rate of the forint to a **basket of currencies**, but a liberalisation of prices and changes in taxation exerted persistent inflationary pressure, which

forced the Bank to devalue the currency from time to time. The fixed, but adjustable, exchange rate regime lost its **credibility** for economic agents due to an incalculable series of devaluations; the exchange rate course was not foreseeable and was unpredictable. The official and regular devaluations not only resulted in speculation disrupting the financial system but also failed to facilitate a reduction in the rate of inflation. An exchange rate regime was therefore needed which met the expectations described above; thus helping to mitigate inflation but enabling a rate of inflation higher than in the partner countries to be maintained for a longer period. The examples of Chile, Poland and Portugal (and other countries) showed that the crawling peg exchange rate regime met the above expectation.

The crawling peg regime, adopted in 1995, set itself a dual goal. Its primary objective was to break the adverse trend of inflation expectations and attain credibility for monetary policy. At the same time, the parameters of the exchange rate system were defined with a view to achieving the other objective and avoiding any excessive appreciation. The necessary flexibility did not primarily come from the narrow band, but rather from the possibility of changing the rate of devaluation at relatively frequent intervals. Under the established procedure, the pre-announced rate of devaluation only covered a relatively short period of time, mainly the following six months to one year. Beyond this period the rate could be further lowered, but an increase was not to be ruled out either.

Sustainability of the exchange rate-based monetary policy called for a tight fiscal policy and maintenance of capital restrictions. By dampening **aggregate demand** growth, a prudent fiscal policy helped keep the **current**

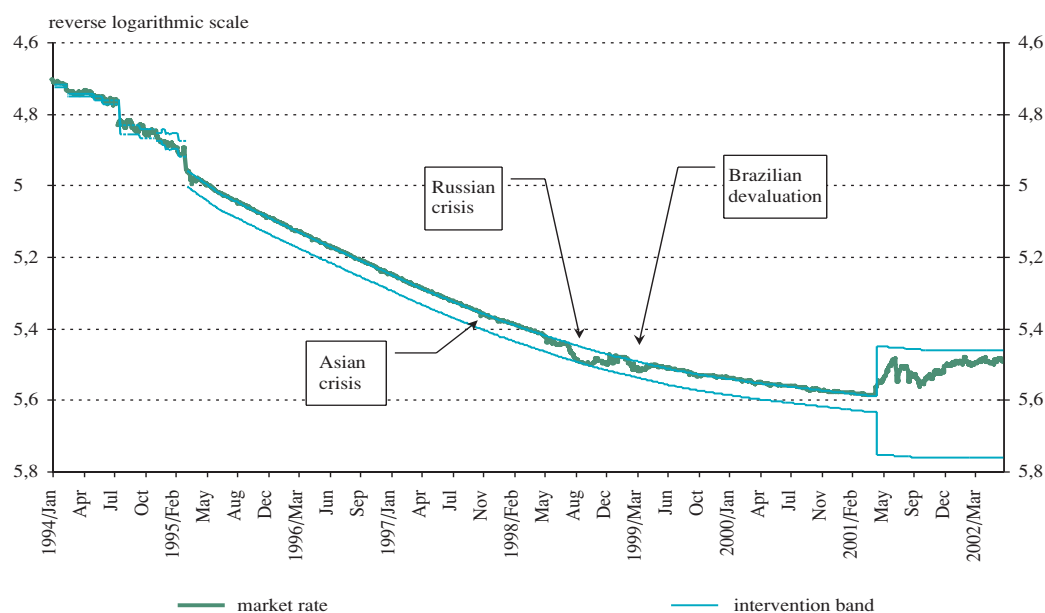
³⁶ See Svensson (1997).

account deficit at a sustainable level. The primary purpose of capital restrictions was to impede transactions aimed at facilitating strong speculation against the forint and attacks on the exchange rate, such as, primarily, hot money flows and derivative deals by wealthy non-resident investors. The crawling peg regime and the associated monetary policy managed to weather the financial storm caused by the 1998 Russian crisis, which later enhanced the credibility of the exchange rate system and the Bank. The crawling peg regime was repeatedly challenged by huge capital inflows, prompting the Bank to **intervene in the foreign exchange market** to a major extent. The liquidity-boosting impact of foreign currency purchases was partly neutralised by an offer of one-month and, later,

two-week deposit facilities, attractive due to the high level of interest rates, and partly by such liquidity contracting instruments as MNB bills, for instance. This kind of **sterilised intervention** prevented a situation whereby excessive growth in money supply would lead to inflationary pressure.

The slowdown in inflation in 1996–97 indicated that the inflationary shock, generated by the stabilisation measures and not accommodated by stringent fiscal and income policy and the monetary policy consistent with them, subsided. With the decline in the rate of inflation, expectations of inflation also declined gradually. In 1998, the MNB attempted to sustain the effects of decreasing world market energy and food prices in Hungary primarily

Chart 3 Exchange rate of the Hungarian forint, January 1994–June 2002*



* Basket composition: August 1993 – May 1994: DM 50% + USD 50%; May 1994 – December 1996: ECU 70% + USD 30%; January 1997 – December 1998: DEM 70% + USD 30%; January–December 1999: EUR 70% + USD 30%, from January 2000 to date: EUR 100%.

through reducing the rate of devaluation more rapidly than usual.

The monetary policy based on the predictability of a pre-announced course for the exchange rate succeeded in bringing down inflation from over 30 per cent to 10 per cent, while strengthening economic competitiveness. However, in 1999–2000 disinflation seems to have been interrupted, and there was a danger of inflation expectations becoming stuck. As this halt in disinflation was due to adverse inflationary shocks and higher imported inflation – factors exogenous to the Bank – the devaluation rate was cut at less and less frequent intervals in order to prevent excessive real appreciation. This, however, strengthened expectations of higher future inflation.

Achieving the strategic goal of economic policy needed a faster and more effective anti-inflation policy. To this end, in agreement with the Bank, the Government widened the fluctuation band of the exchange rate from ± 2.25 per cent to ± 15 per cent as of 4 May 2001. The amendment to the MNB Act which followed, also consistent with EU requirements, established full independence of monetary policy instruments and enhanced the Bank's financial and personal independence (see *Chart 3*).

Inflation projection as an intermediate target

At the time of widening the exchange rate band, the Bank declared that, in the initial phase until the exchange rate found a new equilibrium, it would definitely not **intervene in the foreign exchange market**. Indeed, the Bank has not resorted to foreign exchange intervention even after the initial period. With the Bank no longer a permanent participant in the foreign exchange market, the Hungarian

exchange rate system closely resembles the floating systems. Although in 2001 the exchange rate fluctuated within a narrower, 10-percentage-point, range of the ± 15 per cent band, its volatility gradually approached the volatility of other **floating** currencies. As the Bank did not consider monetary aggregates as a feasible intermediate target, **inflation targeting**, a system in wide-spread use, remained the only viable monetary policy option. Thus, within the Bank's target structure, the role of an **intermediate target** is fulfilled by the inflation projection prepared by the Bank.

Inflation projection is hampered by the limited applicability of mathematical and econometric models, due to the absence of sufficiently long homogenous data series about economic developments. At the same time, this does not impede the practical implementation of monetary policy. It should be kept in mind, however, that the pioneers of inflation targeting had no clearly good data series available either, as a change of monetary policies can be viewed as a structural break and relationships obtained earlier no longer apply under the new conditions.

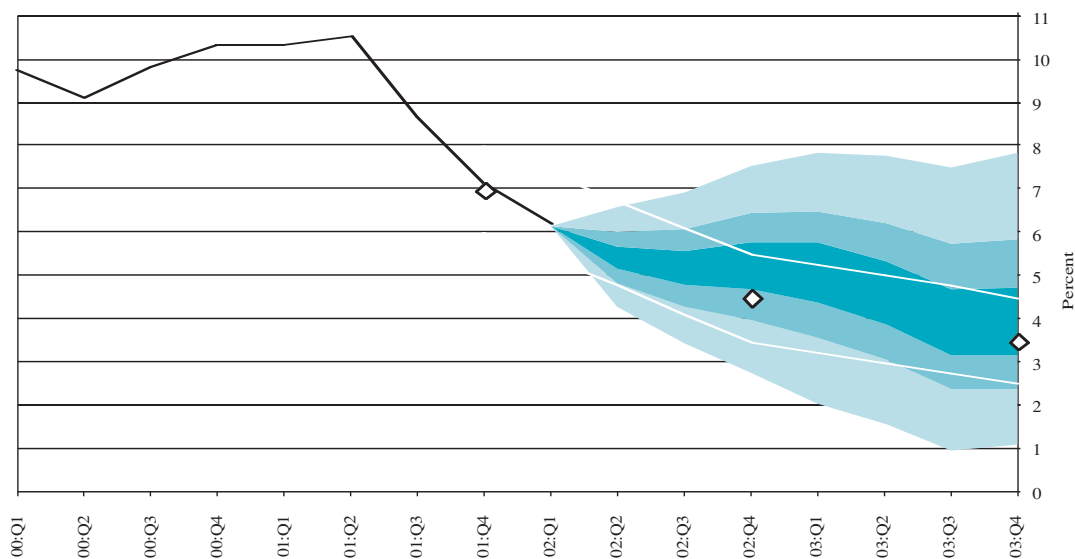
General features of inflation targeting³⁷

The period from the introduction of the inflation targeting regime to the final editing of the present study (June 2002) only spans four complete projection rounds. Although the process of projecting real economic developments and inflation and editing this publication are under constant change, the general features of the projection process will probably remain unchanged in the future.

A key function of inflation projection is to assist members of the Monetary Council in

³⁷ Referring to the MNB (2002a) and the November 2001 issue of the 'Quarterly Report on Inflation'.

Chart 4 Inflation projection fan chart, May 2002
Annual growth



making decisions about interest rate and exchange rate policy issues. Thus, one of the most important features of the projection process is the explicit involvement of decision makers, reflected most markedly in the fact that the projection is based on their monetary policy assumptions. The underlying technical assumption is that the exchange rate remains fixed throughout the entire forecast horizon (at the average rate for the final full calendar month), and that monetary policy remains unchanged (central bank response is not taken into account). In other words, the effect of the interest rate, or a change thereof, is not directly reflected in either the real economy or the inflation forecasts. Nevertheless, with a view to facilitating consistency in the projection, there is an assumption concerning a long-term nominal interest rate path, in line with the projected course of inflation. Accordingly, the published long-term path of the interest rate should not be viewed as a forecast of interest

rates or a projection of prospective interest rate moves by the Bank.

The values of a few exogenous variables of the projection, such as international oil prices, the euro-dollar exchange rate, etc., are fixed on the basis of the last observed values, but for reasons different from those in the case of the forint exchange rate. Forecasting the aforementioned variables is difficult, and the Bank believes it to be a more transparent and correct option not to project them. In this way, decision makers are guaranteed to obtain an unbiased expert forecast, which they can modify in line with their own assumptions and expectations.

Finally, inflation projection in the Bank's terminology also involves the representation of a distribution of risks, in addition to giving a point estimate of the modus of the distribution. Hence, the projection provides not only

a central projection (point estimate), but also estimates and assesses the uncertainty surrounding the central projection (see *Chart 4*).

Time horizon of the inflation projection

Changing central bank rates influences the rate of inflation via various channels over a long period of time.³⁸ This means that central bank interest rate moves have virtually no influence over prices over the one-to-two-month time horizon, and their impact is only partial over a six-to-nine-month period. On the basis of international experience and its own estimate, the Bank considers one to two years over which interest rate moves can make their full impact. Should inflation foreseeably deviate from the target within a shorter period of time, due to unexpected events, the Bank can only, if at all, restore it to its projected path at the cost of major real economic adjustment.

If in such a case the Bank sought to implement the inflation path over the very **short horizon**, reducing inflation by the same rate would require a much, even several percentage point, larger change in interest rates than needed over a period of one year to 18 months. An additional implication is that the Bank would introduce a new measure before earlier moves could have made their full impact. However, earlier measures would continue to make an impact until the end of the noted one to two years, and combined with the effect of measures passed in the meantime would divert inflation from the target in the opposite direction over the next period. Such a policy could lead to excessive volatility in interest rates and economic growth, and ultimately losses to society.

In order to achieve the set inflation target with the smallest possible growth sacrifice, the

Bank only wishes to respond to long-term deviations that exist over the one to two-year horizon. This approach is also reflected in the choice of the 4 to 8-quarter projection horizon, derived from monetary policy requirements and practical considerations. First, the effectiveness of monetary policy requires that the forecast period is longer than the lags with which real economic variables typically react to changes in monetary policy instruments. Second, it should be considered that the creation of the necessary forecasting methods and capacities only started in mid-2001, upon the adoption of direct **inflation targeting**, and thus forecasting for a period longer than one and a half years would involve great uncertainty for the Bank.

The central bank target relates to the twelve-month rate of inflation, which is raised by significant one-off price increases over a twelve-month period. An additional benefit of the choice of the 4–8 quarter forecast horizon lies in the fact that over a period of this length these one-off effects are already removed from the price index, in other words, there is no base period effect.

Rules versus discretion in monetary policy

In principle, direct inflation targeting involves following a very simple rule. When the inflation projection exceeds the targeted value over the target horizon, the Bank has to raise interest rates. However, this is not so simple in reality. First, international experience suggests that even using the best inflation projection does not rule out the possibility that actual data miss the target range due to unforeseeable shocks occurring within the forecast horizon. Although in theory the Bank is not required to respond when this happens, the absence of a response may harm its **credibili-**

³⁸ See the chapter on transmission mechanism.

ty in the eyes of market participants. This dilemma can be especially strong initially, after the introduction of the system. When Hungary adopted inflation targeting in 2001, it was highly probable that inflation would decline by a certain rate. Success in meeting the first reference value set upon introduction for the end of the year, that is within a shorter period than the target horizon, enhanced the credibility of monetary policy.

As decisions about interest rate changes and other central bank moves are ultimately taken by the Monetary Council, it seems logical that the opinion of this body should also be reflected in the inflation projection. This further implies that the proportion of subjective elements in the final projection is rather high as regards both the exogenous factors and the features of the model describing the economy.

The central bank's response significantly depends on the judgement of the nature of a **shock**, on whether it is viewed as a temporary or permanent, a demand or supply shock. If primarily *demand shocks* are at work, there is no irreconcilable conflict between anti-inflation and growth objectives. Positive demand shocks raise output above its potential or natural rate, which exerts inflationary pressure. In such a situation, interest rate moves aimed at stabilising growth (closing the output gap) facilitate the achievement of the inflation target.

By contrast, inflation and growth objectives may clash in the case of adverse supply shocks. Then the correct assessment of whether the *shock is temporary or persistent* may have crucial importance. Should the shock be temporary, there is no reason for a rate increase, as inflation will decline by itself

in the following season. For example, if food prices increase due to a crop failure in a particular year, there is great likelihood that prices will go down during the next season. The problem is somewhat more difficult in respect of international oil prices, as higher oil prices may not only exert upward inflationary pressure directly via certain consumer goods, (such as household petrol, for instance), but also indirectly via a major factor of production (energy and transport fuel).³⁹

The size of an exchange rate change caused by a central bank interest rate move cannot be foreseen, as the exchange rate is primarily determined by money and capital market participants' expectations. Therefore, in its monetary decisions the Bank also takes account of international capital market developments and seeks to change the rate so that the exchange rate strengthens or weakens in an optimal way. However, as it is not possible for the Bank to **fine-tune** the level of the nominal exchange rate, the course of the *exchange rate* is defined via instances of under- and overshooting that is consistent with the path for **disinflation**.

The projection process

Indeed, members of the Monetary Council are directly involved in making the projection. This is crucial as the Council makes the monetary policy decisions, which are only consistent with the projection reflecting the Council's anticipation of the future. The projection process is based on a series of discussions between the staff of the Economics Department, who prepare the projections, and the decision makers.

The Council meets on three occasions during the preparation process. The schedule of the

³⁹ See Haldane (1995), pp. 90–91.

meetings and the different stages of writing the *Inflation Report* and its publication date depend on the availability of the necessary statistics. For each particular quarter the most important statistic is the latest CPI (which the CSO releases about two weeks following the reported month). Based on the length of individual preparation phases, the Council announces the date of the Internet publication of the *Report* six months in advance.

The *first phase* of preparing the *Report* involves identifying the basic assumptions of the current projection and the main factors of uncertainty. This is done at a Council meeting held approximately 7 weeks before publication date. During this meeting, the expert staff and members of the Council finalise the assumptions underlying the central projection prior to making the numerical forecasts and the range of factors of uncertainty. The Council expects the expert staff to assess the effects of these uncertainties on the inflation forecast at a later stage.

The *first draft* of the numerical inflation forecast is prepared in view of the business cycle and consumer price index data for the given quarter. The forecasts are prepared on the basis of the economic model and methods used by the Bank and the assumptions and uncertainty factors specified by the Monetary Council. Although taking into account the reconciled data set, the first draft nevertheless reflects the central projection and the assessment of uncertainties as arrived at by the expert staff. The Council then discusses this draft *Report* three weeks prior to publication. Using a survey, the Council members suggest modifications in respect of both the basic assumptions and the distribution of uncertainties, in order for the forecast to reflect the Council's subjective judgement with regard to the future and its perception of uncertainties. The forecast developed in this way reflects the

consensus view of the Monetary Council rather than being the arithmetical mean of the members' different views. The forecasts are updated on a continuous basis, taking into account the statistical data released and economic policy measures taken in the meantime.

The Monetary Council reviews the *final projection* one week prior to publication. In the light of the final inflation forecast, the Council considers whether **monetary conditions** are appropriate and decides about the required monetary policy measures. The Council releases a statement of its opinion on the inflation outlook, including the inflation fan chart. The statement also sums up the 'message' of the forecast, that is its evaluation from a monetary policy perspective. Accordingly, should the final forecast prompt the Council to change the interest rate or the desired path for the exchange rate, this will also be expressed in the statement, which constitutes the first (unnumbered) chapter of the published *Report*.

Decision makers assess all the new data obtained in the period between two forecasting rounds. Of particular importance is the assessment of the relationship between the latest inflation data and the projection, carried out at the Council's weekly meetings (see *Table 1*).

THE LOWER LEVEL OF THE TARGET STRUCTURE

In addition to **intermediate** targets, most central banks also rely on **operating target variables**. In most central banks, the function of an operating target is fulfilled by short-term money market rates. Operating targets and intermediate targets differ in two fundamental respects. First, operating targets are, in general, directly associated with the instruments available for the central bank, which means

Table 1 The forecasting process

Stage	Topic of the Monetary Council meeting	Timing*
Preparing a 'shock' list	Definition of the assumptions for the central projection and the range of uncertainty factors	- 7 weeks
End-of-quarter CPI data become available		- 5 weeks
Discussion of the first draft of the forecast	Discussion of the forecast by decision makers; formulation of the Council's subjective shock assessment	- 3 weeks
Final review of the forecast	Endorsement of the final forecast; decision on monetary conditions	- 1 weeks
	Electronic publication	0

* Relative to the time of publication on the Bank's website.

that operating target variables reflect the impact of monetary policy measures at once, while in the case of intermediate targets it takes some time for the impact to come through. Second, operating targets are typically unsuitable for fulfilling the role of a **nominal anchor**, in other words they have a less direct link to inflation.

Operating target of the MNB

The operating target of the Bank relates to *short-term, three-month money market* (primarily government security market) rates. The Bank can efficiently influence these rates with its two-week **policy rate**. These short-term money market rates play a paramount role in the mechanism of monetary policy, exerting a major influence over both the exchange rate and the other yields.

A change in the Bank's key policy rate affects **aggregate demand** primarily via shifts in the foreign exchange rate.⁴⁰ **In a small, open economy**, with a high share of foreign trade within the total economy, which implies that the exchange rate channel has a considerable impact, *the level of short-term rates on its own cannot sufficiently account for the restrictive or expansive stance of the monetary policy*. The Bank monitors foreign exchange market developments very closely, and should it judge that the development of the exchange rate jeopardises meeting the **inflation** target, by raising (or reducing) the policy rate it will raise (or reduce) the forint-euro **interest rate differential**, stimulating an appreciation (or depreciation) of the exchange rate. The exchange rate may compromise the inflation target if it differs persistently and significantly from the level required to meet the inflation target. However,

⁴⁰ See the section on the Exchange rate channel of the transmission mechanism.

an exchange rate that is weaker (or stronger) than desirable, although undoubtedly very important, *is only one of the factors influencing the rate of inflation*, and its effect may even be totally neutralised by other factors. Therefore, in the period between two *Inflation Reports* the Bank does not focus exclusively on changes in the exchange rate but on all the factors bearing on inflation.

Changing the central bank rate also affects other bank and capital market rates and yields via the money market rates. As the interest rate on most floating rate corporate loans is tied to money market rates, by influencing the latter, the Bank can directly influence companies' borrowing costs and hence demand for investment goods. In addition, household deposit rates also follow changes in short-term rates. Thus, *by affecting the rates relevant for households and firms, the Bank can also influence aggregate demand for investment and consumer goods within the economy*, as well as the saving and consumption choices of households.

Inflation targeting provides interest rate policy with greater elbowroom. Under the former exchange rate system with a narrower fluctuation band, the autonomy of interest rate policy was restricted by exchange rate risk and country risk and the limits of the fluctuation range. Whenever the interest rate differential between domestic and foreign rates significantly exceeded the sum of the required risk **premium** and the expected depreciation, it triggered major capital inflows, which in turn exerted pressure on the Bank to **intervene**. Reducing the rate of devaluation, or the related expectations, necessarily entailed a drop in yields, and keeping the costs of **sterilisation** (absorption by the

central bank of the excess liquidity caused by foreign currency inflow) at a reasonable level made a reduction in central bank rates sooner or later inevitable. Under the crawling peg regime, interest rate and exchange rate policies moved in opposing directions; in other words, a tightening in the one (cut in the rate of devaluation) triggered an easing in the other (drop in interest rates and yields). By contrast, under the broad-band exchange rate and inflation targeting systems, the exchange rate never poses a restraint. Indeed, an interest rate change and the ensuing exchange rate change have in theory a similar effect; in other words, interest rate and exchange rate policy tightens and eases simultaneously, which enhances the effectiveness of monetary policy.

COMMUNICATION AND TRANSPARENCY⁴¹

Under **inflation targeting**, central bank communications are essentially aimed at favourably influencing expectations in order to considerably mitigate the need for and social cost of central bank intervention. The two main communications objectives are to clarify the role of the exchange rate and to protect central bank credibility (should the target be missed due to unexpected **shocks**). The former objective was already in the focus at the time of introducing the system, while there has been no need for the latter yet. Of equal importance is to communicate what advantages price stability offers and what inflation essentially is. To this end, the Bank makes use of a number of means of communication.

As the factors bearing on inflation make a complex impact in a variable and uncertain manner over time, the Monetary Council

⁴¹ Although verbal intervention is carried out purely via communication, any relating considerations will be presented in the section on central bank instruments, as it is essentially also one of them.

always decides on a case-by-case basis on what have been the most powerful impacts in any given period. This flexibility, however, does not entail a decline in transparency. Monetary policy measures and their brief justification are announced via press statements released generally at 4 p.m. on the Monday following each Council session. A more detailed explanation is given in the *Quarterly Report on Inflation*, which also presents the analytical framework and expert assumptions underlying monetary decisions, in addition to the inflation projection. The report also assesses the probability of meeting the inflation target and the relationship between the projection and the target.

Another means of communicating the Magyar Nemzeti Bank's analytical work undertaken in support of monetary decision-making and the transparency of monetary policy is the series of *Background Studies*. In addition to presenting technical details of forecasting, the papers in the series also discuss economic theory-related issues associated with the preparation of decisions. These studies are only published electronically, with the people on the Bank's mailing list routinely notified of the publication of a new study.

The Bank's senior officials meet regularly with representatives of the press and with analysts. On the day, but still prior to, publishing the *Inflation Report*, the press and analysts have the opportunity to discuss the *Report* with the Bank's staff. The purpose of the meeting is to promote a deeper and more thorough discussion of monetary policy issues and answer any technical questions (given that the decision-makers are not present).

In addition to its publishing and media briefing activity, the Bank also undertakes detailed and full reporting. On the website, the Bank publishes its own balance sheet in addition to the banking sector's aggregate balance sheet on a monthly basis. The latest data on the Bank's instruments are also available via the Reuters network, in addition to the website.⁴²

Transparency in Hungarian monetary policy has improved substantially since the MNB Act entered into force and inflation targeting was adopted in 2001, and it has met the highest international standards. The Bank meets each and every requirement laid down in the IMF's *Code of Good Practices on Transparency in Monetary and Financial Policies*, as confirmed by regular inspections by IMF delegations.⁴³

⁴² See the final subsection.

⁴³ 'As far as transparency in monetary policies is concerned, compliance with requirements on clarity of roles, responsibilities and objectives of monetary policy is complete, as described in the MNB Act. /.../ The MNB meets all criteria in terms of accountability and assurances of integrity' (Report on the Observance of Financial System Standards and Codes).

INDICATORS

Information about ultimate goals and intermediate targets is sometimes available for decision makers at less frequent intervals than required (for example, quarterly). Leading **indicators** are economic and financial variables that provide *advance information* on the state of the economy, helping to predict future developments. So leading indicators change before the trend of inflation and the underlying macro demand conditions determining inflation start to change. Choice and use of a specific indicator from the broad set of available indicators greatly depends on the existing economic environment. Potential leading indicators comprise monetary aggregates (some kind of money or credit supply), information derived from financial product prices (changes in the **yield curve** and forward curve, etc.) or advance information concerning some macro demand factor (such as stock of orders, industrial production or, with regard to household investment, the number of building permits issued).

MONETARY AND CREDIT AGGREGATES

An expansion in the money supply in excess of the demand may have the effect of fuelling inflation and deteriorating the external equilibrium of an economy. Thus monetary policy always, even when it has not expressly set a specific money supply target, attempts to prevent the excessive expansion of monetary aggregates. At the same time, the type of exchange rate regime significantly influences the effectiveness of monetary policy and the role of the monetary aggregates in developing it. The Bank has no explicit target with respect to the money supply. Nevertheless, in examining the net **financing requirements** of the cor-

porate and the household sectors, the Bank pays particular attention to the analysis of claims belonging to the different money categories.

It is a common feature of the various forms of money, such as banknotes and coins, cheques, foreign exchange, sight deposits, time deposits, certificates of deposit or bank bonds, etc., that they appear on the liability side of a bank's balance sheet. The monetary aggregate, embracing the liability-side items of the Bank's balance sheet, is the **monetary base (M0)**, while the liabilities of the consolidated balance sheet of the banking system make up the *money supply categories* (M1 and M3) in the economy. A money supply category taken in the broadest sense, which points beyond banks' balance sheets, is also used in Hungarian practice (M4).

The monetary base includes currency in circulation and the reserves of the banks maintained with the central bank. The amount of currency in circulation is determined by the economy's demand for cash, while the reserves banks are required to maintain with the central bank on their deposits are set in accordance with the **reserve requirement ratio**. Thus, the central bank can influence the level of bank deposits (and hence of M3 and, via the reserve base, the monetary base) via the bank rates that adjust to the level of central bank rates over the longer term. At the same time, it affects the monetary base by changing the reserve requirement on deposits.

Although **sterilisation** instruments (such as MNB bills and the two-week deposit facility, designed to absorb excess liquidity arising

from the inflow of foreign capital) and banks' foreign currency deposits with the Bank are also recorded within the liabilities of the Bank's balance sheet, they do not participate in **money multiplication**, and are thus not constituents of the monetary base.

In calculating the monetary base, the specific features of the reserve regime must be taken into account. Accordingly, commercial banks must meet the **reserve requirement** as an average of the one-month reserve period. It follows that in calculating the monthly monetary base, as currently published by the MNB, the end-of-the-month stock of currency in circulation is added not to the end-of-the-month stock of reserves and other forint accounts of the credit institutions kept with the Bank, but to the average stock set aside during the reserve period (see Table 2).

Broader monetary aggregates can be constructed using items on the liability side of the *consolidated balance sheet* of the banking system. When consolidating the balance sheets of the Bank and the commercial banks, the money operations of the Bank and the com-

mercial banks with one another are netted out. Accordingly, the Bank's refinancing credit allocated to commercial banks, the vault cash, banks' reserves held with the central bank and the stock of sterilisation instruments, are no longer included in the banking system's consolidated balance sheet (see Table 4).

The various monetary aggregates can be defined according to **the degree of liquidity** of assets, which shows what is the cost and time-consumption of a payment. The *supply of M1* includes the perfectly liquid means of payment, that is, those forms of money which meet the payment function without any limitation. Thus, narrow money comprises currency in circulation and sight deposits.

In addition to narrow money, the *monetary aggregate M2* also includes components that serve directly as money and can be liquidated quickly and at relatively low cost. They are known as *quasi money* and comprise forint and foreign exchange fixed deposits.

Broad money, which is represented by M3 in Hungary, comprises M2 and other financial

Table 2 Balance sheet of the MNB (30 April 2002)

		HUF billions	
A.1. Refinancing credits	42	L.1. Notes and coin	1123
		L.1.1. Vault cash	94
		L.1.2. Cash outside the banking sector	1029
A.2. Net lending to government	827	L.2. Banks' reserves	422
A.3. Net foreign assets	1358	L.3. Banks' foreign exchange deposits at the MNB	216
A.4. Other assets, net	-33	L.4. Sterilisation instruments	432
		<i>Monetary base (M0 = L.1. + L.2.)</i>	<i>1545</i>

Table 3 Balance sheet of commercial banks (30 April 2002)

		HUF billions	
A.1. Credits	6514	L.1. Deposits	5923
A.1.1. Credit to households	972	L.1.1. Deposits by households	3672
A.1.2. Credit to non-financial corporations	3597	L.1.2. Deposits by non-financial corporations	1862
A.1.3. Credit to financial corporations	416	L.1.3. Deposits by financial corporations	229
A.1.4. Credit to local authorities	74	L.1.4. Deposits by local authorities	161
A.1.5. Net credit to general government	1455		
A.2. Vault cash	94	L.2. Refinancing credits	42
A.3. Banks' reserves at the MNB	422	L.3. Repurchase agreements	34
A.4. Banks' foreign currency deposits maintained at the MNB	216	L.4. Bank securities	147
A.5. Sterilisation instruments	432		
A.6. Net foreign assets	-560		
A.7. Other assets	-973		

instruments recorded on the liabilities side of banks' balance sheets. With respect to their form, these instruments are not bank accounts but represent *other bank securities*, such as certificates of deposit, savings or bank bonds, and *repurchase agreements* (see Table 3).

M4, another monetary aggregate used in Hungary, goes beyond the components of the banking system's balance sheet and also includes *non-banking instruments*. Being less sensitive to portfolio reallocation within savings, M4 is the most stable monetary aggregate (see Chart 5). In addition to the components of M3, it includes domestic economic agents' stock of government securities held outside the banking system.

Changes in monetary aggregates may convey two kinds of important information. First, it is a good indicator of *change in non-bank participants' financing capacity*, and the reallocation of portfolios across various forms of saving. Second, as M3 is in effect the domestic source of commercial bank funds, change in M3 provides information on *banks' potential for credit extension*.

Under **inflation targeting**, the MNB does not target the monetary aggregates or the stock of credit. Yet changes in the stock of credit communicate important information to the Bank about changes in the environment of monetary policy. Normally, the Bank does not concentrate solely on credit but analyses the effects of credit on different sectors' balance

of investments and savings. Analysis of changes in the credit portfolio is linked to the examination of the consolidated balance sheet of the banking system and the net financing capacity of major sectors.

NET FINANCING CAPACITY

Net financing capacity of a given sector means the *balance of transactions* related to the claims and liabilities of the sector. The balance of transactions corresponds to the increment in the stock of claims and liabilities net of the revaluation effects and other volume changes. The balance of transactions linked to the claims of *households* normally exceeds that of transactions linked to the credits to the sector, hence the household sector is a *net*

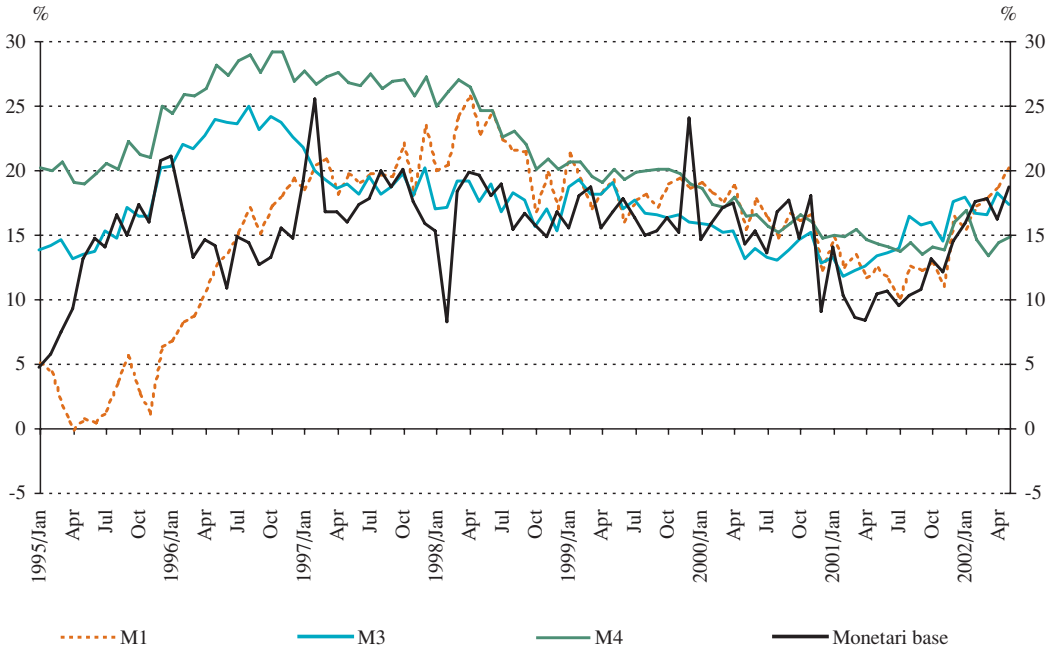
creditor. In the case of the corporate sector, however, the situation is exactly the reverse. Due to the net inflow of external funds to finance investments, the *corporate sector is a net borrower*. Together with general government (which also has a significant financing requirement) consolidated with the MNB, the domestic sectors' net lending balance is equal to the foreign financing requirement, which corresponds to the sum of balance of capital and current account. Accordingly, the changes in the **current account deficit** may be broken down into the changes in the net lending/borrowing position of the various domestic sectors.

Under the narrow band exchange rate regime, the **financing capacity** and stock of lending of

Table 4 Consolidated balance sheet of the banking system (30 April 2002)

		HUF billions
A.1. Credits	7342	L.1. Cash outside the banking sector 1029
A.1.1. Credits to households	972	L.2. Deposits 5923
A.1.2. Credit to non-financial corporations	3597	L.2.1. Deposits by households 3672
A.1.3. Credit to financial corporations	416	L.2.2. Deposits by non-financial corporations 1862
A. 1.4. Credit to local authorities	74	L.2.3 Deposits by financial corporations 229
A.1.5. Net credit to general government	2282	L.2.4. Deposits by local authorities 161
A.2. Net foreign assets	798	L.3. Repurchase agreements 34
A.3. Other assets	-897	L.4. Bank securities 147
		L.5. MNB bills outside the banking system 109
		<i>Broad money</i> 7133
		<i>(M3 = L.1. + L.2. + L.3. + L.4.)</i>

Chart 5 Nominal growth rates of monetary aggregates*
 Percentage changes on a year earlier



*M2 is not presented separately, as due to the relatively small volume of bank securities and repurchase agreements, M2 grows at essentially the same rate as M3.

domestic sectors were monitored by the Bank mainly on account of their impact on the current account of the balance of payments. In a small open economy, a change in demand due to an increase or decrease in credit extension exerts great influence, via external demand, on the **current account** and the exchange rate rather than inflation. Now, with a wider exchange rate band and a system of **inflation targeting**, although no longer an intermediate target, the exchange rate continues to play a pronounced role in monetary policy. The financing capacity of economic sectors is of relevance for the Bank not merely on account of the exchange rate effect transmitted by the current account. The size of foreign currency inflows

arising from saving and borrowing decisions by the different sectors is also of paramount importance with regard to the exchange rate.

WHAT INFORMATION DOES THE YIELD CURVE CONVEY TO MONETARY POLICY?

The **yield curve** depicts the term structure of interest rates. It plots the yields of investments of the same **default risk** with maturities that range from the shortest to the longest term. The analysis of the yield curve provides both market participants (investors) and the Bank with important information in relation to expectations of the future evolution of inflation, interest rates and monetary policy.

In the case of Hungary, market participants and the Bank generally monitor the yield curve depicting risk-free government security yields. This is because the market of government securities can provide price information which can be easily and accurately assessed at frequent intervals. Although a typical assessment tool in many countries, it is not exclusive. Yield curves can also be derived using other forms of investment, such as interbank market rates, swaps or mortgage yields, depending on the composition of the market. This can be attributed to the fact that government bond yields can be significantly distorted by taxation or regulatory features, and it is not possible to correct this bias in prices. Furthermore, these other markets may well be at a more advanced state of development than the government bond markets.

There is no single preferred method for the calculation of the **yield curve**. The necessary calculations can be performed in several ways; the purpose of application should determine the procedure chosen. Most of the time, there is a trade-off between accuracy, stability and reliability of individual methods, and significant differences can be observed with respect to the technical apparatus required as well as complexity. The yield curves derived by using different approaches match completely most of the time, but each looks at the structure of interest rates from a different angle, and each has a different area of application. Discount curves have their primary function in pricing of bonds (claims), while **forward yield** curves can be used for quantifying interest rate expectations and the possible future path of interest rates.

The *internal rate of return (IRR)* yield curve, which compares yields calculated until maturity, can be constructed the most easily (only the IRRs of individual bonds are needed). Nevertheless, this type is the least suitable for purposes of analysis because of its numerous

theoretical and practical disadvantages. The most significant disadvantages include its lack of continuity (i.e. it cannot be assessed over any maturities). Furthermore, the IRR, owing to its definition and method of calculation, does not enable the calculation of **forward yields** or the monitoring of expectations. The most widely used approach is based on the **zero coupon yield curve**, which meets the requirements of economic analysis and is widely quoted in the economic literature. It is derived by decomposing bonds with coupon payments into zero coupon bonds (which pay only at maturity), before calculating the relevant discount rate. The zero coupon discount or yield curve derived in this way can be made continuous (that is it can be interpreted for any maturity) and its truly useful feature is that it is suitable for estimating and forecasting forward rates (interest rate expectations). Its wider applicability is due to the fact that in contrast to **yields calculated until maturity**, it is based on much more sophisticated estimating procedures (which are also more complicated and need greater attention) and have more sound methodological foundations (see *Chart 6*).

The Magyar Nemzeti Bank estimates yield curves using the method proposed by Swedish economist Lars Svensson, which is the most popular method of relevant institutions, such as central banks, economic research institutes, investment banks, etc. At the same time, the Bank also keeps track of and tests other yield curve estimating techniques proposed in the literature and suitable for monetary policy purposes. Thanks to its sufficiently robust function form, a zero coupon yield curve estimated by the **Svensson method** has a smooth shape and its parameters are easy to interpret. Therefore, it is suitable for the analysis of interest rate and **inflation expectations** and the monitoring of changes therein, in other words, all the factors a central bank needs in order to be able to evaluate the economy in general terms and to

consider the effectiveness and **credibility** of monetary policy.

Yield curve theories provide essential help in interpreting yield curves and determining the kind of information that can be extracted from them. Even though the abstract and rigid conclusions of the theories can only rarely be operationalised in their direct form, they represent an appropriate framework for reasoning. It is often possible to estimate and correct the bias caused by the discrepancy between their basic assumptions and genuine economic developments.

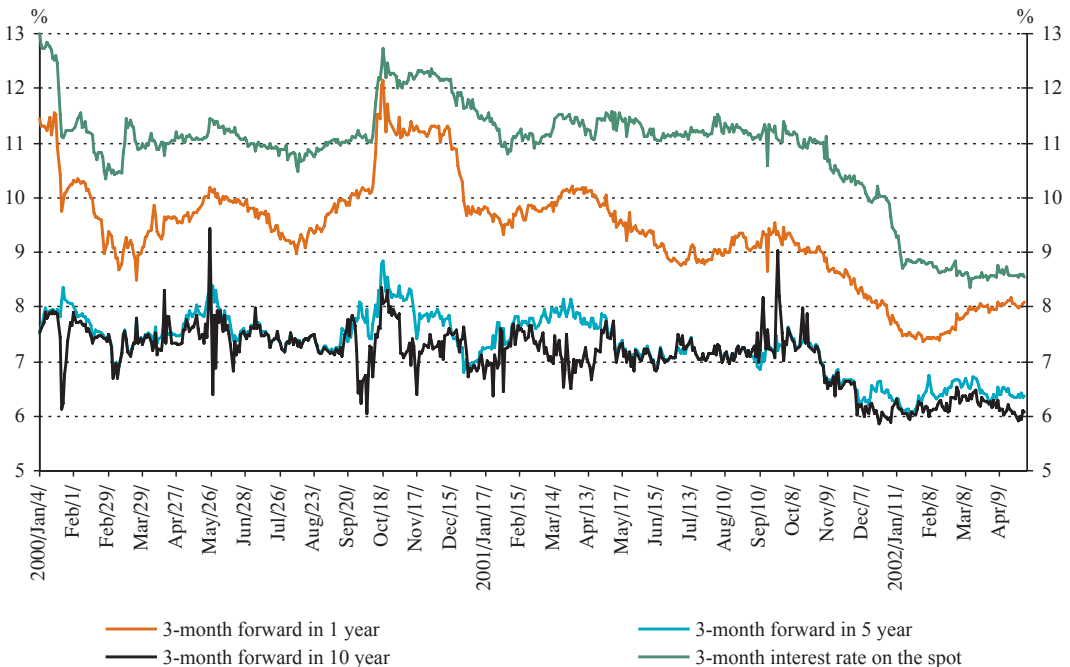
Yield curve theories

The interpretation of the slope of the yield curve basically depends on accept-

ed economic theory. Testing of the theories has revealed that not even the most widely accepted theories hold true in all markets and at all times. In the following, there is a brief description of the three most frequently cited theories.

In terms of the *expectation hypothesis*, the current term structure of interest rates is determined by the consensus forecast of future interest rates. In a technical sense, **implicit forward rates**, derived from spot rates using the criteria of no arbitrage coincide with expectations of future interest rates. However, the hypothesis seems to ignore the factors shaping expectations, the rationality or adaptivity of expectations. Further-

Chart 6 Historical development of zero-coupon yields



more, interpretation of interest rate expectations depends on the applied macroeconomic context and not least the prevailing economic policy regime (such as the exchange rate system and monetary policy). Nominal rates are equally interpreted as indicators of economic activity and **inflation**. In the course of yield curve analysis, a monetary policy regime based on inflation targeting should place the emphasis on inflation, while a system that also targets full employment and the output gap should pay greater attention to interpretation of the yield curve related to the outlook for economic growth. The current Hungarian situation (i.e. a yield curve with a negative slope) does not mean, however, that economic agents anticipate a recession. What stands behind the phenomenon is that the proclaimed **disinflation** policy is credible and its downward pressure on interest rates is stronger than the upward pressure of economic growth.

According to the *liquidity preference* theory, investors are ready to accept lower yields over the short term, regarding short-term securities as being less risky. Short-term investments may have dual benefits. First they are more liquid, and second their prices are less sensitive to interest rate changes. This theory holds that these two features overcompensate for the disadvantage that the purchase of short-term paper and the need to roll over investments involve

renewal risk arising from the uncertainty about yields on future investments. The implication is that investors will not invest over the longer term unless they can count on higher returns, so according to the theory the yield curve should be upward sloping.

The third theory known as market segmentation theory assumes that certain groups of investors are interested in particular maturities of investments to the exclusion of all others, and the yields on the individual maturity lengths are governed by independent forces of equilibrium. The following theory was proposed in response to criticism of the approach's irrational isolated treatment of the term structure. Accepting the plausible assumption that investors will buy bonds outside their preferred maturity range if they receive attractive compensation in terms of a yield **premium** leads to the theory of preferred habitats. Accordingly, yields on individual terms to maturity are governed by investors' preferences and a premium is required to make them leave their 'preferred habitats'.

Provided that money and credit markets are efficient, monetary policy can exert great influence over the short-term (less-than-one-year) sections of the yield curve by means of appropriate monetary policy **instruments** used both in its liquidity-providing and absorbing operations.⁴⁴ By contrast, yields over the longer term are, to a great extent, determined by expectations of future interest rates. In countries with

⁴⁴Liquidity-providing regulation is implemented when there is an overall shortage of funds within the banking system. In this case, facilitation of payment transactions and meeting the reserve requirement (where there is one) require credit from the central bank. The central bank uses its lending facilities to provide liquidity and influence short-term interest rates. By contrast, liquidity-absorbing regulation is implemented when there is an overall surplus of liquidity within the banking system. Excess money is absorbed by the central bank's deposit facilities, and short-term rates are also determined in the process.

advanced financial markets, even though the central bank can influence the yield curve, it cannot fully control it, being unable to sustain an interest rate that deviates from market expectations at longer terms to maturity. Long-term yields are thus influenced not directly via the **instruments** but rather by sending signals about the conduct of monetary policy. These signals typically involve changes in the **key policy rate**, but other monetary policy instrument can also be used for the purpose. In the case of the MNB using **inflation targeting**, such other instruments include **intervention in the foreign exchange market and verbal intervention**, as well as central bank announcements or comments with regard to the state of the economy. The signals inform economic agents about the orientation of monetary policy, on which they build their expectations of future inflation, nominal and **real interest rates**. Thus, economic agents' expectations rather than the central bank's (short-term) policy rate govern long-term rates.

In a small open economy, where money and capital markets are fully liberalised, foreign investors also play a crucial role in the government securities market (in addition to other markets that affect yields). Resident and non-resident investors rely on different economic variables when forming their interest rate expectations, which determine the shape of the yield curve.

Resident investors' expectations of the level of nominal interest rates reflect a factor compensating for inflation in addition to the price of postponing consumption, that is the real interest rate.⁴⁵ By contrast, *non-resident investors'*

yield expectations are determined in relation to yields in their own currencies, with the addition of price risk and different default risk premia, as well as other discounts and premia arising from expectations of exchange rate appreciation and depreciation. Hence, an analysis of the yield curve should also take account of the investor groups and segments dominating the evolution of yields.

As noted above, monetary policy is active at the short end of the yield curve. As a consequence, future monetary policy moves also play a crucial role in short-term market expectations. Within the **transmission lag** period, interest rate moves and nominal interest rate expectations adjusted to current inflation may differ. Hence, at short terms to maturity, the yield curve greatly reflects market participants' expectations of the future path of central bank rates (see *Chart 7*).

By contrast, the long end of the yield curve is beyond the direct control of monetary policy. Long-term yields reflect expectations of economic state variables, taking account of the assumptions about the market structure noted above (dominance of non-resident or resident participants). This helps assess the likely real economic impacts of potential monetary policy moves (in view of the fact that unanticipated price changes have a greater real economic impact).

Linking the level of nominal interest rates at longer (5 to 15-year) maturities to inflation expectations seems justified regardless of the market players dominant in a particular market segment. In respect of resident investors this is

⁴⁵In terms of the liquidity preference theory, the required rate of interest may include an additional element comprised of a maturity and liquidity premium. The maturity premium means that longer-term investments entail a greater price risk (long-term bonds have higher price volatility than short-term ones). In addition, liquidity preference offers compensation to investors for having their funds tied up (this is because economic agents normally wish to take out a loan for longer terms than others wish to make deposits for, which leads to a relative shortage of long-term funds). At the same time, a real interest rate in the broad sense, inclusive of the noted premia, makes modelling significantly easier.

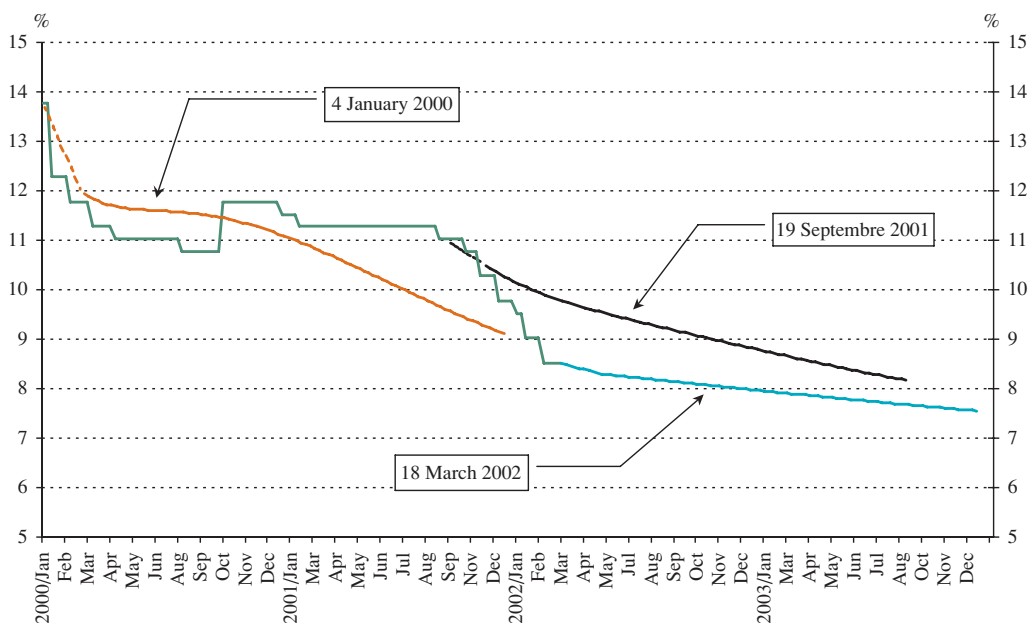
true at the model level, and can be also empirically verified. Regarding to the two main elements of nominal interest rates, in Hungary the nineties witnessed significantly greater fluctuations in inflation expectations than in real interest rate expectations. Due to relative stability in the expected real interest rate and the liquidity premium, changes in long-term yields could be generally interpreted as reflecting changes in inflation expectations. The stability of inflation expectations is also likely to increase in the future. Even though this will weaken the quantification of changes therein, it seems reasonable to assume a strong correlation between stronger inflationary danger or uncertainty and the required real interest rate. In this way the direction of the change in inflation expectations continues to be identifiable with great certainty.

Long-term yields are also affected by the inflation expectations of non-resident investors,

who are normally interested in nominal yields (or yield differentials). The widening of the exchange rate band in May 2001 and the simultaneous adoption of the new monetary policy regime and Hungary's EMU entry in the foreseeable future must have also caused investment strategies to shift. Long-term expectations of a strengthening or weakening in the nominal exchange rate have become more balanced, compared with those under the crawling peg. As a consequence, the downward pressure on yields has also moderated via exchange rate expectations. In addition, the convergence criteria on long-term yields and inflation have created a mechanism in which the yields influenced by non-resident investors speculating on the chances of convergence also reflect inflation expectations.

At the same time, from a more dynamic, 'comparative static' aspect, the *shifts* in the yield

Chart 7 The MNB's key policy rate and its future path derived from the yield curve



curve provide significant feedback in the context of central bank interest rate moves and other monetary policy signals. If a central bank is perfectly credible and transparent, each and every monetary policy measure will be consistent with expectations and will, consequently, not cause a change in the yield curve. (Admittedly, however, the existence of new information and external **shocks** may impede testing the expected and predictable nature of central bank measures.) If a central bank inter-

est rate change triggers a major shift at the short end of the yield curve, it is usually an indication of less than perfect monetary policy transparency, as the monetary policy signal provides the market with additional information. Nevertheless, provided that a central bank is credible, this cannot lead to a rise at the long-term section of the yield curve. A successful and credible monetary policy is typically characterised by stable and low long-term interest rates.

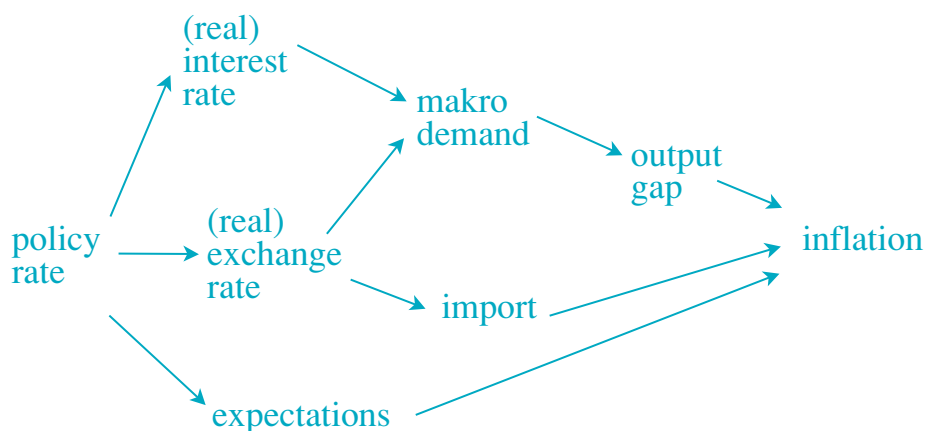
MONETARY TRANSMISSION

CHANNELS OF MONETARY TRANSMISSION

One of the key issues in the operation of the **instruments** of monetary policy is monetary transmission. *The term monetary transmission indicates the mechanism whereby the quantitative and interest rate decisions brought by monetary policy makers influence macro demand and inflation in the economy through various transmissions (see Chart 8).*

Over the long term, however, the nominal value of goods and services (the price level) and their changes (**inflation**) are purely monetary phenomena and monetary policy has the important role in their formulation. In contrast, economic growth is determined by the supply side of the economy, and the central bank can only exert indirect influence on it. A central bank may positively influence the long-term growth course of an economy by reducing

Chart 8 Impact mechanism of monetary transmission



In the short term economic policy influences economic growth and inflation fundamentally through changes in macro demand. It could be said in general that due to more restrictive monetary policy, higher interest rates and a more appreciated exchange rate exert downward pressure on consumption and investment demand within the private economy, which, regarding the supply side of the economy as granted, will moderate both economic growth and inflation.

inflation and thereby the loss of efficiency caused by inflation.

Monetary transmission exerts its effect through three main channels:

- the exchange rate channel,
- the interest rate channel
- and the direct channel via expectations.

The exchange rate channel

The *direct impact* on inflation of changes in the nominal exchange rate is transmitted by changes in the price of **tradable** goods. When the home currency strengthens, imports will become cheaper, exerting downward pressure on the price of import substitutes due to market competition. The lower the level of inventories and the stronger the competition in the market, the faster and more extensive the exchange rate **pass-through** will be.

This implies that a restricted price competition may dampen the impact of the direct exchange rate effect. One of the typical manifestations of this is pricing to market, when the different prices paid for the same products in different markets reflect effective demand in that particular market rather than genuine costs. Here the change in costs caused by the shift in the exchange rate passes through primarily to the company's profits rather than the price of its products.

The exchange rate's ability of directly influencing inflation is further impeded if tradable prices have a large component that is determined independently of the exchange rate. Such a component may be the retail margin. In addition, economic policy makers may purposefully use various taxes or subsidies to remove the price of certain products, such as motor fuels, for instance, from their genuine costs.

At the microeconomic level, a too frequent price change will entail significant costs. Consequently, major volatility in the exchange rate (meaning that the exchange rate changes sharply and in an unpredictable manner over time), also dampens the downward impact of unit appreciation on inflation.

The exchange rate channel also has an *indirect impact* on macro demand via exporters' **com-**

petitiveness and wage costs. This is because an appreciation of the exchange rate may reduce the sales revenue of export and import-substitute sectors in forint terms or increase producers' wage costs in foreign currency terms. A drop in corporate sector profits dampens demand both directly, by weakening corporate investment, and indirectly, by reducing consumer demand via wages, which leads to lower demand-pull inflation. Accordingly, competitiveness could be measured in terms of both price-based and cost-based indicators (such as the **real exchange rate** based on the consumer or producer price indices and unit wage cost-based indices, respectively).

The interest rate channel

Interest rates of relevance for households and companies affect **aggregate demand** for capital goods and consumer goods, and indirectly inflation, via a number of channels. Thus, interest rates influence economic agents' decisions through a combination of factors.

By raising the relative price of current versus future consumption, a rise in government bond market rates and deposit rates will encourage saving in the present to facilitate higher consumption in the future, inducing a *substitution effect*.

The *income effect* works the opposite way. A rise in interest rates promises higher interest income on savings, entailing a higher consumption path in the process and also boosting current consumption to maintain a smooth consumption path. (Needless to say, an interest rate rise will push up the interest burden of debtors, reducing households' purchases of durable consumer goods financed by consumer credit and the volume of home building, and directly dampening corporate expansion by pushing up the price of short-term working capital credit).

The *wealth effect* denotes the outcome of the change in the **present value** of total income. An increase in the **real interest rate** will imply a drop in current consumption, via reducing the value of wealth.

A rise in investment lending rates reduces the **net present value** of intended projects (*discount factor effect*), dampening fixed capital formation.

It sometimes happens that the lending channel is tight, as asymmetric information and high costs impede appraisal of credit to households or small businesses (credit rationing). This effect is studied by the credit channel theory, which stresses that as credit supply is not infinite, the amount of credit is determined not only by demand, and instead of a state of equilibrium, the market is characterised by excessive demand. Such lending frictions weaken interest rate transmission.

By west European standards, Hungary has a low stock of household lending. In addition, as lending to households is less sensitive to interest rates, the substitution effect appears only to a very limited extent. By contrast, the income effect is becoming increasingly more significant, as the financial sector is expected to expand substantially in the future.

Relative significance of the two channels

The above-listed effects of the exchange rate and interest rate channels may vary considerably depending on the structure and openness of the economy, and the composition and weight of financial savings. In Hungary, the exchange rate is clearly the dominant component of **monetary conditions**, determined jointly by the **real exchange rate** and the **real interest rate**.

The exchange rate has a cost effect via exporters' **competitiveness** and a demand effect via the change in the price of tradable goods. Hence, the more open an economy, the stronger is the direct and indirect impact of the exchange rate on inflation. In Hungary, imports account directly for 25%–30% of household consumption, and the weight of tradable goods is also high.⁴⁶ In an international comparison, the share of the import sector within production is exceptionally high at over 60% of GDP.

The weight of the exchange rate within monetary conditions is further boosted by the fact that the real interest rate has only limited effectiveness in Hungary, due to the relatively *low monetisation* ratio within the economy. Total household financial savings amount to 50% of GDP, while household debt accounts for as little as 6% of the national income. Classical mortgage lending, which plays an instrumental role in transmission in most of the advanced economies, was only launched a short time ago. Interest rate policy also has only a limited effect on savings, as structural saving forms (such as pension and life assurance policies and housing society contributions, which are not affected by changes in forint yields over the short term) have a significant and increasing share in financial savings. Furthermore, household foreign currency deposits still hold a high ratio within savings. Even though corporate sector borrowing is stronger (nearly 40% of GDP) than that of households, a large part of it is denominated in foreign currency (foreign currency lending accounts for 60% of total credit), over which changes in domestic interest rates have no direct effect.

Structural properties can and do change over the **long term** as economic development and

⁴⁶ In general, the more developed a country is, the higher the share of services in spending. Services are traditionally referred to as non-tradable goods. The proportion of services in the Hungarian **consumer price index** amounts to 30%, relative to a corresponding ratio of nearly 40% in the EU.

financial intermediation approach those of the most advanced economies. Up to that time the emphasis of monetary policy transmission should be placed on the exchange rate channel, as real interest rate play only a limited role in the formation of monetary conditions.

Role of expectations

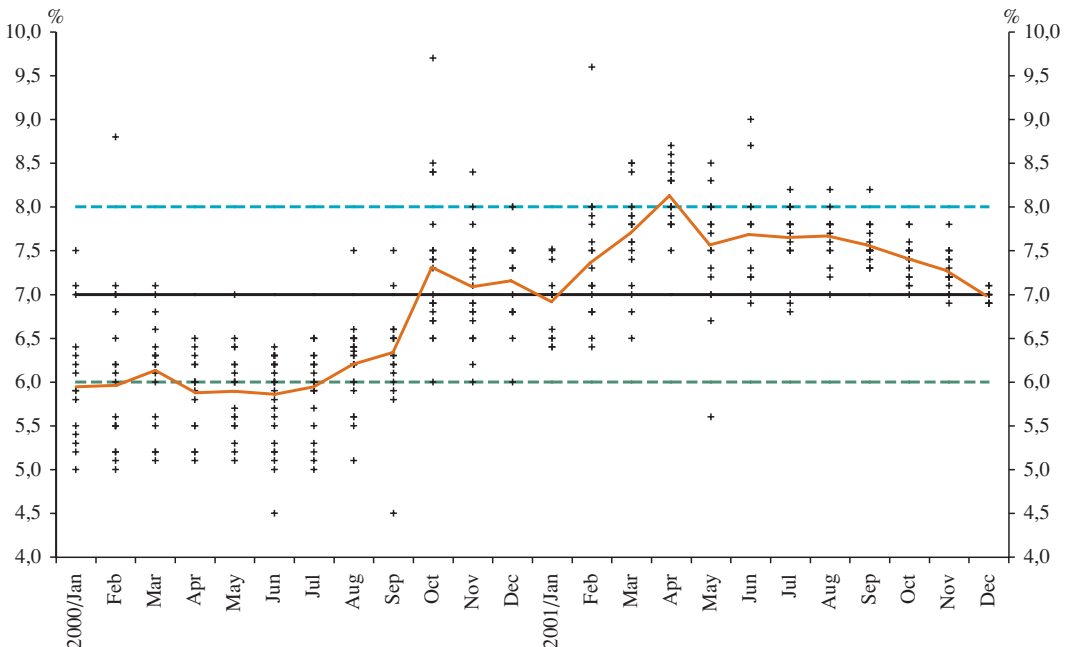
In addition to the noted direct effects, *expectations and credibility of economic policy* play a paramount role all over the world in the effectiveness of the transmission mechanism. A credible central bank can directly affect inflation by influencing **inflation expectations**. This has two important advantages. First, **disinflation** implemented via influencing expectations is much faster relative to the time lags associated with the exchange rate and interest rate channels. Second, it enables a significant reduction to be made in the short-term real economic costs of disinflation,

as there is no need to moderate domestic demand and economic growth (see *Chart 9*).

The direct channel of expectations is especially effective in an **inflation targeting** regime. A credible target set by monetary policy becomes a nominal anchor, which can effectively influence economic agents' pricing behaviour. The latter primarily implies corporate price setting and wage negotiations.

Economic agents' saving and borrowing decisions depend on the *expected* real interest rate and real exchange rate. If economic policy lacks **credibility**, market participants incorporate significantly higher inflation in their expectations than the rate targeted by the central bank. In this case, market participants believe the real interest rate content of the nominal rate consistent with the inflation target to be lower (and the real exchange rate to be more depreciated) than the

Chart 9 Market analysts' inflation expectations



rate economic policy associates with the target-ed saving and borrowing behaviour.

THE EFFECTIVENESS OF TRANSMISSION

Transmission lags

Appraisal of the effectiveness of **monetary transmission** inevitably involves the issue of transmission lags. While changes in money and government securities market yields follow central bank interest rate moves immediately or with a short time lag, corporate and household lending and deposit rates may take as many as several months to adjust. A number of empirical country studies suggest that a change in interest rate policy takes 1.5 to 2 years to fully feed through to inflation and growth. Transmission through the exchange rate channel may also need a similarly long period of time. While the exchange rate pass-through into tradable prices takes only a couple of months, the full adjustment of service prices may take several years depending on the level of inventories and market competition.

It follows that monetary policy should be conducted in a highly forward-looking manner. It should act immediately upon the first indication of future inflationary pressure, even when the adverse development has not yet begun to unfold. In this work, monetary policy makers can rely on **leading indicators**, discussed in the previous chapter, which start changing before inflation or the underlying aggregate demand conditions start to change. In addition, *coincident indicators* may also play a special role. Even though not preceding the development to be predicted, they are in correlation with it and can produce relevant data at an earlier date. (Such data are, for example, VAT receipt and car sales statistics, which can be a leading indicator of household consumption).

Monetary decision makers are often forced to make interest rate and quantitative decisions at

an early stage, when the actual developments can only be foreseen with a considerable margin of error. This is why central banks change monetary conditions only in several small consecutive moves rather than one large step.

Central bank communication

The effectiveness of transmission and coordination of **inflation expectations** depend essentially on central bank **credibility**, which can be enhanced by *transparency* in decision making and efficient *communication*. In its publications and studies, the Bank declares its objectives and commitment, presents current developments within the economy and within the money and capital markets, in addition to describing the instruments used in the conduct of monetary policy. All **inflation targeting** countries publish an inflation report with the bank's numerical projections for the rate of inflation and an analysis, which help compare targeted and projected inflation with actual trends.

One of the most important publications of the Magyar Nemzeti Bank is the *Quarterly Report on Inflation*. In addition to describing current inflation developments and the underlying macroeconomic trends, the *Report* is in effect forward-looking. It presents at length the Bank's inflation forecasts for the following 18 months, the underlying assumptions and the uncertainty about the projection. As the *Report* plays a key role in the formulation of expectations related to the nominal path of the economy, the MNB releases its publication timetable in advance.

The internal information at the disposal of central banks on their own preferences and reaction functions and, often, on foreseeable economic processes is more reliable than that of economic players. Market players are well aware of this, which allows for the possibility (both theoretically and practically) that central bank communication can influence market

yields and exchange rates as well as expectations related to them. **Verbal intervention** takes place when, in the interest of its own monetary policy, the central bank promulgates its own economic outlook report.

When the exchange rate band is wide, verbal intervention is likely to be needed primarily for influencing exchange rates if exchange rate changes are at variance with the economic processes expected by the bank. Announcements made in the interest of an upward exchange rate are justified by the necessity of achieving the central bank's *inflation target*. Intervention in the interest of a more devalued exchange rate is only necessary if, in the judgement of the central bank, the prevailing exchange rate level would lead to *the undershooting of the inflation target*. Inflation below the target band may impair the credibility of the monetary system as well as increase the real economy costs of **disinflation**.

In the interest of **credibility** verbal intervention should only be deployed if the central bank is ready and willing to support it with interest rate measures or foreign exchange market intervention after verbal intervention has proved to be inefficient. If the central bank fails to do so, its credibility will suffer, which, in turn, undermines the effectiveness of later verbal intervention. Intervention is the most successful if it is relatively few and far between, or when market expectations concerning further changes in exchange rates are divided. In such situations a trustworthy central bank's reasoning can channel exchange rate expectations and, as a consequence, influence exchange rates considerably. If the central bank realises that market players act upon deficient information, which results in an exchange rate or an interest rate level that works against the target of monetary policy, this should be pointed out even if verbal intervention on its own is hardly likely to produce the desired effect.

INTEREST RATE TRANSMISSION

The mechanism of interest rate transmission

In the course of monetary transmission, the central bank's decisions about money supply and interest rates affect economic activity, the components of GDP and, ultimately, inflation in a multiple-stage process. Monetary policy in a country with an advanced system of financial intermediation can only indirectly influence government securities, bank deposit and credit yields, whose changes ultimately affect economic agents' saving and borrowing decisions.

As we have seen, central banks usually consider shaping yields on interbank and government securities with 3–6-month maturities as their direct target. These money market yields will, with some delay, have a ripple effect on changes in commercial banks' deposit and lending rates. This highly important stage of monetary transmission is referred to as *the mechanism of interest rate transmission*.

There are a number of factors influencing the effectiveness of interest rate transmission, i.e. the simultaneous and proportionate co-movement of money market yields directly influenced by the central bank as well as the deposit and lending rates offered by commercial banks. Such factors include:

- competition in the financial intermediary system,
- the repricing period of bank products and
- the volatility of the credit risk **premium**.

A highly monopolised and segmented system of financial intermediation cannot *effectively* mediate the impulses of the central bank towards ultimate savers and borrowers. Without the coercive force of competition, the monopolist can easily 'swallow' an interest rate reduction by the central bank to increase its own profits. In

developed countries, in addition to the competition in which banks are engaged against one another, direct financial investment and the inclusion of funds outside the banking system also force them to observe an increasingly compliant behaviour in pricing their products.

The average maturity and structure of banks assets and liabilities fundamentally affect the time that the ripple effect of the central bank's measures takes before it starts to exert its influence (transmission lag). Generally, the shorter the **duration** of assets and liabilities, the higher the proportion of the variable rate instruments and the greater the frequency of interest review dates, the faster the effect of the changes in the interest rates set by the central bank wears off.

The final price of credit is the total sum of the liability costs (including profit and the cost of intermediation) charged by banks and the *credit risk premium*. The latter depends on the risks the debtor represents and his credit repayment ability. When the premium paid by the majority of debtors changes frequently and with great volatility, the lending rate to be influenced will only partly move together with the liability costs that the central bank can influence, which will, in turn, result in a low effectiveness level of interest rate transmission.

The effectiveness of the transmission diminishes when, within the banking system, there are a great number of dynamic banks intent on market acquisition, whose main priority, in pricing their deposit and credit facilities, is the realisation of their respective longer-term objectives rather than the maximisation of their current profits.

The effectiveness of interest rate transmission in Hungary

The risk premium of lending rates relative to yields on government securities had significantly fluctuated before 1997. The difference

between rates on corporate loans with a less than 1-year maturity and yields on 3-month discount treasury bills rose above 5% from an earlier negative value in 1995, then it fell below 2% in early 1997. Since then it has been fluctuating relatively steadily in a 1–2 per cent band (it only left the band during the 1998 Russian crisis and at the turn of 1999 and 2000 when yields declined rapidly, at a time when corporate lending rates only reflected the sharp change in government securities yields with a certain time lag) (see *Chart 10*).

Chart 10 Spread between corporate borrowing rates with less than 1-year maturity and 3-month discount treasury bill yields



The obvious consequence of high and volatile past **inflation** in Hungary is a *high proportion of facilities with less than 1-year maturity and/or variable rate facilities* both on the credit and the deposit side. Consequently, the duration of bank assets and liabilities is short, which, in turn, reduces the transmission mechanism lag.

In connection with the transmission mechanism, another attribute of the **liquidity position** of the banking sector in Hungary should be mentioned, which is different from that of most advanced economies. Between March 1995 and May 2001, when a narrow-band crawling

peg exchange rate mechanism was operational, massive **intervention** (foreign currency purchases) by the Bank on the side of the band occurred. As a result, in 2002 the banking system in Hungary still has *an excessive amount of liquidity*, which the Bank is withdrawing by means of its liquidity-absorbing instruments (e.g. deposits and bills). (See the sub-section on The Instruments of **Sterilisation**). *Commercial banks are, therefore, in a net creditor position vis-à-vis the Bank in contrast with the borrower position, which is common international practice.* In principle, this should not give rise to any difference in the effectiveness of transmission. No matter whether the MNB influences the financing costs of banks by establishing the price of the liquidity still needed in a certain period, or it offers banks alternative investment opportunities by granting attractive yields on the placement of the excessive amount of liquidity: Banks are interested in increasing their profits and they should have the same response to the Bank's interest rate measures. Nevertheless, experience shows that banks, in their day-to-day operations, tend to react to changes in the actual costs of financing more sensitively than to the amount of the profit that they fail to earn compared to what they should have.

Transmission along the yield curve

Generally, the central banks of today only intervene at the short end of **the yield curve**, going up to a maximum of 1 month by quoting their respective interest rates. There are two reasons for this. One is that the central bank is 'the strongest' at short maturities vis-à-vis other market players, since shorter terms mean fewer opportunities for market players to earn speculative profit when they are 'guessing' the central bank's interest rate measures; therefore, no allowances must be made for an unmanageable amount of credit outflow or an equally unmanageable number of deposits. The other

Table 5 Term of the policy rate applied by the individual central banks

Countries	Term [day(s)]
EMU	14
Germany*	14
France*	7
Italy*	<30
United Kingdom	14
USA	1
Japan	1
Canada	1

*Prior to 1 January 1999.

is that in this way the section of the yield curve representing a period that exceeds one year can reflect nothing but market players' inflation expectations, which is an important source of information for all central banks (see Table 5).

For similar reasons, the Magyar Nemzeti Bank has shortened the term of its **policy instrument** in recent years. In March 1999, it was shortened, similarly to that of the European Central Bank, to two weeks. With the help of the rate quoted for this term, the Bank can, under balanced market conditions, influence *both the 3-month interbank and secondary government securities market yields* effectively, that is a term of utmost importance in Hungary in terms of interest rate transmission.

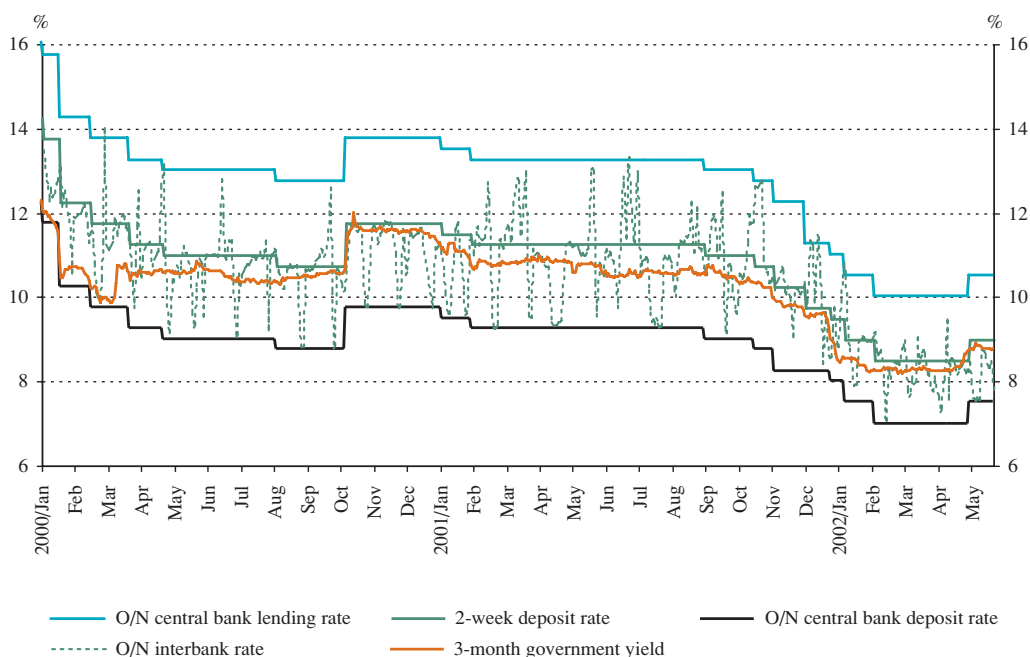
When bank credit facilities are being priced, the 3-month term (e.g. benchmark or BUBOR) is immensely significant both in the case of working capital credit facilities with 1-year maturity and development credit facilities with a maturity period exceeding 1 year, since most of them are variable rated. The pricing of retail deposits also allows for maturity periods of less

than 1 year, though over half of the portfolio includes deposits with maturities of more than 6 months (the majority mature in 6 to 12 months). However, the key policy rate plays a lesser role in this area compared to the one that it plays in the area of extending credit. The reason for this is that most banks in Hungary also keep an eye on strategic goals (e.g. market acquisition, the enforcement of monopoly prices, etc) in attracting household funds. Still, owing to the fact that **discount treasury bills** play a considerable role in household savings, it can be safely assumed that changes in government securities yields with maturities of less than 1 year apply even to household savings less exposed to competition.

The shortest-term and, therefore, the most sensitive rate in the money market is the yield

established in the *overnight interbank market*. Apparently, the central banks whose policy rate is the overnight rate, only intend to tolerate the smallest possible degree of volatility in the O/N interbank market. For central banks, the MNB included, whose policy rate is a longer term (2 weeks), the O/N interbank rate is only important to the extent that it can shift longer-term market yields on facilities maturing in less than 1 year in some direction. Therefore, the MNB maintains an *interest rate corridor symmetric* to the two-week *key policy rate* at the O/N maturity through its repo and deposit facilities, which is to ensure that O/N interbank rates remain within a relatively narrow band specified for 2-week deposit rates. In principle, however, O/N yields can still have an undesirable ripple effect on longer maturities, which is often the case when such yields stick to one side of the band

Chart 11 The Bank's key policy rate, the O/N interbank rate and the 3-month government securities benchmark yield within the Bank's interest rate corridor



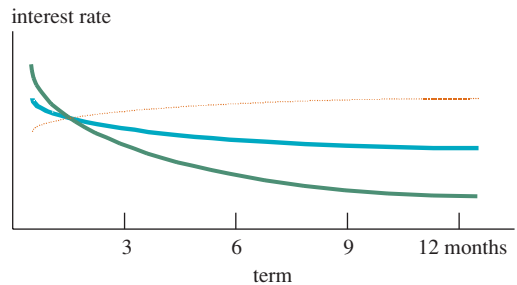
during the reserve period, as a result of which rollover yields on O/N credit facilities or deposits differ from the Bank's actual rates. In order to be able to manage such exceptional situations, the MNB has a short but variable term quick tender that can, during the reserve period, manage **liquidity situations** that are substantially different from what banks expect (see *Chart 11*). (For details, see the chapter on instruments.)

Ultimately, using *the forward interest parity*, the Bank can influence longer-term yields through short-term rates. Accordingly, the 3-month yield reaches a level where the yield on 3-month investments is equal to the expected yield on 2-week investments rolled for 3 months. Providing, for example, that the market expects stable 2-week central bank rates, the 3-month nominal yield should exceed the 2-week one, for rollover investment earns compound interest. If it expects an overall reduction in interest rates, then **the yield curve** will be inverted, as, during the rollover of 2-week investments, reinvesting is only possible at increasingly lower rates.

When the market is highly likely to expect interest rate cuts, the yield curve will **pivot** around the Bank's key policy rate. This can be attributed to the fact that market players wish to earn the largest possible profit from the envisaged repricing induced by rate cuts. When the yield curve, owing to an interest rate reduction, shifts downwards, parallel to where it stood earlier, the price of financial instruments with high duration will increase considerably. Aware of this, market participants strive to purchase fixed rate securities with the longest possible maturities when interest rates are expected to fall, which pushes up (down) the price of (yields on) these securities well before the occurrence of rate cuts. The effectiveness of this speculative strategy can be further improved if the investor uses short-term, e.g. interbank, loans either to purchase longer-term securities, bearing in

mind that yields on short maturities, too, will fall after interest rate cuts. Thus he will be able to finance investments with a longer maturity by means of cheaper, short-term funds. When rate cuts are expected to occur, increased demand for short-term funds triggers an increase in very short-term yields (see *Chart 12*).

Chart 12 Pivoting of the yield curve in the case of expected interest rate changes by the central bank



In summary, expectations of interest rate cuts lead to the pivoting of the **yield curve** and the movement of the yield curve reflects anticipated interest rate changes on longer maturities. Therefore, if the Bank does not change the rates and interest rate cut expectations heighten from time to time, the volatility of longer-term yields will increase even when central bank interest rates are stable.

The volatility caused by pivoting is not necessarily detrimental since it provides the Bank with information on interest rate expectations. If, in such cases, the Bank intends to curb the shift in O/N yields by using 'traditional' instruments, e.g. a narrow **interest rate corridor** or the provision of supplementary liquidity, in doing so, it only increases the number of speculative opportunities for money market players, who can obtain cheaper short-term funds.

III. INSTRUMENTS OF MONETARY POLICY

HISTORICAL OVERVIEW OF DEVELOPMENT⁴⁷

The instruments of monetary policy have undergone a huge development since implementation of the **two-tier banking system** and changeover to a market economy. Not only the objectives of monetary policy, but the instruments available to achieve them as well, largely depend on macroeconomic and institutional conditions, i.e. on the development of the banking sector and financial markets, the exchange rate regime, the extent of liberalisation as well as the banking sector's overall liquidity position.

It was only after progress with the banking reform and the accomplishment of deregulation, decentralisation and development of the market that the focus was shifted towards improving efficiency, cleaning-up the Bank's balance sheet and harmonisation with EU laws. This allowed the Bank to implement a gradual switch from imposing credit quotas to using **open market operations**, i.e. from the direct instruments of the 1980s to today's EU-conforming **instruments**.

USE OF DIRECT MONETARY INSTRUMENTS (1987–1992)

During the history of the Hungarian **single-tier banking system**, the major instrument of monetary policy was the *credit quota system* – in drawing up economic plans, credit lines were established to finance state investment projects, private home-building programmes, export promotion policy, etc. Implementation

of preferred objectives was supported using interest rate subsidies or subsequent interest reimbursement by the central budget. With permission being given for inter-company lending, some forms of the money market appeared in the 1980s (although interest rates on inter-company lending and other conditions largely remained a dark spot for monetary policy), and the use of bills of exchange started.

In the early phase of implementing the **two-tier banking system** (1987–1992), the use of direct instruments was dominant. The essence of this was that the Bank had a direct influence on developments in economic variables it wished to control and, as a **monetary authority**, issued rules of mandatory force to commercial banks. The most frequently used direct instruments were direct interest rate controls (setting ceilings or, eventually, floors for interest rates, and interest margins) and lending ceilings (credit quotas).

More stringent control and the use of direct instruments were inevitable initially, as it was not possible to employ indirect instruments due to the underdevelopment of markets.⁴⁸ The explanation for this policy approach is that, in order for the Bank to exercise an influence on the economy, it had to intervene directly and emphatically. Later, however, several factors led to direct instruments being given a secondary role – for example, direct limits deprived the banks of the incentive to

⁴⁷ A discussion of the monetary policy instruments can be found in the next section presenting the conceptual details of the instruments and their current operation.

⁴⁸ These were often used in countries with sophisticated financial systems, for example, during periods of lending expansion.

collect deposits once the credit ceiling was achieved; they pared down competition in the market; banks developed innovations tailored to local conditions and restrictions, which enabled them to circumvent regulations; and they encouraged the establishment of a financial intermediary system outside banks.

The organisational separation of the Hungarian banking system was in place from 1 January 1987, but the development of genuine competition among banks was only a step-by-step process. In the first two years of their operation, commercial banks were not permitted to pursue retail banking activities – they were only allowed to collect deposits from, and provide lending to, the corporate sector. Nor were commercial banks licensed to conduct foreign exchange transactions and collect foreign exchange deposits until the spring of 1989. Hungary serviced a massive amount of *net foreign exchange debt* and, at the time of implementing the two-tier system, outstanding debts were reflected in the MNB's balance sheet. With the detachment of commercial banks, the Bank's loans outstanding to the corporate sector were transferred to banks; however, net foreign debt, providing a source for a major part of finance to the corporate sector, remained in the Bank's books.

Although corporate and retail banking operations were no longer handled separately as from 1 January 1989, for some time integration was made more difficult by the fact that special reserve requirements provided protection for the deposit portfolio of OTP, i.e. for funds available to provide finance for households, particularly home-building loans. However, this regulation left certificates of deposit unaffected, providing banks with the opportunity to compete for increased household savings. Whereas corporate deposit and borrowing rates were liberalised as early as

1987, retail rates were liberalised only after the integration of bank operations. Nevertheless, the Bank continued to impose interest rate ceilings on household deposit and borrowing rates, and certificates of deposit, until 1991.

Under the circumstances of strongly *restrained competition*, already noted, and the prevailing macroeconomic situation (i.e. significant **current account** deficits, lasting double-digit **inflation** and frequent, substantial devaluations), commercial banks had no other choice but to rely on the Bank to provide them with funding; and *this channel of refinancing was the fundamental instrument of central bank regulation until 1991.*

From a demand aspect, appetite for central bank refinancing was virtually insatiable, as the 'soft budget constraint' in corporate financial management continued to exist. In contrast, regulations concerning debtor rating and provisioning as well as other **prudential rules**, which would have been useful in obtaining a 'realistic' picture of credit risks and the financing bank's financial results, were not yet in place. Owing to the existing macroeconomic environment, i.e. unquenchable thirst for credit and the banking sector's readiness to provide lending, the Bank had to impose restraints on **demand for liquidity**. However, due to the interest inelasticity of demand for credit, interest rate policy was not a suitable instrument. As the banking sector was still strongly dependent on central bank funding, there remained the option of regulating liquidity using direct instruments – *reducing the normative short-term refinancing credit lines of banks.*

Confidence deficit, problems with liquidity management and default risks all were impediments to the development of the money market, so the Magyar Nemzeti Bank, by

virtue of its central role, began organising a centralised **interbank money market** and the auction market for **treasury bills**.

In the *centralised interbank market*, participants were in contractual relationship with the Bank, rather than with each other. Consequently, the MNB had a commitment to repay loans, provided that a borrower was not able to meet its liability to pay on deadline (however, the Bank had the right to exclude non-performing banks from this market). The Bank pursued this activity 'off balance sheet', as an agent, driven exclusively by the idea of building a market.

The Magyar Nemzeti Bank operated the *auction market for discount treasury bills* as from December 1988. The yields evolving in the auctions, given that they could not break away from (corporate) deposit rates, had an impact on the general interest rate level. The acceptable yield maximum (i.e. the minimum price that could be accepted at the auction) was determined by the MoF; the main reason for making this decision was provided by developments in the general financing requirement. It is important to emphasise this because during this period, when the market was characterised by ample liquidity and the Bank had no other instrument to absorb excess liquidity (1992), *the sale of discount treasury bills in the primary market played the role of sterilisation*. The impression that discount treasury bill auctions were part of the Bank's set of instruments was reinforced by the coincidence of endeavours by monetary policy to achieve a general reduction in lending rates and the natural need of the Central Budget to reduce the costs of financing (i.e. treasury bill yields). Issuing, however, was determined not by monetary criteria but the financing requirement of the Budget, which did not necessarily coincide with the requirements of monetary policy.

USE OF INDIRECT INSTRUMENTS (1992–1994)

The lack of money markets and limited competition among banks hindered the MNB in developing its monetary policy instruments until the early 1990s. As a result of higher inflows of foreign capital, strengthening propensity to save and changes in the institutional conditions (e.g. the new Central Bank Act, the Bankruptcy Act and the Accounting Act), the economy became even more open; and competition intensified in the banking sector, which was still regulated using direct controls. This provided the Bank with the opportunity to develop its monetary policy instruments. During the post-1992 years, *central bank policy served the objectives of building the market further and enhancing efficiency*.

The use of *indirect instruments* is based on the central bank's ability to influence money market conditions. Indirect instruments include **open market operations** (OMOs), auctions/tenders and **reserve requirements**. The conduct of OMOs means that the central bank intervenes in an existing **secondary market**, absorbs or injects liquidity and buys or sells government securities. The outright sale or purchase of a government security and a repo are typical OMO. However, the central bank may engage in similar operations in the **primary market** as well, especially in countries with less developed financial markets. The term OMO is often exclusively used to describe operations conducted in the secondary market, and interventions in the primary market are distinguished as 'market conforming' transactions. But issuance of central bank paper, collateralised lending transactions, auctions and tenders are also categorised into OMOs by international literature, although there is no secondary market behind these instruments.

In the initial years, when the Bank was able to use genuine indirect instruments only in a very limited way because of the underdevelopment of the markets, the **reserve ratio** was given an important role. By altering the ratio, through its effect on **money multiplication**, the Bank retained its **control over liquidity**. The Bank raised the ratio several times, in order to offset the acceleration of multiplication and narrow liquidity. From September 1990, the Bank paid interest on required reserves, which partly offset the loss of income for banks caused by the high ratio in international comparison.

The pre-condition for performing open market operations was the large amount of outstanding securities built up as a result of massive issues of **treasury bills**, continuing for years, of commercial bills, of commercial bonds appearing in the early 1990s as well as the substantial quantity of government bonds issued for the purposes of bank consolidation. In addition, the organisation of the issue and trading of these securities established the technical and professional experience required for using similar money market instruments at both the Bank and commercial banks. As from 1993, the MNB introduced *repurchase agreements (repo) and reverse repurchase agreements (reverse repo) conducted with government paper*, as standing facilities. These indirect instruments satisfied the short-term demand of financial institutions for liquidity (or absorbed their liquidity surpluses), were aligned to the process of financial liberalisation and deregulation, and constituted a more sophisticated tool of regulation than the opportunities provided by altering refinancing credit lines. However, the Bank developed its conditions in a way that it was worthwhile for banks to turn to the interbank market when they were facing liquidity shortages.

The decentralisation of foreign exchange banking was a process which took several years to accomplish; and restrictions on foreign exchange transactions were eased gradually. Until 1991–92, banks were obliged to sell to the MNB the foreign exchange above that intended for licensed lending and limited use. From then on, however, they were permitted to freely buy and sell foreign exchange from one another. The then narrowly regulated *interbank foreign exchange market* began to operate in July 1992, where the exchange rate of the forint moved in response to variations in demand and supply. This meant that monetary policy was able to influence movements in the exchange rate through conducting **interventions in the foreign exchange market**. Once this was in place, the regulations limited the risks arising from banks' foreign exchange positions not directly, but through banks' **open foreign exchange positions**.⁴⁹

Commercial banks were also permitted to use foreign exchange funds deposited with them to expand their forint liquidity. With the enlargement of the range of *transactions covered by foreign exchange*, the Bank helped the banking sector to manage its own liquidity. This was also an incentive for commercial banks to raise funds abroad. The purpose of the *foreign exchange deposit swap facility* was to convert long-term foreign borrowings and short-term foreign exchange liabilities into long-term forint borrowings. The essence of the facility was that the MNB offered medium or long-term forint refinancing credit against foreign currency deposit kept with it, in a period when long-term liabilities had not yet been generated domestically. The amount was calculated on the basis of the exchange rate quoted on the day a deposit was placed. The swap facility also eliminated the **exchange rate risk**, arising with the on-lending of foreign and

⁴⁹ The total open foreign exchange position of a credit institution may not exceed 30 per cent of regulatory capital.

domestic foreign exchange funds in forint terms, which would have been substantial under the given conditions of economic policy and the *absence of instruments* suitable for risk management.

The development of the **interbank** foreign exchange market and increasing possibilities for foreign currency lending abroad enabled the Bank to gradually close down this channel of refinancing, first at shorter maturities (in 1993), and then also at medium maturities (in 1995). The maturity constraints on forward markets, serving as a tool to hedge against exchange rate risk, and the scarcity of long-term funding both justified keeping in operation a foreign exchange deposit swap facility *accessible for the exclusive purpose of project finance* until 1998. This, however, could not be regarded as part of monetary policy instruments.

However, short-term *foreign exchange swaps* did constitute a part of the **set of instruments**. *From 1993 until 2001, foreign exchange swap transactions had a role identical with that of repo transactions in monetary policy, and they had matching conditions.*

The *outstanding stock of refinancing loans* continued to account for a considerable proportion of the Bank's assets. As commercial banks could not have been able to borrow abroad directly, the MNB had contacts with foreign lenders and re-channelled foreign currency funds to commercial banks. Therefore, these (forint) refinancing loans did not constitute a part of monetary policy instruments, given that the Bank only assumed an intermediary role, explained by the longer time required for building confidence and a system of relations, particularly in a transition economy. Refi-

nancing loans also included long and short-term loans provided in the pre-1987 period, which were linked to the early stages of the **two-tier banking system**. But the majority were project finance loans or served various selective purposes (e.g. export promotion, reorganisation, re-starting business, establishing modern forms of ownership, etc.).

The instruments of monetary policy experienced a rapid development in the period 1992–94, with the requirement to further develop the existing instruments often going ahead of institutional development. Market conforming interventions had their institutional, regulatory or market hurdles – the strong increase in liquidity caused by capital inflow, or the position of the Central Budget as well as the method of financing it often influenced fundamentally the central bank instruments. Abandoning the quantitative control, the Bank made a gradual shift to *exercising monetary control through interest rates*.⁵⁰

FUNCTIONAL CLEAN-UP AND STERILISED INTERVENTION (1995–2000)

Up to 1994, the MNB had a catalytic role in Hungarian economic policy. However, the banking sector increasing in strength and the financial markets developing further allowed it to make *policy instruments more simple and market conforming* from 1995. The current most important functions of instrument were developed practically after 1995. Monetary policy's room for manoeuvre was primarily shaped by the narrow-band exchange rate regime, the resulting restricted interest rate policy and surplus liquidity flowing into central bank sterilisation instruments. The Bank's standing facilities, the method of selling the main policy instrument, the introduction of the quick

⁵⁰ Tarafás (1995) presents a detailed account of monetary policy instruments used during the initial years of the two-tier banking system.

tender and the gradual reform of reserve requirements offered greater room for banks to manage their liquidity, boosted the banking sector's efficiency and improved the effectiveness of transmission through the development of the interbank market. The MNB controlled its operating target through changes to the key policy rate; and, from 1998, it defined an interest rate target only at one maturity. The Bank made efforts at *eliminating from its balance sheet activities which were not compatible with the core central banking functions*, and allowing either the general government sector or the market (i.e. the commercial banks) to re-channel refinancing loans and foreign borrowings as well as to convert long-term foreign currency deposits into forint loans.

It took several years to *establish the conditions for conducting open market operations* in Hungary. The outstanding stock of refinancing loans had been falling gradually since 1994 (it reached its highest level at HUF 357 billion). With the aim of cleaning up its balance sheet, the MNB transferred the diminishing stock of refinancing loans to the Hungarian Development Bank.

Although the instruments which the Bank used to regulate banks' demand for money more variably were developed gradually, from time to time the Bank had recourse to **reserve requirements**, in order to regulate banking sector liquidity, due to the relative underdevelopment of financial markets. Changes to the reserve ratio have an immediate and powerful effect, and so in the early period of foreign capital inflows the Bank used the opportunity to raise the reserve ratio as well. At that time, the reserve ratio was high in Hungary in comparison with developed countries; therefore, the Bank's longer-term goal was to lower the reserve ratio significantly. Lowering the reserve ratio reduces the tax on banks' income and, through this, it improves domestic banks' competitiveness.

In the exchange rate mechanism introduced in 1995, the exchange rate of the forint was pegged to one currency (**currency basket**), the exchange rate fluctuating in a narrow band of $\pm 2.25\%$ with a pre-announced devaluation rate. The Bank conducted automatic **interventions** at the lower and upper edges of the band, i.e. it was ready to buy or sell foreign currencies. The interest rate level, being consistent with the MNB's anti-inflation objectives, was associated with substantial inflows of foreign capital. The *Bank absorbed surplus liquidity* caused by foreign currency inflow (**sterilisation**). In the period 1995–2001, i.e. under the narrow-band exchange rate regime, the almost uninterrupted purchases of foreign currency increased **foreign exchange reserves** on the assets side, and the outstanding stock of sterilisation instruments on the liabilities side, of the Bank's balance sheet. Banks placed surplus liquidity arising from capital inflow into **reverse repo**, central bank deposits or MNB bills.

For over a longer period, the Bank actively used its *outright securities transactions*, but these did not become substantial instruments of monetary policy. One reason for this was that after a period, repo proved to be a more effective tool for controlling the money supply. The other reason was that strong capital inflows and required sterilisation by the authorities tapped the Bank's holdings of government paper, which reinforced the hurdles to spot securities transactions, thereby making it more difficult to use the outright (and *reverse repo*) instrument. One technical impediment to the conduct of deals was participants' inability to collateralise their large-amount transactions with government securities of the same type. Nor did the Bank's eligible counterparties use the advantages offered by reverse repo (e.g. they did not re-repo securities), and thus a sophisticated repo market failed to develop.

In view of these developments, the Bank introduced the *central bank deposit* in the autumn of 1997. The MNB deposit with a 28-day maturity became the Bank's **main policy instrument**, its role being to influence interest rate movements and strengthening sterilisation. In March 1999, the Bank switched over to the 14-day deposit, which had a better fit with the length of the maintenance period, and so it made it considerably easier for banks to manage their liquidity (see Table 6).

In the countries of central and eastern Europe, massive capital inflows were particularly characteristic in the period of transition, the effects of which on the money supply the central bank neutralised using various *sterilisation instruments*. One reason for this was that in these **small, open economies** the exchange rate played a principal role in stabilising the price level. Consequently, these countries used the exchange rate as a **nominal anchor**, and so they were forced to conduct substantial interventions for a long period. Another reason for ample liquidity was that the central banks in the region lowered the reserve ratio gradually, consistent with international trends.

The one-year MNB bill was first issued in June 1997, serving the purpose of *sterilising at longer maturities*. The objective of introducing the MNB bill was to impede the rapid depletion of foreign exchange reserves in the event of a potential external **shock** and an opposite intervention (sale of foreign currency by the central bank). The liquid MNB bill took over the role of the longer-maturity deposit facility, which the Bank meanwhile ceased to operate. Initially, the Bank sold the bill at a fixed interest rate, then it switched over to selling at auctions. In the aftermath of the Russian crisis, the outstanding stock of sterilisation instruments fell considerably as a result of interventions conducted at the lower edge of the intervention band. Thus the Bank ceased to auction one-year bills from October 1998.

The Bank re-introduced the MNB bill in March 2000, but this time with a maturity of three months. As commercial banks had exclusive access to the two-week deposit facility, involving non-bank participants' liquidity entailed difficulties and additional costs. The objective of re-introducing the instrument was to *widen the range of marketable financial instruments* –

Table 6 Instruments determining Hungary's key policy rate since 1993

Instrument	Operation	Market form	Maturity	Period of use
Repo	Liquidity-providing	Standing facility	1 week and 28 days	1994–mid-1995*
Reverse repo	Liquidity-absorbing	Standing facility	28 days	Mid-1995–October 1997
28-day deposit (1-month)	Liquidity-absorbing	Standing facility, then intermittently available standing facility	28 days	October 1997–1 March 1999
14-day deposit (2-week)	Liquidity-absorbing	Intermittently available standing facility	14 days	From 1 March 1999

* In this period, the dominance of the main policy instrument within the Bank's transactions was not clearly attributable to the role itself, but rather to the assured income achievable in buying government paper and the financing needs of banks with weakened liquidity.

it ensured that the three-month government securities yield and the Bank's key policy rate could not break away from each other permanently. At the auctions (the last one of which was held in April 2002), the Bank adopted a price-taking stance and it did not give signals through the evolving yields (see Table 7).

In the narrow-band exchange rate mechanism, the Bank operated its liquidity-absorbing instruments at a number of maturities as well, for example, at 1 week, 2 weeks and 1 month. However, as far as the liquidity-providing instruments are concerned, **repo** was only operated at the 1-week and overnight maturities.

In Hungary, the overnight *interest rate corridor*, defined by overnight interest rates, was *extremely wide by international standards for a long time* (the width of the band reached 8–12 percentage points). One reason for this was that, after 1995, interest rates on the liquidity-providing instruments were not really effective, due to their relatively high level, and therefore none of the instruments was able to play the role of the interest rate ceiling. As a result, for a long time overnight interest rates on liquidity provision only followed the fre-

quent changes to the main (policy) instrument and the liquidity-absorbing overnight instrument with occasional corrections.

The upper limit of the Hungarian **interest rate corridor** was associated with a quantitative limit until April 2001. This meant that repo and swap limits, defined on the basis of the balance sheet total, constrained overnight borrowing by credit institutions (i.e. their repo and swap transactions), in order to make exchange rate speculation more expensive. If this proved to be insufficient, banks were allowed to use supplementary repos, above their own limits and up to the amount of their free holdings of government securities. However, they only had access to the supplementary repo facility at a much higher interest rate. The Bank ceased to operate the swap as a component of the interest rate corridor, the *supplementary repo*, and the quantity limit of repo and swap transactions in April 2001. The reasons for abandoning the *swap* were that it was utilised at a low rate and that government securities holdings of the banking sector did not make it necessary for the Bank to accept foreign currency as collateral, in addition to government paper.

Table 7 The MNB's sterilisation instruments in the past

Instrument	Market form	Maturity	Period of use
Reverse repo	Standing facility	28 days	March 1995– September 1997
Deposit (main policy instrument)	Standing facility, then intermittently available standing facility	28 days	September 1997–1999
		14 days	1 March 1999–
6 and 12-month deposits	Standing facility	6 and 12 months	January–June 1997
MNB bill	Intermittently available standing facility, then auctions Interest rate tenders, then quantitative auctions	12 months	July 1997–October 1998
		3 months	March 2000–July 2002

PREPARATIONS FOR ENTRY INTO THE EMU

Hungary's likely accession to the EU and, later, the adoption of the euro make it necessary to harmonise the MNB's monetary policy with the ECB's regulations. In developing the instruments used by the MNB, therefore, *compatibility with the instruments of the European Central Bank* is given an increasing role, in addition to transparency and cost effectiveness.

In 2001, the MNB continued to reform its functions; and widening the intervention band of the forint on 4 May 2001 brought a number of changes to the Bank's monetary policy **instruments**. A more ambitious disinflation policy implies a more active monetary policy. With widening the exchange rate band, interest rate policy has now been playing a less subordinated role than earlier.

From mid-2001, the central bank base rate, earlier playing a role in accounting, became the key policy rate of monetary policy. In order to reduce excess volatility of interbank interest rates, the width of the interest rate corridor was narrowed to 200 basis points in September 2002. The MNB's standard collateral assessment system was revised, the risk of inadequate cover diminished, and both the availability of standing facilities and the opening hours of the settlement system (VIBER) were lengthened. In contrast with credit institutions of the European

Union, reserve requirements are a *tax on domestic banks' incomes*, as the interest remunerated on required reserves is lower than the Bank's key policy rate. If this were maintained, domestic banks would suffer a competitive disadvantage following entry into the EU. For this reason, the differential between interest remunerated on required reserves and the key policy rate will be eliminated by the time of Hungary's accession at the latest, in line with the Bank's medium-term strategy announced in June 2001. The new criterion of exemption from reserve requirements (i.e. a maturity of more than 2 years) is in line with the principles of the ECB.

As the exchange rate is now allowed to move between wider boundaries, the *likelihood of foreign exchange interventions* at the lower edge of the intervention band *has decreased*. Increased volatility of the exchange rate and interest rates, associated with the more flexible exchange rate mechanism, and the need to handle higher risks facing the money and capital markets have necessitated developing a new approach to scheduling foreign exchange liberalisation. With the removal of foreign exchange controls in a single step, the forint became a fully convertible currency for both residents and non-residents. Foreign exchange liberalisation facilitated interpenetration between the various segments of financial markets, and the strengthening of the Hungarian derivatives markets.

THE OPERATION OF INSTRUMENTS TODAY

The primary objective of the Bank in conducting its money market operations is to implement an effective **transmission** of central bank interest rate changes, to assist banks' liquidity management and contribute to banking sector stability. Endeavours to improve the effectiveness of financial intermediation and enhance competition in the financial market contribute to the implementation of the Bank's goal – the protection of the value of the national currency.

Monetary policy instruments Chapter II of the Central Bank Act

Article 7. The MNB shall implement its monetary policy with the following instruments:

- a) accepting deposits and, subject to the restrictions described in Article 16, lending based on adequate collateral, within the scope of its account management,
- b) buying, selling and mediating securities on spot and derivative markets within the framework of open market operations and repurchase agreements,
- c) issuing its own debt securities,
- d) influencing and setting exchange rates and interest rates,
- e) discounting (rediscounting) securities,
- f) minimum reserve requirements; and,
- g) using other central bank instruments.

The instruments of monetary policy are strongly determined by the central bank and its objectives – their identical form often cover different functions. *Potential central bank*

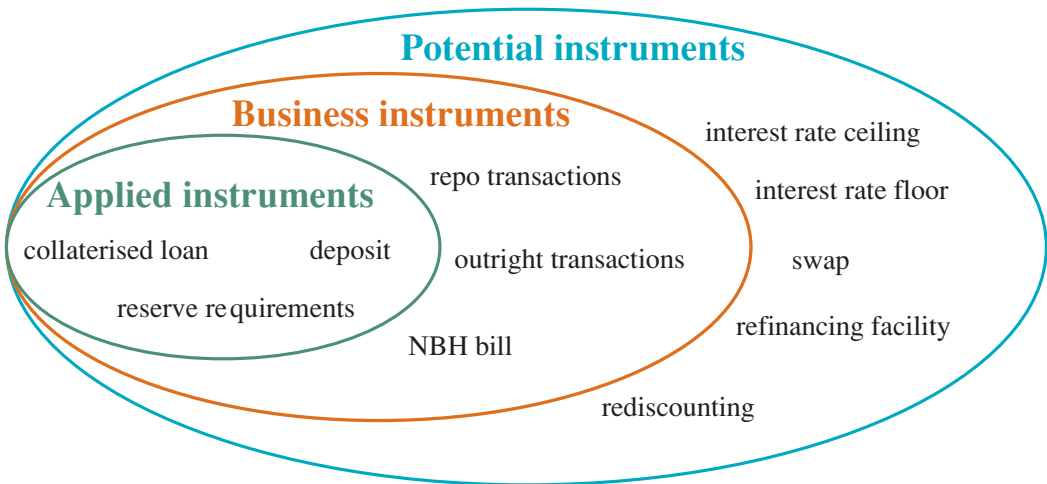
instruments mean the totality of monetary policy instruments which may be used under the authorisation of the Central Bank Act.

A narrower concept than the one noted above is the set of *business instruments*, which means all those instruments for which the MNB has developed its business conditions in force or there is a central bank regulation in place (e.g. MNB regulation on minimum reserve requirements), irrespective of whether the Bank uses the given instrument or not. These instruments are either in operation or the Bank's decision-making body may decide on their use at any time, given that their framework conditions are continuously in place. The set of instruments is most often referred to as the Bank's business instruments (see *Chart 13*).

The *applied instruments* constitute a part of the business instruments. These include instruments in which the Bank and its counterparties transact on a regular basis. In addition, applied instruments not only include instruments that are offered on the basis of continuous availability, but also those whose sale must be announced by the Bank at regular intervals.

The elements of the set of instruments can be grouped according to a number of criteria. They can be distinguished by *technical form*, *objective* or *eligible counterparties*. In addition, instruments may also be classified according to the *form of sale* or *frequency of use*. From the perspective of the party initiating the transactions, discretionary instruments and standing facilities are distinguished (in the

Chart 13 Structure of the MNB's forint instruments in early 2002



case of the former, it is the central bank that decides whether it uses the instrument and, if it does so, how much liquidity it provides/absorbs using the instrument; the latter can be conducted on the initiative of counterparties).

The instruments are frequently broken down into direct and indirect instruments based on their *impact mechanism*. Direct instruments include regulating commercial banks through the highest lending rate or the lowest/highest applicable deposit rate, and using credit or deposit lines. The indirect instruments include **open market operations**, for example, **outright sales or purchases of securities**, deposit tenders, bill auctions as well as reserve requirements.⁵¹

The same central bank objective can be achieved using several of the monetary policy instruments; however, the MNB's most important guiding principle is *to use the instrument with an ability to exert the greatest influence in*

the effort to achieve a given operating monetary policy objective. Beyond the principle of 'one operating target – one instrument', the Bank always attempts to have a clear and transparent architecture of instruments and cost effectiveness (the Bank does not induce extra costs unnecessarily), to serve the objective of building a market within the financial intermediary system and to harmonise its instruments with those used by the **ESCB**, in order to assist the country in joining the EMU as smoothly as possible.

Resulting from the MNB's endeavours to always use the most effective instrument, as noted above, the most important guiding principle in understanding the sets of instruments is functionality. For this reason, in the following the central bank instruments will be presented using mostly the classification according to functional characteristics, starting from the current practice of the MNB. In order to elucidate the use of concepts, however, the following section provides a brief outline of

⁵¹ For more details, see the Chapter 'Historical overview of development'.

Table 8 Major features of the current set of instruments

Objective	Functional name	Technical form	Maturity	Method of allotment	Operation
Defining monetary policy	Key policy rate	Deposit	2 weeks	Intermittently available standing facility	Influencing the operating target variable, Signalling
Smoothing volatility of interbank rates	Interest rate corridor	Deposit	O/N	Standing facility	Controlling extreme interest rate movements
		Collateralised loan	O/N		
	Quick tender	Collateralised loan or deposit	Variable	Tender	Managing unexpected liquidity shocks; fine tuning
	Required reserves	Averaging mechanism	-	-	Reduces interest rate volatility (a higher ratio means higher reserve level and increases the potential effectiveness of averaging)

the basic instruments which make up the sets of instruments, according to their technical form, before a discussion of their functions (see Table 8).

THE BANK'S INSTRUMENTS BASED ON THEIR FORM

Based on their form, the following basic instruments can be distinguished within the MNB's **instruments**: outright securities transactions, repo, collateralised loans, central bank deposits, issue of debt securities and swap. Within these, outright securities transactions, repos and swaps may be instruments of both liquidity provision and absorption, whereas the rest are exclusively qualified either as liquidity-providing or liquidity-absorbing transactions, depending on the banking sector's net liquidity position.

In recent decades, **open market operations** have been provided with an increasing role within the Bank's monetary policy instruments. The explanation for this is that they have a number of advantages vis-à-vis the other instruments (refinancing tools, **required reserves**) – they can be employed flexibly to perform monetary management tasks even on a daily basis; the central bank retains its inaugural role; they can be announced several times a day; and they do not have the 'signalling' impact (as have, for example, interest rate decisions).

Outright transactions

Under outright *purchases or sales of government securities* which qualify as classical open market operations, a central bank trades in securities, primarily government paper, in the

secondary market in order to control liquidity supply.

Outright operations are initiated by central banks (a discretionary instrument). Nevertheless, they do not put pressure on the market and, therefore, banks decide on their own, depending on their assessment of market conditions, whether they accept the central bank's offer. However, a precondition for the use of this instrument is that an adequate amount of securities should be outstanding in the market, i.e. there should be advanced and liquid primary as well as secondary securities markets in the given country. In the absence of these conditions, classical outright operations have become the decisive instruments of monetary policy in relatively few countries (e.g. United States, United Kingdom).

The development of securities markets, however, brought about innovations and transactions which did not require similarly large amounts of outstanding securities as did outright operations; yet they proved to be successful in liquidity management in the banking sector. An example of this type of instrument is represented by securities repurchases (i.e. repo transactions).

Repo

The term is an abbreviation derived from 'sale and repurchase agreement', which is most widely referred to as 'repo' in the financial terminology. A repo transaction is the result of two transactions whereby the counterparties handle the transactions as a single package. The first leg of the transaction is the **spot** sale or purchase of a given security (mostly a gov-

ernment paper), followed by a **forward transaction** (i.e. the repurchase or resale of the security at a future date specified in advance) which equals to reversing the spot transaction. The counterparties agree on the selling and forward repurchase prices at the very beginning of the transaction. Essentially, a repo is a loan provided against collateral, and the difference between the two prices (in concept) equals the rate on a loan secured by collateral. This rate is referred to as the repo rate.

As far as title to the security used as collateral is concerned, *delivery repos* and *hold-in-custody repos* are distinguished. In the case of a delivery repo, the title is transferred for the period of the transaction by the seller to the buyer,⁵² who may have free disposal over the security during this period (i.e. he may sell, re-repo, lend or pledge it as collateral). At the time of the forward repurchase, the buyer has to return the original security or, depending on the agreement, a security with corresponding conditions to the seller. In the case of a hold-in-custody repo, the title is retained by the seller, but the seller places the securities on a separate deposit account for the buyer. Should the seller be unable to honour the payment obligations at the date of the repurchase, the title to the securities is transferred to the buyer.⁵³

The Bank's repo terminology distinguishes between **repo** and **reverse repo** transactions. A repo is a deal under which the Bank provides finance to the given counterparty against government paper used as collateral (here the counterparty is the borrowing party to the transaction). A reverse repo is the opposite of this, whereby the Bank performs a repo transaction with an eligible counterparty in the

⁵² In a classical repo, the terms 'seller' and 'buyer' reflect terminology of the bond markets. Accordingly, the seller (or lender) is the party who sells his security in the initial moment, then repurchases it at a later date; the buyer (or borrower or investor) is the party who practically lends money against security as collateral.

⁵³ The MNB used the hold-in-custody repo, given that, from a central bank perspective it is insignificant whether or not the central bank may endorse the government security received as collateral during the term of the contract.

course of which the Bank provides government paper as collateral against liquidity placed with it for a specific period of time.

Repo transactions constitute an important part of central banks' monetary policy instruments. An advantage of repos is that the maturity of government securities does not limit their use and that they are able to influence efficiently the central bank's operating interest rate target at a permanently short maturity. Using repos, central banks can be available at a directly announced interest rate level, or announce variable rate tenders. Repos have been rapidly gaining ground in the business sector as well – delivery repos are most often used here, which gives the opportunity to use them for a variety of purposes (given that title to the security serving as collateral is passed to market participants during the term of the repo).

The use of repos by financial markets in Hungary is fairly limited. Repo occupied a central position within the MNB's instruments until December 2001 – the **overnight repo rate** functioned as the upper limit of the **interest rate corridor**.

Collateralised loan

Repos and collateralised loans constitute the most widely used technical forms of central bank lending. It is the national central banks' prerogative to make a choice between them, and their use is generally determined on the basis of past experience and legal considerations. Central banks in many countries of the EMU use both instruments.

Up to end-2001, the MNB used the overnight loan facility only at the end of the day, as a liquidity-providing instrument. Earlier, the primary goal of this facility was to transact inter-bank settlements smoothly. Taking into account that the overnight collateralised loan

is able to play the role of the ceiling of the interest rate corridor by itself (i.e. that of the earlier overnight repo), the Bank decided to employ the overnight collateralised loan as the only available MNB instrument at the upper limit of the interest rate corridor from 2002. As a consequence, the overnight collateralised loan was given a dual role – it became one of the monetary policy instruments while continuing to assist intra-day settlements.

In respect of unlimited availability, interest rate, counterparties, eligible securities and the method of acceptance, the overnight collateralised loan has the same conditions as did the repo earlier. Given the current technical and institutional conditions, however, the overnight collateralised loan is more advantageous, as it leads to a more transparent system, allows the Bank to be available longer during the day and is backed by a totality of eligible securities (**pooling** system for collateral management). However, pooling had legal and technical obstacles in the past in the case of the overnight collateralised loan and, therefore, every transaction had to be backed by an individual security. Whereas there is only a technical difference between a hold-in-custody repo and an overnight collateralised loan, a delivery repo would make an important difference in respect of title to the security. However, the Bank has never used this facility.

Based on their limit submitted to VIBER, banks may apply for ensuring a loan on any business day between 8.30 a.m. and 5.00 p.m. whenever they wish. Settlement of deals transacted at the overnight maturity is the same day (T-day).

Central bank deposits

In a central bank deposit transaction, any of the Bank's counterparties place a certain amount of funds with the Bank under either pre-specified conditions or those evolving at tenders (includ-

ing maturity and interest rate), regardless of the method of allotment. A central bank deposit remains non-callable during its term.

A central bank deposit facility is similar to a central bank reverse repo; however, in the case of a reverse repo the Bank provides a security as collateral for the funds placed with it. In 1997, reverse repos were fully substitutable with the deposit facility having similar conditions. The central bank deposit facility is simpler than the reverse repo, as it does not require large holdings of homogenous securities as collateral. Anyway, for the MNB (as a secure debtor) it is not reasonable to provide collateral for funds placed with it.⁵⁴

At the two-week maturity, the central bank deposit has been the **main policy instrument** of the MNB since March 1999, and it has a role in absorbing structural excess liquidity. The overnight deposit sets the lower limit of the interest rate corridor, where the Bank is continuously available for accepting deposits. Overnight deposit deals can be transacted between 8.30 a.m. and 4.30 p.m. on each business day, while two-week deposits can be placed once a week (*intermittently available standing facility*), between 10 a.m. and 12 a.m.

MNB bill

The MNB bill is a debt security issued by the Bank, which its holder may use as collateral for its borrowing transactions with the Bank. The bill is as risk-free as any government paper.

The MNB bill was among the Bank's **instruments** between 1997 and 2002 at two different maturities and with various methods of allotment. Initially, the bill ensured sterilisation at maturities longer than that of the main poli-

cy instrument; later the aim with the issue was to widen the range of transferable money market instruments. The Bank ceased to hold bill auctions in April 2002. The final series of the bill matured in July 2002.

Swaps

A foreign exchange-forint swap is a transaction in the course of which one of the counterparties swaps his forint-denominated assets with another into assets denominated in some other currency. Generally, a swap is a forint-initiated transaction as most frequently the counterparty borrowing forints uses the foreign exchange as cover and pays interest on the forint credit. The MNB operated the overnight swap as a standing facility up to April 2002 under conditions identical to those of the overnight **repo**.

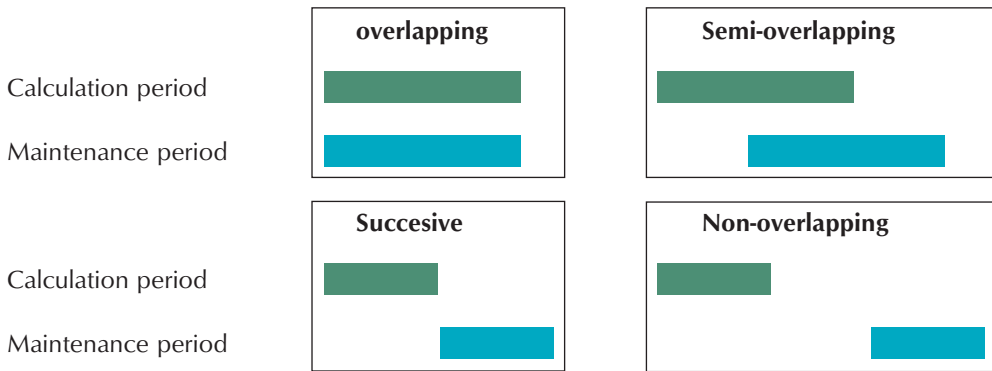
Reserve requirements

Reserve requirements set a percentage of credit institutions' liabilities which they are required to hold as reserves at the central bank. The regulatory task is diverse, and examples of use in international practice also widely differ in respect of the function on which a central bank places the major emphasis.

Through the use of reserve requirements, a *stable demand for central bank money* can be created, which, in turn, may help the central bank **liquidity management**. Required reserves directly reduce the banking sector's **liquidity**. The reserve requirement, in as much as it creates a liquidity shortage in the banking system, increases demand for central bank money, and therefore it contributes to the *effectiveness of the transmission mechanism*. In the event that a country's banking system holds a permanent liquidity surplus (for exam-

⁵⁴ Market building might justify the use of reverse repo, but the Bank does not hold large amounts of government securities which it could use as collateral.

Chart 14 Relationship between calculation and maintenance periods



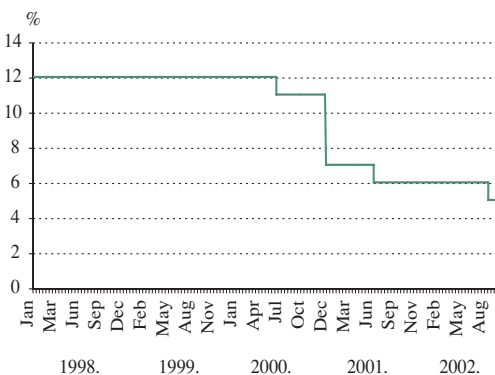
ple, during massive inflows of foreign capital), required reserves assist in absorbing structural liquidity surplus. In addition to this function, reserve requirements help to *smooth overnight interest rate volatility*.⁵⁵

The *most important components of reserve requirements* are the reserve base, the form of compliance, the reserve ratio, the entities sub-

ject to regulation, the remuneration of reserve holdings, the relationship between the period of calculation and the period of maintenance as well as the averaging mechanism.

The *reserve base* is generally the sum of liabilities, or a specified sub-set thereof (for example, liabilities with maturities of more than 2 years may be exempt from the requirement). The *reserve ratio* sets a percentage of liabilities held by the entities subject to the reserve requirement as specified by the central bank. The product of the reserve ratio and the reserve base, therefore, determines the amount of reserve requirements an institution is required to place at the central bank as a balance, which is important from the perspective of liquidity absorption. In most countries, the amount of reserve requirement must be transferred to the deposit account, although there may exist a separate account for holding reserve balances.⁵⁶ The entities *subject* to the reserve requirements are members of the financial system as defined by regulation (e.g. banks) which are required to hold minimum reserves with the central bank.

Chart 15 Reserve ratio in Hungary



⁵⁵ However, the original function of reserve requirements has been diminishing. This may be traced to prudential considerations – reserves served as a buffer against withdrawal of deposit and the fall in liabilities. Moreover, in the event of remunerating interest below market rates or remunerating no interest, required reserves play the role of an indirect tax.

⁵⁶ In some countries, the financial institution's vault cash is also counted towards reserves.

Most often, the calculation of reserve base is based on the daily average of liabilities subject to reserve requirements for a given period (*calculation period*). The reserve requirement calculated in this manner must be placed in central bank money for a given period (*maintenance period*). Most frequently, the periods of calculation and maintenance are equal in length, but, according to their relationship, there may be overlapping, semi-overlapping, successive or staggered periods. These differ from each other with regard to the estimates credit institutions have at the beginning of the maintenance period regarding their reserve required liabilities serving as reserve base, which vary in accuracy, and therefore they ensure different degrees of flexibility (see Chart 14).

The MNB regulation on required reserves (1/1996. /PK. 1./) only covers *credit institutions*, including the Hungarian branches of credit institutions with their headquarters abroad.⁵⁷ In order to reduce the tax on banks, the MNB has lowered the reserve ratio gradually – it has been 6% since July 2001 (see Chart 15). In Hungary, the reserve base exclusively depends on the type and maturity of the liability (but not on its **denomination**). Banks comply with reserve requirements on their *settlement accounts* held with the MNB.

The calculation period is one calendar month (this corresponds to the frequency taxes and contributions are paid), the length of maintenance period is similar to the length of the calculation period. The reserve base is the daily average amount of liabilities in a given month. Banks comply with the reserve requirement on the average of the period, but the balance on their settlement accounts can never dip

into the negative.⁵⁸ This regulation provides banks with an opportunity to flexibly manage their day-to-day liquidity. Another arrangement that helps bank treasuries in managing liquidity is that the MNB displays the time series of the banking sector's reserve requirements and compliance with the reserve requirements up to the given day on Reuters screens.

Beginning with the September 2002 reserve period, the Bank reduced the reserve ratio to 5%, and set the remuneration rate on reserves at 4.75%. With the reduction of reserve base and the reserve ratio, as well as the increase in reserve remuneration, the burden on credit institutions imposed by reserve requirements fell significantly, which improved Hungarian banks' competitiveness vis-à-vis credit institutions in the European Union. The reduction in the reserve requirement is expected to give a boost to the development of banks' **liquidity management**, given that they must operate efficiently with a tighter reserve balance. The changes to reserve requirements serve harmonisation with the ECB's regulations as well. Harmonisation affects almost every element of the reserve regulation (see Table 9).

FUNCTIONS OF CENTRAL BANK INSTRUMENTS

Within the **set of instruments** applied by the MNB, the following are distinguished:

- the instrument serving as the main policy instrument,
- instruments intended to reduce volatility of interbank rates and
- other instruments serving to influence the exchange rate directly.

⁵⁷ The Central Bank Act provides the theoretical possibility of subjecting investment enterprises outside credit institutions to reserve requirements.

⁵⁸ In Canada, the reserve ratio is zero, but it must be complied with on average in the period, so financial institutions may have a negative balance on its account with the central bank (zero averaging).

Table 9 Compulsory reserve regulation by the MNB and the ECB

	ECB	MNB
Reserve ratio	2%*	5%
Reserve base	1) Deposits with agreed maturity up to 2 years* 2) Debt securities issued with an agreed maturity up to 2 years* 3) Money market papers	1) Deposits 2) Debt securities issued with an agreed maturity up to 2 years 3) Other liabilities
Liabilities excluded from the reserve base	1) 1) Interbank liabilities, 2) Liabilities owed to the ECB or to a participating NCB 3) Repos*	1) Interbank liabilities 2) Liabilities owed to the MNB 3) Deposits kept with home-savings institutions under home-savings contracts 4) Repos
Compliance	Reserve account denominated in Euro, full averaging possibility	Reserve account denominated in Forint, full averaging possibility
Institutions subject to reserve requirement	1) Credit institutions 2) Branches of credit institutions	1) Credit institutions 2) Branches of credit institutions
Remuneration	Marginal interest rate of the main refinancing operation. (The excess reserves are not remunerated.)	5.75% (policy rate is currently 9.5%) (The excess reserves are not remunerated.)
Calculation of reserve base	The calculation is based on reported balance sheet data of the last working day of the month.	The calculation is based on monthly average balance sheet data.
Maintenance period	1 month Starting on the 24 th calendar day of a given month and ending the 23 rd calendar day of the following month.	1 month Starting on the 1 st calendar day of a given month and ending on the last calendar day of the month.

* The reserve base of Eurosystem includes deposits and debt securities with agreed maturity over 2 years and also repos; however, the reserve ratio applied to these liability categories is 0%.

The main policy instrument

The **main policy instrument** is the one whose purpose is to set the interest rate which the Bank regards as optimal, and which it also intends to mediate in the market at the maturity that is most decisive from the perspective of the transmission mechanism, taking into account the effectiveness of central bank intervention, without eroding it. This task is most frequently performed using a dictated interest rate, when the Bank determines the rate on the given instrument discretionarily. When there are no extraordinary **liquidity conditions** which could disturb the money market, a decisive portion of deals between the Bank and its counterparties is transacted at the **key policy rate**. Thus, through the **key policy rate** the **monetary authority** is able to exert a direct and highly effective influence on the operating target variables (generally, these are short-term money market rates which play a distinct role in the transmission mechanism of monetary policy).

Similarly, the **signalling** role transmitted through changes to the interest rate on the **main policy instrument** is also important. Frequently, expectations concerning changes in the **key policy rate** have an impact on the interest rates in themselves. When the Bank's policy coincides with the expectations of the market, another signal is emitted indicating that the market and the Bank assess financial and economic developments similarly. The signal is more spectacular, however, when the Bank takes an interest rate decision that deviates from market expectations (or when it does not take the decision expected by the market). In such circumstances, market participants, in addition to having access to central bank instruments at terms and conditions different from their expectations, experience that the Bank evaluates macroeconomic developments differently, which prompts them to re-evaluate

their own interest rate forecasts. Thus, the Bank is able to induce changes in the money and capital markets which go significantly beyond the direct market impact of the interest rate change.

The maturity regarded as decisive for the **transmission mechanism** has a fundamental significance in determining the maturity of the main policy instrument. The key policy rate changes have an impact on investment and consumption demand through household and corporate sector borrowing rates. This means that the maturity of the central bank facility which is closest to the main maturity of the transmission, i.e. *the period over which banks reprice their variable rate long-term credits*, can have the most direct influence on the real economy.

However, if the Bank chooses a relatively long maturity for the main policy instrument, then it may ease *speculation*, which should be taken into account, in addition to the period used by banks to reprice loans. Intense market expectations of a central bank interest rate decision (e.g. excessive or slack deposit-making) may force an official action meeting the market's expectation, i.e. the Bank would be under pressure to redirect its policy towards expectations.

The maturity of the main policy instrument must adequately assist and encourage banks' liquidity management as well. Consequently, an equilibrium maturity must be found over which transactions of the Bank are effective and whereby yield movements in the market can be influenced with the required efficiency.

In line with the provisions of the Central Bank Act, the MNB has defined the central bank base rate as its **key policy rate**. In Hungary, the *two-week central bank deposit facility* is

the main policy instrument, whose interest rate is the base rate.⁵⁹

The two-week maturity of the main policy instrument is optimal from the perspective of **transmission** – it is capable of effectively influencing developments in the short-term, i.e. three-month, money market rates, serving as the operating target of the MNB, and the process of repricing the rates on loans and deposits. Although the Bank is in a monopolistic position in the Hungarian **overnight** market, and at the same time the interbank market is the deepest in this maturity bracket, overnight operations would require repeated ‘interventions’ and would increase the Bank’s costs considerably. The two-week maturity satisfies both the principle of anti-speculation and the **ECB**’s practice. However, the other reason for the MNB choosing the two-week deposit as its main policy instrument is its suitability for absorbing liquidity in a secure way, with the one-month long maintenance period.⁶⁰

Instruments reducing volatility of interbank rates

It is an important matter from the perspective of a central bank whether abrupt twists in the liquidity conditions of the interbank market and, consequently, fluctuations in interbank overnight rates and short-term yields influence the effectiveness of the transmission mechanism of monetary policy, i.e. whether it spills over to the longer end of the **yield curve**. This may be harmful as in this case the liquidity position of the interbank market in a given moment affects developments in interest rates intended to be the central bank’s operating target and thus it conveys noise to the **monetary transmission** mechanism.

The level of free liquidity in the banking sector is in a tight, inverse relationship with interbank rates. In periods when banks have ample amounts of free reserves, they place their surplus funds in central bank deposits and the rate on those deposits will be a standard for interbank lending rates. If, however, the majority of banks are not satisfied with their own reserve positions, then their increased demand for reserves will raise interbank lending rates above the rate on the central bank deposit facility.⁶¹

Interest rate corridor

The central bank **interest rate corridor** is designed to prevent overnight interbank rates from fluctuating excessively, and thus it facilitates the effectiveness of transmission. The interest rates on the instruments positioned at the ceiling and the floor of the interest rate corridor being close to each other serve to stabilise and smooth movements in interbank lending rates.

The *top of the interest rate corridor* (rate ceiling), therefore, means that the Bank determines the lending rate at which it is willing to extend overnight loans against securities as collateral. Even if banks have extraordinary needs of short-term liquidity, but they are unable to obtain the required funds in the interbank money market for whatever reason, interest rates may not rise to extreme heights, as the Bank is ready to satisfy all needs for finance at a relatively high level. The level of interbank overnight rates, therefore, may not be higher than the rate ceiling.

Similarly to the above, the interest rate indicated by the Bank at which its eligible counterparties are entitled to perform overnight deposit or

⁵⁹ Prior to 2001, the bank did not transact at the base rate, it served as a reference rate for legal provisions. In addition, some elements of earlier refinancing facilities were priced on the basis of the base rate.

⁶⁰ Up to the autumn of 1998, the main policy instrument and the instrument used to manage liquidity within the maintenance period were separated – the maintenance period was two-week long (more exactly, there were two maintenance periods in one month). Within these, the one-week deposit was available to bridge over liquidity problems. The main policy instrument was the 28-day deposit.

⁶¹ See Gereben (1999).

deposit-type transactions with the Bank is referred to as the *bottom of the interest rate corridor* (rate floor). Occasionally, the interest rate declines in the overnight interbank market when there is an abundance of liquidity. The purpose of the rate floor is to arrest the decline in the interest rate at a relatively low point. At this rate, credit institutions may place their superfluous funds overnight with the Bank without limits, thus banks have no interest in entering into overnight interbank transactions at a rate lower than the bottom of the interest rate corridor.

Using the interest rate corridor, therefore, excessive volatility of interbank rates can be limited. Its instruments generally refer to overnight transactions – the most often employed liquidity-providing instruments of the rate corridor are overnight repo, collateralised loans, automatic overdrafts or swaps.⁶² The liquidity-absorbing instruments include overnight reverse repo and deposits. In both cases, deals are transacted at a pre-determined interest rate and at the initiative of the counterparty, generally a credit institution.

In Hungary, the floor for overnight interbank rates is provided by the *central bank overnight deposit* rate, whereas the marginal lending facility is the *overnight collateralised loan*. The boundaries of the rate corridor are maintained permanently; the amount of the given bank's holdings of government securities is virtually the only 'natural' hurdle to accessing the MNB's liquidity-providing instruments (unlimited availability).

Since the second half of 1998, the MNB has been gradually reducing the *width of the interest rate corridor*. Similarly to the more advanced countries, narrowing the corridor is aimed at reducing volatility of overnight rates in the Hungarian money market. The MNB's

attempts serve the goal of not only reducing the *width of the rate corridor* to the optimum level, but making it symmetrical with regard to the interest rate on the **main policy instrument**. The interest rate corridor maintained by the MNB was $\pm 2\%$ wide around the key policy rate in 1999–2001, then it was $\pm 1.5\%$ wide, and, from 1 September 2002 it has been ± 1 percentage point wide. (For changes to the width of the corridor, see Chart 11.)

Averaging mechanism of reserve requirements

Fluctuations in overnight rates are also smoothed out by the *averaging mechanism of reserve requirements*. The buffer offered by required reserves makes it easier for the banking system to adjust to situations in which interbank liquidity experiences a sudden change of unanticipated magnitude (liquidity **shocks**) and it also serves (served) to absorb the structural liquidity surplus of the banking system.

Owing to the averaging system, reserve balances are allowed to fluctuate, and required reserves, acting as a buffer, *reduce volatility of overnight interbank lending rates*. Thus the risk decreases the possibility that fluctuations in short-term rates pass through to longer-term rates, thereby marring the effectiveness of **interest rate transmission**.

Quick tenders

Whereas the overnight collateralised loan and deposit facilities serve to maintain the **interest rate corridor**, using the *quick tender* the MNB directly influences movements in overnight rates within the rate corridor. Using quick tenders, the *impact of major money flows on Hungary caused by unforeseen international events can be reduced*. In addition, quick tenders may help

⁶² The interest rate corridor may be interpreted at maturities longer than one day. (This happened in Hungary from the mid-1990s until September 1998, when the one-week repo and reverse repo were also used.)

banks' liquidity management, especially on the last day of the maintenance period, which is difficult to plan in advance. In the event that the banking system is facing a temporary liquidity problem, the MNB may consider whether it lets interbank rates move widely within the boundaries of the rate corridor or, using quick tenders, prevents disturbing (and perhaps unjustified) interest rate volatility. The quick tender is the MNB's discretionary instrument. It is the Bank's prerogative to change its maturity arbitrarily, and it can be employed either for liquidity provision or absorption. It is, however, seldom used.⁶³

As was mentioned earlier, *fine tuning* liquidity primarily involves managing liquidity fluctuations within the maintenance period. This requires monitoring and forecasting banking sector liquidity on a continuous basis. The purpose of '*rough tuning*' is to neutralise longer-term or occasional liquidity fluctuations (e.g. **interventions** by the central bank in the foreign exchange market). In countries where capital inflows often lead to structural liquidity surplus, absorbing liquidity originating from autonomous sources and considered unnecessary is also a part of **liquidity management** operations.

Within the framework of the narrow intervention band and in the event of lasting central bank **interventions**, the MNB attempted to prevent foreign exchange reserves from falling rapidly and *prolong the average maturity of absorbed funds* using a variety of instruments (e.g. deposits, bills, etc.) and rearranging the pattern of the outstanding stock of sterilisation instruments (see *Chart 16*).

OPERATIONS IN THE FOREIGN EXCHANGE MARKET

The central bank's role in the foreign exchange market is different from the role it

plays in the domestic money market. In some, mainly developing countries, foreign exchange market operations constitute an important part of monetary policy **instruments**. If, using foreign exchange market operations, central banks want to influence liquidity in the money market, they use mainly swaps or foreign exchange repos which do not affect the exchange rate level. But foreign exchange market operations may also serve to maintain a given exchange rate regime. The central bank, in order to avoid currency appreciation, buys foreign currency in the foreign exchange market (intervenes), thereby it increases the quantity of domestic currency in circulation. By contrast, it sells foreign currency if the domestic currency depreciates.

On 4 May 2001, the intervention band of the forint vis-à-vis the euro was widened to $\pm 15\%$. Within the system of **inflation targeting**, the Bank also has the opportunity to conduct **foreign exchange market interventions**. The exchange rate has a distinguished role in the **disinflation** mechanism and therefore in monetary policy decision-making as well.

The MNB is available for foreign exchange market counterparties from 9.00 a.m. until 3.00 p.m.⁶⁴ at both edges of the intervention band – it offers to purchase foreign currency automatically at the upper edge (implying strength) and to sell foreign currency at the lower edge (implying weakness) without an upper quantity limit. Transactions are settled on the second business day after the day on which they have been conducted. The lowest transaction amount is 4 million euros which may be raised by steps of 0.1 million. Consequently, if a part of the deals involve considerably lower amounts, the exchange rate at which deals are transacted presumably falls outside the intervention band.

⁶³ For more details on the MNB's liquidity management operations, see Antal, Barabás, Czeti and Major (2001).

⁶⁴ A table detailing the MNB's operating hours can be found in the Appendix.

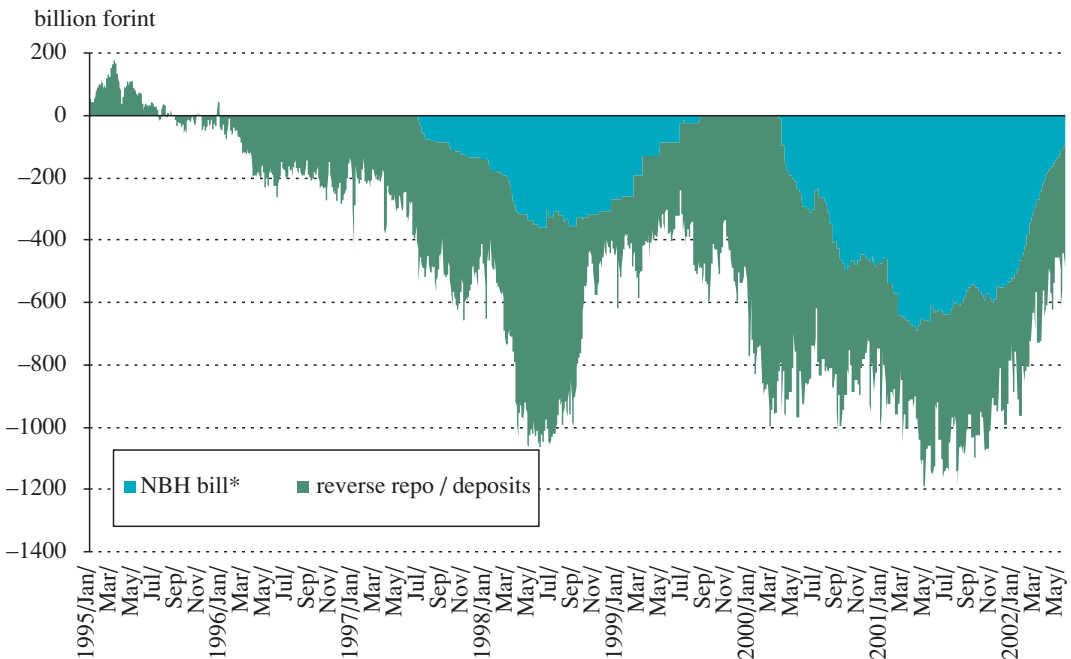
In the narrow band system the Bank often intervened at the edges of the band, mostly at the upper edge. Since 4 May 2001, i.e. the band widening, however, there has been no example of the Bank buying or selling currency at the band's edge (see Chart 17).

Within a wide exchange rate band, the central bank can *intervene in order to reduce volatility and shape movements in the exchange rate*. The MNB has retained its opportunity to trade within the exchange rate band, beyond the use of other instruments, in order to influence movements in the forint exchange rate, if required in order to stabilise the market and expectations in extreme situations that may develop. However, there have been no examples of either

a purchase or sale of foreign currency by the Bank since the band was widened.

With a *credible exchange rate band*, the band's extremes can influence the exchange rate even without effective intervention (target zone). For example, the likelihood of further appreciation diminishes as the exchange rate comes closer to the upper edge of the band. For this reason, market participants sell forints or open long foreign currency positions, in anticipation of the exchange rate weakening, which ultimately leads to depreciation of the exchange rate. With a less credible exchange rate band, in contrast, there is an increased likelihood of appreciation as the exchange rate comes closer to the upper edge of the band, and of realising extra profits, which in

Chart 16 Outstanding stock of sterilisation instruments in Hungary



*This category includes all bills issued by the MNB.

turn boosts speculation against the exchange rate regime.

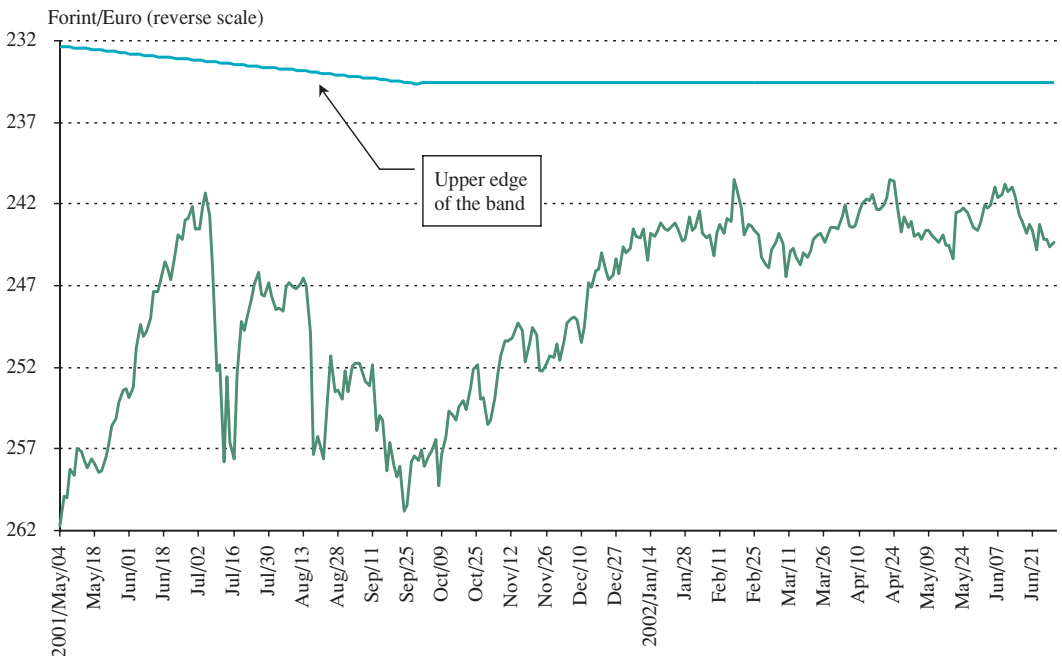
Verbal intervention may also be useful to communicate exchange rate levels required by the **disinflation path**. This special tool of central bank communication may orient exchange rate expectations in the market. It is used when the exchange rate level or its expected path is considered by the central bank as undesirable or unsustainable over the long term from the perspective of the inflation target, but it does not want to change the level of interest rates. Verbal intervention is credible if, provided it fails, the central bank is willing to use other instruments as well (for example, changing interest rates, intervening in the foreign exchange market), in order to achieve its objectives. Otherwise, the central bank loses credibility.

OTHER ELEMENTS OF THE OPERATIONAL FRAMEWORK OF INSTRUMENTS

Liquidity planning at the MNB

Controlling liquidity, i.e. influencing the evolution of rates in the interbank market, represents the lowest level of monetary policy, which is an indispensable condition for achieving the final objective. During the process of controlling liquidity, the central bank defines the interaction between supply and demand in the market of reserves. The market of **central bank money** (reserve balances) is a special one – on the *supply side*, the central bank is in a monopolistic position. There are two sources of commercial banks' demand for central bank money. First, they need liquid assets which can be immediately converted into cash so as to meet their clients' demand for cash and working balances

Chart 17 Exchange rate development following band widening (May 2001–June 2002)



to transact their daily businesses. Second, they have to comply with the reserve requirements imposed by the central bank (**required reserves**). Banks are allowed to use central bank money held with the purpose of complying with reserve requirements as working balances.

Given the characteristics of the demand for bank reserves, the central bank's task is to regulate the supply in order to achieve its interest rate or quantitative targets. Basically, there are two aspects of this function. First, the central bank must ensure that supply is continuously adjusted to demand. This is known as *liquidity management*. Second, if the central bank wishes to change its interest rate or quantitative targets, then the conditions of the supply of central bank money must also be altered. With fixed official interest rates, there also may be a need to control liquidity in case of market problems or to exploit the central bank's information advantage.

Liquidity may be managed in two ways. The essence of *discretionary control* is that it is the central bank's decision to define the amount of deposits it accepts from the banking system (or the amount of government securities it sells) and the amount of credit it offers (or the amount of government securities it buys). This, therefore, means active liquidity management by the central bank. With *accommodating control*, the central bank directly affects interest rates, rather than influencing them through quantities. In this case, liquidity management is controlled by the banking system – the central bank 'stands ready' to deal with banks, i.e. it offers funds or accepts deposits at pre-announced interest rates, and banks may have recourse to these in volumes at their own will. Discretionary control has much to do with *liquidity planning*, whereas accommodating control is rather *liquidity monitoring* (the examination of commercial banks' self-regulatory behaviour).⁶⁵

Table 10 Simplified version of the MNB's balance sheet

Assets	Liabilities
Claims on general government Forint loans Foreign currency loans	Deposits of general government Unified Treasury Account (KESZ)*
Claims on banks Refinancing loans Overnight loans	Bank deposits Settlement account balances (reserve account) Banks' vault cash Two-week deposits Overnight deposits
Claims on non-residents (foreign exchange reserves)	MNB bills outstanding
Other assets	Notes and coin outside banks Foreign debt Other liabilities Equity

* Including ÁPV Rt deposits.

⁶⁵ The MNB's practice of liquidity management is rather accommodating, although it contains discretionary elements as well (e.g. MNB bills, quick tenders).

Constantly monitoring the banking system's liquidity may provide useful information about the market's expectations and whether it is necessary to alter the set of instruments and the broad conditions of the interbank market. Therefore, the Bank monitors settlements and investments by banks of their surpluses on a daily basis and it updates its own short-term forecast of liquidity accordingly. Good exchange of information between the Bank and the Government is an indispensable condition for forecasting liquidity accurately.

Liquidity planning is forecasting the factors affecting supply and demand for central bank money, i.e. forecasting the expected changes in the items on the assets and liabilities sides of the Bank's balance sheet. Table 10 shows the simplified central bank balance sheet which the Bank uses to forecast liquidity.

Bank compliance with reserve requirements is relevant to liquidity planning, as this defines the demand for reserves of the banking sector as a whole. In monitoring **liquidity conditions**, the Bank examines all factors from the perspective of how a change in the given item on the central bank balance sheet affects banks' reserve holdings. A change in a part of balance sheet items (for example, transactions between the Bank and the Government, such as interest payments, repayment by the Treasury of its debt owed to the MNB, transactions by the Bank and the Government related to foreign currency debt, etc.) does not affect commercial banks' account balances.

In order to forecast commercial banks' account balances, *projections* must be made for each of the above variables. With the forecasts in hand, it may be decided how much the average balance on reserve accounts will be in the absence of depositing with or borrowing from the Bank, then this stock may be related to the amount of reserves banks have to build during the remain-

ing part of the month. The difference between the two numbers is the banking system's *free liquidity* (liquidity surplus or deficit), i.e. the amount that it has to borrow from, or deposit with the Bank before the maintenance period is over. However, this cannot be defined accurately, as a number of unanticipated factors may divert liquidity away from its value expected at a given moment before the maintenance period ends.

It may cause problems for the banking system, if its end-of-month free reserve is negative, i.e. it must borrow expensive funds from the Bank in order to meet the required level of reserves. In order to avoid this, banks attempt to keep their free reserves at a positive level throughout the entire period, i.e. they build up safety holdings which are capable of absorbing any negative effects on the reserve account. However, the banks' objective is to lend their surpluses at the highest possible interest rate. They must reduce their free liquidity to the minimum by the last day of the month, as the Bank does not remunerate average holdings above those meeting the requirements. With the maintenance period progressing, uncertainties surrounding end-of-month reserve positions ease, and so a smaller amount of free liquidity provides enough buffer.

The balancing mechanisms of the interbank market ensure that the banking system's global liquidity surplus approximates well individual banks' positions. Based on the forecast of this, the Bank is able to anticipate movements in interbank rates as well. Supplementing data for the banking sector's reserve balances, released by the Bank on Reuters screens, with information on liquidity from individual customers, banks may judge the banking system's overall liquidity position and, therefore, likely movements in overnight rates.

Eligible counterparties of the MNB

Generally, central banks attempt to conduct transactions primarily with market participants

through whom they can achieve their monetary objectives in the most effective way, i.e. through whom **transmission** is the fastest. According to international experience, financial market traditions, the characteristics of the financial intermediary system and the inter-bank market play a dominant role in choosing eligible counterparties. The **ECB** has relations with a wide range of counterparties inherited from the Deutsche Bundesbank, whereas the Bank of England has relations with a fairly narrow range of counterparties. The counterparties for central bank services, beyond monetary operations (for example, central account management, the collateralised loan facility which is closely related to the monetary objectives, ensuring the smooth functioning of the payment system) are also determined on the basis of other criteria.

There are two ways in which central banks may regulate the range of eligible counterparties allowed to participate in a given operation. First, they may determine by restricting *directly* or listing counterparties (for example, by types of credit institution). Second, they can use *technical criteria* (for example, membership in VIBER or accounts held with KELER) or *other conditions* (for example, stipulating the minimum amount of offer) which do not allow certain institutions that would otherwise be eligible to conduct a certain business, or make it very difficult for them to transact with the central bank. These criteria primarily serve to improve efficiency. Certain elements of monetary **instruments** are linked with the normal course of business (for example, the overnight collateralised loan and the two-week **main policy instrument**), therefore, a wider range of counterparties and less indirect criteria are consistent with them. However, in extreme market situations, when the Bank perhaps uses only quick tenders, speed is the most important criterion. Consequently, the Bank conducts business only with large, significant counterparties.

The Bank's counterparties eligible for undertaking transactions generally include all legal entities that are or may be in some kind of a business relationship with the Bank while it performs its monetary functions. This very broad interpretation embraces not only the counterparties who enter into contact with the Bank in the course of implementing the objectives of monetary policy, but also those whose accounts are managed by the Bank. Accordingly, in addition to the institutions listed in Chart 28 (banks, specialised and certain other credit institutions, excluding primary dealers), the Bank holds accounts for KELER, the Investor Protection Fund (BEVA), the National Deposit Insurance Fund (OBA), the Giro Clearing House, the MEHIB, the ÁPV Rt, the ÁKK Rt and the Hungarian State Treasury (see Table 11).

The Bank defines its eligible counterparties separately for each of its monetary policy instruments. However, certain conditions of the given facility, for example, the minimum bid amount, may restrict individual counterparties in conducting transactions with the Bank. Most of the Bank's counterparties may have access to the overnight collateralised loan facility, which is primarily attributable to the dual role of the facility, i.e. that it is linked with both the **payment system** and monetary policy. The range of counterparties eligible for transacting in the two-week main policy instrument, having a major importance for monetary policy, is narrower. Strikingly high requirements have been set in the case of quick tenders – a bank needs to be able not only to make a decision on whether or not to participate in the auction and under what conditions within 30 minutes following the invitation to tender by the Bank, but it must also have adequately rapid data transmission channels and at least HUF 500 million per bid.

Collateral assessment

A basic principle of using instruments is that the Bank conducts lending-side transactions only against sufficient collateral; and this is an obligatory criteria for conducting business in the ESCB as well. The MNB may be exposed to risks in the event that the price of securities delivered as collateral for collateralised loan transactions changes during the term of loans. There are two methods for managing risks.

In the *normative collateral assessment system*, the value of the security accepted is determined in a way that the market value of the collateral security should fall below the acceptance value only with an acceptably low probability. From this it follows that the longer the maturity of the transaction and the higher the volatility of the price of the collateral security, the higher the difference between the market value and acceptance value.

In the *daily collateral assessment system*, it is checked on a daily basis whether the value of the collateral security provides adequate

cover in case of default by the borrower. In the event that there is inadequate cover, the borrower either increases the amount of collateral securities or repays the portion of the loan which has become uncovered. Generally, the parties agree in a way that cover is only restored if the value of the collateral security falls by a larger margin than a pre-determined value.

The major advantage of the daily collateral assessment system is that the risk arising from the maturity of the loan contract becomes marginal and, consequently, the borrower obtains higher funding for the same security relative to the amount of funds he would obtain under the normative collateral assessment system. However, the daily collateral assessment system requires a rather sophisticated **payment and settlement system**.

Simultaneously with developing the **payment system**, the MNB reformed the process of collateral assessment. The normative collateral assessment system was introduced in February 1999. Under the new regime, the

Table 11 Eligibility of the MNB's counterparties to conduct business

	Reserve requirements	Overnight deposit and 2-week deposit	Overnight collateralised loan	MNB bill, spot securities transaction	Quick tender
Banks	X	X	X	X	X*
Specialised credit institutions	X	X	X		
Integrated savings cooperatives	X				
Non-integrated savings cooperatives	X		X		
Primary dealers				X	

* The MNB applies additional restrictions in its Business conditions.

Bank assesses the value of securities accepted as collateral based on a uniform method in the course of its liquidity-providing transactions. At the end of 2001, the Bank extended the system of collateral assessment to intra-day and end-of-day lending as well (earlier, the Bank accepted collateral at face value for intra-day and end-of-day loan transactions). The procedure became public and thus predictable for counterparty banks.

In the case of quoted securities, the Bank derives the market value of the collateral from price data available on the day preceding the transaction, whereas it defines the price of unquoted securities on the basis of the **yield curve**. The acceptance value of the collateral is the product of gross market value and the *acceptance ratio*. In defining the acceptance ratios, securities were categorised into classes based on their term to maturity, interest and availability of price data within which the acceptance ratios are identical. The basic principle in defining the acceptance ratios was that the Bank should not find itself having inadequate cover with a probability of more than 1%.

*The types of credit transactions, conducted by the Bank against provision of collateral, are intra-day loans, overnight collateralised loans and **repo** quick tenders.* Counterparty banks set a limit by depositing government securities as collateral for overnight loans. Up to the amount of this limit, the securities are deposited in favour of the MNB automatically, simultaneously with provision of the loan. This system provides banks with the opportunity to conduct their settlement turnover smoothly. In order to prevent the inclusion of the collateral assessment process from causing a significant gridlock in VIBER's daily operations, it must be automatic at any time within a given day (in the absence of adequate collateral, VIBER refuses to execute transfers). In order

to secure the automatism, KELER performs the task of collateral assessment based on preliminary information received from the Bank. There is no such automatism, however, in the case of repo quick tenders. When concluding the transaction, the parties name the securities they offer as collateral which remain deposited for the MNB until repayment of the loan.

The normative collateral assessment system is expected to be replaced by the daily re-assessment of collateral in the final quarter of 2002. All this is justified by the future possibility of changing over to liquidity-providing regulation and, simultaneously with this, introducing a liquidity-providing instrument with a longer maturity. In the system of normative collateral assessment currently in operation, a lower acceptance value would be required than that of overnight lending transactions in the case of lending-side transactions with maturities longer than the overnight maturity, due to the risks caused by the longer maturity. But this would make it more difficult for banks to have access to central bank lending. With the introduction of the daily re-assessment system, the risks arising from the maturity of loans will become marginal, and thus the acceptance values of securities eligible for lending transactions will not differ significantly from those used at the overnight maturity. As a consequence of these modifications, the system of collateral assessment will be broadly consistent with the **ECB's** principles.

In respect of the range of eligible assets, the Bank will have to prepare itself for the requirement that it should be able to accept all types of collateral accepted within the ESCB at the time accession to the **ESCB**, in addition to the range of those accepted earlier (i.e. forint-denominated Hungarian government securities).

Methods of allotment

The MNB conducts its outright operations, sales of its bills, lending transactions as well as acceptance of deposits according to the conditions of its business terms of money market operations.

The types of allotment include the following:

- continuously available **standing facility** (overnight deposit, overnight collateralised lending)
- intermittently available standing facility (two-week deposit) as well as
- auctions/tenders and quick tenders.

Under *continuous availability*, the instruments sold are activated on demand by the Bank's counterparties. In this case, the customer may place overnight deposits or borrow overnight collateralised loans during the Bank's business hours with same-day settlement (or at the time the bids are submitted).

Intermittent availability means that the Bank is ready to deal with counterparties only on pre-determined day(s), but similarly to continuous availability within the given day. The advantages of intermittent availability is that direct definition of interest rates is more restrained, due to the rarer opportunities of concluding transactions, and that it encourages banks to manage their liquidity more actively, i.e. to assess their **liquidity position** and to accurately formulate their expectations, which, in turn, improves effectiveness of the **transmission mechanism**. On the remaining four days, extraordinary events notwithstanding, the Bank only provides assistance to credit institutions at the edge of the **interest rate corridor** in balancing their liquidity position.

The Bank sold MNB bills at *competitive or variable rate auctions*. This meant that the Bank defined the amount on offer.

Under the MNB's Business conditions, there exist several types of tenders and quick tenders. These include fixed rate tenders, variable rate tenders and competitive tenders. The Bank may use these types of tender at its own discretion, on both the deposit and lending sides, for the purposes of **sterilisation**, interest rate adjustment or fine tuning. The Bank does not employ tenders in the case of its shorter-term policy or sterilisation instruments, although there exists an opportunity to use them whenever it is required.

Under a *fixed rate (quick) tender*, the Bank specifies the interest rate in advance, and counterparties bid the amount of money they want to transact at the fixed interest rate.⁶⁶ Although this does not differ greatly from the intermittently available standing facility in terms of economic content, nonetheless there exist a few technical differences. One such difference is that the outcome of the tender is announced. From this it follows that the tender may be declared unsuccessful and all the accepted amounts are disclosed to the public. Tenders must be invited separately (that is, at discretionary dates), while the intermittently available standing facility means availability on automatically determined days. Terms may change even on every occasion in the case of tenders, while this is only a theoretical possibility in the case of the intermittently available standing facility. Continuous and intermittent availability as well as fixed rate tenders provide an opportunity to fix the interest rate, i.e. to determine the price.

The essence of a *variable rate (quick) tender* is

⁶⁶ One example of this may be fixed rate tenders with quantity limits. Here, the issuer discloses in advance the amounts it intends to accept, in addition to the conditions noted above. If the total amount of bids submitted is higher than the stated amount, then the quantity allotted will be distributed proportionately on the basis of bids submitted.

that the issuer announces the amount intended to be sold and bids must contain, in addition to the amount, the offered (or rather the expected) yield. In the course of bid evaluation, bids are ranked according to how favourable they are for the issuer, scaling from the most favourable towards the least favourable. Bids are accepted in this order but the amount indicated in the invitation to tender constitutes an upper limit. The MNB invites tenders on the preceding day, administers the tender on the day in question, and performance is effected on the following day. The Bank treats this instrument as a bid price (Dutch type) tender, i.e. the Bank's counterparties pay the interest rate offered in their bid on the amount won in the course of the tender. The Bank always has the right to deviate from the announced amount.

When *free (quick) tenders* are invited, the issuer does not announce either a limit amount or a dictated interest rate. This means that the issuer decides on the accepted bids by enforcing its interest rate or quantitative preferences (or some combination of these according to some criteria) with respect to the bids ranked, in accordance with the allocation procedure described under the variable rate tender. The free tender is administered in the bid price form. The Bank assumes a rate-taking stance at variable rate and free tenders.

Communicating changes to the conditions of instruments

The Bank notifies its counterparties of its decisions through various channels, for example, by mail, facsimile, national dailies and Reuters. The governing principle is that new information should reach those most concerned as quickly as possible.

The Bank notifies those concerned of any changes in its *Terms and Conditions of Business* by e-mail. Counterparties are required to confirm the amended conditions and it is only thereafter that they may deal with the MNB pursuant to the amended conditions. If a counterparty fails to sign the contract, then it deprives itself of eligibility.

The MNB attempts to not make its interest rate decisions outside business hours within a given day and to ensure that its policy decisions take effect on the following business day. However, in extraordinary situations the opportunity to alter interest rates immediately cannot be ruled out. In the event of a change to *interest rate conditions*, the banks and other credit institutions (bank treasuries and presidents) are notified via e-mail.

Interest rate changes, invitations to tender, to buy or sell government papers and the results of tenders and auctions are published in the Reuters screen pages of the Bank (MNB, MNBK), its website and in daily newspapers. This ensures that information reaches those directly concerned and financial experts in the most rapid way and at the very same time.

In addition to its monetary policy decisions (e.g. interest rate changes, exchange rate **intervention**, etc.), the Bank may use a wide variety of communication channels to shape market participants' views. These include press releases, publications, speeches by the Bank's senior officials, for both the press and news agencies, interviews and other Internet forums. Efficient communication assists market participants in understanding to which macroeconomic variables the Bank's monetary policy reaction function fits best, thus helping to make the conduct of monetary policy transparent.

IV. APPENDIX

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ABBREVIATIONS

ÁKK Rt.	Államadósság Kezelő Központ Rt.	ESCB	European System of Central Banks
AHB	Austro-Hungarian Bank	EU	European Union
ALCO	Asset-Liability Committee	Eurostat	Statistical Office of the European Union
ANB	Austrian National Bank	Fed	Federal Reserve System
ÁKK Rt	Government Debt Management Centre Ltd.	GDP	Gross Domestic Product
ÁPV Rt	State Privatisation and Holding Company Ltd.	HICP	Harmonised Index of Consumer Prices
SAO	State Audit Office	IRR	Internal Rate of Return
BCE	Budapest Commodity Exchange	KELER	Central Depository and Clearing House Ltd.
BEVA	Investor Protection Fund	KESZ	Unified Treasury Account
BIS	Bank for International Settlements	M0, ... , M4	Money aggregates
IGS	Interbank Giro System	MEHIB Rt	Hungarian Export Credit Insurance Ltd.
BSE	Budapest Stock Exchange	MoF	Ministry of Finance
CMEA	Council for Mutual Economic Assistance	MNB	Magyar Nemzeti Bank
CSO	Central Statistical Office	O/N rate	Overnight rate
DVP	Delivery vs. Payment	OBA	National Deposit Insurance Fund
ECB	European Central Bank	OMC	Monetary Committee
EMI	European Monetary Institute	OSAP	National Statistical Data Collection Programme
EMU	Economic and Monetary Union		

OTC market	Over-the-counter market	TARGET	Trans-European Automated Real-Time Gross Settlement Express Transfer
HFSA	Hungarian Financial Supervisory Authority	TÉBE	Association of Savings Institutions and Banks
RTGS	Real Time Gross Settlement	VIBER	Real-Time Gross Settlement System
SWIFT	Society for Worldwide Interbank Financial Telecommunications		

GLOSSARY

aggregate demand

The sum of planned consumption, investment, government expenditure and net exports of goods and services (the difference between exports and imports).

aggregate supply

The totality of goods and services intended to be sold by producers at a given price level.

autonomy of the central bank

The central bank, as the organisation responsible for monetary policy, must have adequate freedom and independence in taking monetary policy decisions in personal, financial and professional terms. In most advanced countries legal autonomy is established by law.

balance of payments

The totality of the real and financial transactions of a country vis-à-vis non-residents. Its most important components are →the current account, the capital account and the financial account.

banknote tax

A regulation to control the money supply. The financial institution authorised to issue money (the bank of issue) had to pay a tax to the state in proportion to the money supply when the money in circulation exceeded the prescribed coverage plus a certain tax-free amount.

business cycle

Subsequent periods of economic boom and recession (or slowdown in growth), in

the course of which the growth rate fluctuates around its long-term trend.

capital transactions

Transactions affecting the capital account of the balance of payments (foreign direct investment, portfolio and other capital flows).

central bank instruments

see →instruments

central bank money

see →monetary base

central counterparty

In →forward and derivative transactions KÉLER comes in between the buyer and the seller as a central counterparty, consistent with international practice, thus ensuring settlement of the transactions.

collateralisation, collateralised loan

Interest-bearing loan extended against securities as collateral, where the securities held by the lender serve as a guarantee of repayment.

core inflation

A special inflation indicator which shows inflation net of the impact of the most volatile factors, which are the most independent of monetary policy (seasonal foodstuffs, fuel, pharmaceutical prices).

coverage system, banknote coverage, currency banking debate

In the era of currencies convertible into precious metals, the amount of banknotes

and coins issued was restricted on the basis of the quantity of precious metals held by the bank of issue. Full coverage (in general) could not be implemented, but a specified share of banknotes and coins in circulation had to have adequate precious metal coverage held by the central bank, and the central bank could issue money only when it was already in possession of the precious metal coverage. The coverage of additional cash in money circulation was 'bank-type coverage', generally the discounting of good-quality commercial papers.

credibility

The extent to which market agents trust that economic policy decision-makers will react to various economic events in accordance with their declared principles. For instance, a central bank, which sets price stability as its goal, is credible when it responds with a more restrictive monetary policy in accordance with expectations upon signs of rising inflation.

currency basket

In a fixed exchange rate regime, the local currency is frequently fixed not vis-à-vis a single currency: the central bank keeps the weighted average exchange rate of the local currency relative to several different currencies at the designated level. The totality of these currencies and the weights assigned to them is the currency basket.

current account, current account deficit

The balance of trade in goods and services (exports minus imports), current transfers and income transfers vis-à-vis non-residents.

current payment operations

Transactions affecting the current account (trade transfers, income transfers vis-à-vis non-residents, transfers).

Delivery Versus Payment, DVP

A payment and settlement system satisfies the concept of DVP, if it ensures that the final transfer of assets occurs only against payment. Consequently, default risk arising in payment turnover can be reduced significantly using the DVP mechanism.

denomination

The currency of financial claims and debts. Settlement must be effected in the currency of denomination upon the due date.

deposit insurance

This provides security to deposit holders in the event of the insolvency of a credit institution. The deposit insurance fund pays compensation on registered deposits collected by the credit institutions up to the insured amount (according to current Hungarian regulation, this is HUF 1 million).

discount factor

A conversion ratio at which moneys of various periods exchange hands.

discount rate

The interest rate used in the course of calculating the discount factor.

discount treasury bill

A debt security. A special form of government paper generally of a maturity of less than a year, which does not pay interest, is available at a price below its face value and repays the face value upon maturity. It is issued by the Treasury with maturities of 3, 6 and 12 months.

disinflation

Reduction or decline in inflation.

duration

The average period of a cash-flow (for instance, interest payment and repayment

originating from a bond), weighted with the present value of payments. Its magnitude reflects the sensitivity of the price of the given financial asset to changes in market yields. The higher the duration of a financial asset, the more sensitive its value to shifts in the yield level.

ECB

European Central Bank

ESCB

European System of Central Banks. A system comprising the national central banks of the European Union, whose members (not only member central banks of EMU) may participate in the →ECB's General Council.

exchange rate pass-through

Exchange rate pass-through is monetary policy's most important transmission channel. The parameter of exchange rate pass-through measures the extent and time horizon to which a given change in the nominal exchange rate changes domestic prices.

exchange rate risk

The risk of holders of financial assets denominated in foreign exchange arising from the fact that the value of the asset held by them expressed in terms of the local currency changes with a shift in the exchange rate.

expansive monetary policy

A monetary policy resulting in the expansion of aggregate demand (more rapid growth in the money supply, lower real rates or weaker domestic currency).

fixed or floating exchange rate regime

In a fixed exchange rate regime, the central bank undertakes the obligation to

keep the exchange rate of the local currency relative to a given currency or basket of currencies on a predetermined course with the help of foreign exchange market interventions. In a floating exchange rate regime, the central bank has no target with respect to the level of the exchange rate, which thus may freely evolve in accordance with the current market demand and supply. A given type of exchange rate regime fundamentally determines monetary policy's room for manoeuvre.

floating exchange rate regime

see →fixed exchange rate regime

foreign exchange reserves

Foreign exchange reserves comprise the central bank's liquid assets which the monetary authority may use directly in the event of payment difficulties. In addition, foreign exchange reserves provide cover for interventions conducted in the foreign exchange market for exchange rate policy purposes.

foreign exchange deposit swap

A central bank instrument which provides long-term forint liability to commercial banks against the placement of a foreign exchange deposit. The MNB ceased to use this facility in March 1998.

foreign exchange market intervention

see →intervention

forward interest parity

A function describing the relationship between spot and forward rates: it expresses that the combined yield on subsequent short-term forward investments (to be launched in the future) must correspond to the yield on a spot long-term investment of the appropriate maturity.

forward rate

The interest rate on investments and credits to be launched at a future date. For instance, the 6-month forward rate beginning in a year's time is the expected interest rate on a 6-month investment to be launched in a year's time. The forward interest parity establishes the relationship between spot and forward yields.

forward transaction

A purchase and sales transaction in the course of which the subject matter of the purchase and sale exchanges hands at a predetermined price at a specified future date (see prompt transaction).

gold standard

A monetary system in which the value of the currency of a country is equal to a fixed quantity of gold determined by law and the local currency appears in the form of banknotes which can be converted into gold at a specified rate. As a result of the gold standard, the exchange rate of the country's currency against other gold-based currencies becomes fixed within narrow limits.

hyperinflation

Extremely high inflation. Generally, the term is used to characterise a rise in the price level of more than 50% a month. Money does not fulfil or only partially fulfils its traditional functions (legal tender, means of savings).

implied forward rate

→forward yield calculated from the spot yield curve with the help of the forward interest rate parity.

independence

see →autonomy of the central bank

indexation

Linking money claims, prices or wages to some domestic price index or exchange rate and their continuous adjustment with changes thereof.

indicators

Economic and financial variables, which provide preliminary information on the condition of an economy and assist in forecasting future developments.

inflation

The continuous and permanent rise in the general price level of goods and services.

inflation expectations

Inflation expected or planned for a future point in time or period.

inflation targeting

A monetary policy framework in which the central bank explicitly declares its targets concerning the evolution of inflation in the future and undertakes an obligation to meet those targets.

instruments, central bank instruments, monetary policy instruments

The totality of the instruments available to a central bank to achieve its objectives. The central bank can influence the level of interbank rates and the amount of central bank money circulating in the interbank market directly with the elements of its instruments. The most important elements are the open market (forint and foreign exchange) operations and reserve requirements.

interbank market

A segment of the money market, the market of central bank funds, where banks are the participants. Transactions concluded in the interbank market are characteristically

very short-term, the vast majority of transactions are for a term of a few days.

interest premium

The interest premium is the difference between forint yields and foreign yields. Investors expect a surplus yield corresponding to the interest premium against investing their money in forint; which is held to involve higher risk than investing in dollar or euro.

interest rate corridor

The corridor designated by the central bank's overnight loan and deposit rates. Its most important function is to limit fluctuations in interbank rates. Using the interest rate corridor, fluctuations in overnight interest rates can be prevented from passing through to longer-term rates.

interest rate transmission

see →monetary transmission mechanism

intermediate target

A variable influencing the →ultimate goal of monetary policy, which the central bank influences using the operating target under its direct control. Intermediate targets can be the central bank's inflation forecast, the nominal exchange or any of the monetary aggregates.

internal rate of return, IRR

The rate at which the present value of an investment coincides with its market value.

intervention

Intervention by the central bank in the foreign exchange market. The central bank influences the exchange rate of the local currency by buying or selling foreign currency in the foreign exchange market. As a result of intervention, the amount of central bank money in the economy changes

(declining with the sale of foreign exchange and increasing with its purchase). This effect can be offset by conducting sterilisation.

issue

Issue of money (banknotes and coins).

key policy rate

The interest rate which best reflects the direction of monetary policy and the changes thereof. The interest rate on the → main policy instrument.

leading indicator

see →indicators

lender of last resort

In the event that a credit institution's liquidity shortage becomes permanent or experiences a sudden expansion, the central bank, as a lender of last resort, provides the troubled institution with central bank money, in order to avoid the bank's collapse. Typically, central banks undertake this implicit commitment in the interests of maintaining financial system stability.

liquid asset

An asset which can be converted into cash quickly and at low cost (including loss in price).

liquidity conditions

The relationship between the actual and desirable level of bank reserves. There is a liquidity shortage when the desired level is higher than the actual and banks have to turn to the central bank for credit.

liquidity constraint

The maximum amount of own and external liabilities that may be used by an economic agent. For instance, a household is

under liquidity constraint when, in the absence of the possibility of borrowing, its consumption or investment decisions are determined by its current income position rather than its income flow expected over a longer time horizon.

liquidity management

In a broader sense, the activity of financial and non-financial corporations, in the course of which they ensure the liquid assets required for administering their businesses at the lowest possible cost. In a narrower sense, the activity of commercial banks, in the course of which they provide the liquid assets required for executing the transactions of their clients and complying with the reserve requirement at the lowest possible cost.

liquidity regulation

A central bank activity in the money market, in the course of which it shapes the demand for and supply of central bank money using its available instruments, in order to make them consistent with its operating target, whether it is a quantitative or an interest rate target.

long term

see →short term

main policy instrument

The most important →open market operation of a central bank, typically a short-term instrument (deposit or credit). With its interest rate (main policy rate) exerts a direct and effective impact on the yields evolving in the money market.

monetary authority

The institution having a monopoly in issuing money (banknotes and coins), characteristically the central bank.

monetary base (M0)

The narrowest monetary aggregate, which contains currency in circulation plus the balance on commercial banks' foreign accounts held with the central bank. The central bank has a direct influence on the size of the monetary base. At times, the monetary base is referred to as central bank money, base money or high-powered money.

monetary conditions

Variables describing the nature (expansive or restrictive) of monetary policy; generally the real interest rate and the real exchange rate.

monetary transmission mechanism

The chain of effects, in the course of which changes in central bank rates influence consumption and investment decisions of the private sector through market yields and the exchange rate, and thereby ultimately changes in →inflation.

money illusion

A term used to describe the phenomenon whereby economic agents are unable to distinguish nominal from real changes. Owing to the money illusion, an increase in the money supply can, for a transitory period, increase aggregate demand; in the longer term, however, money illusion wears away and growth in the money supply results in inflation.

money multiplier, money multiplication

The money multiplier is the quotient of a →monetary aggregate (M1 or M3) and the monetary base (or central bank money). Money multiplication is the process, in the course of which a unit expansion in the monetary base increases the broader monetary aggregate by a multiple – precisely the value of the money multiplier – as a

result of commercial banks' lending and money creating activities.

moral hazard

Risk arising when certain agents of the economy can fully retain the profits of their activities, and, at the same time, are able to pass their potential losses on to others at least partially. Such situations generally lead to the assumption of excessive risk. In relation to the banking sector, it arises when banks can be certain that the government or the central bank would bail them out in an eventual crisis and, motivated by potentially large profits, they pursue a lending practice which involves higher risk than the prudential level.

net financing capacity

The final balance of transactions in a given period linked to the claims and debts of a given sector. If it is positive, there is a financing capacity and, conversely, if it is negative, there is a requirement. For instance, the net financing capacity of a household is that part of its income which it does not spend on consumption and investment, and thus is available to finance other sectors.

net present value

The difference between the present value and the current market price. An investment is worth implementing when its net present value is positive, that is, if it can be bought or implemented at a market price lower than its present value.

nominal anchor

Nominal macroeconomic variables (e.g. the exchange rate, wages and money supply) directly targeted by an economic policy aimed at stabilisation, the planned developments in which serve as a guidance or reference for setting other nominal

prices. Through this it helps in 'anchoring' inflation and inflation expectations. The nominal anchor generally coincides with the intermediate target variable of monetary policy.

nominal variables

Variables, which reflect price changes (inflation) and volume changes equally.

non-tradable goods

see →tradable goods

open foreign exchange position

A foreign exchange position is open when the sum of the foreign exchange assets and forward foreign exchange claims of a credit institution in a currency does not correspond to the sum of its foreign exchange liabilities and forward foreign exchange debts. The total open position of a credit institution is the sum of its (long and short) positions outstanding in the various foreign currencies expressed in forint terms. The open position according to the balance sheet is the sum of the net open positions calculated on the basis of the foreign exchange assets and liabilities presented in the balance sheet of a credit institution.

open market operations

The activity of the central bank in the course of which it sells or buys securities (primarily government bonds) with a view to influencing the amount of central bank money or the interest rate level.

operating target

A variable on which the central bank is able to exert an effect directly and immediately and whose change influences the →intermediate target of monetary policy. Most frequently it is some kind of short-term money market yield.

outright transaction

A transaction of purchase and sale where the underlying asset of the purchase and sale (security, foreign exchange) changes hands for good (see repo).

overnight rate

The rate on (characteristically interbank) placements or credits maturing in one day, that is, starting today and maturing tomorrow.

pass through

see →pass-through effect

payment and settlement system

The totality of instruments, agreements, organisations and institutions engaged in the intermediation and settlement of payments, which enable the administration of payments and the exchange of the various assets in the financial markets (securities and foreign exchange transactions).

pooling system

A central bank system for managing collateral, in which counterparties open a pool account to deposit assets collateralising their transactions with the central bank. The underlying assets in the pooling system are registered, but they are taken into account collectively, in contrast with the earmarking system, where the underlying securities are earmarked for individual transactions.

premium (lending risk, liquidity, etc)

The surplus yield on a given asset relative to the yield on a risk-free asset, which investors expect to compensate them for the various (political, counterparty, liquidity, etc.) risks of the given asset. The expected (*ex ante*) and actually realised (*ex post*) yield may differ.

present value

The value of future cash (flow) expressed in present money.

price stability

An economic environment characterised by constant price level or very low (0–2 per cent) inflation, where inflation is not a factor in the decision-making of economic agents concerning consumption and investment.

primary market

The scene of putting securities into circulation for the first time.

prudential regulation, prudential rules

Regulation by the supervisory authority which limits the assumption of excessive risk by credit institutions (for instance, the limits on capital adequacy and large credits). By complying with prudential rules, the credit institution must maintain its immediate and continuous creditworthiness (that is, its liquidity and solvency).

real exchange rate

The quotient of the nominal exchange rate and the ratio of the domestic price level to the foreign price level. This is an indicator of the competitiveness of an economy as it presents the value of foreign goods expressed in terms of domestic goods. An appreciation of the real exchange rate implies monetary conditions becoming stricter, a deterioration in competitiveness and a reduction in aggregate demand and inflation, while devaluation means loosening monetary conditions, which generally has the effect of improving competitiveness but also of raising the price level. Monetary policy is able to influence the development of the real exchange rate only in the short term.

real interest rate

The part of nominal rates in excess of expectations of inflation. The magnitude of the real rate has an impact on consumption, savings and investment decisions and thereby on aggregate demand and inflation. *Inter alia*, monetary policy is able to influence changes in its set targets through determining the level of the real rate.

real variables

Variables net of price changes reflecting the volume effect.

real-time gross settlement system

A gross payment system (which performs clearing and settlement at the same time) in which the processing of payment orders and their final settlement take place continuously with the immediate notification of the concerned participants in contrast to the net system (where the settlement and the clearing are separated in time). In gross systems the settlement is delayed (such is, for instance, the inter-bank clearing system earlier referred to as the giro).

refinancing loan

Forint credit extended by the central bank to commercial banks in order that they onlend them to business organisations (under specified programmes).

repo

A security repurchase agreement in the course of which the central bank buys securities (generally government papers) and sells them forward to the same person at a date and price specified upon conclusion of the transaction. The active repo may be interpreted as lending against securities as collateral (see also repo transaction).

repo transaction

Security repurchase agreement. This is a combination of two purchase and sale transactions of opposite directions, in the course of which the asset (most of the time government paper) exchanges hands in the present and at the same time a reverse future transaction is also concluded for a specified date and price. Its purpose is to extend a short-term credit or to place a short-term deposit.

required reserve (ratio)

Commercial banks must set aside reserve with the central bank on the deposits and other liabilities collected by them, at a percentage determined by the reserve ratio. Raising the reserve ratio decreases, reducing it increases the money supply of the economy.

restrictive monetary policy

A monetary policy which results in a decline in aggregate demand (slower increase in the money supply, higher real rates or more appreciated exchange rate).

reverse repo

A security repurchase agreement, in the course of which the central bank sells securities (generally government papers) and repurchases them at a future date and price specified upon concluding the transaction. The reverse repo can be interpreted as the acceptance of a deposit, in the course of which the central bank withdraws liquidity from the banking sector (see also repo).

secondary market

The scene of the purchase and sale of already issued securities among investors.

securitisation, securitised loan

An interest bearing loan extended against securities as collateral, where securities

serve as collateral for the loan in the custody of the lender.

shock

An external effect on the economy, which displaces macroeconomic variables from the equilibrium level.

short and long term

Relative terms. In financial terminology, short-term is shorter than a year, long-term is longer than a year. In microeconomics, short-term refers to a time interval within which the supply side of the economy is able to respond to demand effects only partially, because a part of the factors of production are given, while in the long term, all production factors may change.

single-tier banking system

The central bank has a direct lending relationship with companies and a wide range of the public.

small, open economy

Economic theory regards a country small when it is a price taker in its export and import markets. The measure of openness is the extent of the country's economic relations with non-residents, i.e. its foreign trade; characteristically, it is identified with the share of the sum of exports and imports in GDP.

spot transaction

A foreign exchange or security transaction where settlement is simultaneous with the conclusion of the contract (see also forward transaction).

standing facility

Central bank instrument activated at money market participants' (mostly banks') own initiative. They do not serve as \rightarrow key policy rates, rather they play a safety role.

With the MNB, for example, these are the overnight collateralised loan and the overnight central bank deposit at the two extremes of the \rightarrow interest rate corridor.

sterilisation

All the central bank operations, the purpose of which is to offset the effect of foreign exchange market intervention on the domestic money supply, for instance, by increasing the central bank stock of deposits or bonds to an extent identical with that of the foreign exchange market intervention.

sterilised intervention

A harmonised series of central bank operations, in the course of which the central bank intervenes in the foreign exchange market to maintain the exchange rate target and at the same time offsets the liquidity impact of intervention with open-market or other operations.

swap transaction

A purchase and sale agreement, pursuant to which the contracting parties swap future cash-flows under conditions specified in advance. In a foreign exchange swap transaction, the contracting parties contract to exchange cash-flows specified in different currencies. Swap transactions (beside futures and options) are fundamental instruments of risk management.

time inconsistency

A term used to describe all or certain parts of economic policy. Time inconsistency is mentioned when an economic policy, which is optimal at the present, is expected not to be optimal in the future and thereby the government feels prompted to deviate from its declared policies. The most characteristic example is when an economic policy, which aims at curbing

inflation, fuels inflation higher than expected following wage negotiations with a view to achieving a higher growth rate or better external equilibrium.

tradable goods

Goods and services actually or potentially participating in foreign trade.

transmission

see →monetary transmission mechanism

transmission lag

The time horizon, which lapses between the arising of the necessity of a monetary policy measure and its full impact on inflation.

transparency

Transparency of central bank operations for the agents of the economy. Transparent operation contributes to the establishment and maintenance of the credibility of monetary policy.

two-tier banking system

The bank of issue responsible for monetary policy is not in a direct lending relationship with companies and households.

ultimate goal

The most important goal within the general objectives of economic policy (for example, the reduction in inflation and/or maintenance of high employment) from the perspective of the central bank, generally defined by law.

verbal intervention

A unique tool of central bank communication, used to guide expectations. Verbal intervention is used when the level of a

variable (e.g. exchange rate), important from the perspective of the ultimate goal, is considered by the central bank as undesirable or unsustainable over the →long term, but policy does not wish, or cannot directly, change the general level of interest rates in other ways (for example, using open market operations).

VIBER

Hungarian acronym for real-time gross settlement system.

yield curve

The representation of rates on various maturities in the function of maturity. The most frequently mentioned is the government paper market yield curve representing yields on government papers.

yield to maturity

see →internal rate of return

zero-coupon yield, zero-coupon yield curve

The zero-coupon yield belonging to a given term is the yield (discount rate) at which a zero-coupon security which repays the face value in a single amount at the end of maturity can be issued under the given market conditions. Zero-coupon yield can also be calculated from financial assets, which are repaid not only at the end of maturity (which pay interest and principal separately, eventually on several occasions). When the cash-flows from such a financial asset, which pays on several occasions, are discounted with the zero-coupon yield belonging to the date of the cash-flow, the amount of the present value of the cash-flows will be equal to the market price of the financial asset.

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