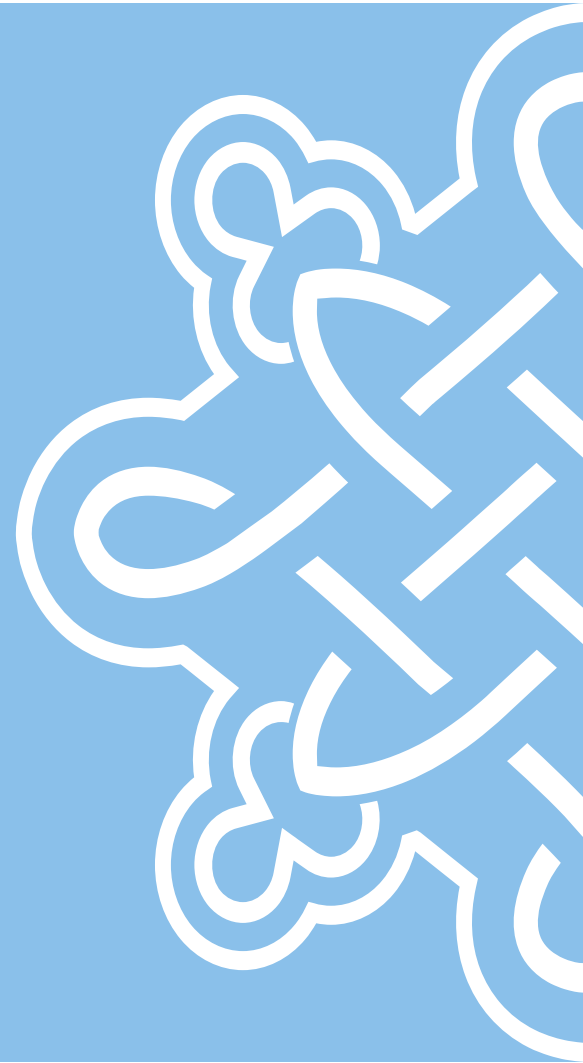




ANNUAL REPORT



2022



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2022 BUSINESS REPORT
AND FINANCIAL STATEMENTS OF
THE MAGYAR NEMZETI BANK

2022

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Part A)
2022 Business Report
of the Magyar Nemzeti Bank

1 The Governor's foreword

The Magyar Nemzeti Bank faced special challenges in 2022. A number of complex, overlapping crises had a compounding effect in many areas, leading to a polycrisis that is yet to be tackled.

The international economic environment in 2022 was mainly characterised by global inflationary pressures that emerged after the coronavirus pandemic as well as the turbulent and often unpredictable commodities and financial market developments caused by the Russian–Ukrainian war. Under these extraordinary circumstances, the Monetary Council was among the first in Europe to launch a monetary policy turnaround and also continued the tightening cycle that started in the summer of 2021 to ensure price stability, the primary objective of the Magyar Nemzeti Bank. In September 2022, the Monetary Council decided to stop the cycle of rate hikes after 16 months and a total increase of 1,240 basis points in the central bank base rate, which rose to 13 per cent from 2.4 per cent at the start of 2022.

At the same time, monetary tightening and the strengthening of monetary policy transmission was also supported by various additional measures. From 1 October, the central bank enhanced the disinflationary impact of interest rate increases by raising the required reserve ratio, regularly holding discount bill auctions and launching a longer-term deposit instrument. This was complemented by a swap instrument providing FX liquidity, which was used by the MNB from July within the quarter and announced on a regular basis, even with one-day maturity. These measures allowed the central bank to take effective action and address money market turbulences.

This was crucial because sentiment on money and capital markets worsened sharply in the first weeks of October, partly due to sharp increases in the prices of several commodities, in particular natural gas and oil, attributable to the news on the suspension of gas deliveries and sabotage against the Nord Stream pipeline. This was compounded by the continued appreciation of the US dollar, and the fact that the forint fluctuated widely and then reached historic lows against the US dollar and the euro. The Magyar Nemzeti Bank responded quickly and, in hindsight, effectively in the affected submarkets in the middle of October, thereby stabilising money markets.

The successful termination of two very successful central bank programmes also contributed to monetary tightening. The FGS Green Home Programme, which had been launched in October 2021 as part of the central bank's green toolkit strategy, ended on 30 September 2022. With its allocated amount of HUF 300 billion, it enabled the construction and purchase of 8,600 properties with high energy efficiency by providing loans at preferential rates. The impact of the termination of the Bond Funding for Growth Scheme in December 2021 was still felt in 2022, as the MNB continued to purchase corporate bonds to realise the ongoing transactions in 2022. Overall, bonds worth a total of HUF 1,549.7 billion in face value were purchased within the framework of the programme as a whole. These central bank funds played a large part in developing the Hungarian corporate bond market.

Changes in the international environment posed extreme risks to the stability of the financial markets and the players in the financial intermediary system in 2022. In this context, it is a remarkable success that the Hungarian banking system remained stable and banks were able to provide the necessary funds to the actors in the Hungarian economy, facilitating their smooth operation. Similar to earlier years, household and corporate credit grew in 2022, with government and central bank lending programmes playing a significant role. Outstanding corporate borrowing expanded by 14 per cent, while household debt grew at a year-on-year rate of more than 6 per cent. The latter fell short of the growth rate of previous years, in large part due to the rising interest rates and the slowdown in the housing market.

It should be noted that the MNB's international reserves increased by around EUR 330 million in 2022, with holdings at the end of December standing at EUR 38.7 billion, far exceeding Hungary's short-term external debt. In 2022, currency in circulation continued to rise, reaching HUF 8,226.1 billion on 31 December 2022, representing a 7.2-per cent increase compared to the end of the previous year. It is also worth mentioning that the counterfeiting of the recently replaced Hungarian banknotes remained negligible. 518 counterfeit banknotes were identified in 2022 among the total banknotes in circulation, which is a remarkably low figure, even by international standards.

Despite the major difficulties and risks in 2022, we are especially proud of opening the Hungarian Money Museum and Visitor Centre (hereinafter: Money Museum). The museum has one of the most unique educational exhibition areas in Europe, and it first welcomed visitors

on 15 March 2022. In addition, the MNB's book series continued to expand. "New Sustainable Economics – Global discussion paper", a fusalional publication, deserves special mention, as it is a seminal work on the necessary and inevitable transformation of economic thinking.

2 A brief overview of the Magyar Nemzeti Bank

Company name: Magyar Nemzeti Bank

Registered Office: 1013 Budapest, Krisztina körút 55., Hungary

Form of operation: company limited by shares. The form of operation, i.e. the ‘company limited by shares’ designation or its abbreviation need not be included in the company name of the Magyar Nemzeti Bank.

Year of foundation: 1924

Owner (shareholder): the Hungarian State, represented by the minister in charge of public finances (hereinafter: Minister of Finance)

Scope of activities: as defined by Act CXXXIX of 2013 on the Magyar Nemzeti Bank (hereinafter: MNB Act)

Subscribed capital: HUF 10 billion

2.1 OBJECTIVES, BASIC AND OTHER TASKS OF THE MNB

The Magyar Nemzeti Bank (hereinafter: MNB, the central bank) is a legal entity operating as a special company limited by shares, which conducts its operations in accordance with the provisions of the MNB Act.

In accordance with Article 127 of the Treaty on the Functioning of the European Union, the MNB Act – which contains provisions governing the MNB’s primary objectives, basic and other tasks as well as its institutional, operational, personal and financial independence and operation – stipulates that the primary objective of the MNB is to achieve and maintain price stability. Without prejudice to its primary objective, the MNB supports the maintenance of the stability of the system of financial intermediation, the enhancement of its resilience and its sustainable contribution to economic growth, as well as the economic policy of the government using the instruments at its disposal. The secondary mandate of the MNB was expanded with facilitating the government’s policies on environmental sustainability.

The MNB Act also stipulates the independence of the central bank in accordance with Article 130 of the Treaty on the Functioning of the European Union. On the basis of

central bank independence, the MNB and the members of its bodies shall be independent in carrying out their tasks and meeting the obligations conferred upon them by the MNB Act, and shall neither seek nor take instructions from the Government, the institutions, bodies and offices of the European Union, the governments of its Member States or any other organisations or political parties, except from the European Central Bank (ECB) and as required based on its membership in the European System of Financial Supervision. The Government or any other organisation shall adhere to this principle and shall not attempt to influence the MNB or any member of its bodies in the course of the performance of their tasks.

The basic tasks of the MNB are as follows:

- it defines and implements monetary policy;
- it has the exclusive right to issue banknotes and coins, including commemorative banknotes and coins, which shall be the legal tender of Hungary;
- it has the exclusive right to hold and manage official foreign exchange and gold reserves, in order to preserve the external stability of the Hungarian economy;
- it has the exclusive right to conduct foreign exchange operations in relation to the management of foreign exchange reserves and the implementation of exchange rate policy;
- it has the exclusive right to oversee payment and securities settlement including overseeing the operation of the system and the operation of the organisation performing central counterparty activities in order to ensure the sound and efficient operation of these systems and the smooth circulation of money, and within the scope of its powers set forth in the MNB Act, it participates in the development of payment and settlement and securities settlement systems;
- it collects and publishes the statistical information required for carrying out its tasks and fulfilling its statistical reporting obligations toward the ECB as defined in Article 5 of Protocol (No. 4) on the Statute of the European System of Central Banks and of the European Central Bank attached to the Treaty on the Functioning of the European Union;

– it establishes the macroprudential policy for the stability of the entire system of financial intermediation, with the objective of enhancing the resilience of the system of financial intermediation and ensuring its sustainable contribution to economic growth. To that end and within the limits specified in the MNB Act, the MNB explores the business and economic risks threatening the system of financial intermediation as a whole, promotes the prevention of the development of systemic risks and the reduction or elimination of evolving systemic risks; furthermore, in the event of disturbances to the credit market, it contributes to the balanced functioning of the system of intermediation in financing the economy by stimulating lending and – in the event of excessive credit outflow – by restraining lending.

Above and beyond its basic tasks, the tasks of the MNB are the following:

- it acts as a resolution authority;
 - it acts as the sole supervisor of the financial intermediary system, in order to
- a) ensure the smooth, transparent and efficient functioning of the system of financial intermediation;
 - b) facilitate the prudent operation of the persons and organisations comprising the system of financial intermediation and supervise the prudent exercise of owners' rights;
 - c) discover undesirable business and economic risks to individual financial organisations or individual sectors thereof, reduce or eliminate specific or sectoral risks which have evolved, and take preventive measures to ensure the prudent operation of individual financial organisations;
 - d) protect the interests of users of the services provided by financial organisations, and strengthen public confidence in the system of financial intermediation;
- via the Financial Arbitration Board, it administers the out-of-court resolution of disputes related to the establishment and fulfilment of contracts for services, established between the consumer and the organisations of the financial intermediary system.

Any further tasks of the MNB shall be defined by acts and, in relation to the supervision of the system of financial intermediation, by legal regulations adopted pursuant to the authorisation of an act. Such tasks of the MNB shall comply with the basic tasks and responsibilities of the MNB as defined in the MNB Act.

Pursuant to Act CXCV of 2011 on the Economic Stability of Hungary, the Governor of the MNB is a member of the Fiscal Council (hereinafter: FC), and thus the information and professional expertise available in the MNB supports the work of the FC. The MNB prepares background analyses for the duties of the FC stipulated in the Stability Act and makes such available to the FC.

2.2 BODIES AND MANAGEMENT OF THE MNB

The MNB operates as a legal person functioning in the form of a single-member company limited by shares. The general rules pertaining to companies limited by shares and the relevant provisions of Act on the Civil Code are applicable to the MNB, with the exceptions laid down by the MNB Act.

The Hungarian State as the shareholder is represented by the Minister of Finance. The MNB operates without a General Meeting.

The **shareholder** is entitled to adopt decisions, by way of a shareholder's resolution, on the establishment and in the amendment of the Statutes as well as on the appointment, dismissal and remuneration of the auditor.

As a guarantee of independence, in contrast to the practice of other companies limited by shares, the remuneration of the MNB's Governor, Deputy Governors and other members of the Monetary Council as well as the members of the Supervisory Board are determined by the MNB Act rather than by the shareholder.

Likewise, the bodies of the MNB are specified by the MNB Act as follows: the Monetary Council, the Financial Stability Council, the Executive Board, and the Supervisory Board.

The MNB's supreme decision-making body is the **Monetary Council**.

The scope of competence of the Monetary Council includes:

- strategic decisions concerning monetary policy, the issue of legal tender, the holding and management of foreign exchange and gold reserves, strategic decisions relating to foreign exchange transactions in the context of foreign exchange reserve management and the implementation of exchange rate policy, as well as strategic decisions concerning statistical tasks, including in particular decisions on the level of the reserve ratio and the interest rate payable on the minimum central bank reserves, and decisions related to the exchange rate regime and determining the central bank base rate;

- in relation to macroprudential tasks, the oversight and the supervision of the financial intermediary system and the MNB's role as a resolution authority, decisions on the strategic framework within which the Financial Stability Council makes its decisions;
- establishing the rules of procedure;
- decisions on any other matter in the exclusive competence of the Monetary Council as defined by law.

Members of the Monetary Council are: the Governor of the MNB as Chairman of the Monetary Council, the Deputy Governors of the MNB and the members elected by the Parliament for six years. The Monetary Council has at least five and at most nine members.

At the first meeting of each year, the Monetary Council elects a Deputy Chairman from among the Deputy Governors of the MNB, who substitutes for the Chairman in the event of his absence – with the exception of the issuance of decrees. In 2022, the Monetary Council elected Barnabás Virág, Deputy Governor, as deputy chairman.

In 2022, the members of the Monetary Council were:

- Dr György Matolcsy, Governor of the MNB and Chairman of the Monetary Council since 4 March 2013, reappointed on 4 March 2019,
- Dr Mihály Patai, Deputy Governor from 22 April 2019,
- Dr Csaba Kandrács, Deputy Governor from 2 October 2019,
- Barnabás Virág, Deputy Governor from 22 June 2020,
- Dr Kolos Kardkovács, re-elected from 13 September 2022,
- Dr György Kocziszky, re-elected from 6 April 2017,
- Dr Bianka Parragh, from 23 March 2017,
- Gyula Pleschinger, re-elected from 5 March 2019,
- Dr Péter Gottfried, from 1 January 2021.

Concerning the matters falling within the MNB's competence, the **Financial Stability Council** acts on behalf of the MNB within the strategic framework defined by the Monetary Council during the decision-making in relation to oversight, macroprudential tasks and resolution authority duties, as well as the supervision of the system of financial intermediation.

Within this scope of competence, the Financial Stability Council

- continuously monitors the stability of the system of financial intermediation as a whole and of the financial markets, in order to maintain the stability of the system of financial intermediation as a whole;
- takes account of risk factors threatening the system of financial intermediation as a whole;
- analyses the risks related to certain types of institutions or products or to the spread of these which may represent a threat to the system of financial intermediation as a whole;
- monitors developments on international and European markets and risks which may represent a threat to the stability of the system of financial intermediation as a whole, and makes decisions on the necessary measures within the strategic framework defined by the Monetary Council;
- discusses strategic, regulatory and risk-related issues affecting the system of financial intermediation as a whole and issues opinions if necessary;
- in situations threatening the stability of the system of financial intermediation, assesses systemic risks and decides on the measures required to mitigate or eliminate such risks;
- places on its agenda, as necessary, the recommendations, opinions and risk warnings of the European Systemic Risk Board relevant to the system of financial intermediation as a whole;
- discusses the recommendations and decisions issued by the European Supervisory Authorities as needed, including decisions addressed to national supervisory authorities calling for specific measures in the event of serious risks to the stability of the European financial system and expresses its opinion on the tasks arising from such decisions;
- publishes non-binding recommendations for persons and organisations supervised by the MNB describing the basic principles of the legal enforcement practices of the MNB;
- annually defines the priority target areas of the MNB's control activities;
- makes decisions within the framework of performing the MNB's resolution tasks concerning the decisions ordering resolution and applying resolution measures, as well as in administrative proceedings related to performing the resolution tasks under the MNB decree on the detailed rules of exercising of powers relating to certain decisions taken by the Magyar Nemzeti Bank as an authority as well as of the substitution of the body that exercises such powers;

- makes decisions in administrative proceedings relating to exercising the supervision of individuals and organisations as well as activities falling under the scope of the acts defined in Articles 39-41 of the MNB Act and the directly applicable legal acts of the European Union, in administrative proceedings related to exercising supervision under the MNB decree on the detailed rules of exercising of powers relating to certain decisions taken by the Magyar Nemzeti Bank as an authority as well as of the substitution of the body that exercises such powers; and
- makes decisions in administrative proceedings related to performing the macroprudential tasks under the MNB decree on the detailed rules of exercising of powers relating to certain decisions taken by the Magyar Nemzeti Bank as an authority as well as of the substitution of the body that exercises such powers.

Members of the Financial Stability Council:

- the Governor of the MNB as its Chairman;
- the Deputy Governors of the MNB;
- as executives appointed by the Governor of the MNB, the Executive Director Licensing and Legal Enforcement, the Executive Director for Digitalisation, the Executive Director Monetary Policy Instruments, Financial Stability and Foreign Reserve Management, the Executive Director for Prudential and Consumer Protection Supervision of Money Market Institutions, as well as the Executive Director for Financial System Analysis and Statistics until 15 December 2022; and
- the Director General.

In accordance with the MNB Act, responsibility for implementing the decisions of the Monetary Council and the Financial Stability Council, as well as for managing the operation of the MNB rests with the **Executive Board**.

The scope of competence of the Executive Board includes:

- managing the implementation of the decisions of the Monetary Council and the Financial Stability Council;
- approving the accounting report of the MNB and adopting decisions on the payment of dividends pursuant to Article 166(1a) of the MNB Act;
- approving the draft report to be sent to the shareholder on the management and assets of the MNB;

- approving matters related to the organisation and internal management of the MNB;
- approving the study plans and programmes relating to the operation of the MNB and the performance of its tasks, including the costs of the development and operational plan;
- managing the MNB’s internal audit organisation in respect of tasks falling outside the scope of competence of the Supervisory Board, and discussing the observations and plans of the internal audit;
- amending the collective agreement in respect of employment rights and obligations, the exercise and performance of these rights and obligations, and the associated procedures; and
- adopting decisions in respect of the central bank’s powers to manage accounts and other financial and auxiliary financial services, as well as certain auxiliary services supplementing investment service activities.

The members of the Executive Board, which is the executive body of the MNB, are the Governor, as the Chairman of the Board, and the Deputy Governors of the MNB.

Provisions relating to the functions and operational procedures of the Monetary Council, the Financial Stability Council and the Executive Board are set forth in the MNB Act, the MNB’s Statutes, Organisational and Operational Rules as well as the rules of procedure formulated by these bodies.

The **auditor** of the MNB can be appointed for a maximum of five years. The shareholder decides on the appointment, dismissal and remuneration of the auditor by way of a shareholder resolution. Prior to the appointment or proposal for the dismissal of the MNB’s auditor, the Governor of the MNB consults the President of the State Audit Office.

In addition to the auditor appointed by the shareholder, the MNB is also audited by the State Audit Office and the Supervisory Board.

The supervisory competence of the **State Audit Office** over the MNB is set forth in the Act LXVI of 2011 on the State Audit Office. The State Audit Office supervises the financial management of the Magyar Nemzeti Bank and its activities that are not included in its basic tasks. In this regard, the State Audit Office examines if the MNB operates in accordance with the applicable law and its Statutes.

Members of the Executive Board and the Monetary Council of the Magyar Nemzeti Bank



Dr György Matolcsy
Governor,
Chairman of the Monetary Council



Dr Csaba Kandrác
Deputy Governor,
Member of the
Monetary Council



Dr Mihály Patai
Deputy Governor,
Member of the
Monetary Council



Barnabás Virág
Deputy Governor,
Deputy Chairman of the
Monetary Council

Members of the Monetary Council of the Magyar Nemzeti Bank



Dr Péter Gottfried
Member of the Monetary Council



Dr Kolos Kardkovács
Member of the Monetary Council



Dr György Kocziszy
Member of the Monetary Council



Dr Bianka Parragh
Member of the Monetary Council



Gyula Pleschinger
Member of the Monetary Council

Members of the Supervisory Board of the Magyar Nemzeti Bank



Left to right: Dr Attila Simon Tóth, Dr László Nyikos, László Madarász, Dr Ferenc Papcsák (Chairman), Dr Gábor András Szényei, István Molnár

As set forth in the MNB Act, the **Supervisory Board** is the body responsible for the continuous supervision of the MNB on behalf of the owner. The supervisory competence of the Supervisory Board defined by the MNB Act does not cover the supervision of the MNB's performance of its basic tasks, its actions as a resolution authority and its supervisory activity in respect of the financial intermediary system, or the impact of such on the MNB's profit and loss. Accordingly, the Supervisory Board compiles the report on the annual accounts as specified in the Act C of 2000 on Accounting within the above limitations.

The members of the Supervisory Board as defined in the MNB Act are its Chairman elected by the Parliament, three additional members elected by the Parliament, the representative of the Minister of Finance and an expert appointed by the Minister of Finance. The Chairman of the Supervisory Board, who is elected by the Parliament, is nominated by the parliamentary panels of the governing parties, whereas the other members elected by the Parliament are nominated by the parliamentary panels.

According to the provision in force until 31 December 2022, the mandate of the members of the Supervisory Board lasts until 31 December of the year in which the mandate of the Parliament terminates.

On 17 September 2018, the Parliament elected the members of the Supervisory Board nominated by the parliamentary groups; then the Minister of Finance designated his representative delegated to the Board and the expert appointed by him.

Members of the Supervisory Board in 2022:

- Dr Ferenc Papcsák, Chairman,
- László Madarász,
- Dr László Nyikos,
- Dr Gábor András Szényei,
- István Molnár until 31 October 2022, thereafter Péter Benő Banai, and
- Dr Attila Simon Tóth until 31 October 2022, thereafter Viktor József Asztalos.

2.3 ORGANISATION OF THE MNB

The organisation of the MNB is based on the operating and operational governance model introduced on 1 July 2013 and, in respect of the integrated organisation, on 1 October 2013. Although the organisational structure has changed several times since then, these changes did not fundamentally alter the organisational structure developed in 2013.

Fulfilment of the statutory and operational tasks of the MNB is controlled and supervised by, in addition to the members of the Executive Board, the Director General, and, in their capacity as the top level executors of the decisions, the executive directors.

In 2022, modifications to the MNB's organisational structure were introduced in relation to areas controlled by the Governor, the Deputy Governor responsible for monetary policy and financial stability, the Deputy Governor responsible for financial institutions supervision and consumer protection, and the Deputy Governor responsible for international relations, cash logistics, financial infrastructures, digitalisation and lending incentives, as well as the Director General. The primary objective of these changes was to enhance efficiency.

The organisational structure as at 31 December 2022, which emerged as a result of the organisational changes, is illustrated on the **organisation chart**.

2.4 THE MNB AS A MEMBER OF THE EUROPEAN SYSTEM OF CENTRAL BANKS

Hungary's accession to the European Union also entailed the MNB's membership in the European System of Central Banks (ESCB). The ESCB comprises the ECB, which was established in June 1998 with its registered office in Frankfurt, and the national central banks of the EU Member States. Its governing bodies are the Executive Board and the Governing Council, the latter consisting of the members of the ECB's Executive Board and the governors of the central banks of the euro area Member States. The General Council holds its meetings quarterly and consists of the President and the Vice-President of the ECB and the governors of the central banks of all EU Member States. The key responsibilities of the General Council include consultancy concerning preparations for accession to the euro area, approval of the convergence reports of the ECB and

monitoring the functioning of ERM II. Within the framework of the latter activity, it assesses the sustainability of the bilateral exchange rate of non-euro currencies participating in ERM II against the euro and provides a forum for the alignment of monetary and exchange rate policies and the management of intervention and financing mechanisms in ERM II. In addition, the General Council is involved in verifying whether the central banks of EU Member States and the ECB comply with the prohibition of monetary financing of the budget and privileged access of the public sector to financial institutions. The General Council also participates in the ECB's advisory functions and in the collection of statistical information; it must be consulted in respect of any changes in the rules of accounting and financial data reporting, as well as issues related to the adjustment of the keys for subscriptions to the ECB's capital. The mandate of the General Council will expire on the date when all of the member states of the European Union have adopted the euro.

The number of ESCB members and euro area central banks did not change in 2022.

The ESCB members are also the owners of the ECB. The respective ownership shares of Member States are determined according to their shares in the GDP and total population of the EU (on the basis of statistical data compiled by the European Commission). Since 1 July 2013, the paid-up capital of the ECB amounts to EUR 10.825 billion.

In 2022, euro area central banks subscribed to 81 per cent of the ECB's capital, while the remaining 19 per cent was divided among the central banks of non-euro area Member States.¹ These latter central banks pay a pre-defined minimum quota of their respective subscriptions to the ECB's capital as a contribution to the operational costs of the ECB which are incurred in connection with their ESCB membership. With effect from 29 December 2010, this contribution was defined as 3.75 per cent of the respective subscriptions (it had previously been 7 per cent). As set forth in the Statute of the ESCB and of the ECB, the capital keys are adjusted every five years, or whenever the number of national central banks contributing to the ECB's capital changes. The capital keys were last adjusted when the United Kingdom left the EU, and as a result, the capital key of the MNB increased to 1.5488 per cent and the amount of its paid-up capital rose to EUR 6.3 million as of 1 February 2020.

¹ As Croatian National Bank became part of the Eurosystem on 1 January 2023, euro area central banks now subscribe to 82 per cent of the ECB's capital, while the remaining 18 per cent is divided among the central banks of non-euro area Member States.

The ESCB Committees play an important role in the work of the ECB's decision-making bodies. The basic role of these committees is to prepare decisions and facilitate coordination as per the horizontal division of various central bank duties, covering all areas of central banking operations from monetary policy through communication to statistical data reporting. Experts from the central banks of non-euro area Member States attend those committee meetings where the agenda includes items affecting the ESCB as a whole and which fall within the competence of the General Council. The committees meet and discuss

current issues relevant to their professional areas in ESCB composition, 4-5 times a year on average, according to a schedule determined for a year in advance. (For a detailed description of the ESCB Committees and the activities of the various fora assisting them, see Chapter 3.14.)

The senior executives and relevant experts of the MNB continue to play an active role in the activities of these committees and their working groups. In 2022, the ESCB committees continued to be useful fora for the exchange of professional experience.

3 Review of the MNB's performance in 2022

3.1 MONETARY POLICY

In 2022, the external environment was dominated by global inflationary pressures and the turbulent commodities and financial market developments caused by the Russian–Ukrainian war. For Hungary, the developments related to European Union funds and the corresponding risk perception of the country were crucial. Inflation in Hungary increased gradually in the first third of the year, entering double-digit territory in May. In the course of 2022, the Monetary Council continued its tightening cycle that started in the summer of 2021, to achieve the MNB's primary objective of price stability. The gap between the base rate and the one-week deposit rate was closed at the end of June. The Monetary Council adjusted the interest rate corridor several times to ensure more room for manoeuvre.

Monetary tightening through base rate increases continued until September, when the Monetary Council decided to stop the base rate hikes after 16 months and a total increase of 1,240 basis points: the base rate rose from 2.4 per cent at the beginning of the year to 13 per cent in September, while the overnight deposit rate increased from 2.4 per cent to 12.5 per cent and the overnight collateralised lending rate rose from 4.4 per cent to 15.5 per cent in the same period.

After this, monetary tightening continued by absorbing interbank forint liquidity. From 1 October, the central bank enhanced the disinflationary impact of interest rate increases through three measures: raising the required reserve ratio, regularly holding central bank discount bill auctions and launching a longer-term deposit instrument (of up to 6 months). From 1 October, the required reserve ratio increased to 5 per cent, and the requirement has to be met on a daily basis. Beyond the minimum rate of 5 per cent, an additional rate of up to 5 per cent, chosen on a percentage basis, and to be fulfilled on a monthly basis, was introduced. The introduction of these new instruments was warranted by the increased liquidity in the banking system, which started to diminish as a result, in the context of rising yields, and over HUF 4,800 billion of the banking system's excess liquidity was tied up.

In the first weeks of October, the financial and capital markets were characterised by a sharp deterioration in sentiment. Driven by the news on the potential suspension of gas deliveries and the sabotage against the Nord Stream pipeline, the prices of several commodities, including natural

gas and oil, rose sharply in a short period of time. The deterioration in the risk environment was also reflected by the continued appreciation of the US dollar. Hungarian markets also experienced marked risks, as the forint fluctuated widely before reaching historic lows against the euro and the US dollar. Using the room for manoeuvre created earlier, the central bank was able to effectively manage the market risks that had risen dramatically by mid-October.

Starting on 14 October, the MNB responded with a set of targeted measures to preserve financial market stability. The Monetary Council raised the overnight collateralised lending rate to 25 per cent effective from 14 October to maintain the stability of the market. Furthermore, the MNB announced a one-day (tomnext) FX swap instrument and overnight deposit quick tenders on a daily basis, at higher rates than before. The instruments used were designed to ensure the rapid and flexible implementation of tighter monetary conditions on the submarkets considered key in terms of monetary policy transmission, such as the interbank market and the swap market. The central bank also made commitments to meet the significant foreign currency liquidity needs of its bank counterparties arising from covering energy imports in the last months of the year.

These central bank measures successfully stabilised financial market developments. After these instruments were announced, the forint entered on a path of rapid, country-specific appreciation. The significant increase in short-term forint interest rates, amounting to hundreds of basis points, provided strong support to Hungarian financial markets. Government securities yields fell markedly, dropping by almost 300 basis points in the 10-year segment. With its measures introduced in mid-October, the MNB supported the achievement of its primary, price stability objective by preserving market stability.

Liquidity in the banking system remained high throughout the period under review, with monthly averages fluctuating in the range of HUF 9,700–11,500 billion. At the end of September, in parallel with the quarter-end seasonality and the new instruments launched in early October, there was a realignment in tying down excess liquidity from one-week deposits towards the new instruments.

As in earlier periods, each quarter the MNB held FX swap tenders providing euro liquidity and discount bill auctions with maturities extending beyond the end of the quarter.

With its active market presence, the MNB sought to address any swap market tensions at the end of the quarters and thus strengthen the effectiveness of monetary policy transmission, thereby supporting the achievement and maintenance of price stability. From July, the central bank also used this instrument within the quarter, with one-day maturity. Through the swap instrument and the measures tying up liquidity introduced in early October, the MNB maintained the stability of the swap market throughout the year, and especially at the end of the year.

The FGS Green Home Programme, which was launched in October 2021 as part of the MNB's green policy toolkit strategy, was terminated on 30 September 2022. With a total amount of HUF 300 billion, it enabled the construction and purchase of 8,600 energy efficient properties by providing loans at preferential rates and thus strengthening environmental sustainability considerations in the housing market.

In line with monetary tightening, the Monetary Council decided to end the Bond Funding for Growth Scheme (BGS) on 14 December 2021. The BGS was originally launched in July 2019 in order to increase the liquidity of the corporate bond market and diversify companies' debt profiles. Consequently, the MNB only finalised the transactions that were related to the negotiations already under way on 14 December 2021, with the last issuance under the programme taking place in April 2022. The MNB purchased bonds with a face value of HUF 1,549.7 billion under the programme, improving the effectiveness of monetary policy transmission and contributing to the development of the Hungarian bond market. Moreover, issuers' funding structures became more diversified and their access to funds became more predictable in the long run.

International financial market developments

Financial and capital market sentiment was unfavourable throughout 2022. During the first two months, investor sentiment varied considerably, primarily due to rising inflation, the evolution of commodity and energy prices as well as developments related to the coronavirus pandemic. In this environment, the Russian–Ukrainian war that began in late February prompted widespread risk aversion in the global markets. Among major commodities, oil and natural gas prices soared, and CEE currencies, including the forint, depreciated due to the sharp risk premium shock. Meanwhile, the continued steep increase in inflation compelled banks to take action around the world. As interest rate conditions became tighter, fears of recession mounted from the middle of the year, which also weighed on investor

sentiment. In this environment, the negative shifts in the financial markets during the summer months and the effects of persistently high commodity and energy prices pointed towards a prolonged high inflationary environment.

By September, both the international and the Hungarian market environment had improved significantly, with commodity prices falling sharply and supply chains showing signs of improvement. However, the financial and capital markets were characterised by an exceptional deterioration in sentiment after the last days of September. The series of negative developments started with the news on the potential suspension of gas deliveries and the sabotage against the Nord Stream pipeline, with gas prices jumping by around 20 per cent in a short period of time. Oil prices also increased, with Brent selling for around USD 100. The negative developments in the Russian–Ukrainian war increased risk aversion even more. Meanwhile, expectations of interest rate increases by the world's leading central banks ran high, peaking in October. Emerging markets experienced massive capital outflows, which was particularly acute in the CEE region. The deterioration of the risk environment was also reflected in the further significant appreciation of the US dollar: even the exchange rates of major currencies, such as the pound sterling or the Japanese yen, fluctuated widely in this period. However, at the end of the year on account of the mild autumn and winter, the risk of an energy crisis diminished, and risk aversion declined as energy and commodity prices adjusted. Nevertheless, money and capital market sentiment remained volatile, with the focus mainly on the expected monetary policy decisions of the world's leading central banks and the economic outlook.

International monetary policy environment

Global inflation started to rise in 2021 and continued to do so at an accelerating pace in early 2022. In response to the mounting inflationary pressure, central banks phased out unconventional instruments and raised policy rates. The monetary policy of the world's leading central banks tightened faster than previously forecast. At the beginning of the year, the Federal Reserve (Fed) communicated that it would end its asset purchase programme, and net asset purchases ended accordingly, in early March. The Fed also started tightening interest rate conditions in March, whereby the target range for the policy rate rose to 1.50–1.75 per cent by June. As a further tightening measure, the Fed also began to reduce its holdings of government securities and mortgage-backed securities. By the end of the year, the target range for the policy rate had increased to 4.25–4.50 per cent, and the Fed also continued to shrink its balance sheet. At the beginning of the year, the European Central Bank (ECB) also communicated that it would pivot

towards a tighter stance. The ECB then ended its asset purchase programmes in March (PEPP²) and July (APP), and started raising the policy rate as well in July. In 2022, the ECB raised interest rates by 250 basis points overall. In response to climbing inflation, central banks in the CEE region also decided to raise rates considerably in the first half of the year. However, in the second half of the year, the Romanian central bank continued its interest rate increases at a slower pace, until reaching 6.75 per cent at the end of the year, while the Czech central bank kept the policy rate at 7 per cent from June, with its Polish counterpart keeping it at 6.75 per cent from September.

Domestic macroeconomic environment

In 2022, consumer prices rose by 14.5 per cent overall, with domestic inflation above the central bank's tolerance band throughout the year. Inflation increased gradually in the first third of the year, but remained under 10 per cent. Price increases then entered double-digit territory in May, rising to over 20 per cent in the autumn months. The high inflation was largely attributable to a steep increase in food prices. Another major component was that in 2022 companies repriced their products and services far more than the average increase in previous years on account of the soaring energy and commodity prices, and the widening of companies' mark-up, along with rising costs, compounded the acceleration of inflation.

Following successful economic reopening, the Hungarian economy continued to grow rapidly in 2022. In the first quarter, Hungary's gross domestic product grew by 8.2 per cent year on year. Growth dynamics were exceptional in an international comparison, and the recovery of the Hungarian economy put the country in the forefront of the European Union. The Hungarian economy exhibited strong growth in the second quarter, with a 6.5-per cent year-on-year increase. In this period, on the production side, the performance of all national economy sectors improved in year-on-year terms in this period, with only agriculture, battered by an exceptional drought, weighing on GDP growth. On the expenditure side, the contributions of most items to annual GDP growth were also positive, and the main driver was household consumption, just like in the first quarter. The Hungarian economy grew at a slower pace in 2022 Q3, as gross domestic product grew by 4.0 per cent year on year. On the expenditure side, growth was mainly driven by net exports, rather than household consumption as in the first two quarters. GDP growth may have continued to decelerate in the fourth quarter of the year, as domestic

demand faded and companies' costs increased. Based on the available data, the budget deficit and government debt continued to drop in 2022, just as in 2021. The current account deficit temporarily rose in 2022 on account of the deteriorating energy balance influenced by soaring energy prices, but a steady contraction is expected from 2023.

Monetary policy measures

Fundamental inflation risks and financial market turbulences warranted strong central bank action in 2022. At the beginning of the year, the Monetary Council continued its tightening cycle that had started in the summer of 2021, and the central bank also raised the one-week deposit rate to manage risks in the commodity and financial markets. In the first two months of the year, the central bank base rate, the overnight deposit rate, and the overnight and one-week collateralised lending rate rose by 50 basis points each, with the base rate and the lower bound of the interest rate corridor rising to 3.4 per cent and the upper bound of the interest rate corridor reaching 5.4 per cent. When war broke out between Russia and Ukraine at the end of February, risks in the commodity and financial markets increased further. The central bank sought to expand its room for monetary policy manoeuvre and raised the upper bound of the interest rate corridor by 100 basis points to 6.4 per cent, and the one-week deposit rate was increased to 6.15 per cent in several steps until the end of March.

In the spring months, fundamental inflation risks continued to rise, and the tightening cycle continued with decisive steps in response. Accordingly, the base rate and the interest rate corridor were increased by 250 basis points by the end of May. In June, the Monetary Council deemed it necessary to close the gap between the base rate and the one-week deposit rate. Therefore, at its meeting on 28 June, it took a decisive step and raised the base rate by 185 basis points and the interest rate corridor by 135 basis points. The one-week deposit rate was increased by 50 basis points to 7.75 per cent, closing the gap between the two rates.

After the interest rate decision in June, upside risks to price stability continued to increase on account of the financial market turbulence, and the risk of a second-round inflationary effects heightened as well. To manage these risks, the central bank raised the one-week deposit rate by 200 basis points on 7 July 2022. The Monetary Council increased the base rate and the interest rate corridor by 200 basis points with its decision on 12 July, with both the one-week deposit rate and the base rate standing at 9.75 per

² Pandemic emergency purchase programme.

cent. After this, the base rate and the interest rate corridor were raised by 100 basis points each with the decisions in late July and August, while the one-week deposit rate followed the increases. The last base rate hike in 2022 occurred in September. In line with the decision, the base rate and the interest rate corridor were increased by 125 basis points, which was also incorporated into the one-week deposit rate. By the end of September, the base rate and the one-week deposit rate had risen to 13 per cent, the overnight deposit rate stood at 12.5 per cent, and the overnight and one-week collateralised lending rate was 15.5 per cent. At the same time, the Monetary Council considered that after a long time the risks surrounding the central bank's inflation projection had become symmetrical once again. In the Monetary Council's assessment, the prevailing interest rate conditions were sufficiently tight and consistent with the achievement of the price stability objective over the monetary policy horizon. At its meeting in September, the Monetary Council decided to stop its 16-month cycle of rate increases, ending the first phase of its monetary policy measures.

At the time of its decision in September, the Monetary Council indicated that monetary tightening would continue by reducing interbank liquidity. From 1 October, the central bank enhanced the disinflationary impact of interest rate increases through three measures: raising the required reserve ratio, holding central bank discount bill auctions and launching a longer-term deposit instrument. The introduction of these new instruments was warranted by the increased liquidity in the banking system, which started to diminish as a result, in the context of rising yields. The MNB managed to markedly reduce interbank forint liquidity with these measures, and more than half of it was tied up in permanently sterilised assets by the end of October. By permanently tying up liquidity, the central bank continued to strengthen the effectiveness of monetary policy transmission in a targeted manner, thereby ensuring that short-term money market rates were consistent with the central bank's stance, even amidst financial market turbulences.

Another important element of strengthening monetary policy transmission was the use of the swap instrument providing FX liquidity. The central bank used this instrument more actively and with increasingly long maturities at the end of the first two quarters, ensuring that short-term rates on the swap market remained stable over all periods. While the central bank kept its swap instrument providing quarter-end FX liquidity in the second half of the year, it was also used within the quarter, with a one-day maturity, from July 2022. This extension led to a rise in implied swap rates and further strengthened monetary policy transmission. The use of the swap instrument was complemented with the impact of the measures tying up liquidity introduced in

early October, and therefore the MNB was able to maintain the stability of the swap market throughout the year, and especially towards the end of the year. By strengthening monetary policy transmission, the central bank created room for manoeuvre that enabled effective action in the event of financial market turbulences.

In the first weeks of October, sentiment on the international financial markets weakened significantly, with the forint fluctuated widely before reaching historic lows against the euro and the US dollar. The rapid rise in positions against the forint held by foreign and domestic actors threatened market stability. Using the previously created room for manoeuvre, the central bank was able to effectively manage these marked market risks in the third phase of monetary policy measures. Starting on 14 October, the MNB responded with a set of targeted measures to preserve financial stability. The use of the overnight deposit quick tender with an interest rate of 18 per cent and the one-day FX swap instrument on a daily basis, coupled with an increase of 950 basis points in the interest rate corridor's upper bound, effectively increased short-term rates. In addition, the central bank provided the FX liquidity necessary for market equilibrium related to the energy bill in the months near year-end.

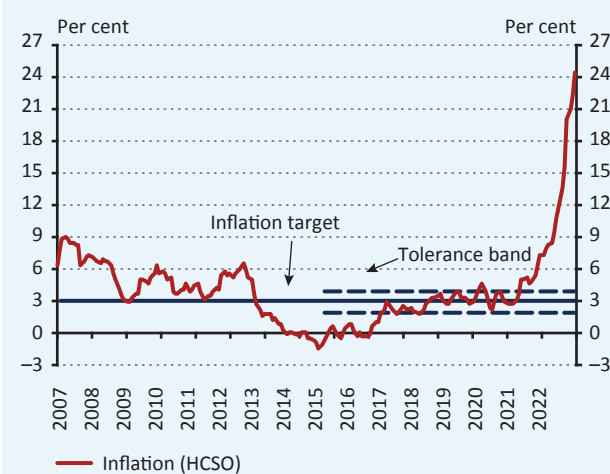
These measures by the MNB successfully stabilised financial market developments. Thanks to the one-day instruments, the substantial increase in short-term forint interest rates, amounting to hundreds of basis points, provided strong support for the Hungarian financial markets and also calmed the markets. After these instruments were announced, the forint entered on a path of rapid, country-specific appreciation. Speculative positions against the forint were slowly unwound, and the confidence of households and companies in the forint strengthened. Government securities yields fell markedly, dropping by almost 300 basis points in the 10-year segment. The 5-year credit default swap (CDS) spread, which is used as a risk indicator, declined by almost 100 basis points. With the measures introduced in mid-October, the MNB supported the achievement of its primary, price stability objective by preserving market stability.

Inflation developments in 2022

In 2022, inflation continued to increase in Hungary, reaching an annual average of 14.5 per cent. The Hungarian consumer price index rose to more than 10 per cent by May and over 20 per cent by September; by the end of the year it had risen to 24.5 per cent, yielding an annual average increase in consumer prices of 14.5 per cent. A temporal duality was observed in inflation developments during the year. The beginning of the year was dominated

by the impact of external factors, with rising inflation primarily shaped by commodity, energy and food prices. The MNB estimates that around two thirds of inflation was attributable to external factors in early 2022. However, the role of domestic effects strengthened in the second half of the year, when companies raised their prices more than the increase in their costs, which was probably reflected in the expansion of profits; accordingly, by the end of the year the price rises may have been influenced significantly by corporate profits. Taken in this context, the acceleration of inflation does not only reflect the increase in costs, as it was also impacted by the rise in companies' mark-up.

Chart 1
The inflation target and developments in inflation since the setting of the continuous target

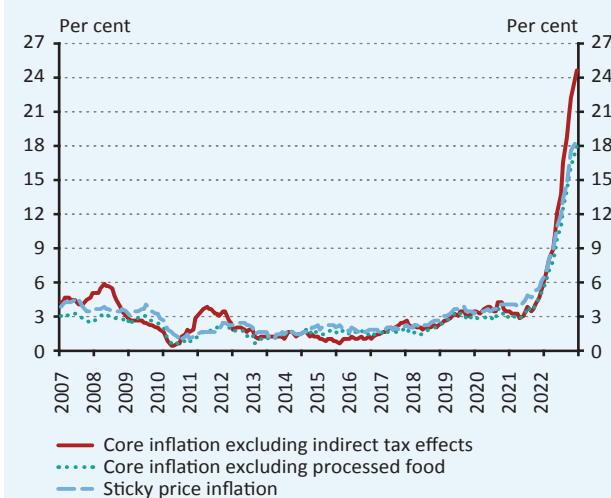


Source: HCSO, MNB

Within the EU, inflation was the highest in the Baltic states and the V4 countries. In the CEE region, the annual harmonised index of consumer prices in 2022 was 14.8 per cent in the Czech Republic, 13.2 per cent in Poland and 12.1 per cent in Slovakia.

Hungarian indicators capturing longer-term inflation trends (core inflation excluding processed food and the inflation of sticky-price products and services) showed a steady increase during the year. Core inflation excluding indirect taxes also increased gradually in 2022, hitting 24.7 per cent at the end of the year. Average annual core inflation was 15.7 per cent in 2022.

Chart 2
Underlying inflation indicators



Source: MNB

Food prices accounted for over one half of the increase in inflation after the summer, which was explained by global developments as well as the efficiency and productivity problems faced by the food industry in Hungary. By the end of the year, unprocessed food prices had broadly increased, with inflation in this product group exceeding 40 per cent. The price change of processed food accelerated to over 50 per cent in December, mostly attributable to the price changes affecting milk, dairy products and bread within

Table 1
Consumer price index and its components

	2020	2021	2022	2022			
				Q1	Q2	Q3	Q4
Core inflation	3.7	3.9	15.7	8.2	12.1	18.8	23.6
Unprocessed food	11.7	2.6	24.3	12.0	19.5	25.4	40.3
Fuel and market energy	-4.6	20.6	12.3	16.6	11.5	8.0	13.1
Regulated prices	0.4	0.6	9.5	2.7	2.2	9.0	24.0
Consumer price index	3.3	5.1	14.5	8.2	10.6	16.5	22.7
Consumer price index at constant tax rates	3.2	4.6	14.4	8.0	11.1	16.2	22.5

Note: (percentage change, year-on-year) In the case of price indices at constant tax rates, the HCSO adjusts the consumer price index for the technical effect of changes in indirect taxes.

Source: HCSO

this product group. Average annual food price inflation was 28.5 per cent in 2022.

Consistent with international developments, the rise in the price index of industrial goods and market services also contributed to inflation growth. In the case of the former, the higher prices were explained by the global shortage of semiconductors and commodity price hikes. As regards market services, price changes for services related to food were significant throughout the year.

In 2022, the government's price control measures also shaped consumer prices. The price of fuels was capped by the government at HUF 480 per litre from 15 November 2021. The group of those eligible for the preferential price was narrowed during the year, and then the price cap on fuels was lifted on 7 December. The prices of seven basic food products were capped from 1 February 2022 (among these granulated sugar, wheat flour, sunflower oil, pork leg, 2.8-per cent UHT milk and chicken breasts are part of the consumer basket measured by the HCSO). Pursuant to the latest government decree, from 10 November 2022 the range of food products subject to price caps was extended to fresh eggs and table potatoes. Initially, the price cap had a technical effect of mitigating the rate of food price increases, but the prolonged use of price caps engendered market mechanisms that led to a rise in other products' prices. This is because retailers passed on the missing price hikes on fixed-price products to other products. The portion of the administered price of households' gas and energy consumption in excess of average consumption converged rapidly to the market price from 1 August.

Changes in monetary policy instruments and recourse to the central bank instruments

The Monetary Council continued its tightening cycle in the first half of the year and started to close the gap between the base rate and the one-week deposit rate on account of the increased challenges. According to the decisions taken at meetings on 25 January and 22 February, the prevailing base rate of 2.4 per cent and the entire interest rate corridor (spanning between 2.4 per cent and 4.4 per cent) were raised by 50 basis points each.

The Monetary Council then decided to expand the interest rate corridor at its meeting on 8 March and increased the O/N and one-week collateralised lending rate by 100 basis points to 6.4 per cent. By expanding the interest rate

corridor, the Monetary Council increased the room for monetary policy manoeuvre.

In the Monetary Council's view, the risks surrounding the inflation outlook continued to rise and preserved their upside nature in the first quarter. Therefore, on 22 March and 26 April, the Monetary Council decided to continue tightening monetary conditions and carry on the tightening cycle with larger steps than before, by 100 basis points each time, as tighter monetary conditions had to be maintained for an extended period.

The inflation path expected by the MNB in June drifted upwards from the March projections. Global inflation reached a decade-high peak, which, in conjunction with the Russian-Ukrainian war and financial market volatility, posed increased risk to the Hungarian inflation outlook. Due to the mounting challenges, the Monetary Council decided to close the gap between the base rate and the one-week deposit rate at its meeting on 28 June. At the end of the half year, the overnight deposit rate was 7.25 per cent and the base rate was 7.75 per cent, while the overnight and one-week lending rate stood at 10.25 per cent.

On 30 August, the Monetary Council decided to introduce three measures to reduce interbank liquidity, which helped short-term money market rates become consistent with the central bank's stance from the autumn, even amidst financial market turbulences. The central bank increased the banking system's required reserve ratio from 1 October: the reserve requirement that had previously amounted to 1 per cent of relevant liabilities rose considerably, and daily as well as monthly average compliance was also introduced. The required reserve ratio increased to 5 per cent, and the requirement had to be met on a daily basis. Beyond the minimum rate of 5 per cent, an additional rate of up to 5 per cent, chosen on a percentage basis, was introduced, whereby the MNB helps in tying down additional liquidity at the base rate. With respect to the discretionary reserve requirement, the regulation stipulates monthly compliance. Furthermore, the central bank regularly holds self-issued discount bill auctions, and a deposit instrument of up to 6 months was introduced to sterilise banking system liquidity at longer maturities.

The Monetary Council continued its interest rate hikes between early 2022 and September, with the base rate increasing from 2.4 per cent in early 2022 to 13 per cent on 28 September due to the decisions of the Monetary Council. The overnight deposit rate advanced from 2.4 per cent to 12.5 per cent, and the overnight collateralised

lending rate rose from 4.4 per cent to 15.5 per cent in the same period. After the measure taken in September, the Monetary Council decided to end the cycle of rate increases. However, it continued to support the maintenance of the tight monetary policy stance and the tightening through the above-mentioned steps.

As part of the long-term tying down of liquidity from early October, more than HUF 4,800 billion was tied down from the banking system's excess liquidity, taking into account banks' choices regarding the reserve requirement and the outcome of the auctions held in the first week of October.

Amidst the financial market turbulence, the Monetary Council raised the overnight collateralised lending rate to 25 per cent and suspended the one-week collateralised credit facility effective from 14 October. Furthermore, on 14 October 2022 the MNB announced an overnight (tomnext) FX swap instrument and overnight deposit quick tenders on a daily basis, at higher rates than before, to preserve the stability of the market. Moreover, the MNB temporarily suspended the one-week deposit tenders, the variable-rate deposit tenders with maturities of up to 6 months as well as the discount bill auctions. The aim of these instruments was to facilitate the rapid and flexible pass-through of tighter monetary conditions to the submarkets considered key from the perspective of monetary policy transmission, such as the interbank market and the swap market.

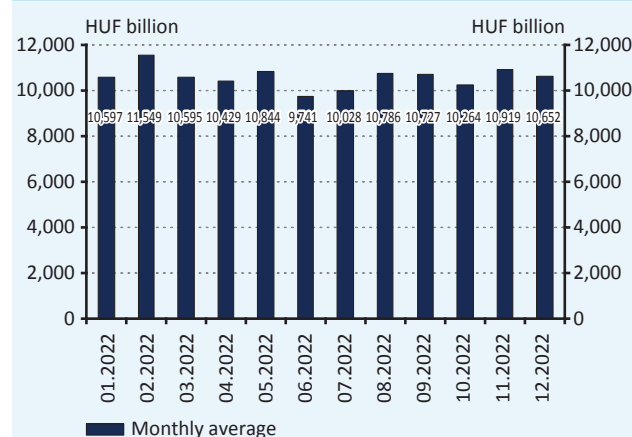
The central bank also undertook to directly meet the large FX liquidity needs of its bank counterparties related to paying for energy imports in the remaining months of the year. As the items of the current account other than the energy balance were already in positive territory overall, this measure significantly changed the supply and demand conditions in the FX market.

As in earlier periods, the MNB held cross-period, quarter-end FX swap tenders providing euro liquidity and discount bill auctions. With its active market presence, the MNB sought to address any swap market tensions at the end of quarters and thus improve the efficiency of monetary policy transmission, thereby supporting the achievement and maintenance of price stability. The MNB typically announced the FX swap tenders without a maximum offered amount, using its international repo line agreements to finance these. EUR 4.4 billion was provided at the tenders in March, then EUR 4.5 billion in June, EUR 3.1 billion in September and EUR 6.3 billion in December.

Liquidity in the banking system remained high throughout the period under review, with monthly averages fluctuating in the range of HUF 9,700–11,500 billion. In 2022, the banking system's average monthly net forint liquidity (the net balance of settlement and instant settlement accounts, the amount of preferential, overnight and one-week deposits less overnight and one-week loans) amounted to HUF 9,741–11,549 billion between January and October, and the remaining monthly averages were similar to what was seen in September, with the average closing value in December coming in at HUF 10,652 billion.

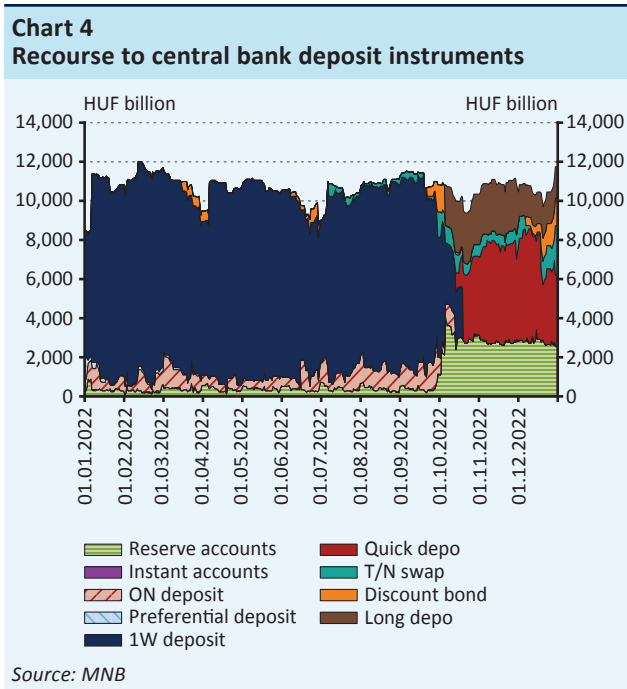
At the end of September, in parallel with the quarter-end seasonality and the new instruments launched in early October, there was a realignment in tying down excess liquidity from one-week deposits towards the new instruments.

Chart 3
Monthly average forint liquidity of the banking system



Source: MNB

The banking system's aggregate reserve requirement was HUF 352–403 billion until the end of September. At the same time, the average monthly holdings on reserve accounts was HUF 363–436 billion. Similar to earlier periods, the reserves actually held exceeded the reserve requirement in all months. Cumulative excess reserves remained low, amounting to HUF 11–44 billion. As a result of the new rules on reserves, the monthly reserve requirement jumped to HUF 2,709 billion in the final quarter. Excess reserves amounted to over HUF 163 billion in October, before falling to approximately HUF 100 billion in the last two months.



Between 8 and 15 July, the MNB held overnight FX swap tenders providing euro liquidity each working day. From 15 July, the regular daily tenders offered were switched from overnight to tomnext value dates, up until the end of

the year. Other than the cross-quarter tenders, the MNB held 122 tenders and accepted all bids. In the period overall, the average value of accepted bids was EUR 910 million (HUF 373 billion). In July, the first month of the scheme, the average was EUR 718 million (HUF 290 billion), with the following two months coming in lower than that. The largest uptake was in October and November with EUR 1,537 million (HUF 645 billion) and EUR 1,518 million (HUF 617 billion), respectively. The trend turned downwards in December, with average utilisation standing at EUR 560 million (HUF 230 billion).

The MNB held four swap tenders providing euro liquidity in March, five in June, and three in September and December each (including the tomnext tenders crossing into the next quarter). The maturity of the tenders varied between overnight and one month. Similar to earlier quarters, the MNB accepted all the received bids, amounting to EUR 4,373 million (HUF 1,614 billion) in March, EUR 4,492 million (HUF 1,779 billion) in June, EUR 3,095 million (HUF 1,288 billion) in September, and EUR 6,289 million (HUF 2,538 billion) in December. With its regular and quarter-end tenders, the central bank was able to successfully smooth swap market volatility.

Table 2
Key data on the quarter-end central bank FX swap tenders providing euro liquidity

Tender date	Value date	Maturity	Type	Total allotted amount (EUR million)	Total allotted amount (HUF billion)
01/03/2022	03/03/2022	01/04/2022	1-month	400	149
23/03/2022	25/03/2022	07/04/2022	2-week	1,675	621
30/03/2022	31/03/2022	01/04/2022	1-day	1,648	606
31/03/2022	31/03/2022	07/04/2022	1-week	650	239
07/06/2022	09/06/2022	01/07/2022	3-week	360	140
14/06/2022	16/06/2022	07/07/2022	3-week	580	232
21/06/2022	23/06/2022	07/07/2022	2-week	892	354
29/06/2022	30/06/2022	07/07/2022	1-week	1,639	651
30/06/2022	30/06/2022	07/07/2022	1-week	1,021	402
20/09/2022	22/09/2022	06/10/2022	2-week	0	0
29/09/2022	30/09/2022	03/10/2022	1-day	2,765	1,149
30/09/2022	30/09/2022	03/10/2022	1-day	330	139
15/12/2022	19/12/2022	05/01/2023	3-week	2,925	1,188
29/12/2022	30/12/2022	02/01/2023	1-day	2,566	1,031
30/12/2022	30/12/2022	03/01/2023	1-day	798	319
Total	-	-	-	18,249	7,219

Source: MNB

The MNB offered a discount bill with a short maturity of no more than 3 weeks, ten times in total in the period under review. Accepting all bids, it issued discount bills with a face value of HUF 520 billion in 2022 Q1, HUF 687 billion in 2022 Q2, HUF 1,410 billion in 2022 Q3, and HUF 1,488 billion in 2022 Q4. The discount bills successfully reduced the banking system's excess liquidity in these periods.

Discount bills with maximum maturity of 1 month were complemented with the variable-rate long-term deposit instrument with a maturity of up to 6 months, which was introduced in October. The long-term deposit instrument was offered three times. The amount of the bids received totalled HUF 2,146 billion, HUF 522 billion and HUF 2,289 billion, respectively, and an additional HUF 517 billion was bid at a non-competitive tender announced by the MNB alongside the second tender. The bids accepted amounted to HUF 2,093 billion, HUF 506 billion and HUF 1,618 billion, with all the bids in the non-competitive tender accepted.

Launched on 4 October 2021 as part of the MNB's green policy toolkit strategy, the FGS Green Home Programme (FGS GHP) facilitated the emergence of the green housing loan market and the implementation of environmental sustainability considerations in the Hungarian housing market with central bank funds at preferential rates, which could be spent on building and purchasing energy efficient new homes. In view of the high demand for the Green Home Loans and the importance of the sustainability considerations, the Monetary Council decided to increase the overall amount by HUF 100 billion to HUF 300 billion on 5 April 2022, while tightening the energy requirements of eligible properties. In the contracting period that ended on 30 September 2022, housing loan contracts for 8,631 properties worth over HUF 299 billion were signed, and basically the entire allocated amount was used up. The amount actually outstanding related to these contracts – meaning the debt already drawn down but not paid back – had expanded to HUF 189 billion by the end of December, and this growth is expected to continue in 2023 due to the large volume of remaining disbursements. The outstanding debt to the SME sector disbursed in the earlier phases of the FGS narrowed to HUF 2,373 billion by the end of 2022.

In line with the 14 December 2021 decision of the Monetary Council to terminate the BGS, by concluding the ongoing negotiations 89 issuers issued a total of 114 bond series and raised funds of HUF 2,859 billion by 21 April 2022. At face value, the MNB's purchases amounted to HUF 1,549.7 billion, so the allocation of HUF 1,550 billion

for the central bank's purchases was fully utilised. Due to the sizeable contribution of the BGS issues, the Hungarian corporate bond market expanded from 1 per cent of GDP at the start of the programme to around 5.5 per cent of GDP by the end of April 2022, thereby pushing Hungary from the last position to the top among the Visegrád countries. The Hungarian corporate bond market has matured considerably since the programme was launched: the number of issuers has doubled, while the number of bond series has tripled, the share of HUF-denominated bonds and fixed interest rate instruments have substantially increased, and issuer and sectoral concentration have significantly fallen. The MNB's bond programme has contributed materially to the efficiency of monetary policy transmission, the establishment and emergence of the Hungarian green corporate bond market, the strengthening of the capital market presence of the corporate sector, the widespread adoption of credit ratings in Hungary, the deepening of financial markets and the evolution of investors' risk management methods.

On 5 April 2022, the MNB decided to tighten the conditions of the Green Mortgage Bond Purchase Programme to promote the use of green mortgage bonds and establish issuer best practices. Until the new conditions took effect, the MNB suspended mortgage bond purchases, with the exception of ongoing issues. Accordingly, the last green mortgage bond auction where the MNB participated was held on 25 April 2022; in aggregate, it had thus purchased mortgage bonds with a face value of HUF 57 billion in the primary market. Together with the secondary market purchases, the MNB purchased green mortgage bonds with a face value of HUF 61 billion under the programme.

Under the mortgage bond rollover scheme, the MNB rolled over maturing mortgage bonds of three issuers, worth HUF 30 billion in total, in the period under review. Effective from 15 August 2022, the MNB decided to tighten the conditions of the scheme. Accordingly, the mortgage bonds eligible for rollover were reduced from those maturing within 12 months to those maturing within 6 months, and the MNB may now purchase half of this amount, rather than 100 per cent as earlier. At the end of the year, the MNB's total mortgage bond holdings had a face value of HUF 687 billion, including those purchased under earlier purchase programmes, the Green Mortgage Bond Purchase Programme and the mortgage bond rollover option.

The 3-month BUBOR subscriptions, which have special significance for interest rate transmission, exhibited an upward trend, climbing from 4.22 per cent at the beginning

of the year to 16.18 per cent at the end of the period, while 3-month discount treasury bill yields jumped from 2.18 per cent to 12.32 per cent.

3.2 STABILITY OF THE FINANCIAL INTERMEDIARY SYSTEM

In 2022, the risks affecting the functioning of the Hungarian banking system and their possible mitigation were presented in the Financial Stability Reports, which regularly and comprehensively assess the risks to financial stability. Changes in the international environment continue to exert a considerable impact on the operation of the economy, but the Hungarian banking system remains robust, and its shock-resilience is adequate from the perspective of the liquidity position and loss-absorbing capacity. Hungarian banks can consistently provide the necessary funds to economic actors, thereby facilitating the smooth operation of the economy. Outstanding loans grew in 2022 again, partly due to government and central bank lending programmes. The annual growth rate of corporate loans was close to 14 per cent, while the annual growth rate of SME loans reached 13 per cent in 2022, based on preliminary data, with a significant contribution from the loan and guarantee schemes of government institutions. Household loans expanded by over 6 per cent year on year in 2022, below the growth rate of previous years. The deceleration in household credit growth was mainly driven by the rising interest rate environment and the slowing housing market.

The volume of non-performing loans in the banking system is at low levels in both the corporate and the household segments, although it started to rise slightly from its historic lows in the months after the general moratorium was lifted. However, credit growth and banks' portfolio cleaning have mitigated the rise in the non-performing loan ratio. In 2022, the domestic credit institutions sector posted a profit after tax of HUF 488 billion, reflecting a decrease of HUF 21 billion from the previous year. The drop in profits is primarily attributable to loan loss provisioning and the extra profit tax as well as impact of the interest rate cap measures. All credit institutions met regulatory capital requirements, but the distribution of free capital buffers within the sector remained concentrated.

In 2022, the MNB's macroprudential activities continued to focus on monitoring and managing the impact on financial stability of the housing market overvaluation, the conflict between Russia and Ukraine, the deteriorating macroeconomic environment and the related fiscal and monetary policy measures. In view of the overvaluation on the housing market and the resulting credit risk, the central

bank decided to raise the countercyclical capital buffer rate applicable to banks' Hungarian exposures to 0.5 per cent at the end of June 2022, effective from 1 July 2023. In order to develop and strengthen the mortgage bond market facilitating stable financing, the mortgage-based funds denominated in FX became eligible for calculating the value of the mortgage funding adequacy ratio (MFAR) from 1 July 2022. Nevertheless, considering the uncertain economic and capital market situation, the MNB decided to postpone the planned tightening of the MFAR requirement. In order to stimulate competition among banks and foster the digitalisation of lending processes, the MNB refined the Certified Consumer-Friendly Housing Loans scheme.

In 2022, the MNB's activities promoting financial innovation and digitalisation focused on assessing and strengthening the level of digitalisation of the Hungarian financial system and deepening the FinTech ecosystem. In 2022, the central bank published its FinTech and Digitalisation Report for the third time, and it also monitored the implementation of the digital strategies of the commercial banks that were developed based on the MNB recommendation released earlier, encouraging the digital transformation of the Hungarian banking system. The cooperation with the Digitalisation Workshop of the Budapest University of Technology and Economics (BME) has continued apace, and the Innovation Space of BME – the completion of which was supported by the MNB – was opened. The Pénczmúzeum mobile application was released, in which the MNB operates an NFT issuance platform to test its own private blockchain. The MNB's achievements in supporting innovation and digitalisation were celebrated at the Singapore FinTech Festival, the world's largest fintech event.

Key developments in the financial system

Pursuant to the MNB Act, the primary objective of the MNB is to achieve and maintain price stability. Without prejudice to its primary objective, the MNB supports the maintenance of the stability of the financial intermediary system, the enhancement of its resilience and its sustainable contribution to economic growth, as well as the economic and environmental sustainability policy of the government using the instruments at its disposal. In addition, based on its mandate linked to its membership in the European System of Financial Supervision, the MNB performs the tasks imposed on it, originating from the competence of the European Banking Authority, the European Insurance and Occupational Pensions Authority, the European Securities and Markets Authority and the European Systemic Risk Board, supervises the Hungarian financial intermediary system and also acts as a resolution authority.

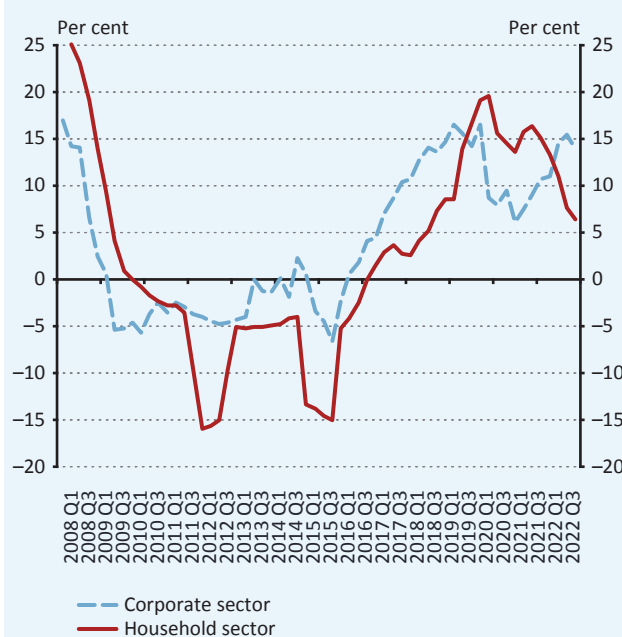
The biannual publication *Trends in Lending* provides a detailed overview of developments in lending in Hungary. Following the record-high lending at the beginning of the year, household credit started to contract due to the rising interest rate environment. Corporate lending, however, continued to grow strongly in 2022, driven by the Széchenyi Card Programme and borrowing by companies in the energy sector.

Credit institutions' household loans expanded at a nominal, year-on-year rate of 6.3 per cent, as a result of disbursements and repayments (Chart 5). The volume of new loans reached new highs in the second quarter, mainly due to new contracts under the FGS Green Home Programme (GHP) and credit demand brought forward due to interest rate increases. As the programme was phased out and lending rates climbed, new lending gradually abated in the second half of the year, and the volume of new contracts was 10 per cent less in 2022 than in 2021. In 2022, only personal loans increased by 5 per cent in annual terms. In the case of prenatal baby support loans, a 17-per cent contraction was observed, but their volume was over HUF 1,900 billion by the end of the year, amounting to 19.5 per cent of household loans. Subsidised loans related to the family protection and home creation programmes (family home creation allowance (CSOK), rural CSOK and prenatal baby support) made 38 per cent of the volume issued in 2022. The annual volume of new housing loans amounted to HUF 1,182 billion in 2022, down 9 per cent on the previous year, while new loans in December dropped by 61 per cent in year-on-year terms. Certified Consumer-Friendly Housing Loans (CCFHLs) continued to account for a significant share of housing loans, reaching 64 per cent of the total in 2022. Within personal loans, the share of Certified Consumer-Friendly Personal Loans amounted to 18 per cent during the year.

Under the GHP that was terminated on 30 September 2022, some 8,600 credit transactions were concluded, with a total volume of around HUF 300 billion. For 56 per cent of the contracts, borrowers also benefited from government's interest subsidies. Households took out 43 per cent of the total for building or purchasing detached houses, 44 per cent of the loans were linked to purchasing flats, and 13 per cent of the volume was used for purchasing semi-detached or terraced houses. GHP loans were worth HUF 35 million on average and had an average maturity of 21.7 years, well over the averages for market loans. In terms of energy efficiency, a significant proportion of the properties financed outperformed the maximum threshold value of 90 kWh/m²/year, later modified to 80 kWh/m²/year, as required by the programme, with an average energy demand of 63 kWh/m²/year.

The annual growth rate of corporate credit reached 13.8 per cent at the end of 2022, while the growth rate of the SME segment was 12.7 per cent based on preliminary data. In real terms, this means a contraction in total credit and SME credit. The transaction growth of corporate credit in 2022 was over HUF 1,400 billion, over 40 per cent more than in the preceding year. Loan and guarantee programmes of government institutions and the increased financing needs of firms in the energy sector contributed significantly to sustaining nominal stock growth. Following the outbreak of the Russian–Ukrainian war, and despite the climbing interest rate environment, demand remained relatively robust overall in the corporate credit market: in the second half of 2022, credit institutions signed new, non-current account type loan contracts worth over HUF 1,930 billion, representing a 5-per cent year-on-year increase. At the same time, there was a shift in the structure of demand towards short-term loans and FX loans. Within total corporate credit disbursed in the second half of the year, the share of market loans was 79 per cent, which fell just short of the 85–90 per cent figures typical in the pre-pandemic period.

Chart 5
Annual growth rate of outstanding corporate and household loans



Note: Credit institutions sector.

Source: MNB

In the first half of 2022, the housing market reached the peak of its cycle that began in 2014, but from the third quarter onwards there were already early signs of a turnaround in the housing market, with a significant decline in demand and transaction numbers, and a quarter-on-quarter decline in residential real estate prices. According

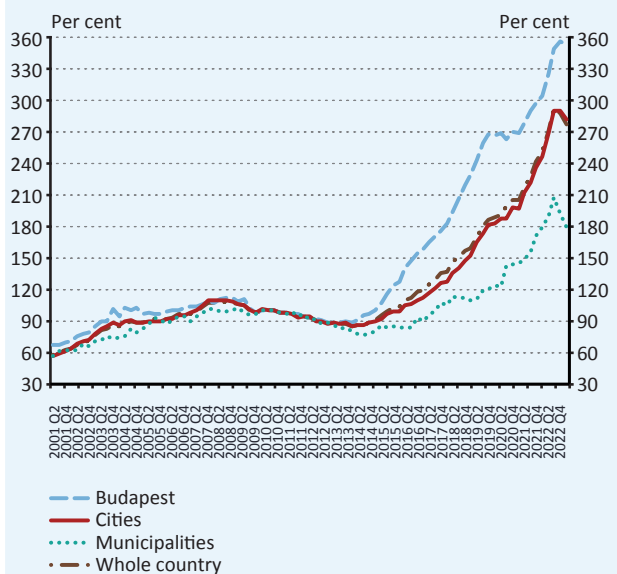
to the MNB's house price index, house prices fell by 3.6 per cent on average in the fourth quarter of 2022, preceded by a slight decline of 1.6 per cent in the third quarter. The decline in house prices was more pronounced in smaller settlements. The annual rate of house price appreciation in Budapest slowed to 16.1 per cent in 2022 Q4, to 14.4 per cent in rural towns and to 0.3 per cent in villages, resulting in a national average of 10.6 per cent (Chart 6). The MNB estimates that house prices exceeded the level justified by macroeconomic fundamentals by 9 per cent nationally and by 3 per cent in Budapest in 2022 Q4, thus significantly reducing overvaluation nationally over six months, which was driven by benign wage and labour market developments in addition to declining house prices.

In 2022, the MNB estimates that individuals nationwide completed 142,000 housing transactions, of which 35,000 occurred in the capital, with these figures down 19 per cent and 14 per cent, respectively, versus 2021. Nationally, the last time fewer transactions took place was in 2014. Borrowing transactions accounted for less than half of all sales, and some 5 per cent of new housing loans were close to both regulatory limits for the loan-to-value (LTV) and debt-service-to-income ratios (DSTI) set by the MNB (DSTI above 40 per cent and LTV above 70 per cent) in 2022 Q4. The number of new homes completed totalled 20,500 in 2022, up 3.2 per cent in year-on-year terms, supported by the construction of environmentally sustainable new homes encouraged by the FGS GHP. In Budapest, housing completions decreased by 6 per cent from the high base of the previous year, while in rural areas, housing completions increased by 8 per cent. The number of new building permits issued increased by 17 per cent in year-on-year terms in 2022. New construction was boosted by the government's extension of the applicability of the reduced, 5-per cent VAT rate to buildings to receive a building permit by the end of 2024 and be completed by the end of 2028.

The deteriorating economic outlook, rising energy prices, growing construction costs, the significant volatility and weakening of the forint against the euro, higher interest rates and tightening financing conditions are all challenges for commercial real estate market players. Although the developments in the commercial real estate market were positive overall in 2022 H1, risks continued to rise across Europe during the year, which may ultimately lead to a decline in property values. In 2022, the vacancy rate in the Budapest office market rose by 2.1 percentage points to 11.3 per cent at the end of the year. At the same time, this indicator rose in the industrial-logistics market segment in 2022 H1, before falling from 6.4 per cent at the end of June to 3.8 per cent by the end of December. These vacancy levels are not high by historical standards, but compared

to the 5.6-per cent vacancy rate in the office market at the end of 2019, the current level already points to a changed situation that requires increased attention. In the office and industrial-logistics segments, the high planned completion volumes point to a further increase in vacancy rates, while in the former market segment no new developments are expected to be launched in 2022. New completions face elevated risks from rising building material prices and supply chain disruptions. In 2022, the commercial real estate market contracted by about one third in terms of annual investment turnover, in comparison to 2021, with prime yields rising by 75 basis points in the latter half of the year. Credit institutions tightened their financing conditions significantly in 2022. The banking system is adequately capitalised and therefore able to manage the risks stemming from the commercial real estate market.

Chart 6
The MNB's nominal house price index by type of settlement (2010 = 100%)



Note: Based on data available at the end of April 2023.

Source: MNB

The volume of non-performing loans in the banking system rose from its historic lows in the months after the general moratorium was lifted, both in the corporate and the household segments. The stock of loans overdue by more than 90 days increased by HUF 75 billion for corporates and by HUF 28 billion for households in 2022. The volume of loans that are not over 90 days past due but are classified as non-performing by banks decreased by HUF 39 billion in the corporate sector, while it increased by HUF 13 billion in the household segment. Loans over 90 days past due accounted for nearly one third of all non-performing loans in both segments. The volume of NPLs stood at HUF 465 billion and HUF 432 billion, respectively, at the end of 2022. As a

result of expansion of lending and banks' portfolio cleaning, the share of non-performing loans was 3.9 per cent in the corporate segment, and 4.4 per cent in the household segment at the end of 2022. Uncertainties in the economic environment, the phase-out of the targeted moratorium on payments and the cost shocks affecting both households and corporates pose upward risks to portfolio quality.

The credit institution sector's profit after tax was HUF 488 billion in 2022 according to preliminary, unconsolidated data, down by HUF 21 billion (4 per cent) on the preceding year. The decline in profit after tax is primarily attributable to loan loss provisioning and the accounting treatment of the extra profit tax as well as the impact of the interest rate cap measures, whose negative impact on profit was partly offset by the exceptionally high net interest income. With a modest decline in nominal profits, the sector's return on equity (RoE) fell from 10 per cent at end-2021 to 9 per cent, and its return on assets (RoA) fell from 0.9 per cent to 0.7 per cent.

Following three quarters of decline, the banking system's consolidated capital adequacy ratio rose slightly, by 13 basis points, to 18.2 per cent at the end of 2022. The improvement in capital adequacy is primarily attributable to the decrease, in forint terms, of the risk-weighted assets held by subsidiaries abroad. After a decline of 158 basis points in 2022, the CET1³ ratio stood at 16.1 per cent at the end of December. The sector's free capital above the total capital requirements decreased by HUF 3 billion to HUF 1,528 billion. The 3-per cent leverage requirement was met by all members of the sector, with institutions with relatively lower leverage ratios all showing increases.

The MNB conducted its 15th *Market Intelligence Survey* in 2022, contacting seven major Hungarian commercial banks in order to study credit institutions' business ideas for 2022, their views on the macroeconomic environment and the outlook for the sector as well as the risks they perceive as most important. The consensus among banks was that the Hungarian economy would experience a slowdown, which may lead to a reduction in lending dynamics. Banks expected heightened competition and falling profitability for 2022. The risk map of the banking sector was dominated by fears of a deceleration of Hungary's economic growth and a rise in geopolitical risks, while deterioration in customers' ability to pay was rated as the third strongest risk by banks at both the banking system and institutional level.

Macroprudential activity of the MNB

In 2022, the MNB paid special attention to the overvaluation on the housing market, the armed conflict between Russia and Ukraine, the deteriorating macroeconomic environment and the impact of the corresponding fiscal and monetary policy measures on financial systemic risks.

The MNB decided to raise the countercyclical capital buffer rate applicable to Hungarian exposures to 0.5 per cent at the end of June 2022, effective from 1 July 2023. The first half of 2022 saw continued robust lending in both the corporate and the household segment, while overvaluation in the housing market reached historic highs. Therefore the Financial Stability Council (FSC) deemed it necessary to bolster banks' shock-resistance by raising the countercyclical capital buffer used for managing cyclical risks. This measure was consistent with the recent regulatory practice in the European Union as well as the warning of the European Systemic Risk Board (ESRB) about the Hungarian residential property market issued in February 2022. Due to the Russian-Ukrainian war and the resulting energy crisis as well as the deteriorating European growth and lending outlook, further increasing the buffer rate was not warranted at the September and December 2022 rate-setting meetings.

The MNB amended the conditions of the Certified Consumer-Friendly Housing Loan (CCFHL) certification to stimulate competition in the banking system and foster the digitalisation of lending processes in multiple steps. From 1 April 2022, housing loans not having an annuity repayment model, subject to a grace period or combined with building savings funds could also be certified. From 1 April 2023, lenders may not charge a disbursement fee for the CCFHL products related to the stipulated green loan purposes, nor any other fee or expenses related to monitoring the green loan purpose, they assume the cost of one energy performance certificate charged to the debtor, and they also have the option of offering an interest discount. From 1 January 2024, the process of taking out CCFHLs will mostly be conducted electronically, so borrowers will only need to go to the bank once, to sign the contract.

The MNB modified its regulation pertaining to the mortgage funding adequacy ratio (MFAR), pursuant to which, in addition to their HUF-denominated counterparts, FX-denominated mortgage bonds and refinancing loans will also be eligible when calculating the MFAR, starting from

³ Ratio of core Tier 1 capital to risk-weighted assets.

1 July 2022. The eligibility of FX-denominated mortgage-backed funds promotes the expansion of the group of mortgage bond investors, as foreign players will potentially play a more active role. To further stimulate the inclusion of green funds, the eligible FX-denominated mortgage-backed funds will need to fulfil sustainability (green) requirements after 30 September 2023. Due to the eligibility of the FX-denominated mortgage-backed funds, other amendments were also adopted to preserve the consistency of the regulation, and the threshold for falling under the scope of the regulation was raised from household mortgage credit holdings of HUF 10 billion to HUF 40 billion. In addition, in view of the major economic and capital market uncertainty caused by the Russian–Ukrainian war and the legally stipulated schedule of the MREL requirement’s implementation necessitating a considerable amount of new funds, the planned MFAR tightening (raising the required level from 25 per cent to 30 per cent, the requirement of stock market listings, rules on cross-equity holdings) was first postponed for one year, and then indefinitely.

The MNB reassessed the significance of Hungarian credit institutions in 2022, and the same seven banking groups were identified as systemically important as in 2021. The capital buffers released due to the coronavirus pandemic at other systemically important institutions (O-SIIs) are to be gradually rebuilt until 2024, but the MNB required institutions to start doing so in 2022. The capital position of the systemically important banks allows the MNB to determine the capital buffers at the previously planned increasing rate from 2023.

Central bank experts monitored the systemic risk evaluations and international regulatory developments affecting the financial intermediary system in 2022 as well and participated in various European institutions’ working groups dealing with macroprudential policy.

The MNB’s activities promoting financial innovation and digitalisation

The central bank continuously and actively analyses the level of digitalisation in the Hungarian financial system and fosters the improvement of the digital competitiveness of institutions providing financial services.

The MNB has been conducting comprehensive, wide-ranging annual surveys on the level of digitalisation in the Hungarian banking system since 2019, and since 2020 the

insurance sector has also been surveyed. The results are presented in the annual FinTech and Digitalisation Report. The 2022 Report, which also summarises the development of the Hungarian FinTech ecosystem, was published in June 2022.

Recommendation No 4/2021. (III. 30.) of the Magyar Nemzeti Bank on the digital transformation of credit institutions, which represents a unique initiative even by international standards, required Hungarian commercial banks to develop and submit a comprehensive digital transformation strategy, which must be reviewed annually. In 2022, the MNB’s staff closely monitored the time-proportional implementation of the strategies and provided feedback on further expectations.

Digital solutions can provide valuable assistance in increasing financial awareness. One good example for this is the MNB’s Digital Student Safe mobile application released in 2020, which is a savings and financial literacy app harnessing the opportunities offered by modern technologies and targeting the young generation of 8–14-year-olds. Development of the application, which already has thousands of users, continued in cooperation with Hungarian FinTech players, credit institutions and the central bank in 2022, and thus, among other things, it will also be able to handle real money transactions.

The MNB actively researches and, when appropriate, tests advanced technology solutions that may prove to be forward looking for the entire financial sector and ecosystem. The MNB has operated the Money Museum mobile application in this spirit since May 2022. Besides providing content related to the Money Museum, a dedicated NFT (non-fungible token) issuance and physical coin ownership registration platform is also available via the app. Thanks to this initiative aimed at testing blockchain technology, almost 300,000 NFTs had been issued on the MNB’s private blockchain by end-2022.

The MNB considers supporting the establishment of a vibrant FinTech ecosystem and the widespread adoption of innovations in Hungary to be crucial, and therefore the *MNB FinTech Club event* series was launched in 2019. These events feature FinTech start-up leaders who have achieved exceptional success in Hungary or internationally, to inspire the success of the next generation. On the other hand, the *MNB Innovation Hub* supports financial institutions and FinTech firms by helping to clarify legal interpretation

issues arising in connection with their financial innovations through responses to the incoming inquiries, also incorporating supervisory considerations.

The extensive digitalisation-focused cooperation between the MNB and the Budapest University of Technology and Economics continued in 2022. In the spring of 2022, the first "Dataracing" data science competition was held, where applicants competed against each other in solving a real-world business problem. In addition, new research project opportunities were announced for students, central bank and university experts contributed to conducting several joint research and workshops, and the MNB Innovation Space, developed based on a joint concept, was opened as well.

The MNB seeks to provide broad support for innovation and digitalisation and to strengthen the FinTech ecosystem in its cooperation with both Hungarian and international players. The seventh Singapore FinTech Festival took place from 2–4 November 2022. The MNB and its subsidiaries participated with their own booth at the event, which welcomed 500 exhibitors and 60,000 visitors from over 110 countries. In the same week, the second *Hungary-Singapore FinTech Business Forum* was organised with the involvement of the FinTech associations and the central banks of the two countries and the participation of Hungarian FinTech firms also active in Asia.

3.3 SUPERVISION AND CONSUMER PROTECTION

In the autumn of 2022, the MNB reviewed its supervisory strategy for 2020–2025 (Stability and Confidence 2.1), which continues to rest on maintaining stability and confidence in the financial system as a whole. The supervisory strategy continues to focus specifically on consumer protection, sustainability considerations and the responses to the challenges of digitalisation.

The Covid-19 pandemic that occurred after the adoption of the Stability and Confidence 2.0. supervisory strategy at the end of 2019 and the first step in its implementation, triggered unexpectedly rapid and resolute action from the MNB. The MNB, using its supervisory powers, took several measures to mitigate the negative economic consequences of the pandemic and to safeguard institutions' shock-absorbing capacity in 2020 and 2021. These crisis management supervisory measures played a large part in

maintaining financial stability and successfully reopening the economy.

The early months of 2022 were dominated by the economic recovery following the pandemic and the related supervisory tasks, but after late February the Russian-Ukrainian war fundamentally altered the projected development paths of the different supervised sectors and institutions. The previously expected market trends and risks changed considerably. Accordingly, the supervisory priorities and objectives had to be reviewed and aligned to the current and newly projected market risks.

Markets can only be resilient to shocks if reliable players with a healthy balance sheet structure, a sound capital position and adequate loss-absorbing capacity act as financial intermediaries. This calls for the monitoring of the risks arising from the economic and market environment as well as their realisation, along with the incorporation of the lessons learnt in the post-Covid world into the models related to capital requirements and capital adequacy projections. The MNB advocates closer supervisory attention to increase institutions' resilience related to cybersecurity, money laundering and terrorist financing risks.

Establishing the framework for the financial IT solutions of the future is vital for ensuring legal certainty and maintaining confidence in the financial intermediary system, and it became necessary to review the MNB's IT-related supervisory regulatory instruments and to issue new ones as well. In addition, the market must be supported in individual cases and current matters. The sense of security in digital finance can only be strengthened if the relevant information on secure digital finance is imparted to the players of the financial ecosystem in line with their capabilities and knowledge.

As part of its consumer protection activities, the MNB pays special attention to harmonising sector-level and individual requirements on service providers' fair behaviour, the special protection of more vulnerable consumers and mitigating the risks of cross-border financial activities.

Targeted and timely supervisory action is helped by the continued development of supervisory stress tests, the automation of supervisory data flows and data transformation as well as the collection of new data. Other priorities include proactive, risk-focused supervisory communications and legal enforcement as well as the strengthening of the effective crisis management toolkit.

Based on the data from 31 December 2022, the MNB was responsible for the full prudential supervision⁴ of 1,265 institutions. The MNB's supervisory activities reflect a highly complex form of supervision – full or partial prudential, consumer protection, anti-money laundering and issuer supervision, depending on the characteristics of the different market participants – and therefore it makes sense to mention here not only the institutions falling under prudential supervision but also those operating under other forms of supervisory activities. According to this approach, besides the institutions under prudential supervision, the MNB exercised some form of supervision over more than 300 institutions in 2022. These institutions do not fall under the MNB's prudential (financial) supervision, or only partly so, but the MNB does exercise supervision over them in another form, with a narrower scope, in particular concerning consumer protection, money laundering and issuer supervision.

In 2022, inspections were concluded in 120 prudential, 319 consumer protection, 34 market surveillance and five issuer supervision cases, while inspections were concluded in twelve AML cases. During this period, the MNB issued 2,646 decisions related to prudential licensing and legal enforcement in connection with inspections and ongoing supervision, with another 529 decisions in consumer protection cases. There were 546 decisions in the area of market surveillance, 863 in issuer supervision, while 100 decisions and orders were issued in the field of AML. As part of its supervisory and consumer protection activities in 2022, the MNB levied supervisory penalties totalling HUF 1,797.8 million. Out of this, the penalties imposed during measures related to prudential supervision amounted to HUF 762.2 million, consumer protection penalties totalled HUF 185 million, market surveillance penalties amounted to HUF 555.6 million, issuer supervision penalties came in at HUF 69.1 million, while issuer supervision penalties amounted to HUF 219.8 million, and administrative and licensing penalties totalled HUF 6.1 million.

Measures aimed at ensuring more transparent, effective and robust consumer protection and customer-focused business approaches continued to be the focus of the MNB's consumer protection activities in 2022. The growing popularity of certified products may lead to stronger

competition, foster appropriate customer information and shorten administrative deadlines, and encourage the widespread adoption of fully online processes:

- Certified Consumer-Friendly Personal Loans (CCFPLs)⁵ were first marketed in early 2021. In the period to end-December 2022, lenders disbursed CCFPLs amounting to almost HUF 210 billion, and nearly 56,000 loan contracts were signed in this period. Currently, 6 institutions distribute CCFPLs products.
- The total disbursed amount of Certified Consumer-Friendly Housing Loans (CCFHLs)⁶ was over HUF 2,702 billion at the end of December 2022, and the number of contracts was more than 191,000. With the little over 19 years of average maturity, the average loan amount was HUF 14.59 million in December 2022, down by HUF 1.1 million in year-on-year terms. In 2022 Q4, the CCFHLs product with a fixed interest rate for the entire period was the most popular.
- In 2022, the number of Certified Consumer-Friendly Home Insurance (CCFHI)⁷ products increased to eleven in the Hungarian insurance market, and now 90 per cent of the market (calculated on a premium income basis) offers CCFHI products. Household wealth insured with CCFHIs amounted to HUF 1,100 billion with an annual premium equivalent of HUF 1 billion at the end of 2022, and the number of new contracts is on the rise.

Financial market supervision

The MNB paid special attention to the risks arising in the focus areas in 2022, in particular the liquidity risks that emerged due to the Russian–Ukrainian war, along with collateral management, assessment and documentation practices and records, the appropriate operation of internal safeguards, especially compliance and fraud, the use of debt cap and CCIS rules, the application of IFRS⁸ impairment rules, the appropriateness of impairment models as well as the appropriateness of the impairment of the exposures subject to the moratorium on payments. Particular attention was paid to the measures that institutions took in preparation for the period after the moratorium on payments, especially the monitoring processes and the framework for managing problematic transactions.

⁴ These institutions are under the MNB's full (prudential, consumer protection, issuer, etc.) supervision.

⁵ <https://www.mnb.hu/mszh/> (in Hungarian only)

⁶ <https://minositetthitel.hu/> (in Hungarian only)

⁷ CCFHI (mnb.hu) (in Hungarian only)

⁸ IFRS International Financial Reporting Standards – financial instruments

The MNB identified the most significant shortcomings related to the adequacy and regulation of internal control functions, the regulation and resources of the compliance function, the fraud prevention framework and the records and reporting of outsourcing. In the area of credit risk, there are still a large number of findings related to shortcomings in the institutions' collateral management processes, collateral records and collateral revaluation. Based on quarterly credit data (HITREG) reporting, the number of commercial properties not revalued within the year was high. The inspections continue to focus on institutions' customer classification and project transaction processes, in particular preferred customer groups. With respect to the appropriateness of impairment, the MNB has been closely monitoring the ECL provisioning levels and practices of supervised credit institutions since early 2021. The guidelines and requirements related to the classification of exposures falling under the moratorium on payments and minimum loan loss provisioning were presented by the central bank in an executive circular, and it has been continuously monitoring the latter.

Owing to the negative effects of the sanctions imposed due to the military conflict between Russia and Ukraine, the MNB has introduced tighter liquidity monitoring across the sector, to identify the signs of the build-up of liquidity risks in a timely manner, and to take the necessary measures for managing such risks.

In its announcement of 1 March 2022, the Single Resolution Board, the European Union's resolution authority, prohibited the continued operation of the Austrian Sberbank Europe AG, the parent company of the Hungarian Sberbank Magyarország Zrt. Due to the full prohibition of the operation of the parent company, the MNB withdrew the operating licence of Sberbank Magyarország Zrt., and ordered its dissolution. It designated Financial Stability and Liquidator Non-profit Limited Liability Company (PSFN) as the liquidator of the company. While maintaining the bank's operation in the short term, the MNB made considerable efforts to safeguard the interests of customers and all stakeholders and to find a long-term solution, namely the sale of the Hungarian Sberbank subsidiary, which, however, failed. Until 5 April 2022, the National Deposit Insurance Fund (NDIF) offered the depositors of the former Sberbank Magyarország Zrt. the option to avail themselves of HUF 141.6 billion, with payment at the Hungarian Post Office, in certain branches of Takarékbank or through a transfer to a bank account provided by the depositors.

After the moratorium on payments was imposed in 2020, the MNB used several supervisory and regulatory instruments to help credit institutions comply with the

laws, and thematic inspections were launched to review the practices affecting consumers in this area. The inspections were terminated in early October 2022, and typically smaller shortcomings were identified, attributable to the requirement to quickly adjust to the moratorium rules and the system's technological features. During the inspection, considering the circumstances identified, the MNB levied penalties of HUF 18 million at nine credit institutions. Customer interests were not seriously harmed related to the moratorium, and the minor issues identified were swiftly rectified by the market participants.

The MNB launched a group-level comprehensive inspection at six members of the OTP Banking Group (Group). It reviewed the operations of OTP Bank Plc (OTP Bank), Merkantil Váltó és Vagyonbefektető Bank Zrt. (Merkantil Bank), OTP Lakástakarékpénztár Zrt. (OTP Ltp.), OTP Jelzálogbank Zrt. (OTP JZB.), OTP Faktoring Követeléskezelő Zrt. (OTP Faktoring) and OTP Ingatlanlízing Zrt. (OTP Ingatlanlízing). In connection with credit risk, the central bank found that the rules on customer classification and the use of the defaulting customer definition were inadequate, and the default of the Hungarian and international banking group was not fully classified. The inspection identified shortcomings related to capital requirement calculation related to the use of inappropriate risk weights for the different segments, and it was found that certain instances of supervisory reporting were submitted with errors or omissions. As regards IT and information security, the MNB diagnosed shortcomings in the disaster management tests of critical systems and data centres. Based on this, the central bank imposed supervisory penalties of HUF 55 million on OTP Bank, HUF 18 million on Merkantil Bank, HUF 6 million on OTP Ltp., HUF 3 million on OPT JZB., HUF 5 million on OTP Faktoring and HUF 2 million on OTP Ingatlanlízing.

The MNB carried out thematic inspections at BÁV Pénzügyi Szolgáltató Zrt., Zálog és Hitel Zrt., Vajda Zálog Zrt., Perun Zrt., Uránia Zrt., Unifinanz Zrt. and Corner Zaloghitel Zrt., reviewing the period between 1 January 2019 and the termination of the inspection. Among other things, the inspection procedure sought to establish whether the activities of the financial enterprises complied with the laws from a consumer protection and prudential aspect, in particular the decree on the definition, calculation and announcement of the annual percentage rate indicator, and the Act on Consumer Credit.

The inspection found that none of the companies complied with all of the legal provisions on establishing the value of the APR and using its upper limit, and they provided pledged loans to several retail customers at a rate that exceeded the

upper limit of the APR. The consumers affected did not receive accurate information on the payment obligations related to pledged loans and were also unaware that they used the financial services at higher rates than the legally stipulated maximum APR. Therefore, the central bank imposed supervisory penalties of HUF 7.5 million and consumer protection penalties of HUF 47.7 million on seven financial enterprises in its published decisions. In determining the amount of the penalties, the MNB considered it an aggravating factor that the identified shortcoming affected a large number of consumers. However, a mitigating factor was that the financial enterprises have consistently performed the measures and fulfilled the requirements aimed at rectifying the identified shortcomings.

Supervision of the insurance market

During the year, new external effects impacted the insurance market that undermined the conditions for safe operation, even with the previously high capitalisation levels. The rising interest rates pushed the yield curve upwards, which entailed the devaluation of insurers' assets, mostly held in the form of government bonds. The supplementary insurance tax levied on the sector also reduces assets. Growing inflation increases costs and claims. Due to the stretched capital position, the MNB conducts continuous supervision to monitor the further effects of external risks on insurers. In the case of eight insurers, the data and the models suggest a deterioration of the capital position and the risk of breaching the capital buffer requirement. Thanks to the clear and direct communication of supervisory requirements, these institutions introduced measures to improve their capital position, continuously updating the MNB on the process.

In the case of the inspection procedures launched during the supervision of the insurance market, special attention was paid in 2022 to the complete implementation of the requirements of the IDD,⁹ in particular those related to the product oversight and governance system as well as the inspection of the KIDs¹⁰ under the PRIIPs Regulation.¹¹ In 2022, special attention was paid to the preparation of insurers for IFRS 17¹² as well as to inspecting compliance with the adequacy of Certified Consumer-Friendly Home Insurance Products, and, in the case of non-life products, to examining compliance with the legally stipulated deadlines in connection with the reported damages.

Since 2021, on a quarterly basis the central bank has published its MTPL Premium and Claim Index, using the data from the Central Itemised MTPL Database operated by the MNB based on insurers' reporting. Regular publication of the MTPL Index facilitates the provision of clear, accurate information to the public and stimulates competition. The published data show average changes, which may vary across the individual MTPL contracts. If customers review the processes and their individual contracts and are unsatisfied with their MTPL fees and/or the quality of the service, they have the option to choose the best insurance offer on their renewal date and conclude a new contract. According to a press release from 8 December 2022, the average portfolio premium of MTPL policies was HUF 46,700 at the end of September 2022, up by 5 per cent compared to the third quarter of the preceding year. Within that, the MTPL fees of car owners in Budapest increased by 6 per cent, while that of car owners outside the capital climbed by 5 per cent year on year. The average portfolio premium of drivers outside the capital (around HUF 43,400) is more than HUF 22,000 less than that of car owners in the capital (around HUF 65,600).

The MNB reviewed the maximum technical interest rate (guaranteed return) that can be applied by insurers for traditional life insurance policies used for savings purposes. Based on this, the central bank raised the maximum guaranteed interest rate on regular-premium, forint-based life insurance policies from 1.8 per cent to 4 per cent per year, and to 7 per cent for single premium contracts of no longer than 5 years (the interest rate is also capped at 4 per cent for the single premium schemes longer than five years). In the case of euro-based life insurance policies, this figure rose from 0.6 per cent to 1.5 per cent annually.

Without entailing the risk of overpromising by insurers related to their long-term commitments that would jeopardise their safe operation, the increased maximum interest rates may facilitate the renewed popularity of traditional products, reduce premiums on products containing insurance risk and increase competition for customers overall.

The new maximum interest rates can be applied to the life insurance policies signed after the amendment's effective date, for the entire period until maturity. Based on their market practices, and due to competition, insurers typically

⁹ IDD (Insurance Distribution Directive): Directive (EU) 2016/97 of the European Parliament and of the Council on insurance distribution

¹⁰ Key information documents

¹¹ Regulation (EU) No 1286/2014 of the European Parliament and of the Council of 26 November 2014 on key information documents for packaged retail and insurance-based investment products

¹² International Financial Reporting Standards – Insurance Contracts Standard

pass on 80–90 per cent of any extra returns on the invested premiums, in addition to guaranteed interest rates. The competitiveness of insurance products against other retail savings products may be further bolstered by the fact that they make claim payments even in the case of an insured event prior to maturity (without any additional fees/premiums).

Supervision of the funds market

During the inspections carried out as part of the supervision of the funds market, the MNB focused specifically on the soundness of the business model, the long-term sustainability of operations, the efficiency of internal control systems, the monitoring of larger risk-taking affecting funds' portfolios and the justification for the calculation of the TCIPf¹³ indicator.

In these inspections, at several funds using a general meeting of delegates, the MNB found that the representation of the members was not fully ensured, because those deemed to be non-payers were denied the right to elect delegates, and no substitute delegates were elected in some districts. The MNB continued to identify risks concerning internal control systems: the supervisory board did not always inspect all of the areas stipulated by law, or the inspections were not appropriately documented. Some smaller funds have no up-to-date analytics that provides a clear overview of the asset holdings associated with certain reserves, in particular coverage reserves, for any given day.

In 2021, the classic total costs charged indicator, which expresses the costs of the voluntary pension fund sector in retrospect, was 0.71 per cent, and the adjusted total costs charged indicator was 0.75 per cent. Following a decline in the previous year, the total costs charged indicator values climbed somewhat, but remained lower than the 2019 values.

As regards the components of the costs charged, operating costs did not change significantly, as their adjusted value was 0.31 per cent, one basis point lower than in the preceding year. The costs charged related to investment activities increased from 0.37 per cent in 2020 to 0.44 per cent, attributable to the payment of performance fees to

the asset managers, an increasingly common practice in the sector. The rationale behind this is the following: asset managers were able to mitigate the negative impact of the volatile market environment in 2021 and outperformed the benchmark rate, by 2.40 percentage points on average, double the figure from last year.

The average 30-year total costs charged indicator (TCIPf) calculated based on the central bank's recommendation, modelling the average time expected to be spent in the pension fund, was 0.92 per cent in 2022. This indicator is recalculated every year and rose by 7 basis points from the preceding year's average, but remained below 1 per cent. Nevertheless, there are significant differences between the participants in the sector, as 30-year TCIPf values currently vary between 0.19 per cent and 2.35 per cent.

Capital market supervision

In the inspection of investment service providers, safeguarding customer claims remains a top priority, and the results of the data sent to the MNB and processed by the filtering and cross-checking algorithms are continuously monitored during continuous supervision. The inspections continue to focus on compliance with the MiFID II¹⁴/MiFIR¹⁵ regulatory environment (including product governance and the best execution regime requirements). Consistent with international practices, the inspection of investment fund management companies concentrated mainly on liquidity management and asset valuation, with investment decisions, order management and the calculation of net asset value examined especially closely. The priorities continue to include the operation of internal safeguards, in particular compliance. In the course of continuous supervision and inspections, risk management and liquidity management have gained significance.

At the time when the Russian–Ukrainian conflict started, several investment funds had direct Russian exposures, but the overall volume of such was not significant. Two top fund managers have specifically Russian-focused equity funds, sales of which had to be suspended, as the trading and quoting of some securities was terminated.

Thanks to the MNB's IT development, customers with securities accounts can now download a free querying

¹³ Pension funds' total cost indicator

¹⁴ Directive 2014/65/EU of the European Parliament and of the Council of 15 May 2014 on markets in financial instruments and amending Directive 2002/92/EC and Directive 2011/61/EU

¹⁵ Regulation (EU) No 600/2014 of the European Parliament and of the Council of 15 May 2014 on markets in financial instruments and amending Regulation (EU) No 648/2012

application with a QR code reader (ÉSZLA app) to their mobile phones to check the balance of their securities and funds in a reliable and anonymous manner on a monthly basis. Until now, users could only access the ÉSZLA query platform available on the MNB's website to check the balance of their securities and funds by entering a set 24-character login ID and a 12-character password from the account statement that changed monthly. This process was simplified in September with the help of the ÉSZLA mobile application available for both iOS and Android. Retail and corporate customers can use the ÉSZLA query platform, and, from September, also the ÉSZLA application to check the month-end balance of their securities and funds for one month starting on the 10th working day of each month. In the event of any discrepancy between the information on the balance statement received from the account keeping institution and the ÉSZLA query platform, a complaint should be lodged with the investment service provider. From September, users can also send their complaints to the MNB using the mobile application. The central bank evaluates the difference in all cases, and, if necessary, it orders the problem to be rectified during an inspection.

The MNB conducted a comprehensive inspection at Kereskedelmi és Hitelbank Zrt. (K&H Bank), mainly focusing on its investment service activities. During the inspection, K&H Bank was unable to justify the concrete methodology for determining secondary market prices with respect to the chosen transactions involving certain retail government securities and conducted in the period under review. Moreover, disregarding its customers' interests, it aligned the proprietary selling price with the price of non-retail government securities and other business and risk management considerations. The central bank also found that, for an extended period, the credit institution used a significantly higher price during its secondary market proprietary sales than its primary quotes (in other words the price at which government securities are sold during primary trading). Therefore, due to the non-market net price, its customers who purchased the retail government securities concerned in the secondary market were worse off than if they had purchased the papers at the bank by quoting, or at the State Treasury. K&H Bank did not act fairly and efficiently and in line with customers' interests and thus violated legal and professional requirements. Based on the above, the MNB imposed supervisory penalties totalling HUF 48 million on the credit institution.

Issuer supervision and market surveillance procedures

Acting in its supportive function, the MNB helped public securities issuers in several ways; it organised an issuer workshop for many companies registered at the BSE Xbond and Xtend markets for preventing market abuse (MAR¹⁶); and it informed capital market players about supervisory expectations in an executive circular on the compliance of public securities issuers with the MAR regulation. Moreover, according to the standard practice, players registering on the XBOND and Xtend markets received a general information letter that describes their requirements stipulated in MAR.

In 2022, the MNB once again reviewed the content of issuers' annual reports, focusing specifically on whether the issuers managed to prepare their annual reports in the European Single Electronic Format (ESEF)¹⁷ for the first time.

During a direct inquiry control procedure of an issuer that was closed in early 2022, the MNB found that OTT-ONE Nyrt. repeatedly failed to make extraordinary disclosures about information directly or indirectly affecting its perception and the value and return of its shares (for example a large loan, the termination of a contract that had previously been deemed material and disclosed by the issuer and major equipment purchases). Therefore the MNB levied penalties totalling HUF 111 million on OTT-ONE Nyrt. for violating legal provisions on prohibited market manipulation, the immediate public disclosure of insider information and the extraordinary disclosure obligation.

The MNB started 41 market surveillance procedures in 2022: 21 of these were launched on suspicion of unauthorised, unlicensed or unreported activities, and 20 were launched to inspect market abuse, the violation of MAR reporting rules and the provisions of the short regulation. The MNB closed 34 market surveillance procedures during the year, 14 of which were begun for examining unauthorised activities and 20 were launched in connection with market abuse. In the 34 inspections that were closed, the MNB levied penalties totalling HUF 471.6 million.

Out of the market surveillance procedures conducted in 2022 regarding unauthorised conduct, the procedure against Bankmentor Kft. deserves special mention. In the

¹⁶ Regulation (EU) No 596/2014 of the European Parliament and of the Council of 16 April 2014 on market abuse (market abuse regulation) and repealing Directive 2003/6/EC of the European Parliament and of the Council and Commission Directives 2003/124/EC, 2003/125/EC and 2004/72/EC

¹⁷ European Single Electronic Format (ESEF)

course of this procedure, the MNB found that Bankmentor Kft., which advertised itself on several websites, had conducted brokerage and, in certain cases, mortgage intermediary activities for many years. It signed agency contracts with its customers to the effect that the debtors' earlier and now cancelled loan contracts with financial institutions could be terminated with a "settlement". The MNB levied a market surveillance penalty of HUF 70 million on Bankmentor Kft. on account of the identified infringement, and it permanently prohibited the company from pursuing unauthorised activities with immediate effect.

Out of the market abuse market surveillance procedures, one against a natural person was of special significance. Based on the evidence, the central bank established that a natural person on the insider list of EST MEDIA Nyrt. (currently: Delta Technologies Nyrt.) acquired insider information due to their position. Having acquired the information, the person concerned gave OTC orders which constituted prohibited insider trading. With their behaviour, the individual entered into capital market transactions with additional information that gave them unfair advantage over other investors. Accordingly, the MNB prohibited the unlawful conduct and required the person concerned to pay a market surveillance penalty of HUF 64 million due to the violation of the provisions prohibiting insider trading.

In recent years, some market abuse cases were committed by officers and employees of listed firms by flagrantly abusing their position or situation. The central bank had already considered this an aggravating factor, because these persons used their, often coordinating or controlling, position in a listed firm to seriously harm the smooth operation of the capital market. Furthermore, upon the MNB's initiative, capital market abuse is now punished more strictly in the Criminal Code. From 1 January 2023, in the case of insider trading and market manipulation, when these crimes are committed by a person who is in connection with a listed firm, this is considered an aggravating factor. Due to the amendment, such persons now face a more severe punishment, involving incarceration of up to five years and a large market surveillance penalty.

In view of the expansion of the MNB's market surveillance powers, the central bank's proposal has been accepted, and from 2023 the provision of unauthorised crowdfunding services, the provision or sales of pan-European Personal Pension Products without being registered with the European Insurance and Occupational Pensions Authority

(EIOPA), and the performance of unreported electronic money sales activities are considered unauthorised financial activities and thus crimes.

In order to combat unauthorised activities, the central bank seeks to develop instruments that best protect consumers' interests by amending laws. Such a proposed amendment opened the gates to website blocking in January 2022, which was successfully used by the MNB for the first time in a market surveillance procedure.

IT supervision

As part of the CyberShield programme, the MNB hosted the second specialised knowledge sharing day. On 7 November, a cooperation agreement was signed, a press conference was held, a press release was published and the kiberpajzs.hu website went live to mark the formal launch of the CyberShield project. After this, there were several discussions among the participating organisations, namely the MNB, the Hungarian Banking Association, the National Media and Infocommunications Authority, the National Cyber Security Centre and the Hungarian Police, and the project's Communication and Operational working groups were formed.

The "Cyber threat landscape report of the Hungarian financial sector 2022"¹⁸ was prepared and published on the MNB's website, providing a comprehensive picture of the main cybersecurity threats faced by the Hungarian financial institution sector and the key trends and offering a high-level overview of the incidents observed in the Hungarian financial sector. The publication was written with support and financing from the 2021 Technical Support Instrument of the Directorate-General for Structural Reform Support (DG REFORM) of the European Commission (hereinafter: Commission) as a result of a 1.5-year project, with the active participation of 39 supervised institutions in the data collection phase.

Supervisory activities related to the prevention and combating of money laundering and terrorist financing as well as the implementation of asset- and finance-related restrictive measures

Similar to earlier years, the inspections related to the prevention and combating of money laundering and terrorist financing (AML/CFT¹⁹) as well as the implementation of asset- and finance-related restrictive measures received

¹⁸ Cyber threat landscape report of the Hungarian financial sector 2022 (mnb.hu)

¹⁹ Anti-Money Laundering/Combating the Financing of Terrorism

special attention in the supervisory activities in 2022. Using its established methodology, the MNB identifies the risks related to money laundering and terrorist financing at the supervised institutions, and analyses and evaluates them together with other available information. The objective and timeline of the supervisory procedures is determined by the supervisory risk assessment. The purpose of AML/CFT inspections is to identify shortcomings and vulnerabilities on the one hand and assess the actual threat to institutions to quantify expected reputation risks on the other hand. Other important aspects include examining efficiency, and the identification and understanding of the potential sources of risk.

In 2022, the MNB conducted an inspection to assess the responsibilities and accountability of investment service providers' AML compliance officer, and shortcomings were found in connection with the appointment of the AML officer and their deputy in accordance with the prevailing laws. The central bank also used thematic inspections to assess trust companies' practices, exploring the source of the funds under their asset management. In these inspections, the MNB identified shortcomings in connection with the fulfilment of the reporting obligation, customer due diligence practices and practices related to obtaining information on the source of funds.

As part of another thematic inspection conducted at four credit institutions, the MNB also reviewed the management of AML/CFT risks as well as the filtering procedures. At the institutions under inspection, the main shortcomings identified were those regarding the fulfilment of the reporting obligation, the acquisition of the information on the source of funds and the substantiating documents, the operation of the internal control and information system, in particular the use of obligatory screening, the parameters of the screening system and the assessment of alerts, as well as certain customer due diligence requirements.

In 2022, the MNB conducted two other targeted inspections and one follow-up inspection to inspect credit institutions' AML/CFT activities. In these inspections, the MNB identified shortcomings regarding the internal control and information systems in the use of obligatory screening conditions and the enhanced procedure used for customers reported to the financial information unit, and it found that the screening logic and the thresholds applied were not always commensurate with the nature and value of business relations, and no alert was triggered in the screening system in some cases when it would have been warranted.

In addition, in several instances the inspected institutions failed to process the AML/CFT suspicion alerts after

screening, or they only did so after the legally stipulated deadline had passed. Therefore they were unable to fulfil their reporting obligation towards the competent authority in a timely manner, or to take appropriate risk-reducing measures. Another unlawful practice related to the reporting obligation was that in the case of certain suspicious ML cases, the institutions failed to fulfil their reporting and repeated reporting obligation towards the competent authority. A further shortcoming identified by the inspection was that credit institutions' practices concerning the acquisition of information on the source of funds and customer due diligence did not always comply with the prevailing legislation.

In 2022, the MNB levied numerous large supervisory penalties for the above instances of unlawful conduct in its decisions taken during the course of the AML/CFT inspections, totalling HUF 211 million.

In 2022, continuous supervision in AML/CFT cases became even more important as the risks identified had to be addressed in a timely fashion. The results of the continuous supervision effectively facilitate the inspections and the review of the supervisory risk assessment. The MNB examined the AML/CFT practices of several service providers through continuous supervision in 2022.

During this process, in the course of inspections targeting the reporting practices and the practices regarding the content requirements of reporting as well as the screening system, supervisory penalties of HUF 8.7 million were imposed on two credit institutions. Having processed information from an extraordinary reporting, the MNB sent warning letters to eleven service providers due to shortcomings observed in connection with the identification of the beneficial owners of the customers subject to trust, and having processed the documents that were requested from service providers on a risk basis, it sent warning letters to two service providers.

The MNB paid close attention to the various sanctions and limitations that were introduced in connection with the Russian–Ukrainian war and significantly affected MNB's supervisory activities and stipulated a considerable amount of additional requirements for service providers.

Customer service activity

The MNB's customer service received 27,811 customer service queries and requests in 2022, around 12 per cent more than in the previous year. The breakdown of the queries and requests by sector did not change substantially from earlier years, as most customer interactions concerned

the financial market, followed by the insurance market. Customers mainly turned to the MNB's customer service in issues related to lending, account-keeping, non-life insurance as well as claims management activity.

In connection with the dissolution of Sberbank Magyarország Zrt. "under dissolution" ordered on 2 March 2022, the MNB's customer service handled 4,498 customer interactions in the first half of the year. The queries were typically in connection with the indemnification provided by the NDIF and loan repayment, but there were also many queries related to payment services and safe deposit box services.

The number of customer complaints concerning phishing attacks at banks first jumped in September 2022 and then surged strongly in the fourth quarter relative to the early months of the year. The typical methods used for cyber fraud included phishing on fake bank websites and during fake bank phone calls from banks, and the customer service was most often contacted by the victims of such attacks.

3.4 RESOLUTION

In its capacity as the resolution authority, the MNB's resolution planning activities focused on reviewing resolution plans, conducting resolvability assessments and reviewing the minimum requirement for own funds and eligible liabilities (MREL requirement) throughout 2022.

The credit institutions falling under the MNB's jurisdiction fulfilled the MREL requirements stipulated as intermediate targets by 1 January 2022, the deadline set out by law. However, full compliance with the MREL requirements, as expected from 1 January 2024, calls for further adjustment on the part of credit institutions, and therefore the MNB has been monitoring the status of adjustment on a quarterly basis starting from 2022. In view of this, the MNB has published on its website its sanctions policy on the legal consequences of breaching the MREL requirements in the transitional period, as well as its revised principles for setting the MREL requirement. In addition, the build-up of eligible instruments has reached such a level at Hungarian institutions that the MNB has approved several requests for a general preliminary permission for buybacks during the year.

The European Union regulation on a framework for the recovery and resolution of central counterparties has entered into force, and pursuant to it, from August 2022, the resolution authority powers pertaining to this institution in Hungary also lie with the MNB.

The Austrian Sberbank AG experienced difficulties due to the Russian–Ukrainian war, which, however, did not jeopardise the stability of the Hungarian banking system, as its Hungarian subsidiary merely had a 1-per cent market share. In the short period of time that was available, it was not possible to sell the subsidiary through resolution, because it became obvious that the resolution of the Austrian parent bank would not be ordered, as it was to be terminated in an insolvency procedure. The MNB incorporated the lessons learnt from crisis management into its practices, making proposals for enhancing the resolution framework at the national and EU levels.

With the involvement of MNB experts, and as a result of the work in the resolution planning and execution working groups of the European Banking Authority (EBA), the guidelines on improving resolvability were published in 2021, followed by the guidelines on resolution transfer strategies in 2022. These provide clear requirements to foster the full implementation of institutional resolvability, by specifying resolvability requirements. Moreover, the programme aimed at converging the resolution practices within the EU (European Resolution Examination Programme – EREP) was established with the main annual priorities, the backtesting of which was made part of the tasks of the Member State authorities, for example of the MNB.

Resolution planning, resolvability assessment and determining the MREL requirement

Within the MNB's resolution responsibilities, resolution planning is a key area, which also includes the establishment and review of the minimum requirement for own funds and eligible liabilities (MREL requirement). In 2022, the MNB, acting as the group-level resolution authority, reviewed the resolution plan for the banking group engaged in significant cross-border activities and domiciled in Hungary, and conducted the resolvability assessment procedure²⁰ for the current resolution planning cycle. In this context, it reviewed the minimum requirement for own funds

²⁰ The resolvability assessment refers to examining whether there are any major obstacles at a given institution or group to following the crisis management strategy (liquidation or resolution) in the event of a future crisis.

and eligible liabilities (MREL requirement),²¹ both at the consolidated level of the resolution group and the individual level of subsidiaries, which was adopted by the resolution authorities concerned with joint decisions.

With the participation of the MNB, the work related to group-level resolution planning and MREL requirement prescription continued in the resolution colleges headed by the Single Resolution Board (SRB), acting in the capacity of the resolution authority in charge of the most important institutions and banking groups registered in the banking union. In the course of this, as the resolution authority responsible for the Hungarian subsidiaries of the parent companies registered in the banking union, the MNB developed its proposal regarding the MREL requirement for the Hungarian subsidiaries concerned and shared it with the SRB, along with its justification, after which joint decisions were reached to adopt the group-level resolution plans and the consolidated and individual MREL requirements. At the same time, the review started on the resolution plans of the institutions subject to simplified obligations.

The revised EU regulation considerably expanding the rules of establishing and fulfilling the MREL requirements stipulates that the early calling, redemption, repayment or repurchasing of certain eligible liabilities be subject to the prior permission of the resolution authority. It also created the option for institutions to request a general prior permission, for up to 1 year, to execute the above transactions. The build-up of eligible holdings has reached such a level at Hungarian institutions that the MNB has approved several requests for a general prior permission during the year.

The MNB reviewed its principles for setting the MREL requirement (MREL policy) in 2022, taking into account its own experiences and international best practices. The current review concerned the principles used in classifying resolution entities as institutions posing systemic risk from the perspective of insolvency in the resolution sense (fished banks), as well as the detailed rules on waiving the individual (internal) MREL requirement and the conditions for fully or partly complying with the requirement through a guarantee.

Institutions' compliance with the MREL requirement in the transitional period

The credit institutions falling under the MNB's jurisdiction fulfilled the MREL requirements stipulated as intermediate targets by 1 January 2022, the deadline set out by law. However, full compliance with the MREL requirements, as expected from 1 January 2024, calls for further adjustment on the part of credit institutions, and therefore the MNB has been monitoring the status of adjustment on a quarterly basis starting from 2022. In connection with this, the MNB has published on its website its sanctions policy on the legal consequences of violating the MREL requirements in the transitional period to provide information about its instruments and procedures used for enforcing MREL compliance.

Resolution authority tasks pertaining to central counterparties

The European Union regulation on a framework for the recovery and resolution of central counterparties has entered into force, and MNB's tasks have expanded from August 2022, as in Hungary the resolution authority powers pertaining to this institution lie with the MNB.

Crisis management at Sberbank

The Russian-owned Sberbank Group provided retail and corporate banking services in the CEE region. The Austrian Sberbank AG experienced difficulties due to the Russian–Ukrainian war that started on 24 February 2022, which, however, did not jeopardise the stability of the Hungarian banking system, as its Hungarian subsidiary merely had a 1-per cent market share.

As soon as it received a notification from the SRB, acting as the group-level resolution authority for the banking group, about the crisis of the banking group, the MNB immediately started to consult with the competent European Union and Member State authorities. On 1 March, the SRB found that the conditions of resolution were not fully met at the Austrian parent bank, and therefore it prohibited the continued operation of the

²¹ In accordance with the Resolution Act, the MNB is obligated to set a minimum requirement for the appropriate amount and quality of own funds and eligible liabilities (MREL requirement) at the consolidated and the individual level, and these instruments should be available for being written off in a crisis for loss absorption and for being converted into capital to restore the relevant capital requirement after resolution.

Austrian Sberbank Europe AG, the parent company of the Hungarian Sberbank Magyarország Zrt. Due to the full prohibition of the operation of the parent company, the MNB withdrew the operating licence of Sberbank Magyarország Zrt., and ordered its dissolution, as there was no resolution tool available that would have been better able to fulfil the resolution objectives than liquidation. The MNB incorporated the lessons and experiences from crisis management into its practices, making proposals for enhancing the resolution framework in Hungary and the EU.

Tasks related to collective funds, the regular annual contributions of the Resolution Fund's member institutions

In accordance with the relevant Commission regulation²² and the provisions of the Resolution Act, the MNB appropriately calculated the regular annual contributions payable by the member institutions of the Resolution Fund. The capitalisation of the Resolution Fund is therefore increasing as scheduled. The goal is to reach the target level specified in the Resolution Act (1 per cent of the eligible deposits below the coverage level of all credit institutions licensed in Hungary), thereby reinforcing the financial stability safety net. Furthermore, the MNB's representatives continued to actively participate in the work of the boards of the Resolution Fund and the National Deposit Insurance Fund.

Tasks related to the resolution asset manager

Pursuant to the Resolution Act, the ownership rights in MSZVK Magyar Szanalási Vagyonkezelő Zártkörűen Működő Részvénytársaság (MSZVK Zrt.), the Hungarian resolution asset management vehicle, are exercised by the MNB. In 2022, the group and the MNB started to discuss the vision for the group and its new, medium-term business plan.

International cooperation, participation in shaping the European Union's regulatory environment

MNB experts continue to participate in the EBA's resolution planning and execution working groups. The EBA published its guidelines on improving resolvability in 2021, and its guidelines on the feasibility and credibility of resolution transfer strategies (sale of business, bridge institution, asset separation) as well as the additional

requirements pertaining to their implementation in 2022. The guidelines provide clear requirements to foster the full implementation of institutional resolvability. In addition, the programme aimed at the convergence of resolution authorities' resolution planning and implementation activities (European Resolution Examination Programme – EREP) and its main priorities (managing MREL shortcomings, developing an executive information systems for facilitating assessment, taking measures for satisfying liquidity needs during resolution, operationalising bail-ins) were established, and compliance needs to be backtested by Member State authorities, including the MNB. Moreover, MNB experts take part in the work of the resolution working groups of the European Securities and Markets Authority (ESMA) and, by incorporating their experiences in bank resolution, the EU's legislative bodies, to establish a resolution framework for insurers.

3.5 PAYMENT AND SECURITIES SETTLEMENT SYSTEMS

The series of consultations with bank and non-bank members led to the publication of MNB Decree No. 57/2022 (XII. 22.) on amending MNB Decree No. 35/2017 (XII. 14.) on the execution of payment transactions. The regulation may provide renewed impetus to the development and adoption of payment services based on instant payments, because from 1 February 2024 account-servicing payment service providers will be required to offer their customers instant credit transfers initiated with single data entry solutions (e.g. QR code) and they will also have to comply with the related notification obligation.

Open banking has only been adopted to a limited extent, and therefore the MNB has devised a complex action plan. In cooperation with the Hungarian Banking Association, it called for a roundtable discussion on open banking and the operation of the APIs enabling such, with the participation of third-party providers and account servicing payment service providers. Further targeted measures were considered during the discussion.

In the case of KELER KSZF Központi Szerződő Fél Zrt. (KELER CCP), the extreme price hikes in August entailed severe risks and exposures, which necessitated higher individual and collective collateral in the guarantee system. The European Union is trying to combat the extreme price rises with concerted action, seeking to maximise the prices of certain exchange-traded gas products.

²² Commission Delegated Regulation (EU) 2015/63 of 21 October 2014 supplementing Directive 2014/59/EU of the European Parliament and of the Council with regard to ex ante contributions to resolution financing arrangements

The European Commission and the European Securities and Markets Authority started to review the CSDR regulation in effect since July 2014 with the involvement of national competent authorities, and the European Commission has proposed to amend the regulation. Moreover, the review of EMIR, the most important regulatory framework for European central counterparties, also got under way.

Development of the instant payment ecosystem

The MNB consulted with several bank and non-bank members to improve the instant payment ecosystem in 2022. Based on the feedback and the proposals, it drew up regulatory and enhancement proposals of many areas of the instant payment ecosystem. After the consultations, the MNB shared its proposals with the largest Hungarian members in the payment ecosystem (e.g. banks, insurers, retailers, invoice issuers, online stores, fintech companies) at the end of the first half of the year. It welcomed questions and comments from market participants until the end of August, and two in-person consultation forums were held in August to answer the questions. The MNB processed the received proposals and finalised them in the autumn, which were sent to all actors in the payment ecosystem affected by the MNB decree for their comments. Based on the comments received, the MNB finalised the text of the decree, and MNB Decree No. 57/2022 (XII. 22.) on amending MNB Decree No. 35/2017 (XII. 14.) on the execution of payment transactions was issued on 22 December 2022. Accordingly, the limit of credit transfers classified as instant credit transfers is raised from HUF 10 million to HUF 20 million from 1 September 2023. In order to facilitate the widespread use of instant payments in many payment situations, from 1 February 2024 account-servicing payment service providers will be required to offer customers instant credit transfers initiated with single data entry solutions (e.g. QR code) and they will also have to comply with the related notification obligation. The technical specifications of the single data entry solutions are included in the annex to the MNB Decree. To facilitate the widespread adoption of payment solutions based on requests to pay, account servicing payment service providers will be required to execute the instant credit transfers initiated with a request to pay from 1 February 2024. Moreover, new customer notification rules were introduced so that the parties concerned in the instant credit transfers receive

clear feedback on the success or failure of the execution, and so that the MNB can support the market entry of technical service providers which are not considered as payment service providers in the case of instant credit transfers initiated with single data entry solutions, to strengthen competition. The MNB seeks to implement the next steps in the development of instant payments together with banks, in particular regarding the IPS-specific chargeback procedure and the design elements of instant payments.

Central anti-fraud system

In close cooperation between the MNB and GIRO, examination of the options for establishing a central fraud monitoring system began. Both the MNB and GIRO held bilateral consultations with stakeholders, who would support the creation of a system assisting the work of banks' individual anti-fraud systems. A concept proposal was prepared for the parameters and services of the central system, and it was presented to stakeholders. The MNB now awaits the written comments from market participants.

Energy market turbulences and their impact on KELER CCP

The start of the Russian–Ukrainian war triggered strong volatility in the energy market in 2022, which had a significant impact on the European central counterparties that are involved in clearing energy market products. The extreme price increases in March and August 2022 generated severe risks and exposures, which necessitated higher individual and collective collateral in the guarantee system. Market participants and market infrastructures experienced extreme liquidity pressure, and the availability of adequate liquidity became crucial. In this context, KELER CCP continuously expanded market participants' total guarantees to make itself more resilient in the event of a default, as energy market turbulences put energy trading companies using KELER CCP's services at great risk. The European Union is trying to combat the extreme price rises with concerted action, and a regulation was introduced in late 2022 that can maximise the prices of certain exchange-traded gas products. This mechanism enters into force in February 2023, and its impact on the market and central counterparties will be examined by the European Securities and Markets Authority.

College meeting of KELER CCP held again in 2022

In 2022, KELER CCP's annual supervisory college meeting was held as foreseen in EMIR.²³ The College comprising international supervisory authorities and the ESMA²⁴ held its meeting on 20 October in online form. In the first phase of the meeting, the supervisory and oversight activities of the MNB from 2022, the results of the comprehensive supervisory inspection concluded in 2022, the KELER CCP's risk management and IT operations as well as the supervisory and oversight tasks planned for 2023 were presented and discussed in detail. Subject to certain required amendments, KELER CCP's recovery plan was adopted. In the second phase of the meeting, the most important events affecting KELER CCP were presented, along with its key strategic objectives and plans. College members assessed the MNB's supervisory and oversight activities as well as the operation of KELER CCP.

Participation in ESMA's committees

The committees' main tasks included the monitoring and assessment of the effects caused by the Russian–Ukrainian war in 2022 and drawing conclusions. They also coordinated the biannual ESMA EU CCP Stress Test. The stress test provides a comprehensive assessment of the performance and resilience of European central counterparties' guarantee systems. Based on the stress test, KELER CCP's guarantee system proved to be adequately resilient against the simulated extreme market shocks.

ESMA's Post-Trading Standing Committee (PTSC) operated until late 2022,²⁵ focusing on post-trading processes and regulation, including central securities depositories and securities settlement systems, typically operated by central securities depositories. In 2022, the PTSC's priorities included the so-called SDR²⁶ Commission delegated regulation that entered into force on 1 February 2022, supplementing the provisions of Article 7 of the CSDR²⁷ regulation. The special attention paid to the SDR is

warranted by the review and ongoing revision of the CSDR regulation and by the assessment of market participants' practical experiences following implementation, mainly related to the penalty mechanism, with a particular focus on initial technical hurdles. Another task was to clarify the questions that arose in connection with the reporting on so-called settlement fails²⁸ as detailed in the SDR. ESMA published guidelines on this reporting, which were implemented by the MNB with MNB Decree No. 54/2022 (XII. 2.). In connection with Article 19 of SDR,²⁹ it had to be discussed whether to modify the originally established penalty collection processes applicable to central counterparties in their capacity of participants in the central securities depository system. According to the Final Report prepared in connection with amending Article 19 of the SDR, the content of the article will be simplified, in that central counterparties would be subject to the same procedure as the other participants in the system. This amendment was supported by the stakeholders.

Revision of the CSDR regulation, the so-called CSDR Refit, is under way

Acting in accordance with Article 75 of the CSDR, in 2020 the European Commission started to review the CSDR regulation in effect since July 2014 with the involvement of the European Securities and Markets Authority and national competent authorities and proposed to amend the regulation. The proposals were as follows: (1) simplifying the passporting process for cross-border services, while the current licensing procedure should be replaced with a notification requirement; (2) establishing compulsory supervisory colleges to facilitate efficient supervisory action; (3) allowing central securities depositories offering banking-type ancillary services to provide financial services to central securities depositories that do not have a banking licence; (4) modifying the rules on settlement discipline, for example by clarifying the current provisions (especially as regards Article 7 of the CSDR), and; (5) amending the rules on third-country central securities depositories so that the grandfathering clause does not apply to them anymore. As

²³ Regulation (EU) No 648/2012 of the European Parliament and of the Council of 4 July 2012 on central counterparties and trade repositories

²⁴ European Securities and Markets Authority (ESMA)

²⁵ On 1 January 2023 the PTSC merged into the ESMA Secondary Markets Standing Committee (SMSC) to form the ESMA Markets Standing Committee (MSC). The MSC also includes four ESMA working groups, out of which the so-called Post-Trading Working Group will be the only one besides the MSC to be concerned with post-trading processes, especially the OTC as defined in EMIR, and central securities depositories and securities settlement systems pursuant to the CSDR.

²⁶ Commission Delegated Regulation (EU) 2018/1229 of 25 May 2018 supplementing Regulation (EU) No 909/2014 of the European Parliament and of the Council with regard to regulatory technical standards on settlement discipline

²⁷ Regulation (EU) No 909/2014 of the European Parliament and of the Council of 23 July 2014 on improving securities settlement in the European Union and on central securities depositories and amending Directives 98/26/EC and 2014/65/EU and Regulation (EU) No 236/2012

²⁸ Monthly and annual reporting, often referred to as CSDR7, shortened from Article 7 of the CSDR. The monthly report contains aggregate daily data, while the annual report shows data with annual frequency, broken down by volume and value.

²⁹ Sanctions mechanism used if the participant is a central counterparty

the CSDR covers various topics, the review of the regulation would be changed as well. From now on, reviews would only occur at predetermined intervals and only focus on certain areas.

Review of the EMIR regulation has begun, with EMIR 3.0 soon to arrive

In 2022, the review of the most important regulatory framework for European central counterparties began. The proposed amendments tie in with other EU policies and ongoing initiatives and aim to develop the capital markets union, strengthen the EU's open strategic autonomy and enhance the efficiency and effectiveness of EU-wide supervision. Having a secure and competitive settlement regime in the EU is vital for developing the capital markets union, and the proposed legislative amendments, including the further bolstering of the supervisory framework, would promote a more efficient and secure post-trading environment. A strong central settlement system mitigates the risks arising from the heavy dependence on a third-country central counterparty and supervisory authority. The recent developments in energy markets have shown that the EMIR needs to be modified further to continue reducing the risks jeopardising the financial stability of the EU.

The regulation on a pilot regime for market infrastructures based on distributed ledger technology (DLTR) entered into force

On 2 June 2022, the Official Journal of the EU published the regulation on a pilot regime for market infrastructures based on DLT,³⁰ the so-called DLTR. The EU's financial service laws are difficult or impossible to apply to DLT and crypto assets, as they contain provisions that may prohibit or limit the use of distributed ledger technology in issuing, trading, clearing and recording financial instruments. The DLTR provides for the temporary exemption of market infrastructures using distributed ledger technology from certain requirements of EU financial services laws (such as MiFIR³¹/MiFID II³² and the CSDR). The exemption is subject to an authorisation procedure, and obtaining the authorisation in accordance with the DLTR is optional for the multilateral trading facilities, investment firms, market operators and central securities depositories considering the introduction of this technology. The regulation would

promote the adoption of the distributed ledger technology in trading and post-trading processes and the collection of the resulting experiences. KELER Központi Értéktár Zrt. (KELER), registered in Hungary and operating in line with the CSDR, can therefore request authorisation from the MNB if it wishes to operate a DLT-based securities settlement system. The ESMA also published on its website the questions and answers related to the regulation.³³

A roundtable discussion on open banking was held at the MNB's initiative, involving market participants

Open banking has only been adopted to a limited extent, because international regulations are not specific enough on access interfaces (APIs) and banks can hinder new entrants in many ways. In 2021, the MNB devised a complex action plan to promote open banking and remove barriers. However, the MNB has found shortcomings related to open banking in every recent payment inspection. The inspections and the feedback received from third-party providers showed that the challenges and problems have not been eliminated in this new market, and in fact further difficulties can be seen in expected support, the test environments, banks' response times, anomalies related to the data available through APIs and the handling of PSD2 certificates.

In September and October 2022, in cooperation with the Hungarian Banking Association, the MNB called for a roundtable discussion on open banking and the operation of the APIs enabling such, with the participation of third-party providers and account servicing payment service providers. The MNB sought to foster the management of the existing challenges and support the achievement of innovative and competition enhancing objectives through open banking.

Establishment of a common oversight availability (service level) measurement methodology

In 2022, a common oversight availability measurement methodology was implemented pertaining to the Real Time Gross Settlement System (VIBER) operated by the MNB, the Interbank Clearing System (BKR) operated by GIRO Zrt., the

³⁰ Distributed ledger technology

³¹ Regulation (EU) No 600/2014 of the European Parliament and of the Council of 15 May 2014 on markets in financial instruments and amending Regulation (EU) No 648/2012

³² Directive 2014/65/EU of the European Parliament and of the Council of 15 May 2014 on markets in financial instruments and amending Directive 2002/92/EC and Directive 2011/61/EU

³³ ESMA DLTR Q&A: <https://www.esma.europa.eu/document/qas-dlt-pilot-regulation>

securities settlement system operated by KELER and the central counterparty activities performed by KELER CCP.

The methodology was developed to set out common requirements for all Hungarian financial market infrastructures with respect to the measurement and reporting of their availability and service level. The new availability measurement methodology is more sophisticated than previous versions in how it examines operational problems, incidents and the indicators calculated from this provide more information to overseers and the management of system operators as well.

Publication of the regulation on the digital operational resilience of the financial sector

In 2022, in its Official Journal, the European Union published Regulation (EU) 2022/2554 on digital operational resilience for the financial sector and amending Regulations (EC) No 1060/2009, (EU) No 648/2012, (EU) No 600/2014, (EU) No 909/2014 and (EU) 2016/1011 (Digital Operational Resilience Act, or DORA), which may bring about significant changes in the financial sector. The European Commission started to work on the regulation on digital resilience in 2020, with the main aim of creating a common legal framework for European financial institutions to reduce digital risks, in other words the risks arising from the increasing number of cyber attacks. Before publication of the regulation in December 2022, the MNB participated in several rounds of discussion in the relevant working groups, providing comments. The regulatory technical standards have not been published yet; they will become public by 2025 at the latest, and the stipulations of the regulation will become binding then.

International memorandum of understanding on payment fraud data (MoU)

A memorandum of understanding (MoU) was signed by the EBA, the ECB and national authorities on reporting on payment fraud.

In order to reduce the reporting burden caused by the PSD2 and the ECB's regulation on payments statistics, the EBA and the ECB drew up a draft memorandum of understanding, which allows national authorities to comply with legal requirements by submitting the data once. Pursuant to the MoU, starting with the data from 2022 H1, national

authorities only send the necessary information to the ECB, and the ECB passes on the PSD2 data to the EBA. The single-channel data submission is favourable from the perspective of data clarity and work management, and it does not require major developments from the MNB. The MoU has been signed by the MNB, the EBA and the ECB, thanks to which, starting in the next data submission cycle, the central bank will not have to send fraud data to two players simultaneously.

Legal interpretations and inspections

In 2022, the central bank issued 14 legal interpretations and expert opinions about payments based on queries from credit institutions, other legal entities and natural persons, mainly concerning the interpretation of certain stipulations in the Payments Act and other payment legislation. In addition, administrative inspections concerning payments were launched at four banks and two payments institutions. In all cases, the inspections concerned the general inspection considerations as published on the MNB's website. Based on the data collected in continuous supervision, no unplanned inspection procedures were launched in 2022.

The types of infringements identified in the MNB's payments-focused administrative procedures conducted during the year varied widely and were connected to almost every payments law under review. 2022 saw the conclusion of six inspection procedures, launched against five banks and one EEA credit institution branch. In four of these cases, the decision on the required measures also included penalties amounting to a total HUF 133 million. Procedures are often continued into the next year, which can be seen from the fact that decisions will be made in 2023 in the case of four of the inspection procedures launched in the year under review, whereas four of the completed inspection procedures started in 2021.

In 2022, due to failure to comply with the provisions of an earlier MNB decision by the deadline, a decision was taken requiring an obligation to be fulfilled, in addition to the (repeated) imposition of a penalty of HUF 25 million.

At the "Frequently asked questions" page launched for the clarification of the PSD2 regulation's³⁴ provisions on strong customer authentication and secure communication, the MNB disclosed its legal interpretation in two topics concerning the appropriate interpretation of the trusted beneficiary exemption rule. The MNB sought to

³⁴ Directive (EU) 2015/2366 of the European Parliament and of the Council of 25 November 2015 on payment services in the internal market, amending Directives 2002/65/EC, 2009/110/EC and 2013/36/EU and Regulation (EU) No 1093/2010, and repealing Directive 2007/64/EC

provide guidance to the sector concerned on the proper interpretation of the rules.

Publications related to payments and payment systems, conferences, professional lectures, consultations and press conferences

Survey on the payment habits of the Hungarian population

One of the priorities of the MNB is examining the payment habits of the Hungarian population and the share of the different payment methods as well as why one is chosen over the other. The MNB presented households' payment habits in a comprehensive, 4-part series of articles.³⁵

Time is money – A survey of the social costs of payment instruments

After 2009, the MNB once again surveyed the social costs entailed by payment methods. In the span of ten years, the number of payment transactions increased by almost 50% in Hungary. The use of electronic payment methods has grown dynamically, and there was a moderate increase in cash use. The analysis³⁶ presents the development of payments and quantifies the social costs attached to the use of payment methods. Real costs per transaction fell considerably in the case of cash, card and credit transfer payments as well, which shows the improving efficiency. Since electronic payments are available in most retail payment situations, the costs per transaction may continue to fall as electronic transactions expand.

Artificial Intelligence Working Group

Within the Artificial Intelligence Working Group (MIMCS) of the National Tax and Customs Administration (NTCA), the MNB participates in analyses using the online cash register (OCR) database. During the meetings, sharing ideas about the research opportunities related to the OCR database and the joint work strengthens the professional ties with the Ministry of Finance and other participating institutions in the long run.

3.6 MANAGING INTERNATIONAL RESERVES

The MNB's international reserves increased by around EUR 330 million in 2022, with holdings at the end of December 2022 amounting to EUR 38.7 billion. In 2022, the level of foreign exchange reserves was boosted by the ÁKK's foreign currency bond issuances and inflows of EU transfers from the European Commission. At the same time, disbursements by the state to repay debt, foreign exchange expenditures of the Treasury and the change in the central bank's forint liquidity providing FX swap holdings mitigated the increase. For financing the euro liquidity providing swap tenders over year-end, the MNB used its framework agreements concluded with international organisations.

Purposes of holding reserves

Similarly to other central banks, one of the key tasks of the MNB – as specified in the MNB Act – is to manage the country's foreign exchange reserves. The MNB holds foreign exchange reserves for the purpose of fulfilling several functions:

- to ensure the level of reserves expected by market participants ('international collateral');
- to support the monetary and exchange rate policy (providing intervention capacity);
- to provide foreign currency liquidity for the banking sector;
- and to meet the state's transaction-related foreign currency needs.

In terms of transaction goals, servicing the management of government debt continued to be the most important objective in 2022. In addition, in this context the continuous provision of foreign currency to cover the needs of budgetary institutions should be mentioned. The transfers from the European Union also flow through the MNB, and as in previous years they boosted the foreign exchange reserves. The above transaction goals were satisfied smoothly in 2022 again.

³⁵ A bankszámla-lefedettség már nem akadályozza az elektronikus fizetés terjedését (Bank account coverage no longer hinders the adoption of electronic payments) (vg.hu); Már a lakosság 80 százaléka veszi igénybe az elektronikus fizetési lehetőségeket (80 per cent of people already use electronic payment options) (vg.hu); Az életkortól, a végzettségtől, a foglalkoztatottsági státuszunktól és a jövedelmünktől is függ az, hogy mivel fizetünk. De mennyire befolyásolják vajon? (The method of payment depends on age, educational attainment, employment status and income. But to what extent?) (vg.hu); A lakosság fele szívesebben fizet(ne) elektronikusan (Half of the population (would) like to pay electronically) (vg.hu) The articles are only in Hungarian, but the English version of the entire study, upon which the articles are based, is available here: <https://www.mnb.hu/letoltes/mnb-op-143-final.pdf>

³⁶ <https://www.mnb.hu/letoltes/fer-21-2-st1-deak-kajdi-nemecske-vegso.pdf>

The MNB regularly reviews the desirable level of reserves and, if necessary, takes measures – within the permitted limits – to reach the adequate level. Throughout 2022, the international reserves of the MNB exceeded the reserve indicators closely monitored by the central bank and investors as well. Out of these, the MNB pays special attention to the Guidotti–Greenspan rule, so that the reserves comfortably exceed the level of short-term external debt.

Reserve size

The level of Hungary's international reserves rose by nearly EUR 330 million in 2022 and amounted to EUR 38.7 billion at the end of the year.

The reserves were decreased first and foremost by the debt repayment items of the Government Debt Management Agency (ÁKK) (including the residency bond maturities in March, June and September, as well as the repurchase of USD bonds with a face value of USD 1.2 billion in June) and the interest payments on FX bonds, along with the FX expenditure of the Hungarian State Treasury.

FX reserves fell by around EUR 1.4 billion related to the phase-out of the swaps providing forint liquidity, and thus the volume of outstanding transactions fell to zero in September.

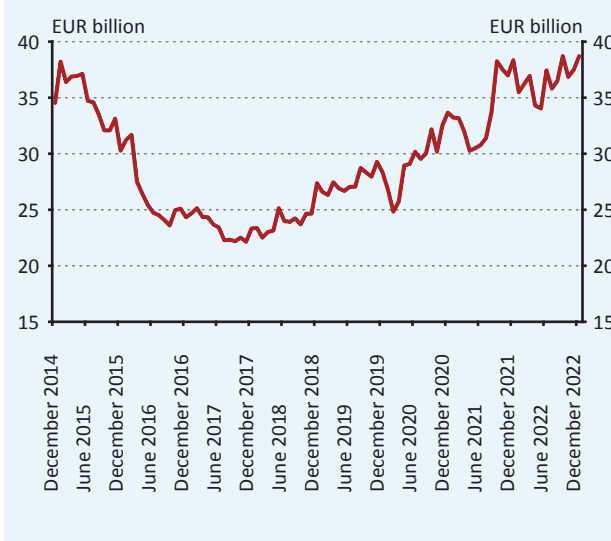
The reserves were increased by the Samurai bonds issued by the Government Debt Management Agency in February, the 7-year and 12-year USD bonds and the 9-year EUR bonds issued in June, the SURE loan received in March, followed by green bonds with a face value of RMB 2 billion and EUR 1 billion in November, as well as the quantity increase of the USD bonds maturing in 2041 through a private placement in December.

Net EU transfers from the European Commission amounted to EUR 4.4 billion in 2022.

For financing the euro liquidity providing swap tenders over year-end, the MNB used its framework agreements concluded with international organisations. The difference between the value of the swap transactions provided to the banking system and the repo transactions used for their financing had a temporary effect on reserve levels.

Moreover, in order to meet the FX financing requirement related to energy imports, the MNB conducted conditional EUR/HUF spot transactions and EUR/HUF forward transactions starting from 7 November 2022.

Chart 7
Developments in the amount of foreign exchange reserves



Financial performance and risks of foreign exchange reserves

In carrying out its core tasks as stipulated in the MNB Act and especially in the management of the country's international reserves, the MNB inevitably faces financial risks. The basic principle followed by the central bank is that the degree of the assumed risks should be aligned with the objectives of the core activity, the size of the risks should be known and risk assumption should be conscious and limited, in accordance with the institution's risk-taking capacity. In the course of foreign exchange reserve management, the threefold objective of liquidity, security and yield must be satisfied, meaning that the MNB strives to achieve the highest possible yield level while continuously keeping the risks at a pre-defined low level and maintaining the necessary liquidity.

Similarly to the core duties of the central bank, the Monetary Council is also the supreme decision-making body in respect of foreign exchange reserve management: it defines the objectives and requirements related to the foreign exchange reserves such as the level and liquidity of the reserves, decides on the currency used for optimisation, the risk strategy and the most important quantitative strategic parameters of reserve investment. The operative decision-making powers are exercised and the foreign exchange reserve management strategy is implemented by the Executive Board of the MNB, within the framework stipulated by the Monetary Council. The Executive Board approves the limit system serving as a framework for risk taking: the permitted maximum deviation of the reserve portfolios from the benchmarks, the counterparty limits and

the range of investment instruments permitted in the field of reserve management.

The benchmark system and the limit system comprise the two main pillars of reserve management. Independent performance measurement is an important element of the risk-taking policy. In order to measure the success of portfolio management, the performance of each reserve portfolio is compared against the performance of a reference (benchmark) portfolio. The benchmark portfolios show the yield that would have been earned by a passively managed portfolio representing a wide market segment with the same investment parameters. The performance of foreign exchange reserve management activity is presented in comparison to these benchmark portfolios. The benchmarks reflecting the risk-return preference of the MNB and serving the performance measurement of the portfolios are maintained by the risk management unit, independently of portfolio management.

The most important risk categories related to foreign exchange reserve management comprise market risk, liquidity risk and credit risk (settlement risk and counterparty risk). The MNB controls the possible degree of financial risks related to foreign exchange reserve management with limits. In accordance with the conservative reserve portfolio management characteristics of central banks, the MNB applies a strict limit system, which considers market and other indicators, in addition to the expected high level of credit ratings. In the course of reserve management, the MNB also considers the foreign currency liquidity requirement of the monetary policy instruments.

In the course of foreign exchange reserve management, the MNB employs a variety of risk-minimising techniques to ensure that the assumed risks correspond to the MNB's risk tolerance. In the case of derivative instruments, the MNB concluded ISDA (International Swaps and Derivatives Association) and related CSA (Credit Support Annex) agreements with its counterparties, which keep the credit risk exposure potentially arising in respect of the counterparty at a low level through the margin arrangement. In the case of repo transactions regulated by GMRA (Global Master Repurchase Agreement), the prescribed margin also helps to limit the risks. In the case of foreign exchange transactions, in accordance with the international best practices the MNB settles its transactions in the CLS system, thereby minimising its settlement risks.

In 2022, FX reserve management was dominated by the rising inflationary environment, the Russian–Ukrainian war and the corresponding international and Hungarian central bank measures. The prolonged war significantly influenced supply chains and commodity prices, which posed a risk to the

inflation outlook and growth prospects. During the year, major central banks continuously revised their inflation expectations upwards and their growth expectations downwards. Euro area inflation rose to over 10.5 per cent in October, and inflation also reached highs not seen in decades on the other side of the Atlantic. While managing the coronavirus pandemic, central banks moved towards easing, but this trend was reversed in 2022 H1. The ongoing tightening cycle continued with further interest rate increases in the second half of the year, and the central bank engaged in gradual deleveraging. The Fed raised interest rates several times in the course of 2022, with the target range for the policy rate thus rising to 4.25–4.50 per cent by the end of the year. The ECB also raised its policy rates in September and October by 75 basis points each, and by another 50 basis points in December, bringing the interest rate on the main refinancing operations to 2.5 per cent by the end of the year. Quantitative tightening began: the crisis management and liquidity expanding pandemic emergency purchase programme (PEPP) was terminated in the first half of the year, bonds maturing under the APP were reinvested until February 2023, and holdings are being gradually reduced, by EUR 15 billion each month.

As a result of market developments, a large rise in yields was observed in most of the markets relevant in terms of reserve management in 2022. The euro area's yield curve shifted considerably upwards during the reporting period, rising by 250–330 basis points, pushing the yield curve typically above 200 basis points, even though it had still been in negative territory at all relevant tenors at the beginning of the year. The yields on American government securities issues rose by 410–460 basis points on short maturities, and more modestly, by 270–380 basis points, on longer maturities, which inverted the government yield curve. The yields on AUD and GBP, along with CEE yields, which are all relevant from the perspective of reserve management, increased significantly in 2022, and the only decline in yields was seen in the Chinese market.

The gold price was mainly influenced by the Russian–Ukrainian war conflict, central bank measures (especially those of the Fed), mounting global inflationary pressure, the development of bond yields and the change in the USD exchange rate during the year. For the most part of 2022, the US dollar was steadily strengthening in the EUR/USD currency pair, even reaching parity during the year, but the Fed's interest rate increases then disrupted this trend. The US dollar appreciated against the euro from 1.14 at the beginning of the year to 1.07 at the end of the year.

In 2022, the MNB stood prepared to address the heightened uncertainty in the period after the coronavirus pandemic, in an environment marked by the Russian–Ukrainian conflict and surging inflation. The level of FX reserves significantly

exceeded the value of relevant benchmarks. In addition, the MNB had already previously developed an international safety net from bilateral swap and repo agreements, which provides additional FX liquidity (FX liquidity can quickly be increased by EUR 10 billion) and increases the MNB's room for manoeuvre while the safe level of international reserves is preserved, thereby reducing external and internal vulnerabilities:

- Repo agreements with the ECB and the Bank for International Settlements (BIS);
- Access to the repo facility announced by the Federal Reserve;
- Currency swap agreement concluded with the People's Bank of China (PBoC).

Continuously monitoring the developments representing a risk to the level and liquidity of reserves, the MNB – similarly to most central banks – regularly revises the reserve investment framework.

In terms of reserve management, the MNB continues to take a conservative approach: the liquidity limits are tight, the interest rate risk of FX reserves is relatively low, and the credit quality of reserve portfolios remains high.

In 2022, the MNB basically managed foreign exchange reserves in eight currencies (EUR, USD, JPY, GBP, AUD, RMB, PLN, CZK), in a variety of portfolios. The MNB assumes exchange rate exposure basically in euro: it hedges the other currency/euro cross rate risks via derivative instruments. The holding of foreign currency instruments denominated in currencies other than euro is justified by the higher diversification and, in the case of the US dollar, the higher liquidity available. Altogether, the MNB actively manages eight portfolios in euro, US dollar, British pound, Chinese renminbi and Australian dollar. The MNB manages the Japanese yen, the Czech koruna and the Polish zloty portfolios, containing government securities only, as index-linked portfolios strictly following the benchmark. From the end of 2012 – in the form of a mandate given to an external asset manager and custodian – US agency mortgage-backed securities (MBS) also form part of the MNB's investment strategy. Similar to previous years, the strategic average duration (target duration) of the reserve portfolios was around 1 year, while the duration of green bond and MBS exposures was the highest during the year, at 5–6 years. The liquidity allocated for the attainment of the monetary policy objectives was continuously available during the year, and credit risk events that would have had an adverse effect on the MNB were avoided.

The euro risk-free portfolio represents the backbone of the foreign exchange reserves and may only include highly rated

government securities, state-guaranteed securities and the issues of (supranational) international institutions. Highly-rated corporate and bank issues, and covered securities may be purchased for the second largest, euro investment portfolio, and for the investment portfolios in general; this portfolio typically includes government securities only for the purpose of adjusting the maturity structure. After the euro exposure, the combined share of the US dollar portfolios represents the most substantial item in the reserves, where – along with the investment portfolio – the considerable proportion of the agency MBS exposure deserves special mention.

In 2022, the MNB continued to take steps to understand climate risks and take into account the related considerations in its reserve management. In 2022, the MNB was one of first central banks to publish a report entitled 'The Magyar Nemzeti Bank's climate-related financial disclosure', which also includes an analysis of the climate risks of the reserve holdings.

The MNB achieved a return of -2.22 per cent on the gold and foreign exchange reserves in 2022. A large part of the loss is related to the hedged bond portfolios and reflects the impact of rising yields, which was only partly offset by the profits on the gold exposure. Denominated in their own currency, the performance of bond portfolios exceeded the benchmark by 20 basis points.

With respect to the future performance of the FX reserves, the risk persists that, as a result of yield increases, the revaluation loss arising from the devaluation of existing bonds will undermine reserve performance in the short run. On the other hand, due to the short duration of the reserves, a yield rise has a positive medium-term impact on profits, as the maturing reserve components can be reinvested at higher yields.

3.7 CASH LOGISTICS ACTIVITY

On 31 December 2022, the total value of currency in circulation amounted to HUF 8,226.1 billion, representing an increase of 7.2 per cent compared to the end of the previous year. The expansion was similar to the rise in 2021, but its extent varied widely during the year. The evolution in the amount of currency in circulation in 2022 was influenced by three main factors: the dramatic increase in demand following the start of the Russian–Ukrainian war; the adjustment partly dictated by the major changes in the interest rate environment with the reduction of credit institutions' forint and FX reserves; and the steady expansion in households' currency demand throughout the year.

Relative to GDP and households' consumption expenditure, the amount of currency in circulation has been on the

decline for two years, amounting to 12.3 per cent of GDP and 25.1 per cent of consumption at the end of 2022.

In 2022, the MNB managed cash turnover for its clients, i.e. credit institutions and the Hungarian Post, in the total amount of HUF 4,216,1 billion; within that, it distributed 266.6 million banknotes to its clients, while 222.2 million banknotes were delivered to the central bank.

In line with previous years' trends, the degree of counterfeiting of forint banknotes remained low, and the number of counterfeit forint notes removed from circulation was only 518 in 2022. Last year, the number of counterfeit banknotes for each one million genuine banknotes in circulation per year was 0.8, which is an extremely favourable value by international standards.

In 2022, the MNB focused its cash circulation administrative inspections on the operation of the rising number of customer-managed banknote handling machines, as well as the legal compliance of credit institutions regarding the minimum required level of cash services offered to households.

Pursuant to the MNB Act, the central bank has the exclusive right to issue banknotes and coins, including commemorative banknotes and collector coins, which are also legal tender in Hungary. In 2022, in the spirit of its mission of issuing collector coins for more than half a century now, the central bank issued 28 collector coins in 16 thematic schemes, of which three were gold coins, nine were silver coins and 16 were non-ferrous metal collector coins (of which 6 coins had an independent theme, and 10 coins were issued as the non-ferrous metal versions of precious metal coins). Six previously started series were continued, and three new ones were launched in 2022. Furthermore, 2 million 100-forint commemorative coins entered into circulation, marking the opening of the Money Museum in 2022.

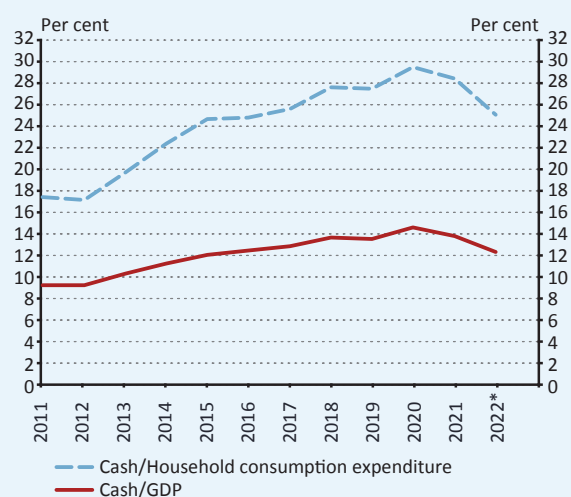
Currency in circulation

On 31 December 2022, the total value of currency in circulation amounted to HUF 8,226.1 billion,³⁷ representing an increase of 7.2 per cent, or HUF 551 billion in nominal terms, compared to the end of the previous year. This expansion was similar to the increase of 7.1 per cent registered in 2021, but its size varied widely during the year. The evolution in the amount of currency in circulation in 2022 was influenced by three main factors. The start of the Russian–Ukrainian war and the one-time government

payments in February triggered an unprecedented expansion in currency in circulation in Hungary between 1 February and 11 March 2022, amounting to an increase of HUF 672 billion in that period. This dramatic increase in demand was followed by a protracted, slow adjustment, partly influenced by the major changes in the interest rate environment occurring in the meantime. Another characteristic feature of the year that deviated from earlier trends was the long-term rationalisation of credit institutions' cash holdings. Thanks to the rise in interest rates and the adjustment processes following the earlier shock, in July 2022 credit institutions started to gradually reduce their cash holdings which they had significantly increased at the beginning of the year. Despite the considerably unfavourable macroeconomic environment, households' currency demand remained robust in 2022, with both the amounts withdrawn from ATMs and money paid into ATMs rising during the year. As a result, the value of cash holdings stagnated at around HUF 8,200 billion in May–December 2022.

The amount of currency in circulation has been on the decline for two years relative to GDP and households' consumption expenditure (see Chart 8), amounting to 12.3 per cent of GDP and 25.1 per cent of consumption at the end of 2022. The contraction can be primarily attributed to the evolution of GDP after the start of the Covid-19 pandemic.

Chart 8
Currency in circulation as a percentage of annual Hungarian GDP and household consumption expenditure



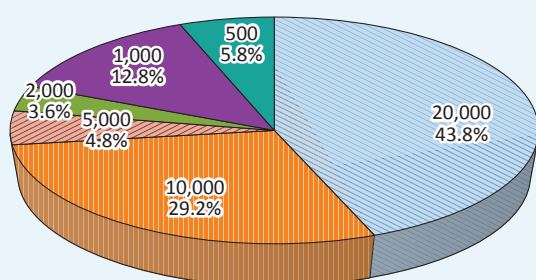
*The 2022 GDP figure and the household consumption expenditure data are MNB estimates.

³⁷ The value includes holdings of collector coins and commemorative banknotes issued by the central bank, which, as legal tender, form part of the means of payment in circulation at face value, but in accordance with their role, do not participate actively in cash payments. It does not include, however, the value of withdrawn banknotes that are still convertible, which is recorded in the central bank's balance sheet as a liability.

The change in the volume of banknotes in circulation varies by denomination. The 20,000-forint note continues to account for the largest share in turnover; its expansion of 8.5 per cent in 2022 was still considerable. A similar, 8.4 per cent rise was observed with the 5,000-forint banknote. The amount of 10,000-forint notes, accounting for the second largest share in turnover, grew modestly, by 3.3 per cent compared to the end of 2021. One should also mention the

expansion in the amount of the two smallest banknotes, the 1,000-forint and 500-forint notes, in circulation, which were up by 11.6 per cent and 9.9 per cent, respectively. The amount of the 2,000-forint notes grew only marginally, by 0.4 per cent. The change in numbers points towards polarisation of the denomination structure, as in the past two years the strongest growth was seen in 500-forint notes (15.8 per cent), 1,000-forint notes (20.3 per cent) and 20,000-forint notes (17.5 per cent) compared to the holdings at the end of 2020.

Chart 9
Breakdown of banknotes in circulation by quantity at the end of 2022



The two largest banknote denominations still play a dominant role in cash turnover: at the end of 2022 they jointly accounted for 73 per cent of the volume and 96 per cent of the value of all banknotes in circulation.

Compared to the end of previous year, the volume of forint coins in circulation expanded by 6 per cent on average. The denomination distribution of the coins in circulation is stable, the ratio between the different denomination values changed by less than 1 percentage point in the five years between 2018 and 2022.

Banknote and coin production

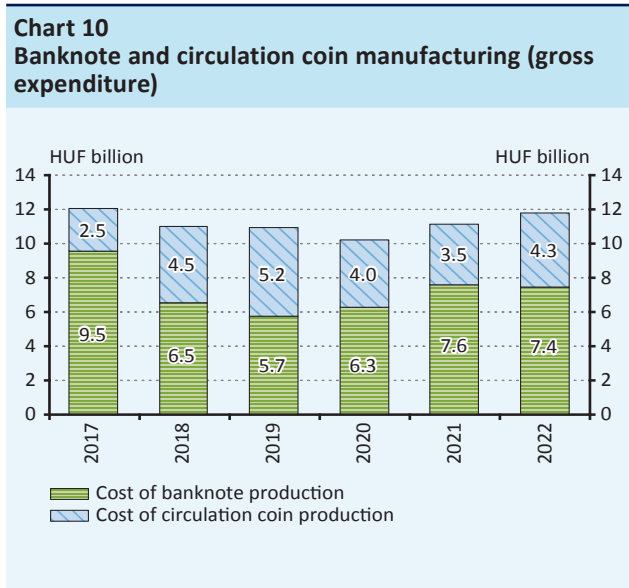
In order to meet the increasingly strong cash demand and replace unfit and hence, destroyed banknotes and coins, the central bank has banknotes and coins produced.

Table 3
Banknotes and coins in circulation³⁸
(figures as at 31 December 2022 and 31 December 2021)

Banknotes	2022				2021			
	Volume	Value	Ratio (%)		Volume	Value	Ratio (%)	
	Million pieces	HUF billion	Volume	Value	Million pieces	HUF billion	Volume	Value
20,000 forint	292.9	5,858.9	43.8	72.1	270.0	5,400.5	43.2	71.3
10,000 forint	194.9	1,949.5	29.2	24.0	188.6	1,886.5	30.2	24.9
5,000 forint	32.1	160.5	4.8	2.0	29.6	147.8	4.7	2.0
2,000 forint	24.0	47.9	3.6	0.6	23.9	47.9	3.8	0.6
1,000 forint	85.9	85.9	12.8	1.1	77.0	77.0	12.3	1.0
500 forint	38.8	19.4	5.8	0.2	35.3	17.7	5.8	0.2
Total	668.6	8,122.1	100.0	100.0	624.5	7,577.3	100.0	100.0
Coins	2022				2021			
	Volume	Value	Ratio (%)		Volume	Value	Ratio (%)	
	Million pieces	HUF billion	Volume	Value	Million pieces	HUF billion	Volume	Value
200 forint	187.3	37.5	8.0	41.5	177.7	35.5	8.0	41.7
100 forint	237.1	23.7	10.1	26.3	224.2	22.4	10.1	26.3
50 forint	232.0	11.6	9.8	12.9	219.0	10.9	9.9	12.8
20 forint	433.7	8.7	18.4	9.6	407.5	8.2	18.3	9.6
10 forint	475.9	4.8	20.2	5.3	452.1	4.5	20.3	5.3
5 forint	788.2	3.9	33.5	4.4	741.2	3.7	33.4	4.3
Total	2,354.2	90.2	100.0	100.0	2,221.9	85.3	100.0	100.0

³⁸ The table does not include holdings of collector coins and commemorative banknotes issued by the central bank.

The MNB's expenditures related to cash production amounted to a gross sum of HUF 11.7 billion in 2022, which was HUF 0.6 billion more than in the previous year.



Distribution of cash

In 2022, the MNB managed cash turnover for its clients, credit institutions and the Hungarian Post, in the total amount of HUF 4,216,1 billion; within that, it distributed 266.6 million banknotes to its clients, while 222.2 million banknotes were delivered to the central bank. The change in the macroeconomic environment and institutions' currency demand could also be felt in the rise in the volume of the central bank's cash transactions in 2022.

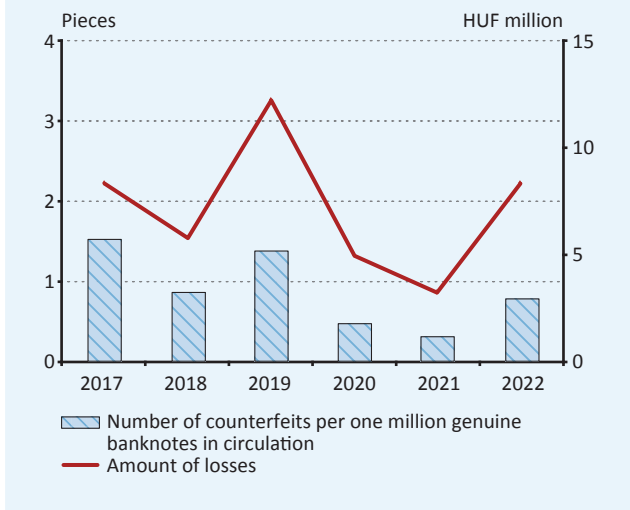
In the past year, the MNB scrapped 80.9 million end-of-life banknotes, and replaced them with new, high quality means of payment. Removal mainly affected the smaller denominations, which play a transaction role.

Prevention and reduction of counterfeiting

In line with previous years' trends, the degree of counterfeiting of forint banknotes remained low, and the number of counterfeit forint notes removed from circulation was only 518 in 2022.

Last year, the number of counterfeit banknotes for each one million genuine banknotes in circulation per year was 0.8, which is an extremely favourable value by international standards.

Chart 11
Trends in counterfeits for each one million genuine banknotes and the value of the resulting damage



The MNB provided free banknote awareness trainings (25 sessions with 450 participants) in 2022.

As in previous years, the counterfeiting of higher denominations (mainly the 10,000-forint and 20,000-forint banknotes) remained most typical in 2022, accounting for more than 90 per cent of counterfeit forint notes.

Table 4
Denomination breakdown of forint banknote counterfeits discovered in 2022

Denominations	500	1,000	2,000	5,000	10,000	20,000
Breakdown (%)	1	5	1	1	25	67

No significant change occurred in counterfeiting methods, which are still characterised by the use of office reproduction equipment (colour copy machines, printers). Persons familiar with the features of authentic banknotes can detect the counterfeits using simple checks (touching, holding up to light or moving) or in a cash office environment using combined checks with UV-A and UV-C light.

The central bank's experts identified 569 various foreign currency counterfeits in 2022, including 480 counterfeit euro banknotes. Examining the domestic cash circulation as a whole, it is still true that the occurrence of counterfeit currencies is insignificant.

Cash distribution administrative inspections

In 2022, the MNB inspected compliance with the provisions of the MNB Act pertaining to cash issuance, of the Banknote Decree³⁹ and of the MNB decrees on the central bank data reporting.⁴⁰ In 2022, the MNB focused its inspections on the operation of the rising number of customer-managed banknote handling machines, as well as the legal compliance of credit institutions regarding the minimum required level of cash services offered to households. In 2022, the MNB launched seven inspection procedures against six credit institutions, one payment institution and one cash processing provider. Three procedures were completed in 2022, four in early 2023 and one is still ongoing. In the course of continuous supervision, the MNB inspected four credit institutions, determined based on their role played in cash payments, the number of their branches and their country-wide coverage, focusing on the following: the assessment of the operational risks of cash distribution; the revised action plan for managing extraordinary situations; and the revised list of the infrastructure network elements critical from the perspective of cash distribution.

Out of the three procedures launched and closed in 2022, measures were taken in two cases, including warning letters containing calls for the organisation of training and full compliance in the future with the laws. In the case of one credit institution, the MNB terminated the inspection procedure with a decision, considering that the credit institution had already ended its cash distribution activities in the meantime.

Out of the inspection procedures launched in 2021 and terminated in 2022, the MNB called on the inspected institutions to rectify the unlawful situation and to fully comply with the laws in the future with a warning letter in one case, and with a decision in three cases, where penalties were levied in all three cases.

During the administrative inspections terminated in 2022, the MNB detected the violation of certain rules pertaining

to banknote distribution, the assessment of the operational risks of cash distribution, the action plan, the handling of incomplete or damaged forint banknotes, and the denomination exchange and exchange of forint banknotes.⁴¹ The most common infringements were related to the violation of the provisions of the MNB Act and the Banknote Decree on the handling of incomplete and damaged forint banknotes.

Issuance of collector coins and commemorative coins

Pursuant to the MNB Act, the central bank has the exclusive right to issue banknotes and coins, including commemorative banknotes and collector coins, which are also legal tender in Hungary. The MNB issues collector coins with the aim of commemorating Hungary's major historic, cultural and scientific anniversaries significant for society as a whole, and passing these on to succeeding generations in a lasting form, and to celebrate contemporary events and honour national idols.

Collector coins are legal tender, but their use in circulation is inconsistent with the issuer's objective of ensuring solemn commemoration, which is reflected in the amendment of the MNB Act with Act LXXVII of 2022, effective from 22 December 2022, pursuant to which collector coins can be refused during payment transactions.⁴² The amendment does not affect the legal tender status of the collector coins, as the MNB continues to guarantee that they are exchanged at face value without any time constraint.

In 2022, 28 collector coins were issued by the central bank in 16 thematic schemes,⁴³ of which three were gold coins, nine were silver coins and 16 were non-ferrous metal collector coins (of which 6 coins had an independent theme, and ten coins were issued as the non-ferrous metal versions of precious metal coins). Six previously started series continued and three new series were launched during the year.

2 million 100-forint commemorative coins⁴⁴ entered into circulation, marking the opening of the Money Museum in 2022.

³⁹ MNB Decree No 19/2019 (V. 13.) on the processing and distribution of banknotes and on technical tasks relating to the protection of banknotes against counterfeiting, in force during the period under review

⁴⁰ The provisions of MNB Decree No 41/2020 (XI. 18.) on the obligations to report data to the central bank's information system primarily to enable the Magyar Nemzeti Bank to carry out its basic duties, applicable to the period under review, and MNB Decree No 54/2021 (XI. 23.) concerning the P50, P23 and P26 MNB disclosures

⁴¹ Article 23(3) and (8) of MNB Act, Article 4(2) and (4), Article 5(2), (3) and (6), Article 6, Article(8), Point c) of Article 19(2), Article 21(5) and Article 23(1) of the Banknote Decree

⁴² <https://njt.hu/jogszabaly/2013-139-00-00> (in Hungarian only)

⁴³ <https://www.mnb.hu/letoltes/2022-evi-emlekerme-kibocsatas-program-en.pdf>

⁴⁴ <https://www.mnb.hu/en/banknotes-and-coins/collector-and-commemorative-coins/2022/commemorative-circulation-coin-to-mark-the-occasion-of-the-opening-of-hungarian-money-museum-and-visitor-centre>

Table 5 The MNB's 2022 collector coin issuance programme*									
Theme of Coin	Specification							Date of Issuance	
	Material	Weight g/pc	Diameter/size mm	Edge	Finish	Face Value HUF	Announced Quantity pc		
The Hungarian discovery behind mRNA vaccines	Ag .925	31.46	38.61 x 38.61 rectangular	smooth	PP	15,000	10,000	10 March 2022	
	Cu75Ni25	30.8					15,000		
Ágnes Nemes Nagy	Ag .925	31.46	38.61	milled	BU	2,000	5,000	11 April 2022	
	Cu75Ni25	30.8					5,000		
Budapest University of Technology and Economics	Ag .925	31.46	38.61	fine-grained with edge lettering	PP	15,000	5,000	20 April 2022	
	Cu75Ni25	30.8					5,000		
Peter Lax "Wolf Prize-Winning Mathematicians of Hungarian Descent" – 1.	Ag .925	12.5	30	milled	BU	7,500	4,000	1 May 2022	
	Cu75Ni25	12.5					4,000		
The Golden Bull of Andrew II	Au.999	0.5	11	smooth, independent, interlocking coins	uncirculated	10,000	10,000	20 May 2022	
	Cu63Ni37	117.5					10,000		
György Békésy "Nobel Prize Winners of Hungarian Descent" collector series – 6.	Ag .925	12.5	30 x 25 oval	smooth	PP	7,500	4,000	3 June 2022	
	Cu75Ni25	10.3					4,000		
Milton Friedman "Nobel Prize Winners of Hungarian Descent" – 2.	Ag .925	31.46	38.61	milled	BU	15,000	4,000	11 July 2022	
	Cu75Ni25	30.8					4,000		
St. Stephen's Hall "National Hauszmann Programme" – 1.	Nordic gold	20	37.18 hexagonal	smooth	Proof-like	3,000	20,000	19 August 2022	
	Au .986	3.491					2,000		
The Gold Florin of János Hunyadi "Hungarian Gold Florins from the Middle Ages" collector series – 7.	Au .986	13.964	20	smooth	uncirculated	50,000	500	6 September 2022	
	Cu75Ni4Zn21	2.7					5,000		
Gedeon Richter	Cu75Ni25	14	28.43 x 28.43 rectangular	smooth	BU	2,000	23,000	23 September 2022	
	Ag .925	31.46					7,000		
Vilma Hugonnai, the first female doctor in Hungary	Ag .925	31.46	38.61	milled	PP	15,000	5,000	29 September 2022	
	Cu75Ni25	30.8					5,000		
Király Kis Miklós Hungarian folk tales animated series – 2.	Cu75Ni4Zn21	16	34	fine-grained with edge lettering	Proof-like	2,000	20,000	30 September 2022	
	Ag .925	40					7,000		
Kecskemét, Bács-Kiskun County "Hungarian counties and county seats" collector series – 1.	Ag.925	40	42	milled	PP	15,000	7,000	3 October 2022	
	Cu90Zn10	29.5					10,000		
Mudi "Hungarian herding and hunting dogs" collector series – 4.	Cu75Ni4Zn21	16	34	milled	Proof-like	2,000	20,000	4 October 2022	
	Ag .925	12.5					4,000		
Imre Kertész "Hungarian Nobel Prize Winners" collector series – 7.	Ag.925	12.5	30 x 25 oval	smooth	PP	7,500	4,000	9 November 2022	
	Cu75Ni25	10.3					4,000		
Székesfehérvár, Romkert "National Memorial Sites" collector series – 9.	Cu90Zn10	18.4	37	milled	patinated	2,000	10,000	28 November 2022	
	Ag .925	12.5					4,000		

*Legend:

gold

silver

non-ferrous metal

3.8 STATISTICAL SERVICES

In 2022, the renewal and expansion of the MNB's statistical publications continued. As part of this, the first publications based on the credit register (HITREG) were published. The time series "Composition of loans extended to the households" was also moved to a HITREG basis, and the interactive publication detailing the loan-to-value ratio (LTV) of household mortgages upon acceptance was published based solely on HITREG data. An interactive publication on the accounting data of non-financial corporations, and the financial accounts statistics were overhauled, along with the time series presenting household deposits. The publications presenting consolidated data on credit institutions and insurers were extended. The own funds data of investment firms was published in a new form. A summary of the first results of the 2020 household wealth survey, "What do we live from", along with an interactive publication, was published, as was a statistical publication on the 30-year anniversary of investment funds in Hungary. In addition to the renewal and expansion of the statistical publications, the MNB's new Statistics page has also been available since June 2022 (<https://statisztika.mnb.hu/en>). The new page seeks to show the MNB's statistical publications in a readily accessible manner, presenting clear information to users on Hungary's financial and economic developments.

One major event in 2022 was the transformation of the Hungarian Bank Holding group. The incorporation of the corresponding changes into the MNB's supervisory data reception systems, the maintenance of the continuity of reporting and the presentation of the data in supervisory statistical publications went smoothly.

2022 saw the launching of a pilot project on supporting the central bank's data collection with machine learning (ML). Such ML methods are at a trial stage at most European central banks, so some of the project proved to be applied research. Ultimately, a cross-sectional algorithm based on decision trees was implemented that can handle non-linear correlation and variables' covariance.

For the purpose of fulfilling its duties as specified in the MNB Act, the Magyar Nemzeti Bank collects statistical

information and publishes the statistics thus compiled for the analysis of financial developments, the preparation of monetary policy decisions, oversight of the operation of the payment and settlement systems to ensure the smooth execution of payments with a view to supporting the stability of the financial system, and for the performance of micro and macroprudential supervisory activities.

The MNB publishes statistical information, analyses and time series on its website for the public, in accordance with the release calendar for statistics. In relation to the individual statistical areas, the MNB also issues methodological and thematic publications.

In 2022, the MNB issued six decrees related to reporting for 2023. One of these is the MNB decree⁴⁵ amending the MNB decree on reporting required for the fulfilment of the MNB's basic tasks,⁴⁶ supplemented by four MNB decrees requiring reporting primarily necessary for the fulfilment of supervisory tasks,⁴⁷ and the MNB decree⁴⁸ amending the HITREG decree.⁴⁹ In 2022, the effective MNB decrees related to data reporting were amended on three occasions during the year, due to the changes in the international and Hungarian legislative environment.⁵⁰

Credit register data collection

As part of the data quality management of the HITREG data collection, the regular assessment of the data quality of more and more data fields continued, and data quality also improved considerably as regards the consistency with aggregate data collection.

The first HITREG-based publications appeared in 2022. The very first of these was the quarterly publication called "Composition of loans extended to the households", an established publication, which appeared based on HITREG data from 2022 Q2 in September 2022. Then, in October 2022, a completely new publication followed based solely on HITREG data, presenting the semi-annual time series of the loan-to-value (LTV) ratio of household mortgages upon acceptance using interactive charts, supplemented with textual information analysing the trends.

⁴⁵ MNB Decree No 49/2022 (XI. 22.)

⁴⁶ MNB Decree No 54/2021 (XI. 23.)

⁴⁷ MNB Decrees No 51/2022. (XI. 29.), MNB Decrees No 52/2022. (XI. 29.), MNB Decrees No 53/2022 (XII. 2.) and MNB Decrees No 54/2022 (XII. 2.).

⁴⁸ MNB Decrees No 18/2022 (V. 25).

⁴⁹ MNB Decree No 35/2018 (XI. 13.) on the data reporting obligations to the central bank's information system with respect to specific credit transaction data

⁵⁰ The amendments mainly concerned the underlying MNB decrees (MNB Decree No. 22/2022. (VI. 11.), MNB Decree No. 44/2022. (XI. 30.) and MNB Decree No. 58/2022. (XII. 22.)).

The modification of the credit register data collection effective from 2022 Q2 provides more detailed data for example on large exposures, customer groups and the number of days in default. The next amendment of the MNB decree on HITREG reporting published in MNB Decree No. 18/2022. (V. 25.) is effective from 1 January 2023. Pursuant to the amendment, the most important change for reporting credit institutions is the continued expansion of the data to be reported related to green loans, and in the case of financial enterprises the monitoring rules pertaining to reporting entities under consolidated and unconsolidated supervision are distinguished for data quality reasons, and detailed data are requested on cash pool schemes from all reporting entities.

Introduction of ML tools in the reporting verification processes

2022 saw the launching of a pilot project on supporting the central bank's data collection with machine learning. This was necessary because there has been a boom in the amount of data received due to the introduction of granular reporting, and the identification of the errors in the data requires the use of solutions that go beyond traditional instruments. This makes the methods automating quality control especially important, and this is what the pilot project focused on.

The machine learning (ML) quality control project launched in 2022 concentrated on HITREG data in general and LTV publication data in particular. Such ML methods are at the trial stage at most European central banks, so some of the project proved to be applied research. Ultimately, a cross-sectional algorithm based on decision trees was implemented that can handle non-linear correlation and variables' covariance ("gradient boosting"). This helps exploring correlations across the column in the dataset, and the difference between the estimated and actual values of new data is examined. If this difference is outside a certain range, the MNB can request an explanation of data content from the reporting entity concerned.

Supervisory statistics

In the credit institution sector, one of the main events of 2022 was the transformation of the Hungarian Bank Holding group along with the incorporation of the corresponding changes into the MNB's supervisory data reception systems, the maintenance of the continuity of reporting and the presentation of the data in supervisory statistical publications. Related to the planning of the reporting in 2023, the MNB reviewed reporting processes with the involvement of the banking sector and with a view to

reducing redundancies, and thanks to this some redundant reporting should be replaced in 2024, after the appropriate preparations. A new supervisory recommendation was developed and published on the establishment, operation, framework and control functions of the compilation of credit institutions' reporting as well as the related data asset management tasks. The new supervisory regulation tool will facilitate the consistent, timely fulfilment of credit institutions' increasingly complex reporting requirements and the continued improvement of data quality. The consolidated publication on credit institutions was supplemented with new content on liquidity and capital adequacy in 2022.

In the case of the insurance and pension funds sector, the required supervisory reporting (2021 Q4, 2022 Q1–Q3, 2021) was received from the institutions subject to reporting by the deadline. The publications about insurers and pension funds based on quarterly reporting were published on the MNB's website by the stipulated deadlines, and the publication about insurers was supplemented with data on ad-hoc premiums, thereby ensuring that all types of premium data were published. The preparatory work requiring coordination across policy areas and providing new data reception and reporting processes related to the pan-European personal pension product (PEPP) marketable from 2022 continued.

In the case of the insurance sector, the review of the common supervisory reporting system launched in 2019 and coordinated by the European Insurance and Occupational Pensions Authority (EIOPA) was completed, thanks to which the preparation for the changes can commence in the next period.

In 2022, investment firms were required to prepare their own funds reporting in accordance with the new EU regulation, based on which investment firms' own funds data were published in a new form. In order to enhance the common European reporting system, the MNB conducted data quality tests in cooperation with the European Securities and Markets Authority (ESMA), which considerably improved the quality of reporting based on the data quality report presented in 2022 by ESMA. In 2022 H2, the capital market transaction reports (MiFIR) were received by the MNB with the application of the new validation rules, and in November the developments related to the change in the structure of certain reference data were also completed.

Changes in MNB publications

The MNB presented the first results of the 2020 household wealth survey, "What do we live from", in the form of a

summary document and an interactive publication in March 2022. The survey is the Hungarian version of the Household Finance and Consumption Survey (HFCS) coordinated by the ECB and organised every three years. The household wealth survey data show how the financial and non-financial assets held by Hungarian households are distributed based on features such as age and geographical region, and an impression can also be gained about the wealth inequality between households.

The financial accounts statistics were expanded in 2022, and the derivatives positions of non-financial corporations held with each other and the collateral deposits placed due to the derivatives were also incorporated. The development was particularly justified because the role of derivative transactions started to increase in 2020 and gained even more weight in 2021 in the balance sheets of energy trading companies.

Starting from the publication of the interest rate statistics for May 2022, individuals' deposit data are highlighted within household deposit time series. This allows the data pertaining only to the household sector, without the self-employed, to be analysed.

The renewed Statistics page of the MNB is available from June 2022 (<https://statisztika.mnb.hu/en>). The new page seeks to show the MNB's statistical publications in a readily accessible manner, presenting clear information to users on Hungary's financial and economic developments. During the developments, a dynamic publication calendar platform, a more structured menu and a new search engine were created. The new page provides more entry points for accessing content, and there are thematic pages, in other words collecting subpages where users can directly access the latest data and publications of a given topic in a specialised area of statistics. Besides the above, the modernisation of publication procedures continued, allowing them to use new presentation and visualisation technologies to open the door to self-service data analysis opportunities, helping interested parties comprehend quickly of the data and offering a wide range of query and display options.

A new interactive publication was released in September 2022 on the accounting data of non-financial corporations, broken down by sector and size.

In December 2022, a statistical publication on the 30-year anniversary of investment funds in Hungary was released, which uses statistical data collected by the MNB in the past 30 years to present the development and changes of the investment fund sector, highlighting the most important and interesting events from this period.

International data supply, international cooperation

As follows from its status, the expectations arising from international cooperation and its membership obligations, the MNB regularly supplies data and information to the ECB, the Statistical Office of the European Communities (Eurostat), the European supervisory authorities (EBA, EIOPA), the Bank for International Settlements (BIS), the International Monetary Fund (IMF), the World Bank and the Organisation for Economic Co-operation and Development (OECD).

With a view to complying with the international recommendations and requirements and monitoring the changes therein, the MNB regularly participates in international forums related to the central bank's statistical activity and plays an active role in the work of the international working groups dealing with methodological developments and current statistical issues.

In 2022, a new challenge was to comply with the requirements laid down in ECB Regulation No. 2020/2011 on amending Regulation (EU) No. 1409/2013 on payments statistics (ECB/2020/59), which also requires compliance with the quarterly and semi-annual reporting requirements of the European Banking Authority, as stipulated in the EBA guidelines on fraud reporting requirements (EBA/GL/2018/05) pursuant to Article 96(6) of the PSD2. To reduce the reporting burden, the MNB undertook to comply with the reporting requirements of both the EBA and the ECB, in a single data flow to the ECB. The MNB introduced a new system and structure for collecting data from its data warehouse to compile the reports and comply with the reporting requirements. By 30 November 2022, the reporting on 2022 H1 was completed in adequate quality.

Data quality, administrative inspections

In 2022, based on the MNB decrees stipulating a reporting requirement for the central bank's information system, the MNB, during its continuous evaluation of compliance with the reporting requirement, including timely fulfilment and adequate data quality, proposed penalties 73 times, in addition to the warnings and the resolutions imposing measures and notices. The penalties totalled HUF 34.9 million and affected 59 reporting entities.

In 2022, four inspection procedures were terminated, two of which began in 2021. As part of the inspection procedures, the MNB found violations of certain provisions in Section I and II of Annex 2 in the MNB's decrees on the obligations to report data to the central bank's information

system primarily to enable the Magyar Nemzeti Bank to carry out its basic duties, as applicable to the respective period (MNB Decree No. 37/2019 (XI. 19.) for 2020, MNB Decree No. 41/2020 (XI. 18.) for 2021, MNB Decree No. 54/2021 (XI. 23.) for 2022), and of the provisions on filling out the M01-M05 MNB reporting tables. Out of the credit institutions under review, one was subject to measures stipulated in a decision, while three institutions were also subject to measures stipulated in a decision but they were also required to pay penalties totalling HUF 4 million. The targeted inspection of one investment firm launched in 2022 was terminated in January 2023.

3.9 THE MNB'S ACTIVITY IN THE AREA OF SOCIAL RESPONSIBILITY

Based on its Corporate Social Responsibility Strategy that is formulated in harmony with the basic values and vision in its Statutes, the MNB considers it its mission to serve the public good and contribute to the achievement of objectives serving society as a whole within its means and capabilities and without jeopardising its primary tasks. In 2022, the main strategic objectives included strengthening financial literacy, the continued development of education (mainly higher education), economist courses and financial education, along with supporting scientific activities. The central banks' related activities in 2022 provided continued assistance in achieving the objectives.

The Hungarian Money Museum and Visitor Centre opened its doors at Széll Kálmán tér on 15 March. The educational exhibition area is unique in Europe and showcases the history of money and finance. It was designed to provide a clear, comprehensive picture to all generations on the logic behind how money operates, its economic and social significance and cultural history, presented through games and personal experiences.

The Pallas Athena Public Thinking Programme forms a key element of the MNB's social responsibility strategy. In the implementation of the programme, the central bank considers it to be its task to enhance financial literacy, financial awareness and the underlying economic and social thinking, as well as the related institutional system and infrastructure. With a view to achieving the defined goals, the MNB works to enhance education (primarily tertiary education), the system of economics and financial training, scientific activity and financial literacy. The programmes supported by the MNB and its foundations are partly its own initiatives and are partly realised through partnerships with participating institutions.

Higher education programmes and cooperation

In the 2022/2023 academic year, as part of its Corporate Social Responsibility Strategy, the MNB announced for the seventh time the MNB Excellence Scholarship Programme for the bachelor and masters economics courses related to its activities. In the academic year in question, 577 students at 24 Hungarian higher education institutions were granted this scholarship.

In 2022, the MNB renewed its cooperation with its priority university partners, the Budapest University of Technology and Economics (BME) and the John von Neumann University (NJE) for the 2022/2023 academic year. Within the framework of the cooperation with the BME, in addition to the work in the two large professional workshops (the Digitalisation, Artificial Intelligence and Data Era Workshop as well as the Green Finance and Green Economy Workshop) a new, Higher Education Innovation Workshop was also launched successfully, and the joint research projects continued with the involvement of academics from BME and experts from the MNB.

Within the framework of the cooperation with the University of Debrecen in the 2021/2022 academic year, along with the previously introduced two classes, two new classes were offered and 7 research projects were completed. Regular competitions were announced for the students of the partner universities.

An economics and finance masters course was launched in the autumn of 2022 at the Budapest campus of John von Neumann University, in the MNB Knowledge Centre's Sustainable Finance Centre (MNB Institute). The success of the course was already reflected in the fact that 2.5 times more students applied than the number of available places, and it became one of the country's largest full-time masters courses in economics. The International Economics and Business course is the country's only Hungarian masters course in economics. Thanks to the structure of classes based on international standards, students can learn about big data, artificial intelligence, green finance, digital currencies and behavioural economics as well as several topics relevant for the central bank's analysis functions.

In 2022, the Budapest Metropolitan University (METU) became one of the MNB's priority university partners. As a result of the cooperation, a Sustainability and Competitiveness Research Institute was established as an organisational unit of the METU Metropolitan Knowledge

Centre. In parallel with the establishment of the Research Institute, further education specialised courses in journalism in economics and in financial regulation and supervision were launched to improve the educational quality offered at METU and expand the educational activities in economic fields.

Within the framework of its cooperation with the universities other than its priority partners, the MNB conducted several programmes on sustainability with the six universities participating in the "University network for sustainable development" programme.

The MNB is actively involved in the 'Opening up to the East' policy announced by the government of Hungary, and in strengthening these efforts Chinese groups of researchers and priority actors were supported in Hungary by the central bank. Under this scheme, the cooperation between the "Modern Far East Research Group" operating at the Pázmány Péter Catholic University and the MNB established in 2020 successfully continued in the second semester of the 2021/2022 academic year.

With the professional participation of the MNB, as an incentive for the continuing education of the Tiszaroff sub-region the 'Tiszaroff Scholarship Tender' has been announced each year since 2015 to support students in higher education. Under the title 'Tiszaroff Further Education Scholarship Tender', in 2017 the programme was extended to the support of the studies of high school students. In the spring semester of the 2021/2022 academic year 54 university students (including five PhD students) and 30 secondary school students won scholarships, while in the autumn semester of the 2022/2023 academic year 52 university students (including four PhD students) and 20 secondary school students won scholarships.

In 2022, the cooperation between the MNB and TDK-ért Közhazsnú Alapítvány ('For the Scientific Students' Circle' Non-Profit Foundation) continued, with the main objective of promoting financial awareness and interdisciplinary fields.

Financial education for the public

In order to improve the financial awareness of the adult population, and consistent with the MNB's financial stability and financial consumer protection objectives, the MNB operates its complex information system called *Financial Navigator*, which is aimed at providing credible

and accessible information to wide swathes of society through various channels about the aspects and risks to be considered while taking informed financial decisions. Monitoring legislative changes and market developments, the central bank regularly updates and expands the content. Well-informed decisions as well as comparisons of products and service providers are assisted by the product search features and calculators available free-of-charge, including nationwide branch and ATM search, credit calculator, deposit calculator, household budget calculator, loan and lease selector, deposit selector applications.

The quality of user services is further enhanced by the Bank Account Choosing Programme, which was overhauled in the autumn of 2022, while the Financial Navigator website was supplemented with a topic on Digital Security, focusing on online threats and financial consumer protection risks. A significant part of the content is also available on a mobile app with the latest news and exchange rate data, the embedded versions of online search engines and calculators, a customer service appointment reservation function and a financial dictionary. For those who prefer hard copies of the publications, a 40-part thematic paper series is available. The free Financial Navigator papers are available at the MNB's customer service centre, the customer service offices of financial service providers and at participating NGOs.

To enhance the public's financial awareness, the MNB operates the Financial Navigator Advisory Office Network (FNAON)⁵¹ with offices in all county seats. The offices are operated by civil society organisations, which are independent of financial institutions and service providers. The advisers give unbiased, professional and free financial advice for consumers in person, on the phone as well as electronically and by post. The objective of the advisory service, which is under the MNB's continuous professional control and support, is to allow consumers to request an independent expert opinion before their financial decisions as well as to receive assistance in drafting and submitting official documents, applications and complaint letters.

The FNAON advisers addressed more than 27,000 cases in 2022. The number of customers serviced was up by 34 per cent from the previous year. Similar to earlier years, most queries (58 per cent) were requests for information related to financial services rather than complaints, and most of the queries received concerned the Certified Consumer-Friendly products.

⁵¹ <https://www.mnb.hu/fogyasztovedelem/tanacsado-irodak> (in Hungarian only)

At the end of the year, in response to the financial consumer protection aspects of the period before Christmas, a new thematic subpage was launched on the Financial Navigator website called “Conscious preparation for the holidays” to provide useful information related to finance prior to the holidays in a readily accessible manner. The topics included considerations for consciously planning spending, the features of consumer loans and the importance of careful borrowing. Articles were published about this topic on several online platforms, and the financial consumer protection posts on Facebook in December were also related to this.

Linked to the MNB’s Green Programme and its sustainability objectives, the central bank considers it an important objective to stimulate potential demand for green financial products among households. The central bank’s programme called Family Green Finance (FGF), which seeks to enhance financial literacy and shape consumers’ awareness among adults by presenting how the conscious management of finances can serve the environment and sustainable development. The content related to the programme can be accessed from the menu of the Financial Navigator page. In 2022, the most popular topic was the “Available state subsidies”, supplemented by new content on solar panels, heat pumps and electric cars. Family Green Finance is also showcased on the MNB’s Facebook page with one post per week.

At the end of 2021, the MNB concluded a cooperation agreement with the Family-Friendly Hungary Centre, under which consumer protection topics were presented on the www.csalad.hu website on a monthly basis, with practical advice.

Hungarian Money Museum and Visitor Centre

On 15 March, the Hungarian Money Museum and Visitor Centre was opened on Széll Kálmán Square in Budapest. In the year of its opening, the museum welcomed more than 62,000 visitors, and it served as a venue for several events, competitions and conferences organised for students and families. The listed building of the former Post Palace that houses the museum was restored completely in recent years, after which the money history and financial education and exhibition space, unparalleled in Europe, was established with a floor area of over 2,400 m². The MNB marked the opening of the museum by issuing 2 million 100-forint commemorative coins.

The Money Museum was created to provide a clear and comprehensive picture to all generations on the logic

behind how money operates, its economic and social significance and cultural history. Partly based on the experiences from its previous visitor centre, the MNB created a place that offers extensive information on money through games and personal experiences, rather than in a traditional museum setting. Thanks to the novel approach, the exhibition not only provides information about money, but also helps visitors make their own realisations through first-hand experiences. The services offered by the Money Museum were supplemented with a mobile application on the International Museum Day.

Sponsoring

Within its means and capabilities, the central bank also provided ad-hoc support to promote the achievement of value-creating objectives for society as a whole. In 2022, the main objectives from the Corporate Social Responsibility Strategy included strengthening financial literacy, the continued development of education (mainly higher education) and supporting scientific activities.

3.10 THE MNB’S ENVIRONMENTAL SUSTAINABILITY ACTIVITY

The MNB’s Green Programme launched in 2019 has become an important benchmark for supervised institutions. This was reinforced by the measures taken by the MNB in 2022 to promote green financial services in Hungary and mitigate environmental risks.

In connection with its operational activities, the MNB has developed an environment protection strategy for the period 2020-2022 to continue reducing its own carbon footprint. To green its operations, it has decided to make ambitious carbon footprint reductions, while since 2021, it has been offsetting its carbon dioxide emissions with a habitat restoration project. In 2021, the MNB started operating in a carbon-neutral fashion by reducing its carbon footprint and offsetting its footprint that cannot shrink any further.

In its environmental strategy for 2020–2022, the MNB set out the objective of reducing the carbon footprint related to its operating activities by at least 30 per cent by the end of 2022. This was exceeded by the MNB.

At the end of 2021, the MNB staff moved to two new properties. In parallel with the move, systems and solutions ensuring environmentally conscious office work were adopted, and this was acknowledged by the Green Office certification audit in 2022, at the end of which the MNB’s Green Office Certificate was extended for another two years.

The MNB's Green Programme

At its December 2021 meeting, the Monetary Council decided to end the Bond Funding for Growth Scheme (BGS) due to monetary policy considerations, but the MNB believes that the continued greening of the bond market is important. Therefore, a Green Bond Issuance Guide⁵² was published in January 2022 to help the green bond issues of Hungarian companies. The published document presents the main green bond standards, the activities and documents related to issuance as well as the post-issue reporting requirements.

The central bank announced its preferential capital requirements programme for green corporate and municipal financing targeting credit institutions⁵³ at the end of 2020 to foster the reduction of the Hungarian banking sector's climate exposure by encouraging growth in the share of green assets on banks' balance sheets relative to "brown" customers more exposed to climate change. In view of the success of the preferential programme originally focusing on loans and green bond issues financing renewables and energy efficiency, the MNB extended the programme several times, for example in agriculture and electromobility. In the spring of 2022, preferential treatment became available for financing sustainable properties, further increasing the areas that can be covered by the programme.

The retail leg of the preferential capital requirements programme was also expanded: the green home preferential capital requirement programme's revised conditions extended to energy saving renovations was released on 9 June 2022. The programme set out new conditions for the loans financing the sales, construction and renovation of energy efficient properties as well as the modernisation measures in residential buildings.⁵⁴ Thanks to the fine-tuning of its corporate and household legs at the end of 2022, the preferential capital requirement programme remains a key element in the MNB's sustainable finance toolkit.

In March 2022, the MNB was among the first central banks and Hungarian financial corporations that prepared their climate-related finance (TCFD) report.⁵⁵ Consistent with the third pillar of the Green Programme, the report seeks to

help the MNB in exploring, measuring and transparently publishing as extensively as possible the climate risks related to its operating activities and financial instruments, thereby showing the way for the players in the Hungarian financial sector.

The MNB signed a cooperation agreement with the European Investment Bank (EIB) in the spring of 2022 to support the EIB's long-term HUF-denominated lending activities vis-à-vis the players in the Hungarian economy. The cooperation promotes environmentally sustainable economic growth, the post-pandemic economic recovery and the funding of Hungarian climate protection projects. The EIB used this agreement to respond to the growing financing requirement of the non-euro area EU Member States in the local currency.

The MNB published its second Green Finance Report in May 2022,⁵⁶ presenting the financial market processes related to sustainability and the central bank's market regulation and market-shaping activities.

In June 2022, the MNB published a document entitled "Q&A for financial service providers on the implementation of the SFDR and the Taxonomy Regulation on sustainability-related disclosures".⁵⁷ This seeks to help financial market participants in applying the new EU laws focusing on sustainability, and promoting the emergence of new, sustainable financial instruments in the Hungarian capital market.

The MNB has revised its recommendation on climate change and managing environmental risks and the implementation of environmental sustainability considerations written for credit institutions. The document,⁵⁸ published in August 2022, utilises the information from the EU rules that changed in the meantime, the central bank's surveys and market consultations, and includes more specific requirements than before. By setting out clear priority objectives, it encourages banks and branches in Hungary to operate in a more sustainable manner. The central bank's individual requirements need to be fulfilled by credit institutions gradually, from 15 September 2022, July 2023 and January 2025. The MNB also offers a dedicated Knowledge Base⁵⁹ to market participants and the public with

⁵² <https://www.mnb.hu/letoltes/mnb-zold-kotveny-utmutato.pdf> (in Hungarian only)

⁵³ <https://mnb.hu/letoltes/zold-vallalati-es-onkormanyzati-tokekovetelmeny-kedvezmeny.pdf> (in Hungarian only)

⁵⁴ <https://www.mnb.hu/letoltes/tajekoztato-lakascelu-zold-toke-kedvezmeny.pdf> (in Hungarian only)

⁵⁵ <https://www.mnb.hu/letoltes/tcfd-jelente-s-2022-en.pdf>

⁵⁶ <https://www.mnb.hu/letoltes/20220718-green-finance-report-2022-3.pdf>

⁵⁷ <https://www.mnb.hu/letoltes/20220629-sfdr-tr-qa-final.pdf> (in Hungarian only)

⁵⁸ <https://www.mnb.hu/letoltes/10-2022-zold-ajanlas.pdf> (in Hungarian only)

⁵⁹ <https://mnb.hu/letoltes/zold-ajanlas-tudastar.pdf> (in Hungarian only)

further useful background information on the developments in green finance related to the recommendation.

The acceleration of environmental degradation poses a great risk to the economy and the financial sector as well. However, measuring these effects is much more difficult than measuring climate risks. Therefore, the MNB launched a research methodology project within the framework of its Green Programme for assessing the financial risks arising from the reduction of biodiversity and for establishing financial supervisory methodologies for managing such risks. The cooperation, lasting for almost two years, is financed by the EU through the Technical Support Instrument (TSI), while the OECD takes part in the process as an implementation adviser, in cooperation with the European Commission's Directorate-General for Structural Reform Support (DG Reform). The project aims to explore the risks in the Hungarian financial system that arise from the reduction in biodiversity and to establish a supervisory regime for assessing such risks. The opening event of the project, involving a professional consultation was held in the building of the MNB'S Supervisory Centre and Money Museum on 6 September 2022, with the representatives of ministries, the Hungarian Academy of Sciences, commercial banks, NGOs, DG Reform, the OECD and the MNB.

The MNB held its fourth International Green Finance Conference on 6 October 2022,⁶⁰ focusing on the changing economic environment.

Environmental aspects of the MNB's operational activities

Evolution of the carbon footprint of the MNB's operational activities

In connection with its operational activities, the MNB has developed an environment protection strategy for the period 2020-2022 to continue reducing its own ecological footprint, and has moved to carbon-neutral operations from 2021 onwards. The strategy involved the extension of the carbon footprint calculation to other factors with an environmental impact (e.g. banknote briquette recycling, office paper recycling, general waste).

The MNB started operating in a carbon-neutral manner in 2021, by considerably reducing its carbon footprint on the one hand, and offsetting its footprint that cannot shrink any further on the other. In its environmental strategy for 2020–2022, the MNB set out the objective of reducing the carbon footprint related to its operating activities by at least

Table 6
Evolution of the carbon footprint of operational activities

Carbon footprint/cause	MNB's carbon footprint (CO ₂ emission in tons)		Change in 2022 %	Change compared to the 2019 base %
	2021	2022		
Electricity	3,013	87	-97.1	-97.9
Natural gas and district heating	981	1,975	101.3	13.9
Total carbon footprint from energy use	3,994	2,062	-48.4	-58.3
Vehicles fleet	104	116	10.78	-6.0
Air travel	33	411	1,146.7	-56.5
Car travel abroad	0.5	2.8	460.0	15.8
Domestic car travel	2.7	10.4	285.2	33.5
Taxi usage	3.5	4.6	31.4	73.7
Total business travel	144	545	278.3	-49.6
Refrigerants	5	3	-37.7	-
Banknote briquettes for energy purposes	17	15	-10.0	-
Recycled office paper	3	1	-73.2	-
Waste	110	61	-44.8	-
Total other emissions	135	80	-40.8	-
Total carbon emissions (tonnes)	4,273	2,687	-37.1	-55.4
Unit carbon footprint (tonnes/person)	3.2	1.9	-40.8	-58.9

⁶⁰ <https://www.mnb.hu/sajtoszoba/sajtokozlemenyek/2022-evi-sajtokozlemenyek/zold-penzugyi-konferencia-cel-a-zold-penzugyi-lendulet-fenn-tartasa> (in Hungarian only)

30 per cent by the end of 2022. This was exceeded by the MNB, as the volume of the carbon footprint fell by 55 per cent, and the carbon footprint per worker was down by 59 per cent in the period.

75–80 per cent of the carbon footprint related to operational activities can be linked to the energy consumption of buildings. In 2022, the MNB's staff worked in two new properties that have higher energy needs than the previous ones due to their technical features. Nevertheless, the carbon footprint arising from operating the buildings declined by almost 50 per cent in 2022. This was due to the fact that 100 per cent of the electricity purchased in the energy market comes from renewables, attested by the supplier with a guarantee of origin. The MNB continuously monitors developments in the energy market. In the future, energy for heating is expected to be available from partly renewable sources. Due to the large variation in the office comfort systems on the MNB's premises, the operator and the MNB pay special attention to optimising the energy mix. On account of the energy crisis that began in 2022, economical operation is a top priority, and reducing the carbon footprint related to operating activities to a minimum is also important.

The second biggest component of the operational carbon footprint is business travel. Table 6 shows the large drop in air business travel during the pandemic, and in 2022 it only rose to half of the figure from 2019, which can be considered the base year. However, the carbon footprint caused by foreign and domestic travel with a vehicle and taxi use was higher than in pre-pandemic times. It

should be noted that within business travel, air travel is the least environmentally friendly, but this is largely offset by the online meetings, discussions and conferences that became popular during the pandemic, but are now a part of everyday life. At the end of 2022, the carbon footprint per capita related to the operational activities of the MNB was 59 per cent smaller than in the base year.⁶¹

Evolution of energy indicators

The MNB's direct environmental impact is mainly due to energy consumption, within which energy consumption related to the operation of buildings makes a key contribution.

At the end of 2021, the MNB's staff moved from the Head Office building and the branch office in Krisztina körút to the MNB's Buda Centre and the Supervisory Centre and Money Museum buildings. The features of the new buildings (operational and comfort systems, building size) are so different from the two former buildings that energy consumption cannot be compared across years.

The energy crisis that unfolded in 2022 forced the MNB to voluntarily fulfil the energy reduction requirements announced by the government, and energy use reduction measures were adopted in the MNB's buildings. There are no consumption data available for the new buildings from 2021, so the results of the measures are presented in Table 8 for the MNB's Logistics Centre building, by comparing 2022 and 2021.

Table 7
Total energy consumption in 2022

Total energy consumption	2022			
	MNB's Buda Centre	MNB Logistics Centre	MNB's Supervisory Centre and Money Museum	Total
Electricity consumption (kWh)	1,724,362	2,986,752	2,251,539	6,962,653
Heating, hot water energy consumption (kWh)	5,312,852	1,040,793	1,147,181	7,500,826
Fuel energy consumption (kWh)	390,878			390,878
Total energy consumption (kWh)				14,854,357
Unit energy consumption (kWh/person)				10,465
Unit energy consumption (kWh/used area m2)				320

⁶¹ An important objective of the 2020–2022 strategic period was to fine-tune the carbon footprint calculation model, expand the factors with an environmental impact, review and update the emission factors used and reduce the carbon footprint by at least 30 per cent.

Table 8**The Logistics Centre's total energy consumption**

Total energy consumption	MNB Logistics Centre		Change in 2022 %
	2021	2022	
Electricity consumption	3,022,414	2,986,752	-1.2
Heating, hot water energy consumption	1,415,021	1,040,793	-26.4
Total energy consumption (kWh)	4,437,435	4,027,545	-9.2

Thanks to the energy reduction measures introduced in October 2022, total energy consumption was reduced by around 10 per cent. It is important to note that the workflows in the Logistics Centre are highly automated, and the building operates as a high security “plant”, which means that the energy reduction measures can only yield a smaller drop in electricity use. Nevertheless, the above measures led to a more than 25-per cent fall in heating energy use. The heating energy reduction was also due to the relatively mild winter, but the detailed analyses showed that 80 per cent of the 26.4-per cent energy savings was attributable to specific energy reduction measures.

Waste management

There was no change in the separate waste collection system in 2022. The separate collection of the used aluminium-based coffee capsules and the Tetra-Pak boxes remains popular with workers. Many people also welcome the fact that they can bring their used batteries and burnt out lights to the MNB buildings for separate collection.

The waste collected in the new buildings is weighed before transportation, which makes waste reports more accurate. The daily amount of general waste continued to shrink in 2022, to 19.1 dkg per worker per day.

In 2022, 74.7 per cent of the total annual waste amount was collected separately, which is a nearly 10-per cent improvement. The proportion of hazardous waste in total waste was just 0.03 per cent.

Water management

Due to the outdoor green surfaces and the indoor green walls created within the buildings, the piped water need of the new buildings is very different from the old buildings; therefore, water consumption cannot be compared to earlier years. Of course, the MNB pays special attention to water consumption in its buildings, for example motorised valves with presence sensors are installed in every toilet during the construction project in the Logistics Centre to prevent any water leaks and dripping.

3.11 FACTORS SHAPING THE COMMUNICATION OF THE MNB

In 2022, the MNB considered it important to continuously and transparently present the central bank's activities, achievements, reports and recommendations. In order to supply comprehensive information and continuous updates on its technical work, the MNB held nearly 37 press conferences and published 335 press releases. In addition, during the year it published 150 professional articles in the print press, on online economic portals and on its website in order to maintain the reputation created by the MNB's high quality professional work and to reinforce positive public opinion. The central bank sought to increase the financial awareness of the corporate sector and the public through its social responsibility, supervisory, market surveillance and consumer protection activities and communication actions. The MNB also organised international conferences important for the management of its reputation abroad, and published professional articles and publications in English on its website, which it distributed to interested foreign audiences through its social media platforms.

In 2022, the MNB considered it important to continuously and transparently present the central bank's activities, achievements, reports and recommendations. In order to supply comprehensive information and continuous updates on its technical work, the MNB held 37 press conferences and published 335 press releases. The press was mostly briefed about the MNB's reports online, but the central bank organised several major events with media presence in a hybrid manner.

In the course of its communication, the MNB focused on disclosing and explaining the key decisions concerning the core tasks of the MNB, monetary policy and financial stability. Accordingly, the MNB regularly presented the substance and background of its major decisions, disclosed the outcomes of Monetary Council meetings and published on an ongoing basis the results of supervisory inspections and procedures and the content of the measures, including those responsible for the infringements which were found. Warnings about the necessary precautions to identify

risk related to financial operations also formed part of the supervisory communication in 2022, along with the communication about Certified Consumer-Friendly products. In addition to the information campaigns, each member of the product group has its own dedicated page and calculator on the MNB's website.

Moreover, the educational campaign related to the opening of the Money Museum in March, during which the film "The Legend of the Gold Train" was created was of great importance. The film is about the Second World War, commemorating the heroes of the central bank who transported Hungary's gold reserves to the West to hide it from the occupiers. It contains elements of a documentary, and it was recognised by international moviemakers, when the professional audience of the Cannes Corporate Media & TV Awards honoured it with a Silver Dolphin trophy in the category History and Personalities/Portraits.

The MNB launched a financial awareness campaign in the second half of the year, during which it maintained an active social media presence and shared a few prepared animated shorts on the central bank's platforms. The number of financial offences increased considerably during the year, as certain groups of consumers cannot keep up with the rapid rise in digitalisation and managing cyber risks. The MNB responded to this with the online *CyberShield* media campaign in November and December, pointing out the frequent offences to consumers and bank customers and showing how to stay protected, online and over the phone. The *CyberShield Collaboration* refers to the joint and coordinated communication activities of five cooperating partners (the MNB, the Hungarian Banking Association, the Special Service for National Security, the National Cyber Security Centre, the National Media and Infocommunications Authority and the Hungarian Police) in the next year.

Specialised articles on key central bank topics were produced at regular intervals during the year. These were intended to present an in-depth view of the MNB's activities in adequate detail and in accordance with the requirements of clarity, while at the same time bringing interested parties closer to the work of the various functional areas and the explanation of the key results. In 2022, the number of publications reached 150, and the MNB was assisted in this by reputable news and economic websites. The professional articles, analyses and summaries were also posted on the mnb.hu website, in order to maintain the reputation created by the central bank's high quality professional work, to strengthen positive public opinion and to increase the number of visitors of the website.

The central bank sought to increase the financial awareness and knowledge of the corporate sector and the public through its social responsibility, supervisory, market surveillance and consumer protection activities and communication actions. Increasing consumers' knowledge was a focus area in the central bank's communication in 2022 again, not only through supervisory press relations but also in the form of topical campaigns.

After the pandemic pressure eased, communication was not only conducted online in 2022, as the MNB streamed international conferences, events open to the press and press conferences on its official YouTube channel. The MNB soundcloud was constantly updated with podcasts, which were also published on the central bank's website and social media platforms. In addition to informing the public and raising its financial awareness, the main purpose of producing this content was to highlight professional achievements. Facebook and YouTube, as well as other social media outlets, are efficient platform for reaching Generations Y and Z. Important central banking messages were disseminated through readily accessible audiovisual content (animations, short videos), tailored for these platforms.

The central bank considers it its social responsibility to preserve the traditions of culture and arts, and present and strengthen the treasures in Hungarian fine arts as well as contemporary artists. In this spirit, the MNB's Buda Centre served as the venue for the Great Book Festival and Contemporary Arts Exhibition. The event was free, and visitors could attend book launches and specialised roundtable discussions as well as the central bank's contemporary arts collection.

In addition, the MNB has placed increasing emphasis on communication on social media platforms: with nearly 120,000 followers, social media can provide a wide reach. The central bank also organised international conferences important for the management of its reputation abroad and published professional articles in English on its website. Related information was typically and mainly communicated to international economic actors via the Twitter channel, which also allowed for continuous and direct interaction. During the year, the MNB continuously updated the public on the international activities of the central bank and its executives. There was also active communication about the foreign visits of Hungarian delegations as well as the international meetings and conferences organised in Hungary. Thanks to the developments in recent years, the central bank's social media outreach is in the top five among European central banks.

3.12 THE MNB'S INCOME IN 2022

In 2022, the MNB recorded a loss of HUF 402 billion. On the expanded balance sheet, the tying down of the banking system's excess liquidity entailed a huge rise in interest expenses due to the continued rate increases. Consequently, net interest and interest-related losses grew at an ever-faster pace during the year, which was only partly offset by the higher income arising from exchange rate changes compared to the past. Despite the negative developments, the central bank's equity exceeded the value of the subscribed capital, and thus the central government had no reimbursement obligation.

In 2022, the MNB recorded a loss of HUF 402 billion. During the year, the following main developments had an effect on the balance sheet and the profit:

- the level and composition of international reserves defined by monetary policy, risk management considerations and foreign currency purchases and sales affecting the level of reserves: net foreign exchange inflows from EU transfers, operations performed by the Government Debt Management Agency in relation to debt management, and the foreign exchange conversions performed by the Hungarian State Treasury for purposes not related to debt financing and the foreign exchange sales related to the covering the foreign exchange needs of energy imports;
- developments in instruments absorbing forint liquidity, which are correlated with changes in foreign exchange reserves and the MNB's net foreign currency receivables,

as well as with the evolution of the central bank's liquidity and growth support instruments;

- monetary policy instruments to support the lending activities of the banks (GHP) and the BGS aimed at diversifying the fundraising of the corporate sector, increasing the liquidity of the corporate bond market;
- central bank asset purchase programmes (mortgage bond purchase programme);
- changes in forint interest rates and international foreign exchange interest rates; and
- changes in exchange rates.

The net interest and interest-related losses amounted to HUF 1,062.3 billion. The dramatic increase in losses was mainly attributable to the deterioration in the net forint interest income. As a result of the interest rate increases undertaken to control inflation, the tying down of the banking system's excess liquidity occurred as interest rates climbed, which entailed steady growth in net forint interest expenditure.

Net forint interest and interest-related income amounted to a loss of HUF 968.2 billion in 2022. The central bank continued with interest rate increases during the year. The base rate rose from 4 per cent at the beginning of the year to 13 per cent, and the overnight deposit quick tender offered 18-per cent interest. Due to the rising interest rates, the interest expenditure paid on interest-bearing forint liabilities (credit institutions' one-week and

Table 9
Abbreviated income statement of the MNB

No.	Description (P/L line)	2021	2022	Change
1	Net interest and interest-related income (I+II)-(X+XI)	-72.6	-1062.3	-989.7
2	Net forint interest and interest-related income (I-X)	-70.0	-968.2	-898.2
3	Net foreign exchange interest and interest-related income (II-XI)	-2.6	-94.1	-91.5
4	Realised gains/losses arising from financial operations (IV-XIV)	-25.0	-27.4	-2.4
5	Income arising from exchange rate changes (III-XII)	146.2	797.7	651.5
6	Other constituents of net income* (V+VI+VII+VIII)-(XIII+XV+XVI+XVII+XVIII)	-105.7	-110.0	-4.3
7	Profit/loss for the year (1+4+5+6)	-57.1	-402.0	-344.9
	Selected items of equity in the balance sheet			
8	Retained earnings	208.3	151.2	-57.1
9	Revaluation reserves due to unrealised foreign exchange gain/loss	654.5	774.9	120.4
10	Revaluation reserves due to changes in the market value of the foreign currency securities	-16.8	-278.4	-261.6

* Incomes from supervisory activities, net profit/loss of banking operations, costs of issuing banknotes and coins, net creation and release of provisions, income/expenses from commission and from other items.

overnight deposits, required reserves, MNB discount bills, the forint deposits of the central government) increased by HUF 900 billion. The increase in interest income fell far short of this. The decrease in net forint interest and interest-related income was also attributable to the losses on interest rate swap transactions with credit institutions, caused by the rising forint interest rates on the market.

Net foreign exchange interest and interest-related losses amounted to HUF 94.1 billion in 2022. As foreign exchange yields rose, interest income on international reserves started to increase from a low base, coming in HUF 41 billion higher than in 2021. However, this was offset by the expansion in foreign currency interest expenses. The net foreign currency interest-related income deteriorated by more than HUF 100 billion, attributable to the losses on the forward transactions related to reserves caused by the change in foreign exchange yields on the one hand, and by the FX swap transactions with credit institutions on the other hand.

The realised gains arising from financial operations contain gains and losses realised from changes in the market price of securities generated upon the sale of the securities. In 2022, the MNB realised losses on selling securities related to foreign exchange reserve management transactions, due to the rapid rise in foreign exchange yields. This was the main reason that a loss of HUF 27.4 billion was recorded for net realised income from financial operations.

Income arising from exchange rate changes is determined by the difference between the forint's official exchange rate and the average cost rate on the one hand and by the volume of foreign currency sales on the other hand. In 2022, realised net gains on exchange rate changes reached HUF 797.7 billion. The official forint exchange rate depreciated during the year with large fluctuations, and the difference between the official and the average cost rate increased considerably from the previous year. The foreign currency sales were predominantly connected to the Government Debt Management Agency's debt management operations, the management of the gold and foreign currency reserves and covering the foreign currency needs of energy imports, and the conversions volume rose compared to earlier years in 2022. In 2022, the MNB decided to reduce the risk arising from fluctuations in the gold price, while continuing to hold the gold reserves in physical form.

Other components of net income include banking operating income, costs and expenditures, costs of issuing banknotes and coins, creation and release of provisions and impairment, incomes from supervisory activities and

income/expenses from fees and commissions and other income/expenses. Net expenditures resulting from these items amounted to HUF 110 billion in 2022, an increase of HUF 4.3 billion compared to the previous year, due to higher banking operating costs.

The MNB's equity amounted to HUF 255.9 billion on 31 December 2022. Equity was increased by the change in the revaluation reserves due to exchange rate changes, while it was decreased by the change in the revaluation reserves of foreign currency securities and the annual loss. Equity exceeded the value of the subscribed capital at the end of the year, and thus the central government had no reimbursement obligation.

The positive difference between the official forint exchange rate and the average cost rate, along with the revalued foreign exchange holdings, increased compared to the end of 2021, and accordingly the revaluation reserves due to exchange rate changes rose by HUF 120.4 billion, amounting to HUF 774.9 billion on 31 December 2022.

On 31 December 2022, unrealised losses on foreign currency securities marked to market amounted to HUF 278.4 billion, falling short of previous year's level by HUF 261.6 billion. The change was related to the rise in foreign exchange yields, which depressed market prices for securities.

3.13 THE MNB'S FINANCIAL MANAGEMENT IN 2022

Actual operating costs in 2022 amounted to HUF 69,282 million, which is 3.5 per cent below the approved budget (excluding central reserves) and 27.3 per cent above the expenditures incurred in 2021.

The increase versus the previous year was primarily reflected in general (mainly operating) costs, principally the renting and operation of the new properties and the related parking spaces as well as the House of Wisdom throughout the year, while IT costs and depreciation also increased. In addition to this, personnel costs also rose.

In relation to normal operations, the approved capital expenditure budget for 2022 amounted to HUF 12,738 million. In 2022, expenditure on investments amounted to HUF 9,046 million. A large portion of the capital expenditures in 2022 was related to the purchase of hardware and software products and various IT projects.

The internal operations of the MNB are essentially aimed at providing the resources required for the efficient discharge of the duties stipulated by the MNB Act.

Operating costs

Actual operating costs in 2022 amounted to HUF 69,282 million, which is 3.5 per cent below the approved budget (excluding central reserves) and 27.3 per cent above the expenditures incurred in 2021.

The increase versus the previous year was primarily reflected in general (mainly operating) costs, principally the renting and operation of the new properties (the MNB's Buda Centre and the MNB's Supervisory Centre and Money Museum) and the related parking spaces as well as the House of Wisdom throughout the year. In the case of the other properties, operating costs grew because of the fees payable on account of the procurement procedure ended in 2021 Q4. In addition, IT costs and depreciation also increased. Within personnel costs in 2022, it was mainly the wage costs of staff members that rose.

Personnel costs

In 2022, personnel costs exceeded the previous year's figure by HUF 4,811 million (17.4 per cent).

The difference mainly reflects the fact that, pursuant to the decision of the MNB's Executive Board, in order to ensure and retain highly qualified personnel over the long term, the 2021 wage bill limits within the wage bill management scheme were raised by 10 per cent from 1 January 2022, and by another 7 per cent from 1 July 2022 under certain conditions. In addition, similar to earlier years, the Executive Board of the Magyar Nemzeti Bank decided to provide employees with a net extraordinary SZÉP Card benefit of HUF 350,000 in 2022. At the same time, the statistical average headcount rose by 2.5 per cent.

In addition to the above, entertainment expenses in 2022 doubled from 2021, which had been much lower than before due to the pandemic.

General operating costs

In 2022, general operating costs amounted to HUF 36,749 million, up by HUF 10,043 million (37.6 per cent) from 2021. The changes in the components are attributable to the following.

IT costs increased by HUF 1,014 million (21.5 per cent) compared to the previous year, due to added functions and the extra costs incurred from higher availability levels on the one hand, and to the costs of already implemented IT investments on the other hand. News services costs also climbed due to higher fees and the purchasing of new Bloomberg subscriptions, as did the repair and maintenance costs of IT equipment.

In 2022, operating costs were up by HUF 9,425 million (99.0 per cent) from 2021, mainly attributable to property costs, in particular property rents, the cost of property-related material and maintenance costs as well as guarding and utility costs. The rise in expenditure was mostly due to the renting, operation and guarding of the new properties and the related parking spaces along with the House of Wisdom throughout the year. (Nevertheless, no costs were incurred in 2022 related to the headquarters in Szabadság tér and the property leased at Krisztina körút 39.) Operating costs expanded at the other properties as well, partly as a result of the agreement that had to be signed based on the outcome of a public procurement procedure, where the MNB submitted a joint bid with MNB-Ingatlan Kft., and which ended in 2021 Q4, and partly on account of the significant increase in electricity fees in accordance with the new electricity supply contract.

The depreciation of tangible and intangible assets in 2022 was 9.2 per cent (HUF 521 million) higher than in 2021. This is mainly the effect of the investments, mostly in IT, in particular purchasing intangible assets (software), in 2022.

Table 10
Operating costs of the MNB in 2022

Description	Actual data for 2021	Budget for 2022	Actual data for 2022	Index (2022 actual / 2022 budgeted)	Index (2022 actual / 2021 actual)
	HUF million			Per cent	
1. Staff expenditures	27,722	32,140	32,533	101.2	117.4
2. General operating costs	26,706	39,673	36,749	92.6	137.6
Total	54,428	71,813	69,282	96.5	127.3

Other costs in 2022 shrank by 12.4 per cent (HUF 871 million) compared to the expenditure in the previous year, typically due to the lower costs of communication services, because some of the costs in 2021 were one-off items, and in some cases the costs incurred in 2022 were lower than before. However, 2022 saw an increase in secondment travel, accommodation and material costs compared to 2021, along with the costs related to conferences and trainings, mainly because in 2021 the services related to these items were used much less due to the pandemic.

The absolute value of the transfer of costs – which reduces operating expenses to ensure that the total amount of operating expenses reflects only the actual expenses incurred by the MNB – increased in year-on-year terms. The main reason behind this is that the portion of the costs of a foreign event, attended by the MNB and its subsidiaries, not related to the MNB was invoiced. Furthermore, expert fee income (reimbursed to the MNB later) and the prime cost of SWIFT service invoiced to GIRO also rose in 2022.

Capital expenditure

Various development projects and procurements are required for the achievement of the MNB's objectives and maintaining the volume and quality of its assets. In relation to normal operations, the approved capital expenditure budget for 2022 amounted to HUF 12,738 million. Only HUF 9,046 million was paid out in relation to investments during the year.

The majority of capital expenditures in 2022 were related to hardware equipment and software development projects for various IT systems as well as the purchase of software products and Microsoft licenses.

As part of the investments in communication, short films related to the Financial Knowledge Base Programme and raising financial awareness were produced.

Personnel management at the MNB

The MNB continues to treat human resource management as a strategic issue with a view to fostering efficient and profitable operation. The MNB provides stable employment and has developed a work culture where employees are able to perform their tasks efficiently, focusing on performance, in a value-driven atmosphere, and where they acquire and enhance the knowledge, skills and competence

necessary for efficient work. Moreover, the productive work performed by the employees is supported by incentives and moral appreciation. In return, the MNB expects ethical behaviour on the part of its employees, in addition to the high-level work. Through it all, in line with the interests of the institution, the individual interests of the colleagues can be promoted as well.

The MNB is an exceptional and attractive organisation in the labour market, characterised by its special legal status, its specific and wide-ranging tasks and the financial and moral esteem of its staff. According to the PwC Employee Preference Survey, the MNB ranked among the top three in the financial sector three times in the past four years.

Based on the human resources strategy, the MNB is committed to recruiting excellent employees, and retaining them. To this end, it also helps support individual ambitions in line with objectives of the organisation. One of the key human resources strategic goals of the MNB is to employ employees loyal to the institution, who enable it to take active part in the changes arising in line with the renewing domestic economic and social interests and values. On this basis, highly educated and motivated employees can be secured in the required number.

Employees typically attend professional trainings, domestic leadership trainings and language trainings, which – tailored to individual needs – serve the participants' development in terms of efficiency and approach, as well as the development of cooperation skills.

Aligned with the rapidly changing external environment, targeted trainings were held in person, and in hybrid and online form, and there were developments and support programmes that serve to promote the continued professional development of the staff, while ensuring security, stability, predictability and lower stress levels. During the support programmes, the MNB sought to give employees a boost that fosters work efficiency, creative thinking and innovative solutions, and therefore along with the various professional trainings, language development courses and the well-being programme, internal trainings were advertised that bolstered and enhanced employees' mental strength, physical health and emotional well-being. The training topics focused on achieving resilience, stress management, time management and self-knowledge.

With the extension of its internship system, also incorporating international best practices, the MNB

continued to support university students in acquiring professional skills. Within the framework of the internship system, the MNB received higher education students for the period of their field practice and also within the framework of dual training. In cooperation with John von Neumann University and as a dual corporate partner, the MNB participates in the training of BA students in Business Administration and Management, International Business Administration and Finance and Accounting courses. In this scheme, 65 students completed their traineeship at various functional areas and subsidiaries of the MNB.

New graduates and career starters also had the opportunity to participate in the internship programme, which helped their integration in the labour market, and also provided the MNB with the opportunity to select students showing outstanding performance and employ them.

In 2022, the human resource area continued the development and digitalisation of HR systems, which supported the integration of new entrants, the relations between the employee and the organisation for the duration of the legal relationship, and supported the process of departure of colleagues from the organisation.

The heads of functional areas play a key role in determining the headcount and defining the wages necessary for fulfilling the tasks. The MNB's wage and income policy reflects its special position and supervisory function. The wages recognise the special knowledge and professional skills that the staff of the individual functional areas possess.

The wage bill management system operating in the MNB provides the opportunity, in accordance with the objectives specified upon the implementation thereof, to manage changes and requirements arising in the various functional areas in a fast and flexible manner by regrouping the employees, temporarily as well if necessary. In addition, wage bill management also supports executives in the most complete performance of the tasks of the areas they manage, in a way that the heads of the various areas can directly evaluate excellent work and the relevant achievements, which may also be reflected in the remuneration of the employees. Accordingly, the system that was introduced became suitable for the long-term retention of high quality, highly qualified personnel and also for strengthening responsible financial management by granting much wider possibilities for the heads of wage management areas to give proposals.

The MNB phased out the optional non-wage benefits system as of 1 January 2020 and, at the same time, while retaining or restructuring some forms of the non-wage benefits already provided under the system, it also introduced new elements, which were maintained in 2022. It continued to provide broad support to its employees and also preserved its family welfare scheme during the year. In particular, it provided special support for starting a family and having and raising a child, contributed to the mitigation of the burden related to unexpected situations in life, and to the self-care of its employees. For the preservation of the personnel's health, a once-yearly complete medical check-up programme was still available for each employee again this year. The employees who had contracted the coronavirus could continue to make use of a tailored post-Covid screening package in 2022, as well as the vaccines subsidised by the employer.

It is of key importance in the MNB's organisational culture that employees can also fulfil their roles and grow in their private life, while performing their tasks at the workplace supported by a well-balanced family background.

In recognition of several measures, successful initiatives and its family policy, the MNB was awarded the Jubilee Cradle Award of the National Association of Large Families (NOE).

In the Family-Friendly Place certification programme announced under the aegis of the government's Family-Friendly Country Programme, the MNB's bid earned it the Family-Friendly Workplace certification. The certification expresses an organisation's commitment to family-friendly operation and the implementation of basic measures to achieve this.

Changes in staff numbers

Changes in staff numbers were influenced by the MNB's staffing needs for the performance of its tasks in 2022.

As a result of employee attrition, quality-driven turnover and changes in inactive payroll, the MNB's statistical headcount declined by 159 employees.

In order to secure an adequate workforce for the operating structure aligned with the challenges and the MNB's tasks to fill vacant or new positions, 175 persons were recruited and added to the MNB's statistical headcount.

As the combined balance of the decreases and increases, the closing headcount of 2022 was 1,573, exceeding the 2021 figure by 16 persons.

In 2022, the average staff number of the MNB was 1,568.1 employees, exceeding that of the previous year by 38.8.

The average age of employees at the end of 2022 was 42.3 years.

Procurement

Like other central banks in the European Union, the MNB conducts public procurement procedures in respect of purchases where the value reaches the value limits of national public procurements. In accordance with Directive 2014/24/EU of the European Parliament and of the Council on public procurement and repealing Directive 2004/18/EC and Act CXLI of 2015, the MNB is subject to public procurement obligations. The procurement processes of the MNB are regulated by the internal regulations, in accordance with the prevailing Act on Public Procurement. The procurement needs arising in 2022 resulted in a total of 963 procedures. The total value of the successful procedures amounted to HUF 17.93 billion based on the signed contracts (including multiannual contracts). No legal remedy was sought in relation to the procurement procedures launched and concluded in 2022. The MNB performed the procurement tasks in compliance with the deadlines, with due transparency and keeping in mind the good reputation and prestige of the institution.

Operational risk management and business operation continuity

The successful implementation of the MNB's strategic objectives and the safeguarding of its reputation and assets are crucially important values. An efficient operational risk management system plays an important role in the protection of these objectives and values. With this in mind, the identification, assessment and continuous in-house monitoring of operational risks and the implementation of the appropriate response measures constitute an integral part of the MNB's corporate governance. In order to continuously maintain the operational risk management activity at a high level, it is essential to monitor international best practices and to improve the MNB's procedures and systems in line with such practices.

Within the framework of the continuous development of the operational risk framework, the MNB also applies the internationally accepted IAP (Integrated Assurance Programme) methodology, which is based on the cooperation of internal control areas.

In order to be able to adequately fulfil its fundamental tasks in critical situations as well, the MNB has efficient business continuity management in place. In this context, it continuously updates its business continuity and disaster recovery plans, the reliability of which is tested every year. The test performed in respect of the operation of the payment system and foreign reserve management bears the utmost importance.

The MNB made great efforts to mitigate the impact of the pandemic on the MNB, in the interests of protecting the health of its employees and ensuring the continuity of business operations. The lessons learnt from the pandemic were evaluated, and the action plans and policies were amended as necessary.

As a result of the measures taken in 2022, the MNB was able to continuously operate and perform its duties with a high level of competence, as stipulated in the MNB Act.

3.14 INTRODUCTION OF THE ESCB COMMITTEES

The ESCB Committees play an important role in the work of the ECB's decision-making bodies. The basic role of these committees is to prepare decisions and facilitate coordination as per the horizontal division of various central bank duties, covering all areas of central banking operations. The senior executives and relevant experts of the MNB play an active role in the work of these committees and in the activities of the committees' working groups.

Since Hungary's accession to the European Union, the MNB's management and experts have been participating in the work of the ESCB committees and their working groups. This membership and cooperation provides an opportunity for national central banks to work together and formulate coordinated positions, and also enables the representatives of national central banks to obtain information on the ECB's activities on a regular basis.

On 31 December 2022, there were fifteen ESCB committees and two other committees assisting the work of the ESCB.

In connection with the launch of the Single Supervisory Mechanism (SSM) in November 2014, in addition to the two existing configurations (euro area composition and ESCB composition), a number of committees have held meetings in SSM composition since 2014 as well, with the attendance of representatives of the supervisory authorities operating as organisations independent of the central banks of the Member States participating in the SSM.

The following provides a brief summary of the fields of activity (mandates) of each ESCB committee:

Accounting and Monetary Income Committee (AMICO):

This Committee develops and regularly reviews the accounting policy principles which define the framework of financial statements in accordance with the Statute of the ESCB and the methodology of the preparation of regular financial reports, facilitating their coordination at an international level. It monitors the calculation of monetary income in accordance with the risk management process developed by the security framework system of accounting.

Banknote Committee (BANCO): This Committee determines the euro banknote needs of euro area countries, coordinates the production of banknotes and elaborates the stockpiling and banknote processing policies for euro banknotes. Its tasks include sharing experience in the production of euro banknotes, the examination and development of security features to prevent euro banknotes from being counterfeited, and the assessment of security risks related to the production of the euro. It contributes to the harmonisation of practices applied in the euro area, the development of the system which monitors counterfeiting and the verification of statistics regarding euro banknotes and coins.

Committee on Controlling (COMCO): It contributes to the application and enhancement of the Common Eurosystem Cost Methodology and prepares analyses on the cost data and cost structure of certain functions and products of the Eurosystem and the ESCB. In the area of management information systems, it serves as an important forum for cooperation and information exchange on issues concerning the ESCB as a whole. COMCO only holds meetings with euro area participants.

Eurosystem/ESCB Communications Committee (ECCO):

This Committee contributes to the development of the external communication policy of the Eurosystem, the ESCB and the ECB, with the aim of making the objectives

defined by the Eurosystem and the ESCB more transparent and understandable, and informing the public of the tasks and activities of the Eurosystem and the ESCB.

Financial Stability Committee (FSC): Its task is to provide professional support to the decision-making bodies of the European Central Bank in their functions relating to financial stability and macroprudential policy issues.

Internal Auditors Committee (IAC): By reviewing the relevant common projects, systems and activities and by providing for cooperation in certain auditing issues which are of 'common interest' for the ECB and national central banks, this Committee assists the ESCB in achieving its targets.

International Relations Committee (IRC): IRC assists in carrying out those tasks of the ESCB that are related to international cooperation and contributes to formulating the position of the Eurosystem regarding the various areas of relations with non-EU countries.

Information Technology Committee (ITC): This Committee contributes to the development of the information technology policy and strategy of the Eurosystem and the ESCB as well as the related guidelines (with special regard to security concerns) and provides technical advice to other committees. Furthermore, it initiates and implements Eurosystem and ESCB level developments and independent projects.

Legal Committee (LEGCO): LEGCO provides legal assistance for the work of the ESCB; in particular, it contributes to the maintenance of the regulatory framework of the Eurosystem and the ESCB and to the review of the transposition of legal regulations into national law, and monitors and reports on how national authorities and EU institutions comply with their consultation obligations relating to draft legislation in areas falling within the ECB's competence.

Market Infrastructure and Payments Committee (MIPC):

This Committee assists the ESCB in the smooth operation of payment systems and in connection with the cross-border use of collateral. Furthermore, it supports the ESCB in general and 'oversight' issues relating to payment systems, as well as in strategic decisions related to securities clearing and settlement systems. It pays special attention to the strengthening of the oversight activity, the fostering of pan-European developments in the area of high- and small-value payments, securities and collateral management.

Market Operations Committee (MOC): MOC assists the ESCB in the implementation of the single monetary policy and the execution of foreign exchange transactions, the management of the ECB's foreign reserves and in the appropriate adaptation of the monetary policy tools applied by the central banks of the non-euro area Member States, as well as in the implementation of ERM II.

Monetary Policy Committee (MPC): This Committee assists the ESCB in the implementation of the single monetary and exchange rate policy of the Community. In addition, it provides assistance in the execution of the ESCB's tasks related to the coordination of the monetary and exchange rate policies of the NCBs of non-euro area Member States and the ECB.

Organisational Development Committee (ODC): It assists the work of ECB decision-makers with proposals regarding the planning and organisational issues related to the operation of the Eurosystem and the Single Supervisory Mechanism (SSM). In addition, it also coordinates the work of the Eurosystem Procurement Coordination Office (EPCO) and runs the operational risk management and business continuity system of the Eurosystem/ESCB. ODC only holds meetings with euro area participants.

Risk Management Committee (RMC): Its task is to assist the work of ECB decision-makers in managing and controlling risks arising from the market operations of the Eurosystem by means of analyses and proposals. RMC only holds meetings with euro area participants.

Statistics Committee (STC): STC assists in the collection of statistical information required for carrying out the tasks of the ESCB. It contributes, *inter alia*, to the elaboration and cost-effective application of necessary modifications in statistical data collection.

Other committees assisting the work of the ESCB:

Budget Committee (BUCOM): This Committee assists the Governing Council of the ECB in issues concerning the budget of the ECB; its members are the ECB and the central banks of euro area Member States.

Human Resources Committee (HRC): The objective of this Committee is to serve as a forum for the central banks of the Eurosystem/ESCB in the exchange of information, opinion and experiences on issues concerning the management of human resources.

3.15 RESEARCH ACTIVITY OF THE MNB

The purpose of the research activity performed by various directorates of the MNB is to support the central bank's decision-making. Research results are published in international and domestic scientific journals as well as in the MNB's internal publications, the MNB Working Papers (typically published in English only), the MNB Occasional Papers series and the Financial and Economic Review. In addition to the publications, the MNB's research activity also encompasses representation of the MNB at international conferences and in the research networks and working groups coordinated by the ECB.

In 2022, the MNB's authors published 17 articles in international scientific journals, eleven of which were released in top-tier journals (Q1), while three were published in the second quartile (Q2).

In addition, MNB authors also published studies in the following journals in 2022: WSEAS Transactions on Business and Economics, Journal of Risk and Financial Management, Public Finance Quarterly. Having been accepted for publication, there is a forthcoming MNB study in the journal Economics Letters.

In addition to international journals, studies by MNB researchers and analysts also appeared in publications of foreign central banks, international institutions and universities. Two studies appeared in the BIS Working Papers series, along with one chapter each in the books called Central Banking, Monetary Policy and the Future of Money and Results and Challenges: Ten Years of China-CEEC Cooperation.

Hungarian journals presented 41 publications from the MNB's experts: in particular, the Financial and Economic Review published twelve studies, three essays, six special articles, four book reviews and five conference reports by MNB experts in its 2022 issues. Moreover, five articles were published by the MNB's authors in a Category A journal, the *Közgazdasági Szemle*, as classified by Section IX of Economics and Law of the Hungarian Academy of Sciences.

Numerous applied research results were also published in the MNB's internal publications. Four studies were published in the MNB Occasional Papers series, and seven in the publication MNB Working Papers. One of these, a study on agent-based modelling was recognised by the Economic and Social Research Council of the UK with a research award.

Table 11		
Publications by MNB authors in Q1- and Q2-ranked journals in 2022		
Author(s)	Title	Journal
Ádám Banai, Edina Berlinger, Barbara Dömötör	Adjustable-rate mortgages in the era of global deflation: How to model additional default risk?	Plos One
Eszter Baranyai, Ádám Banai	Heat projections and mortgage characteristics: evidence from the USA	Climatic Change
Éva Berde, Áron Drabancz	The propensity to have children in Hungary, with some examples from other European countries	Frontiers in Sociology
Chaoyi Chen, Mehmet Pinar, Thanasis Stengos	Renewable Energy and CO2 Emissions: New Evidence with the Panel Threshold Model	Renewable Energy
Chaoyi Chen, Nikolay Gospodinov, Alex Maynard, Elena Pesavento	Long-Horizon Stock Valuation and Return Forecasts Based on Demographic Projections	Journal of Empirical Finance
Christian Diem, András Borsos, Tobias Reisch, János Kertész, Stefan Thurner	Quantifying firm-level economic systemic risk from nation-wide supply networks	Scientific Reports
László Kökény, Zsófia Kenesei, Gábor Neszveda	Impact of COVID-19 on different business models of European airlines	Current Issues in Tourism
Mark Antal, Lorant Kaszab	Spillovers from the European Central Bank's asset purchases to countries in Central and Eastern Europe	Economic Modelling
Gábor Neszveda, Gábor Till, Barnabás Timár, Marcell Varga	Is short-term reversal driven by liquidity provision in emerging markets? Evidence from China	Finance Research Letters
Veronika Fenyves, Tibor Tarnóczy, Zoltán Bács, Dóra Kerezsi, Péter Bajnai, Mihály Szoboszlai	Financial efficiency analysis of Hungarian agriculture, fisheries and forestry sector	Agricultural Economics (Czech Republic)
Zombor Berezvai, Olivér Hortay, Tamás Szőke	The impact of COVID-19 measures on intraday electricity load curves in the European Union: A panel approach	Sustainable Energy, Grids and Networks
Anna Naszodi, Francisco Mendonca	Changing educational homogeneity: Shifting preferences or evolving educational distribution?	Journal of Demographic Economics
Lorant Kaszab, Ales Marsal, Katrin Rabitsch	Asset pricing with free entry and exit of firms	Economics Letters
Roman Horvath, Lorant Kaszab, Ales Marsal	Interest rate rules and inflation risks in a macro-finance model	Scottish Journal of Political Economy

3.16 PUBLICATIONS AND CONFERENCES ORGANISED BY THE MNB

In 2022, the MNB's specialised book series on economics and monetary policy was expanded with new publications. In May, 'New Sustainable Economics – Global discussion paper' was published with the main thesis that in today's world a turnaround in sustainability is needed in all areas of life, which must be reflected in economics as well. The central bank published another book of studies in December entitled 'The Future is Now – Eurasian Central Banks at the Forefront of Innovation', which uses 21st-century examples to illustrate central banks' latest innovation practices.

The range of regular specialised publications was also expanded in 2022, when the MNB's financial report related to climate change was published. The publication seeks to explore and transparently publish the climate risks related to the MNB's operating activities and financial instruments

in as much detail as possible, thereby showing the way for the players in the Hungarian financial sector. Other publications included 'From the turnaround in lending to the green transition – Collection of studies on the nine years of the Funding for Growth Scheme to date'; and 'Monetary policy for sustainability', published on the anniversary of the introduction of the MNB's green central bank toolkit strategy.

Regular publications

Inflation Report

The Inflation Report is published quarterly in order to enable the public to understand and follow the Bank's policies. The Report provides a regular presentation of past and expected future trends in inflation, evaluates the macroeconomic developments that determine inflation and provides a summary of the forecasts and considerations on the basis of which the Monetary Council makes its decisions.

Report on Financial Stability

Published twice a year, this Report outlines the position of the Bank regarding the changes in the financial system and describes the effect of these changes on the stability of such. The analysis in this Report focuses on the forward-looking assessment of long-term trends and risks.

Growth Report

The annual Growth Report presents Hungary's longer-term growth path (occasionally encompassing an entire business cycle) and its determinants, using both standard and alternative indicators. The Report provides an annual overview of the most important trends shaping economic growth over the short, medium and longer term.

Productivity Report

The Productivity Report, published once a year, helps to understand the drivers, characteristics, distribution and dynamics of the key factor of economic growth and convergence, and thus brings us closer to the formulation and implementation of productivity reforms. The Report does this in a complex manner, examining a wide range of efficiency indicators, including labour productivity as well as innovation, digitalisation and ecological productivity.

Housing Market Report

The MNB's semi-annual Housing Market Report addresses current trends in the Hungarian housing market. The purpose of the publication is to provide a comprehensive overview of the short-term and long-term trends affecting the residential property market and present the regional differences in the domestic market. Housing market developments are closely related not only to financial stability issues, but also fundamentally determine the short-term and long-term prospects of economic activity.

Commercial Real Estate Market Report

This thematic MNB publication analyses developments in the commercial real estate market on a semi-annual basis. It presents the macroeconomic factors influencing the market as well as supply and demand trends characterising various market segments. The report also covers banks' real estate financing activities, as the main link between real estate market developments and financial stability.

Macroprudential Report

The purpose of the annual Macroprudential Report is to present the macroprudential instruments applied by the MNB to prevent and address the systemic risks identified and communicated in the Financial Stability Report, as well as their effects and the adjustment of market participants. In line with the MNB's Statutes and macroprudential strategy, the publication intends to make the MNB's macroprudential measures easier to follow and understand both for the actors of the sector and the general public.

Competitiveness Report

The purpose of the Competitiveness Report is to provide a comprehensive, objective picture of aspects of Hungary's competitiveness that usually are given less attention in the Bank's traditional macroeconomic analyses, although they are important factors in terms of economic developments. The report measures and assesses the competitiveness of the country in 14 areas using more than 160 indicators, 95 per cent of which are objective, for comparison with the European Union, the Visegrád countries and the most advanced Nordic countries.

Competitiveness Mirror

The publication seeks to monitor in a structured manner the realisation of the competitiveness initiatives and recommendations formulated by the MNB, facilitating the necessary competitiveness turnaround by supporting implementation. The Competitiveness Mirror annually assesses progress in Hungary's competitiveness, based on the 330 recommendations in the Competitiveness Programme published in 2019. The monitoring system uses both descriptive and analytical methods to evaluate the implementation of the central bank's recommendations.

FinTech and Digitalisation Report

The purpose of the annual FinTech and Digitalisation Report is to provide insight into domestic and international developments in financial innovation, digitalisation and their underlying technologies, which are becoming increasingly dominant in the Hungarian financial markets. In this way, the MNB contributes to strengthening the digitalisation level of the domestic financial system, a process in which it intends to continue playing a key supporting role.

Report on Insurance, Funds, Capital Market Risk and Consumer Protection

The publication presents key characteristics and risks of insurance companies, funds, intermediaries, non-banking group entities and markets of capital market participants. The purpose of the Report, which is published annually, is to inform the public and the institutions of the financial system in respect of current prudential and consumer protection issues, thereby enhancing the risk awareness of stakeholders and also maintaining and strengthening confidence in the financial system. Official activities to identify and reduce risks, as well as the information and educational activities of the central bank, and its efforts to enhance Hungarian financial literacy all contribute to making the information necessary for decisions concerning financial institutions and products available to stakeholders, thus strengthening the stability of the financial system as a whole.

Cyber Threat Report

Reinforcing the objective laid down in Act CXXXIX of 2013 on the MNB, the MNB's Supervisory Strategy stipulated that its main goal was to support and deepen the stability of the financial system until 2025. Owing to digitalisation, the significance of ICT solutions and digital services and the dependence on them is constantly growing in the financial sector, and so special attention needs to be paid to digitalisation processes, and the related security and threats, in order to foster the resilience of the financial system. The cyber threat map summarises the features and various characteristics of the incidents in the financial sector, along with the methods for handling them in certain cases.

Trends in Lending

The objective of Trends in Lending is to present a detailed picture of the latest developments in lending and to facilitate the appropriate interpretation of such. To this end, it elaborates on the evolution of credit aggregates, the demand for loans perceived by banks and credit conditions.

Report on the Balance of Payments

The Report is published four times annually to inform market participants on developments in the balance of payments and provide deeper insight into correlations in the economy. Developments in the external balance are key to financial stability, as processes relating to the balance of payments allow for conclusions to be drawn concerning the sustainability of economic growth and the relevant risks.

The MNB performs comprehensive, regular analyses of trends relating to Hungary's external balance, examining a number of indicators to assess macroeconomic imbalances.

Payment Systems Report

Once a year, this Report provides a comprehensive review of the trends in payments and the functioning of the overseen payment and securities settlement systems in Hungary, the main risks and any measures taken by the MNB which are necessary to maintain the smooth provision of payment services and facilitate the reliable and efficient operation of the supporting payment and settlement systems.

Public Finance Report

With the aim of supporting the fulfilment of its fundamental duties stipulated in the MNB Act, and particularly the task related to the definition and implementation of monetary policy, the MNB analyses the developments in the budgetary deficit and debt, monitors the financing of the general government, analyses the impact of financing on monetary processes on the capital markets and on liquidity, and researches fiscal policy issues. Pursuant to Act CXCV of 2011 on the Economic Stability of Hungary, the Governor of the MNB is a member of the Fiscal Council (FC), and thus the professional expertise and accumulated information available in the MNB can indirectly support the work of the FC. The MNB prepares background analyses for the duties of the FC stipulated in the Act and makes such available to the FC. The general public can learn about the most important results of these analyses from this publication.

Annual Report

Published once a year in Hungarian and English, this publication presents the Bank's business report on the previous year and its audited annual financial statements in accordance with the Accounting Act.

Semi-annual Report: Semi-annual Report on the MNB's Activities

The Semi-annual Report is published once a year in September with contents in line with the Annual Report. The report is the central bank's business report and financial statements pertaining to the first half of the year (unaudited).

Interim Report: Quarterly Report on the MNB's Activities

The Interim Report is published twice annually, in April and November, between the annual and semi-annual reporting

periods. It gives an account of the basic activities of the central bank's operating units as stipulated in the MNB Act, in respect of the first and the third quarters: monetary policy, overview of the financial system, FX reserves, payment transactions, cash logistics activities and statistical changes.

Report on the annual activities of the Financial Arbitration Board

The Financial Arbitration Board, operated by the MNB, publishes its summary report about its operation and activities once a year online and in printed form, under the title 'Report on the annual activities of the Financial Arbitration Board'. The annual report prepared based on the considerations set out in Article 130(1) of the MNB Act discusses, among other things, the analysis of incoming requests and closed cases as well as the recurring or major problems between consumers and financial service providers that often lead to disputes. The publication also contains recommendations on how to avoid or solve such problems in the future. The report presents the average time it takes to resolve consumers' legal disputes and also includes information on how companies implement the recommendations, the decisions including a requirement and the decisions authorising a deal.

Supervisory Board Report

Pursuant to the MNB Act, members of the Supervisory Board have a reporting obligation to the Parliament that elects them and the Minister who appoints them. The focus of the Supervisory Board's duties is on controlling the central bank's continuous operation. The Supervisory Board performs its activity based on the laws applicable to it, its own rules of procedure and the internal operational principles defined by the members jointly during the operation of the Board. The meetings of the Supervisory Board constitute the main form of the control activity, the topics of which are determined by the annual rolling workplan based on the audit universe. The *Supervisory Board Report* is a presentation of the Supervisory Board's activity.

Environmental Statement

The fight against and adaptation to climate change as well as environmental issues that are generally becoming increasingly severe have significant impacts on the economy as a whole and thus also on the financial intermediary system. In view of this, in 2019 the MNB launched its Green Programme, which aims to reduce the risks related climate change and other environmental issues, expand green

financial services in Hungary, broaden the corresponding Hungarian and international knowledge, and further mitigate its own and financial actors' ecological footprint. The MNB is at the forefront of international practices in continuously reducing the environmental impact of its operations. In accordance with the requirements of the environmental management system, the so-called EMAS (Eco-Management, and Audit Scheme), regulated by Regulation (EC) No 1221/2001 of the European Parliament and of the Council and Regulation (EU) No 2017/1505, the certified Environmental Statement is published annually. The publication presents stakeholders with information on the institutional efforts to improve environmental performance and the results achieved.

Sustainability Report

In line with the MNB's legal mandate, the Sustainability Report aims to examine and clarify the key factors in Hungary's long-term sustainable convergence and inclusive growth, thereby facilitating the formulation and implementation of reforms that ensure sustained economic and social welfare. The Sustainability Report does this with a multifaceted approach: along with real economy factors, it also looks at whether by international standards the financial, social and environmental resources are utilised sustainably to ensure successful convergence and the achievement and preservation of social welfare. The report is published once a year in Hungarian and English.

Green Finance Report

The MNB publishes the Green Finance Report annually. The aim of the publication is to increase transparency on environmental sustainability and finance and thereby strengthen market awareness, and to contribute to a more accurate understanding of the financial aspects of climate change by the actors in the financial system and economy, as well as by Hungarian society. As the consequences of climate change and environmental anomalies may be reflected as financial risks, it is especially important to remedy the lack of data in the financial system. By improving the understanding regarding sustainable financing, the publication may indirectly boost the effectiveness of sustainability efforts.

The MNB's Climate-Related Financial Disclosure

The MNB was among the first among central banks and domestic financial institutions to produce a climate-related financial report. The aim of the report is to identify, measure and transparently disclose the climate risks related to the operational activities and financial instruments of the MNB

to the widest possible extent, thereby providing guidance to the domestic financial sector. The report is published once a year in Hungarian and English.

Analyses, studies, statistics

MNB Occasional Papers

The MNB Occasional Papers series primarily presents practical (applied) research related to the central bank's professional areas, summarises existing theories and international findings in certain topics, and provides analyses facilitating the understanding of central bank decision-making.

MNB Working Papers

The MNB Working Papers series presents the results of the more theoretically-oriented research conducted at the MNB. The studies published in this series are primarily directed at academic, central bank or other researchers, with the goal of encouraging readers to offer comments that the authors may use in their future research.

Financial and Economic Review

The Financial and Economic Review is a journal in social science with a history of over a decade. The journal has been edited and published quarterly by the MNB in separate volumes in Hungarian and in English. A Chinese-language compilation of the most important studies is also published once a year. The journal publishes scientific studies, short essays, book reviews, conference reports and reports on other scientific activities.

Other publications

Financial Navigator Papers

The thematic, easy-to-read booklet series targeting financial consumers helps provide information to the public and prepare individual financial decisions. The free booklets are available in the branches and customer service offices of various financial institutions, at the MNB's Customer Service and in the customer reception areas of the Financial Navigator Advisory Office Network in all county seats. Monitoring legislative changes and market developments, the MNB regularly updates the contents of the Papers and also expands the scope of topics. In 2022, the Papers were still reaching a large section of society through the branches of more than 100 partners (financial service providers and

the Hungarian Post Office), and they are also available online at the Financial Navigator subpage of the MNB's website. With a view to sustainability, some papers in the series were only published online in 2022.

From the turnaround in lending to the green transition – Collection of studies on the nine years of the Funding for Growth Scheme to date

The book of studies published on the ninth anniversary of launching the Funding for Growth Scheme (FGS) presents the goal and significance of the different phases of the FGS as well as the impact and achievements of the programme to date from various aspects. The central bank's first lending incentive scheme launched in 2013 played a key part in providing adequate funds to the SME sector and promoted the efficiency and productivity of companies. Launched as part of the MNB's green policy toolkit strategy, in the spirit of sustainability, the FGS Green Home Programme sought to facilitate the emergence of the green housing loan market and the implementation of environmental sustainability considerations in the Hungarian housing market and enabled around 8,600 households purchase or build energy efficient residential properties with a preferential loan.

Monetary policy for sustainability – A book of studies by the Magyar Nemzeti Bank on the first year of the green monetary policy toolkit.

Marking the first anniversary of its green central bank toolkit strategy, the MNB published a book of studies called 'Monetary policy for sustainability'. The publication reviews the practical steps taken by the MNB since the adoption of the green toolkit strategy in supplementing its monetary policy with green elements. It presents the advancements in international central banking in terms of green programmes and practices, along with the evolution of the frameworks and standards that serve as the basis for the green financial system. A detailed analysis is given of the impact of the central bank measures affecting the green segment of the Hungarian government securities, corporate bond and mortgage bond markets as well as the development of the markets, supplemented by the MNB's steps for stimulating the green housing market, in particular the Green Home Programme as well as the augmentation of the collateral management system with green elements. The steps presented provide a comprehensive picture of the relationship between green finance and Hungarian monetary policy, and also offer conclusive evidence that environmental sustainability considerations can be implemented without affecting the monetary policy stance.

2022 – Overview of the green programmes of central banks and international organisations

Promoting sustainable development and greening the financial system are top priorities in the policies of central banks, international organisations and various regulatory bodies. Nowadays, there is almost full consensus among central banks that institutions need to address the negative impact of climate change and climate risks on financial stability, but there is no common understanding about the extent to which central banks need to intervene. In its Overview of the green programmes of central banks and international organisations, the MNB examined some of the main green and sustainable development measures of international organisations and the key institutions within the MNB's network from 2021, including central banks from Europe, Asia and the Americas.

MNB books

The MNB considers the development of financial literacy in Hungary as one of its priority tasks, hence, relying on its available means, it intends to facilitate education in the field of economics as well as the widening and enhancement of financial literacy. To this end, the book series on economics and monetary policy was expanded with new volumes in 2022.

The book 'New Sustainable Economics – Global Discussion Paper' edited by Gergely Baksay, György Matolcsy and Barnabás Virág was published in May. The main thesis of the discussion paper is that in today's world a turnaround in sustainability is needed in all areas of life, which must be reflected in economics as well.

In November, a book aimed at children was published called 'Messes gazdagság' (Tales about wealth), containing 49 folk tales. The book explores what tales teach to children and adults about money, gold, being rich and getting by in life.

In December, a collection of studies called 'The Future is Now – Eurasian Central Banks at the Forefront of Innovation' was published. It aims to present the innovation best practices of central banks, such as the central banks of China, France, the Republic of Korea, Germany, Kazakhstan and Portugal, along with the BIS Innovation Hub and the MNB, through 21st-century examples.

Events organised by the MNB

In respect of the events organised, the MNB pursues a strategy of openness with its associate and partner institutions, which is aimed at strengthening professional

and collegial partnership. Another objective of the MNB is to achieve broad recognition and to integrate the work of the Hungarian central bank, to the greatest possible extent, into that of the international professional community. To this end, the MNB arranges international conferences, internal events and cultural events.

International conferences

Most of the MNB's international professional conferences involve 70-100 persons, although the number of participants in some events reaches 200-300 guests. The international conferences are primarily held on the premises of the MNB. The Covid-19 pandemic created a new trend in terms of these events, as some of them were organised in a hybrid form. As the pandemic abated, the central bank returned to organising in-person events, but it has become a standard practice to provide also online access via streaming.

The most important international conferences organised in 2022 were the following:

MNB-OMFIF Financial Stability Conference

The MNB and the Official Monetary and Financial Institutions Forum (OMFIF) jointly organised the international conference titled 'Financial Stability Conference: New Challenges and Focuses' on 26–27 May 2022. At the two-day conference, 29 speakers from four continents discussed in a hybrid form the most topical issues of the financial system as well as the short-term challenges and long-term future of financial stability. Speakers included leading financial and economic experts: representatives from international organisations, European and Asian central banks as well as representatives from major universities and companies expressed their views at the event.

IMF-WBG Constituencies' Meeting at Deputies Level

The annual IMF-WBG CEE Constituencies' Meeting at Deputies Level took place at the Lámfalussy Sándor Conference Centre in the MNB's Buda Centre from 30 June to 2 July 2022, and was hosted by the MNB as the institution primarily responsible for IMF matters. Representatives of the eight member countries' central banks and ministries of finance attended the IMF-WBG joint meeting. The professional programme of the event was opened by Dr Mihály Patai, Deputy Governor of the MNB, and László Balogh, Deputy State Secretary of the Ministry of Finance of Hungary, and a speech was delivered by Alfred Kammer, Director of the IMF, Hela Cheikhrouhou, Vice-President of IFC and Gallina Andronova Vincelette, Director of the World Bank.

MNB–CEMLA joint workshop

In September 2022, the MNB organised a joint workshop with the Center for Latin American Monetary Studies (CEMLA) entitled ‘*Seminar on New Perspectives on Central Banking After the COVID-19 Crisis*’, hosted by Mexico City. During the thematic panel discussions such topics were discussed by experts as recent developments in monetary policy; rising inflation amidst the current economic uncertainty; financial stability; the post-pandemic competitiveness landscape; and the impact of monetary tightening on bank liquidity and financial markets. Issues related to digitalisation opportunities and central bank digital currencies (CBDCs) were also discussed. The conference provided opportunity for the MNB experts to network with Latin American central bank representatives and gain a deeper understanding of the region’s economic developments.

Budapest Eurasia Forum

The MNB launched its annual conference Budapest Eurasia Forum in 2019, based on the idea of the emergence of a new multipolar world order and the rise of Eurasian power centres. The Budapest Eurasia Forum seeks to strengthen the dialogue between the countries of the supercontinent, promote joint answers to the economic and social challenges through thematic panel discussions, such as sustainability, digitalisation and technology, the renewal of the financial system and the growing importance of geopolitics. In keeping with tradition, representatives of different segments of the international and Hungarian economy and society shared their experiences and views during the Forum in panel discussions such as finance, geopolitics, economics, infrastructure, multilateral cooperation and education. The event entitled ‘*Sustainable Growth and Cooperation – How to Win the 21st Century?*’ that was organised in Budapest hosted 48 speakers from 18 countries. Speeches were given by Dr György Matolcsy, Governor of the MNB; János Csák, Minister of Culture and Innovation; Sethaput Suthiwartnarueput, Governor of the central bank of Thailand; Zhu Jun, Chairwoman of the Silk Road Fund; and Simon Tay, Chairman of the Singapore Institute of International Affairs. The prestigious event was attended by a wide range of international experts and scientists and ended with the thoughts of Dr Mihály Patai, Deputy Governor of the MNB, who emphasised the necessity of fostering international cooperation in the fields of finance, economics and education.

MNB–NBP joint conference

A high-level central bank conference took place on 29 September 2022, organised jointly by the MNB and the central bank of Poland (Narodowy Bank Polski – NBP). Held for the fourth time, the conference ‘*Competitiveness and Sustainable Economic Growth in the CEE Region*’ was attended by high-level Hungarian and Polish central bank officers and leading financial and economic experts from the region. The event was dedicated to addressing issues such as the transition of the global and local economies and opportunities to enhance competitiveness. The conference was opened by Barnabás Virág, Deputy Governor of the MNB, and Marta Kightley, first Deputy Governor of the NBP, emphasising that we live in a peculiar era burdened by the pandemic, the war and stagflation. Participants in the two panel discussions of the professional programme discussed issues including the competitiveness-related aspects of crisis recovery and the changing role of supply chains in the global economy.

International Money Museum Conference

On 3 October 2022, the MNB held an international money museum conference entitled ‘*The New Era of Financial Education*’. Speakers at the conference included high-level members of international central banking, money museums and the EdTech community as well as financial literacy experts, who shared their thoughts and experiences about the future of financial education, ways to strengthen the financial literacy of younger generations and the role of high-tech innovations in the field of financial culture. The event was opened by Dr Csaba Kandrács, Deputy Governor of the MNB, who underlined the importance of enhancing financial awareness in his speech. The keynote speeches were followed by two panel discussions, at which heads of central bank money museums and EdTech companies as well as experts in international financial education presented their views on the subject.

International Green Finance Conference

The MNB held its fourth International Green Finance Conference on 6 October 2022. The 2022 event focused on the changing economic environment: participants discussed how to sustain the momentum of green finance in recent years amid rising inflation, recession concerns and geopolitical turbulence. In his opening speech, Dr Csaba Kandrács, Deputy Governor of the MNB, highlighted

that economic shocks are not a hindrance to but rather an additional reason for accelerating the green transition. Other speakers at the conference included Hungarian and foreign figures who are at the forefront of "greening" activities, such as senior executives of the ECB, the Austrian National Bank, the World Business Council For Sustainable Development (WBCSD) and the United Nations (UN) Environment Programme Finance Initiative (UNEPI), as well as representatives from major institutions focusing on sustainability.

Within the framework of the conference, the Green Finance Awards for financial institutions and the Green Finance Science Awards for academic excellence were presented during the event.

Other international events and related awards

Lámfalussy and Popovics Awards

Parallel to the launch of the Lámfalussy Lectures Conference in 2014, the Governor of the MNB established the Lámfalussy Award to recognise outstanding international professional performance and lifetime achievements that influence the MNB's activity and have a major long-term impact on developments in international monetary and financial policies. Besides the Lámfalussy Award, the Popovics Prize, commemorating the first governor of the MNB, is a recognition awarded by the central bank to outstanding young professionals in the field of economy and finances. Based on the proposal by the MNB's expert committee, the prize named after the 'father' of the euro was awarded to Yi Gang, the Governor of the People's Bank of China (PBoC), and the Popovics Prize was received by Levente Magyar, Deputy Minister and Parliamentary State Secretary at the Ministry of Foreign Affairs and Trade in 2022.

4 Additional information on the supervisory activity of the MNB in 2022

Table 12	
Institutions subject to full supervision¹	
Money market	752
Financial institution	277
Credit institution	30
Bank	18
Bank branches ²	1
Specialised credit institution	10
Cooperative credit institution	1
Non-financial institution	246
Financial enterprise equivalent to credit institution	14
Other financial enterprise	230
Financial holding company	0
Organiser (NOK)	1
Non-financial institution	475
Independent intermediary ³	459
Money market broker	16
Money market multiplier	4
Money market multiple agent	303
Money market trade multiple agent	136
Payment service provider	14
Electronic money issuer	2
Insurance	406
Insurance institution	33
Insurance association	21
Insurance company	12
Insurance intermediary ⁴	373
Insurance broker	337
Insurance multiple agent	36
Guarantee fund management ⁵	1
Funds	51
Occupational pension provider	1
Private pension fund	4
Voluntary fund	46
Voluntary healthcare and mutual fund	11
Voluntary healthcare fund	3
Voluntary mutual fund	2
Voluntary pension fund	30
Capital market	56
Investment fund manager	41
Alternative investment fund manager	34
UCITS fund manager	7
Investment firm	11
Clearing house, central counterparty	2
Stock exchange	2
Total	1,265
¹ The members of the institutional group are under direct supervision of the MNB on 31 December 2022	
² Hungarian branch of a financial institution not domiciled in another third-country state	
³ Independent intermediaries include registered and principal intermediation institution	
⁴ Insurance intermediaries include registered and principal institutions	
⁵ Compensation Account and Compensation Fund	

Table 13			
Number of inspections conducted, by type of inspection and sectors			
<i>(pieces)</i>			
Number of inspections		Started in 2022	Closed in 2022
Prudential	Total	56	120
	Money market	12	23
	Insurance	13	10
	Funds	13	14
	Capital market	18	22
	Thematic audit	0	51
	<i>Number of involved institutions</i>	<i>0</i>	<i>44</i>
Consumer protection	Total	313	319
	Money market	225	217
	Insurance	58	48
	Funds	7	8
	Capital market	19	18
	Thematic audit	4	28
	<i>Number of involved institutions</i>	<i>4</i>	<i>0</i>
Market surveillance	Total	47	39
	Related to market surveillance	40	34
	Related to issuer oversight	7	5
Anti-Money Laundering	Total	5	12
ICAAP/ILAAP/BMA	Total	43	17

Table 14	
Amount of fines imposed	
<i>(HUF millions)</i>	
Prudential fines	762.2
<i>Money market</i>	431.2
<i>Insurance</i>	134.6
<i>Funds</i>	18
<i>Capital market</i>	178.4
Consumer protection fines	185
Anti-Money Laundering fines	219.8
Market surveillance fines	555.6
Issuer supervision fines	69.1
Procedural fines	6.1
Licensing fines	0
Summary	1,797.8

Table 15	
Measures taken in the financial market sector	
<i>(pieces)</i>	
Number of prudential decisions and orders	1,512
Number of authorisation resolutions/rulings	644
Number of foundation permits	3
Number of operating licences	8
Number of operating change licences	6
Number of stock transfer licences	6
Number of shareholding licences	41
Senior executives/ board members licences	248
Number of withdrawal licences by an institution	15
Allow and approve amendment of Articles of Association and other regulations	35
Resolutions issued under CRR	27
Number of other authorisation decisions	201
Number of substantive orders for authorisation	54
Number of enforcement decisions	868
Number of decisions related to investigations	30
Number of revocation and suspension decisions by MNB sanctions	13
Ongoing supervisory decisions/number of decisions containing measure	297
Money laundering prevention decisions and orders, number of reports	78
Number of consumer protection decisions and orders	408
Number of other enforcement decisions	42

Table 16	
Measures taken in the capital market sector	
<i>(pieces)</i>	
Number of prudential decisions and orders	675
Number of authorisation resolutions/rulings	570
Number of operating licences	10
Number of activity change permissions	8
Number of shareholding licenses	13
Senior executives/ board members licences	158
Number of withdrawal licences by an institution	0
Allow and approve amendment of Articles of Association and other regulations	20
Resolutions issued under CRR	2
Number of other authorisation decisions	323
Number of substantive orders for authorisation	36
Number of enforcement decisions	105
Number of decisions related to investigations	29
Ongoing supervisory decisions/number of decisions containing measure	2
Money laundering prevention decisions and orders, number of reports	22
Number of consumer protection decisions and orders	29
Number of other enforcement decisions	13
Number of other enforcement orders	10

Table 17	
Measures taken in the insurance market sector	
<i>(pieces)</i>	
Number of prudential decisions and orders	370
Number of authorisation resolutions/rulings	200
Number of operating licences	13
Number of stock transfer licenses	6
Number of shareholding licenses	10
Senior executives/ board members licences	118
Number of withdrawal licences by an institution	19
Number of other authorisation decisions	3
Number of substantive orders for authorisation	31
Number of enforcement decisions	170
Number of decisions related to investigations	23
Number of revocation and suspension decisions by MNB sanctions	3
Ongoing supervisory decisions/number of decisions containing measure	62
Decision on the secondment of a supervisory commissioner	1
Number of consumer protection decisions and orders	80
Number of other enforcement decisions	1

Table 18	
Measures taken in the funds market sector	
<i>(pieces)</i>	
Number of prudential decisions and orders	41
Number of authorisation resolutions/rulings	16
Number of operating licences	1
Number of stock transfer licenses	0
Number of withdrawal licences by an institution	0
Allow and approve amendment of Articles of Association and other regulations	14
Number of other authorisation decisions	1
Number of substantive orders for authorisation	0
Number of enforcement decisions	25
Number of decisions related to investigations	13
Number of orders granting an interim measure	0
Number of consumer protection decisions and orders	12

Table 19**Market surveillance and issuers supervision***(pieces)*

Number of enforcement decisions and orders issued	579
Number of market surveillance decisions	31
Market surveillance enforcement orders	515
Number of issuer oversight decisions	29
Number of Issuer supervision orders	4
Substantive rulings, orders, number of resolving discrepancies	1,322
Number of Issuance decisions	863
Number of Issuance orders	0
Number of supplementary information requests	459

Table 20**Licensing related to securities issuance***(pieces)*

Number of issues and stock exchange listings	15
Number of stock exchange listings	15
<i>Stocks</i>	5
<i>Bond and mortgage bonds</i>	10
Offers	1

5 Explanation of abbreviations and terms specific to central banking

ABBREVIATIONS

APR: Annual Percentage Rate

BGS: Bond Funding for Growth Scheme

BIS: Bank for International Settlements

BISZ Zrt.: BISZ Central Credit Information Plc.

BPM: Balance of Payment Manual

BSE: Budapest Stock Exchange

CCFHI: Certified Consumer-Friendly Home Insurance

CCFHL: Certified Consumer-Friendly Housing Loans

CCFPL: Certified Consumer-Friendly Personal Loans

CCIS: Central Credit Information System

DLT: Distributed Ledger Technology

EBA: European Banking Authority

EBRD: European Bank for Reconstruction and Development

ECB: European Central Bank

EIB: European Investment Bank

EIOPA: European Insurance and Occupational Pensions Authority

EMIR: Unified Monitoring and Information System

EMU: Economic and Monetary Union

ESCB: European System of Central Banks

ESMA: European Securities and Markets Authority

ESRB: European Systemic Risk Board

FGS: Funding for Growth Scheme

FNAON: Financial Navigator Advisory Office Network

FSB: Financial Stability Board

FSC: Financial Stability Council

GIRO: GIRO Clearing House Ltd.

HCSO: Hungarian Central Statistical Office

HITREG: Central bank credit register

ICAAP: Internal Capital Adequacy Assessment Process

IFRS: International Financial Reporting Standards

ILAAP: Internal Liquidity Adequacy Assessment Process

IMF: International Monetary Fund

ISDA: International Swaps and Derivatives Association

KELER: KELER Central Clearing House and Depository Ltd.

LIRS: Interest Rate Swap (IRS) conditional on lending activity

LTV: Loan-to-value ratio

MFAR: Mortgage Funding Adequacy Ratio

MTPL: Compulsory motor third-party liability insurance

MIRS: Interest Rate Swap (IRS) facility of monetary policy purpose

MNB: Magyar Nemzeti Bank

MOF (PM): Ministry of Finance

MSZVK Zrt.: MSZVK Magyar Szanálási Vagyonkezelő Zártkörűen Működő Részvénytársaság

NPL: Non-Performing Loans

OECD: Organisation for Economic Co-operation and Development

PTI: Payment-to-income ratio

SNA: System of National Accounts

SRB: Single Resolution Board

SSM: Single Supervisory Mechanism

TSA: Treasury Single Account

VIBER: Real-time gross settlement system, a payment system operated by the MNB

GLOSSARY

Access interface: Pursuant to the PSD2 requirements, all account servicing payment service providers had to design an interface that, subject to specific rules, enables third-party providers to provide services to customers.

AFR: A domestic payment platform for clearing and settlement of instant payment orders

AML/CFT: Anti Money Laundering and Combating the Financing of Terrorism

API: Application Programming Interface With the help of a public API, it is possible to use the services of a programme system without having to know its internal operation.

Breaches in connection with payment-related administrative procedures:

The breaches concerned:

– with respect to Act LXXXV of 2009 on the Pursuit of the Business of Payment Services, the provision of information to customers prior to signing the framework contract, the format and content requirements of framework contracts, the amendment and termination of framework contracts, the opening of payment accounts, the ex-post information given in the case of the payment orders based on the framework contract, the authorisation and correction of payment transactions and liability rules;

– with respect to MNB Decree No 35/2017 (XII. 14.) on the execution of payment transactions, the secondary account identifier, the time of the start and end of the working day and the final submission deadline, the receipt and identification of payment orders, rejection of the execution of payment orders and payment transactions between payment service providers, the execution of payment orders between payment service providers, the rules concerning the value date, making the funds of the payment transaction available to the beneficiary, and the special rules concerning transfers;

– with respect to Government Decree No 262/2016 (VIII. 31.) Korm. on the access to, and the characteristics and fees of, the basic payment account, the maximum fee chargeable;

– with respect to Government Decree No 263/2016 (VIII. 31.) Korm. on payment account switching, the cancellation of payment accounts on the day specified in the power of attorney or at the end of the notice period as well as the transfer of the remaining balance;

– with respect to the Government Decree No. 144/2018 (VIII. 13.) on certain issues pertaining to the information about the fees related to payment accounts kept for consumers in accordance with Commission Implementing Regulation (EU) 2018/33 of 28 September 2017 laying down implementing technical standards with regard to the standardised presentation format of the statement of fees and its common symbol according to Directive 2014/92/EU of the European Parliament and of the Council, the adequacy of the fee statement provided to the consumer (completeness, accuracy, detailed nature, sequence of statement), and the adequacy of the stipulated notice period's duration;

– with respect to Commission Delegated Regulation (EU) 2018/389 of 27 November 2017 supplementing Directive (EU) 2015/2366 of the European Parliament and of the Council with regard to regulatory technical standards for strong customer authentication and common and secure open standards of communication, general authentication requirements, the review of the security measures, the requirements pertaining to elements categorised as knowledge, the general obligations for access interfaces, the obligations for a dedicated interface and contingency measures;

– with respect to Regulation (EC) No 924/2009 of the European Parliament and of the Council of 16 September 2009 on cross-border payments in the Community and

repealing Regulation (EC) No 2560/2001 amended by Regulation (EU) 2019/518 of the European Parliament and of the Council of 19 March 2019 amending Regulation (EC) No 924/2009 as regards certain charges on cross-border payments in the Union and currency conversion charges, the information on the currency conversion charges related to transfers.

Cash turnover: The sum of exchanges and payments to and from the central bank

CLS (Continuous Linked Settlement): A clearing and settlement model that enables the elimination of FX settlement risks. It is based on a multi-currency payment versus payment (PvP) mechanism. The CLS is operated by CLS Bank.

CROE (Cyber Resilience Oversight Expectations): The cyber resilience oversight expectations

CSDR (Central Securities Depositories Regulation): Regulation (EU) No 909/2014 of the European Parliament and of the Council of 23 July 2014 on improving securities settlement in the European Union and on central securities depositories and amending Directives 98/26/EC and 2014/65/EU and Regulation (EU) No 236/2012

Currency Interest Rate Swap (CIRS): Usually a medium or long-term transaction involving the exchange of different currencies, a series of interest payments on the principal and repayment of principals when the transaction is settled.

DORA (Digital Operational Resilience Act): Regulation (EU) 2022/2554 of the European Parliament and of the Council of 14 December 2022 on digital operational resilience for the financial sector and amending Regulations (EC) No 1060/2009, (EU) No 648/2012, (EU) No 600/2014, (EU) No 909/2014 and (EU) 2016/1011

Duration: Average remaining maturity of bonds. It is an indicator measuring the level of risk associated with the bond portfolio.

Exchange Rate Mechanism II: An exchange rate mechanism for establishing the conditions for an exchange rate policy co-operation between euro area countries and EU Member States not participating in the third stage of EMU. The ERM II is a multilateral system of fixed but adjustable exchange rates, where the mid-rate is surrounded by a normal, +/-15 per cent fluctuation band. All decisions in relation to the mid-rate and, as the case may be, a narrower fluctuation

band, are made on the basis of a joint agreement between the Member State concerned, the euro area countries, the ECB and the other Member States participating in the mechanism.

FGS Green Home Programme (FGS GHP): A programme launched under the Funding for Growth Scheme (FGS), as part of the MNB's Green Toolkit Strategy, to support the modernisation of the stock of Hungarian properties from an energy perspective and the implementation of green considerations in lending by financing the construction of new, highly energy-efficient flats and family houses.

FinTech: FinTech is a technology-driven financial innovation that can result in new business models, applications or products, and can have a significant impact on financial markets and institutions, and on the financial services themselves.

Foreign exchange futures: A stock exchange transaction where the basis of future settlement is a certain amount of standardised (expressed-in-contract) foreign exchange specified at the time of the deal.

Foreign exchange swap: Usually a short-term transaction involving the exchange of different currencies and, when the transaction is settled, exchange of the currencies again at the price determined in the contract by the cross rate and the interest rate of the currencies.

FX swap: See Foreign exchange swap

IDD (Insurance Distribution Directive): Directive (EU) 2016/97 of the European Parliament and of the Council on insurance distribution

IFR/IFD regulation: Regulation (EU) 2019/2033 of the European Parliament and of the Council of 27 November 2019 on the prudential requirements of investment firms and Directive (EU) 2019/2034 of the European Parliament and of the Council of 27 November 2019 on the prudential supervision of investment firms

IMF reserve quota: The freely drawable, i.e. not yet drawn portion of the IMF quota paid to the International Monetary Fund in SDR (Special Drawing Rights).

Interest rate swap (IRS): The exchange of fixed rate and variable rate interest on principal at pre-determined intervals, adjusted to certain market rates and conditions.

MIFID II (Markets in Financial Instruments Directive): Directive 2014/65/EU of the European Parliament and the Council on markets in financial instruments.

MNB Act: Act CXXXIX of 2013 on the Magyar Nemzeti Bank

Monetary financial institutions: The central bank, financial institutions and money market funds together constitute this institutional category within financial corporations.

O/N: Overnight deposit/loan

Option contract: For the owner of the foreign exchange option this means a right, but not an obligation, to buy or sell a certain amount of currency against another currency at a pre-determined rate, at or before a pre-determined date. If the holder of the option exercises this right, it will become an obligation for the seller (writer) of the option.

MAR (Market Abuse Regulation): Regulation (EU) No 596/2014 of the European Parliament and of the Council of 16 April 2014 on market abuse

MBS: Mortgage-backed securities

MoU: Memorandum of Understanding on cooperation between the MNB, EBA, ECB and EU authorities

MREL: Minimum requirement for own funds and eligible liabilities

Payment system: In the case of supervised systems, a form of cooperation established based on an agreement between the cooperating parties for the operation of the system defined in Section 6(1)(27) of the Credit Institutions Act. It is part of the financial infrastructure. It includes means of payment, bank procedures and interbank payment systems that together enable the execution of payments.

PEPP: Pan-European Personal Pension Product

Pmt: Act LIII of 2017 on the Prevention of and Combating Money Laundering and Terrorist Financing

PRIIPS: Regulation (EU) No 1286/2014 of the European Parliament and of the Council of 26 November 2014 on key information documents for packaged retail and insurance based investment products

PSD2 (Payment Services Directive 2): The revised Payment Services Directive. Directive 2015/2366/EU of the European

Parliament and of the Council of 25 November 2015 on payment services in the internal market, amending Directives 2002/65/EC, 2009/110/EC and 2013/36/EU and Regulation (EU) No 1093/2010, and repealing Directive 2007/64/EC

Repurchase and reverse repurchase transaction: An agreement on the transfer of the ownership right of a security with a repurchase obligation at a pre-determined price at a future date specified or to be specified at the time when the contract is concluded. During the term of the contract the buyer may either obtain the security which is the subject of the transaction and freely dispose over it (delivery repo transaction) or may not obtain it and may not freely dispose over it, in which case the security is deposited as a bail to the benefit of the buyer during the term of the contract (hold-in-custody repo).

Revaluation reserve: The revaluation reserve of the forint exchange rate and the revaluation reserve of foreign exchange securities are reserves that are part of the equity of the MNB.

– **Revaluation reserve due to forint exchange rate changes:** Unrealised exchange rate gains and losses on the forint exchange rate changes of foreign currency assets and liabilities are indicated in the forint exchange rate revaluation reserve, which constitutes a part of the equity.

– **Revaluation reserve of foreign exchange securities:** The valuation difference between the market value and cost rate of foreign exchange assets based on securities is indicated in the revaluation reserve of foreign exchange securities, which constitutes a part of the equity.

ROE: Return on Equity

SCAr: Commission Delegated Regulation (EU) 2018/389 of 27 November 2017 supplementing Directive (EU) 2015/2366 of the European Parliament and of the Council with regard to regulatory technical standards for strong customer authentication and common and secure open standards of communication

SEPA: Single Euro Payments Area, an area within which economic operators can effect and receive payments in euro anywhere, using one single payment account, in the same manner as in their own respective countries. Geographically, the Area covers the 28 EU Member States, Iceland, Liechtenstein, Norway, Switzerland and Monaco.

SREP: Supervisory Review and Evaluation Process

Third-party providers: The new players on the payment services market: account information service providers, payment initiation service providers and payment service providers issuing card-based cash-substitute payment instruments.

VaR: Value at Risk – a method for measuring risks. VaR quantifies the maximum amount of loss to be expected at a given confidence level for a specific time horizon.

Part B)
Audited financial statements
of the Magyar Nemzeti Bank

1 Independent auditor's report



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This is a translation of the Hungarian Report

Independent Auditor's Report

To the Shareholder of Magyar Nemzeti Bank

Opinion

We have audited the accompanying 2022 annual financial statements of Magyar Nemzeti Bank ("the Bank"), which comprise the balance sheet as at 31 December 2022 - showing a balance sheet total of HUF 28,060,849 million and a loss after tax for the year of HUF 401,954 million -, the related profit and loss account for the financial year then ended and notes to the annual financial statements, including a summary of significant accounting policies.

In our opinion, the annual financial statements give a true and fair view of the equity and financial position of the Bank as at 31 December 2022 and of the results of its operations for the financial year then ended in accordance with the Act C of 2000 on Accounting ("Hungarian Accounting Law").

Basis for opinion

We conducted our audit in accordance with Hungarian National Auditing Standards and with applicable laws and regulations in Hungary. Our responsibilities under those standards are further described in the "Auditor's responsibilities for the audit of the annual financial statements" section of our report.

We are independent of the Bank in accordance with the applicable ethical requirements according to relevant laws in effect in Hungary and the policy of the Chamber of Hungarian Auditors on the ethical rules and disciplinary proceedings and, concerning matters not regulated by any of these, with the International Ethics Standards Board of Accountants' (IESBA) International Code of Ethics for Professional Accountants (including International Independence Standards) (IESBA Code), and we have fulfilled our other ethical responsibilities in accordance with these requirements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Other matters

The Bank's annual financial statements as at 31 December 2021 were audited by another auditor who expressed an unmodified opinion on those financial statements on 27 April 2022.



Other information

Other information consists of the 2022 business report of the Bank. Management is responsible for the preparation of the business report in accordance with the Hungarian Accounting Law and other relevant legal requirements, if any. Our opinion on the annual financial statements does not cover the business report.

In connection with our audit of the annual financial statements, our responsibility is to read the business report and, in doing so, consider whether the business report is materially inconsistent with the annual financial statements or our knowledge obtained in the audit or otherwise appears to be materially misstated.

Concerning the business report it is our responsibility also, in accordance with the Hungarian Accounting Law, to consider whether the business report has been prepared in accordance with the Hungarian Accounting Law and other relevant legal requirements, if any.

In our opinion, the business report of the Bank for 2022 is consistent, in all material respects, with the 2022 annual financial statements of the Bank and the relevant requirements of the Hungarian Accounting Law.

Since no other legal regulations prescribe for the Bank further requirements with regard to its business report, we do not express opinion in this regard.

Further to the above, based on the knowledge we have obtained about the Bank and its environment in the course of the audit we are required to report whether we have identified any material misstatement in the business report, and if so, the nature of the misstatement in question. We have nothing to report in this regard.

Responsibilities of management and those charged with governance for the annual financial statements

Management is responsible for the preparation and fair presentation of the annual financial statements in accordance with the Hungarian Accounting Law, and for such internal control as management determines is necessary to enable the preparation of annual financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the annual financial statements, management is responsible for assessing the Bank's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting. Management is required to apply going concern principle unless the applicability of that principle is precluded by other provisions or there are facts and circumstances that contradict with the continuance of the Bank's business activity.

Those charged with governance are responsible for overseeing the Bank's financial reporting process.



Auditor's responsibilities for the audit of the annual financial statements

Our objectives are to obtain reasonable assurance about whether the annual financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with Hungarian National Auditing Standards and with applicable laws and regulations in Hungary will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these annual financial statements.

As part of an audit in accordance with Hungarian National Auditing Standards and with applicable laws and regulations in Hungary, we exercise professional judgment and maintain professional scepticism throughout the audit. We also:

- ▶ Identify and assess the risks of material misstatement of the annual financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- ▶ Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Bank's internal control.
- ▶ Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.
- ▶ Conclude on the appropriateness of management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Bank's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the annual financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the Bank to cease to continue as a going concern.
- ▶ Evaluate the overall presentation, structure and content of the annual financial statements, including the disclosures, and whether the annual financial statements represent the underlying transactions and events in a manner that achieves fair presentation.

We communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings,



including any significant deficiencies in internal controls of the Bank that we identify during our audit.

Budapest, 16 May 2023

(The original Hungarian version has been signed.)

Nagyváradiné Szépfalvi Zsuzsanna
Ernst & Young Kft.
1132 Budapest, Váci út 20.
Registration No. 001165

Dr. Hruby Attila
Registered auditor
Chamber membership No.: 007118

2 Balance sheet of the Magyar Nemzeti Bank

HUF millions

Note	ASSETS	31 Dec 2021	31 Dec 2022	Change
1	2	3	4	4-3
	I. RECEIVABLES DENOMINATED IN FORINTS	10,953,788	11,073,698	119,910
4.3.	1. Receivables from the central government	3,302,769	3,311,869	9,100
4.7.	2. Receivables from credit institutions	6,309,756	6,203,114	-106,642
4.10.	3. Other receivables	1,341,263	1,558,715	217,452
	II. RECEIVABLES DENOMINATED IN FOREIGN CURRENCY	14,932,652	16,502,644	1,569,992
4.9.	1. Gold and foreign exchange reserves	14,141,134	15,464,679	1,323,545
4.4.	2. Receivables from the central government	0	0	0
4.8.	3. Receivables from credit institutions	36,723	26,719	-10,004
4.10.	4. Other receivables	754,795	1,011,246	256,451
	III. BANKING ASSETS	261,805	287,185	25,380
4.12.	of which: invested assets	259,464	283,712	24,248
4.14.	IV. DEFERRED EXPENSES/ACCRUED INCOME	159,177	197,322	38,145
	V. TOTAL ASSETS (I+II+III+IV)	26,307,422	28,060,849	1,753,427
Note	LIABILITIES AND EQUITY	31 Dec 2021	31 Dec 2022	Change
1	2	3	4	4-3
	VI. LIABILITIES DENOMINATED IN FORINTS	19,404,098	21,320,242	1,916,144
4.5.	1. Central government deposits	1,356,350	912,782	-443,568
4.7.	2. Deposits by credit institutions	8,475,400	8,380,109	-95,291
	3. Banknotes and coins in circulation	7,675,234	8,226,122	550,888
4.11.	4. Other deposits and liabilities	1,897,114	3,801,229	1,904,115
	VII. LIABILITIES DENOMINATED IN FOREIGN CURRENCY	5,917,948	6,188,755	270,807
4.5.	1. Central government deposits	578,047	940,798	362,751
4.8.	2. Deposits by credit institutions	211,592	209,793	-1,799
4.11.	3. Other deposits and liabilities	5,128,309	5,038,164	-90,145
4.13.	VIII. PROVISIONS	1,111	909	-202
	IX. OTHER BANKING LIABILITIES	120,184	113,155	-7,029
4.14.	X. ACCRUED EXPENSES/DEFERRED INCOME	65,179	181,911	116,732
4.15.	XI. EQUITY	798,902	255,877	-543,025
	1. Share capital	10,000	10,000	0
	2. Retained earnings	208,333	151,239	-57,094
	3. Valuation reserves	0	0	0
4.16.	4. Revaluation reserves due to exchange rate changes	654,452	774,944	120,492
4.16.	5. Revaluation reserves of foreign currency securities	-16,789	-278,352	-261,563
	6. Profit/Loss for the year	-57,094	-401,954	-344,860
	XII. TOTAL EQUITY AND LIABILITIES (VI+VII+VIII+IX+X+XI)	26,307,422	28,060,849	1,753,427

16 May 2023, Budapest

Dr György Matolcsy
Governor of the Magyar Nemzeti Bank

3 Income statement of the Magyar Nemzeti Bank

HUF millions

Note	INCOME	2021	2022	Difference
1	2	3	4	4-3
4.18.	I. INTEREST AND INTEREST-RELATED INCOME DENOMINATED IN FORINTS	136,866	220,612	83,746
	1. Interest on receivables from the central government	66,970	91,267	24,297
	2. Interest on receivables from credit institutions	38,203	64,576	26,373
	3. Interest on other receivables	21,643	55,227	33,584
	4. Interest-related income	10,050	9,542	-508
4.18.	II. INTEREST AND INTEREST-RELATED INCOME DENOMINATED IN FOREIGN CURRENCY	204,623	287,018	82,395
	1. Interest on foreign exchange reserves	54,131	95,152	41,021
	2. Interest on receivables from the central government	0	0	0
	3. Interest on receivables from credit institutions	-40	-25	15
	4. Interest on other receivables	0	0	0
	5. Interest-related income	150,532	191,891	41,359
4.19.	III. INCOME ARISING FROM EXCHANGE RATE CHANGES	153,119	806,234	653,115
4.18.	IV. REALISED GAINS ARISING FROM FINANCIAL OPERATIONS	9,837	1,308	-8,529
4.21.	V. OTHER INCOME	27,458	33,291	5,833
	1. Fees and commissions	1,593	2,653	1,060
4.22.	2. Income other than fees and commissions	3,533	4,954	1,421
4.23.	3. Income from supervisory activities	22,332	25,684	3,352
4.13.	VI. PROVISIONS RELEASED	156	878	722
4.13.	VII. REVERSED IMPAIRMENT	494	3,299	2,805
4.24.	VIII. OPERATING INCOME	240	866	626
	IX. TOTAL INCOME (I+II+III+IV+V+VI+VII+VIII)	532,793	1,353,506	820,713
Note	EXPENSES	2021	2022	Difference
1	2	3	4	4-3
4.18.	X. INTEREST AND INTEREST-RELATED EXPENSES DENOMINATED IN FORINTS	206,829	1,188,789	981,960
	1. Interest on central government deposits	23,252	102,494	79,242
	2. Interest on deposits by credit institutions	158,347	962,423	804,076
	3. Interest on other deposits	700	21,817	21,117
	4. Interest-related expenses	24,530	102,055	77,525
4.18.	XI. INTEREST AND INTEREST-RELATED EXPENSES DENOMINATED IN FOREIGN CURRENCY	207,181	381,145	173,964
	1. Interest on central government deposits	-3,190	377	3,567
	2. Interest on deposits of credit institutions	-507	540	1,047
	3. Interest on other liabilities	-390	24,135	24,525
	4. Interest-related expenses	211,268	356,093	144,825
4.19.	XII. EXPENSES RESULTING FROM EXCHANGE RATE CHANGES	6,898	8,575	1,677
4.20.	XIII. COST OF ISSUING BANKNOTES AND COINS	12,427	13,182	755
4.18.	XIV. REALISED LOSSES ARISING FROM FINANCIAL OPERATIONS	34,870	28,737	-6,133
4.21.	XV. OTHER EXPENSES	7,718	7,430	-288
	1. Fees and commissions	2,367	2,815	448
4.22.	2. Expenses other than fees and commissions	5,351	4,615	-736
4.13.	XVI. PROVISIONS CHARGED	258	676	418
4.13.	XVII. IMPAIRMENT	58,430	53,158	-5,272
4.24.	XVIII. OPERATING COSTS AND EXPENSES	55,276	73,768	18,492
	XIX. TOTAL EXPENSES (X+XI+XII+XIII+XIV+XV+XVI+XVII+XVIII)	589,887	1,755,460	1,165,573
	XX. PROFIT/LOSS FOR THE YEAR (IX-XIX)	-57,094	-401,954	-344,860

16 May 2023, Budapest

Dr György Matolcsy
Governor of the Magyar Nemzeti Bank

4 Notes to the financial statements

4.1 MNB ACCOUNTING POLICIES

The Magyar Nemzeti Bank (MNB), the central bank of Hungary, is owned by the Hungarian State (the shareholder). Ownership rights are exercised by the minister in charge of public finances (the finance minister).

The MNB has been a member of the European System of Central Banks (ESCB) since the effective date of the Act promulgating the international treaty on the accession of Hungary to the EU, i.e. 1 May 2004.

The accounting policies of the MNB are based on the Act on Accounting (Act C of 2000), Act CXXXIX of 2013 on the Magyar Nemzeti Bank (hereinafter: the MNB Act) and Government Decree 221/2000 (XII.19) on the special reporting and accounting requirements applicable to the Magyar Nemzeti Bank (hereinafter: the MNB Decree).

The following sections present a brief description of the MNB's accounting system and the valuation and profit recognition rules, insofar as these differ from the general rules.

4.1.1. Changes in the regulatory environment

In 2022, one of the most significant changes in the MNB Act occurred in the rules related to the MNB's dividend payment and the central government's reimbursement obligation. In connection with these amendments, the MNB Decree was also changed.

In accordance with the practice of EU central banks, a rule-based dividend payment system was introduced. According to this, if the amount of MNB's equity exceeds the subscribed capital at the end of the year under review, one half of the MNB's annual profit shall be paid as a dividend. In addition to the automatic dividend payment, additional dividend payment is possible based on the decision of the Board of Directors to the extent specified by the law.

A new recapitalisation rule was introduced instead of the previous two types of reimbursement rules. If the amount of equity falls below the subscribed capital, the difference shall be reimbursed from the central budget directly to the retained earnings of the MNB within 5 years, in equal instalments every year. Any new reimbursement obligations arising within the 5-year period shall also be reimbursed within 5 years, with the provision that the central budget ensures that the MNB's equity does not remain below the level of the subscribed capital for a prolonged period of time. If the amount of equity exceeds the subscribed capital, all outstanding reimbursement obligations shall cease.

Based on the MNB Act in force, the amount of the dividend or the reimbursement obligation established in the annual financial statements is accounted in the year following the year under review. There were no changes in the rules regarding the accounting of the dividend. At the same time, in relation to the compensation of losses the accounting has changed to the extent that previously the reimbursement regarding the revaluation reserves based on the preliminary data and fulfilled by 31 March of the year following the year under review had to be recorded in the balance sheet of the year under review as receivables from the central government. Any adjustments based on the final data and the reimbursement of the loss exceeding the retained earnings had to be recorded in the year of the payment. Based on the current rule, the amount of the current reimbursement obligation shall be accounted in full directly to the retained earnings in the year following the year under review at the time of financial settlement.

Based on the above, the balance sheet and the income statement in the financial statements for 2022 are not affected by the legal changes. In 2023, neither the old nor the current rules allow for a dividend payment, as the sum of the retained earnings and the result for the year under review is negative. Based on the current MNB Act, a reimbursement obligation will not be incurred in 2023, as the equity exceeds the subscribed capital. In line with the Act before the amendments,

there would be no need for compensation in relation to the revaluation reserves, as the sum balance of these reserves is positive, but the HUF 250.7 billion negative difference of the loss incurred in the year under review in excess of the retained earnings would have to be reimbursed to the retained earnings by the central budget in 2023. As a result, the legal amendment in 2023 results in non-restructuring of the liability side in the balance sheet (in the case of reimbursement, the KESZ account will be charged to increase the retained earnings) and does not have an effect on the result. For more details on changes in equity, see Section 4.15.

4.1.2. The MNB's accounting framework

One of the key accounting principles of the MNB is that transactions are booked for the period in which they occur unless the financial year is already closed. This is especially important for the accurate measurement of exchange rate gains and losses, in particular foreign exchange sales and purchases. Spot foreign currency transactions which involve foreign exchange conversions are recorded in the books on the transaction date. Assets and liabilities arising from such transactions affect the MNB's foreign currency position from the date of entering into the transaction. The same procedure is applied to recording the revaluation difference in the balance sheet relating to derivative transactions for hedging purposes.

On a daily basis, the MNB records:

- exchange rate differences arising from the revaluation of its foreign assets and liabilities and off-balance sheet derivative transactions recorded for hedging purposes;
- amortisation of the securities' price gains and losses; and
- accrued/deferred interest arising from on and off-balance sheet assets and liabilities from hedging transactions.

Pursuant to the MNB Decree, for the purpose of reporting data to the owner, the MNB must close accounts relating to its assets, liabilities and income and prepare trial balances on a quarterly basis, in accordance with the procedures specified in its accounting policies.

For internal use, the MNB compiles a balance sheet and income statement on a monthly basis; these are supported by:

- market valuation of foreign currency securities;
- breakdown and recording of realised and unrealised portions of foreign exchange gains and losses derived from daily revaluation; and
- charging of depreciation and amortisation.

Upon the quarterly closing of accounts, the MNB measures its off-balance sheet contingent and future liabilities arising from derivative transactions for other purposes and securities lending operations based on international agreements (in this case, the liabilities are equal to the purchase value of the collateral received) and other off-balance sheet liabilities. It also measures the receivables and securities in the balance sheet, and additionally measures the financial investments at the end of the year and at the second quarter. As a result of this measurement, the MNB recognises impairment losses as necessary and forms provisions for off-balance sheet liabilities.

The balance sheet preparation date is the 15th working day of January in the year following the reporting year. For this report, the balance sheet preparation date was 20 January 2023.

By law, the MNB is also required to report to Parliament. The MNB submits a single report to both Parliament and the Ministry in charge of public finances (Ministry of Finance), which exercises the rights of ownership as laid down in the MNB Act. This takes the form of an Annual Report, which contains a business report describing the MNB's structure, operations and state of affairs during the reporting year, and the MNB's annual financial statements defined by the Act on Accounting, as adopted by the Board of Directors with the auditor's opinion. The Supervisory Board submits an opinion

on the Annual Report and a report on such to the shareholder. The Annual Report is published in unabridged form on the internet in Hungarian and in English. The website is accessible at: <http://english.mnb.hu>.

Additionally, the Governor of the MNB also reports to the Parliament's committee responsible for economic affairs on the half-year activity of the MNB. This report is the Half-year Report, which contains a business report describing the MNB's structure, operations and half-year activity, as well as the half-year financial statements as defined by the Act on Accounting and compiled by the Board of Directors. The Half-year Report is also published on the internet in Hungarian.

Pursuant to the MNB Decree, the MNB is not obliged to draw up consolidated financial statements.

The financial statements of the MNB must be audited by the statutory auditor in compliance with the Act on Accounting. The registered auditor of the MNB is Dr Attila Hruby (Ernst & Young Kft.), Chamber membership number: 007118.

The person authorised to sign the Annual Report is Dr György Matolcsy, Governor of the Magyar Nemzeti Bank.

The person responsible for accounting services is Gábor Kalina, registration number: 194599.

4.1.3. Major valuation principles

Receivables from the central government

Securities stated under receivables from the central government are recorded in the balance sheet at amortised purchase price and include no interest. The difference between the purchase price excluding interest and the face value is shown in the MNB's income statement as a valuation gain or loss in proportion to the time elapsed.

Receivables from credit institutions

Mortgage bonds and securities issued by credit institutions with government guarantees are recorded in the balance sheet under 'Receivables from credit institutions' at amortised purchase price net of interest. The market value difference at acquisition is shown in the MNB's 'Interest-related income' as a valuation gain or loss in proportion to the time elapsed.

Interest-free refinancing loans within the framework of the Funding for Growth Scheme (FGS, FGS+ and FGS GHP) and the base rate fixed loans provided to credit institutions with collateral (securities, large entity loan receivables) are recorded in the balance sheet at the disbursed amount.

Other receivables

Corporate bonds are recorded in the balance sheet under 'Other receivables' at amortised purchase price, net of interest. The market value difference at acquisition is shown in the MNB's 'Interest-related income' as a valuation gain or loss in proportion to the time elapsed.

Receivables from supervisory activities are stated in the balance sheet, along with any related impairment. The MNB records supervisory fees imposed in line with the incoming data reported by the institutions and reports, and the penalties imposed are recorded in accordance with the final resolutions. Supervisory fees, penalties levied and fees from public proceedings are recognised as 'Income from supervisory activities'.

The balance of 'Other receivables' also contains employee loans and loans provided to other legal entities in the amount of the disbursements. The related interest income is stated under 'Interest on other receivables'.

Valuation of receivables

Impairment losses may not be recorded in connection with receivables from the central government.

'Receivables from credit institutions' and 'Other receivables' are tested for impairment and if the book value of the receivable is higher than its expected recovery value, an impairment loss is recorded, in line with the MNB's impairment policy. This does not apply to receivables with market valuation and collateralised monetary policy receivables.

With the exception of government bonds and bonds issued with government guarantees, securities that are denominated in forints and purchased for monetary policy purposes are tested for impairment in line with the corresponding rules, and impairment is recorded in proportion to the risk of losses. Other forint-denominated securities held for monetary policy purposes (mortgage bonds, corporate bonds) are tested for impairment separately for each portfolio (held-for-sale portfolio, held-to-maturity portfolio). With regard to the held-for-sale portfolio, the appropriate amount of impairment is defined as the negative difference between the book value and the market value, provided that such difference (loss) appears to be a permanent, material amount. With regard to the held-to-maturity portfolio, the impairment methodology is based on the risk of non-performance and the related expected loss, ignoring the materiality criteria.

Valuation of foreign currency assets and liabilities and recognition of exchange rate gains

In its books, the MNB records all foreign currency assets, including the precious metals held for central bank purposes based on the MNB Decree, and liabilities at the official exchange rate prevailing on the date of acquisition. If a foreign currency asset or liability is created as a result of foreign exchange conversion, the exchange rate gain or loss arising from the difference between the actual and the official exchange rate is recorded by the MNB as conversion income for that particular date and is stated under 'Gains/losses from exchange rate changes' in the income statement.

The MNB carries out a daily revaluation of foreign currency assets and liabilities as well as off-balance sheet assets and liabilities arising from derivative transactions for hedging purposes, taking account of variations in the official exchange rate. As a result of this revaluation, balance sheet items denominated in foreign currency are stated at the amount converted at the official exchange rate prevailing on the balance sheet date. Banking assets and banking liabilities in foreign currencies (with the exception of foreign investments) and foreign currency accruals and derivative transactions for purposes other than hedging do not form part of the revaluation.

Income received in foreign currency is stated at the official exchange rate prevailing on the given date.

Daily accounting for accrued income is preceded by reversing the accrued income from the previous day. As a result, foreign currency accruals are recorded in the balance sheet at the official exchange rate without revaluation.

In respect of foreign exchange gains and losses arising in the course of daily revaluation, only realised exchange rate gains and losses can be stated as a profit item, while the unrealised result is reported under 'Equity' in the item 'Revaluation reserve due to exchange rate changes'.

Realised income in a particular currency arises as a result of a decrease in the net foreign currency position (in absolute terms). Realised income arises as the difference between the value of the change in the net foreign currency position at the official exchange rate and the average cost rate prevailing on that particular date.

Foreign currency securities

Foreign currency securities are stated at market price. The difference between the market value (mid prices applied by the instrument facilitating portfolio management) prevailing on the date of valuation and the amortised purchase value is recorded in 'Revaluation reserve of foreign currency securities' as part of 'Equity'. Exchange rate gains or losses realised on sales are stated under 'Realised gains/losses arising from financial operations'.

The MNB measures its securities on the basis of market prices prevailing on the last working day of each month. However, if adequately liquid prices are not ensured on this day in respect of a certain foreign currency, the valuation of securities is based on the market prices available on the previous working day.

Foreign currency securities managed by external trustees based on a mandate are also stated at market price, applying the prices received from the custodian.

Security repurchase transactions based on international agreements are recorded as credit/deposit transactions, while the related receivables or liabilities are stated as off-balance sheet items.

Securities lent through securities lending operations based on international agreements need not be removed from foreign exchange reserves; they are recognised as off-balance sheet items. Non-cash collateral and investments from cash collateral must be recorded as contingent liabilities under off-balance sheet items and, in the event that their market value is negative, a provision of an equal amount must be created for the investments on a quarterly basis.

Accounting rules relating to the IMF quota

Part of the IMF quota subscribed in foreign currency and denominated in SDR as a callable loan is stated under foreign exchange reserves.

The part of the quota paid in forints and recorded in SDR is presented under 'Other foreign currency receivables' in the balance sheet. The related IMF forint deposit is reported on the liabilities side of the balance sheet. It is the MNB's duty to ensure at least annually that the amount of the IMF's forint deposit is equal to the amount of the quota paid in forints. As this deposit account is only formally a HUF account, it is reported under 'Other foreign currency payables' in the balance sheet.

The SDR allocation aims to increase the foreign exchange reserves of the IMF's members. The amount received increases the MNB's foreign exchange reserves and creates a liability to the IMF without a maturity date on the liability side of the balance sheet. This transaction has an effect on profit and loss (interest must be paid on the SDR amount received) if it is utilised.

Accounting rules relating to derivatives

Based on the transaction purpose, the MNB distinguishes between two groups of derivative transactions: hedging transactions, and derivatives for purposes other than hedging.

Hedging transactions are defined as transactions which reduce the risk arising from changes in the exchange rate or market value of a specific asset or liability or open position, are directly related to such, are announced as hedging transactions at the start of the contract and neutralise or significantly mitigate the risk that is intended to be hedged. Furthermore, derivatives with the government or non-resident counterparties to hedge these transactions are also regarded as hedging transactions. FX transactions for the purpose of setting the benchmark FX structure or decreasing in absolute terms the remaining average duration of the interest-bearing assets and liabilities, are deemed macro hedging transactions.

Derivatives are stated under off-balance sheet assets and liabilities. The aggregate revaluation difference of foreign currency assets and liabilities arising from hedging transactions is reported on the balance sheet (depending on the balance of such, either in 'Other foreign currency receivables or liabilities', or 'Foreign currency receivables from or liabilities to the central government or credit institutions'), including the interest accrued in proportion to the time elapsed (as accrued income or accrued expenses).

When derivative transactions for purposes other than hedging are closed, the income from such transactions is stated in the lines of income and expenses arising from exchange rate changes when foreign exchange transactions are involved, and in the lines of interest-related income and interest-related expenses for transactions linked to interest rate changes. While such transactions are not revalued, consistent with the principle of prudence, in reasonable cases, based on the information available at the balance sheet preparation date, a provision is formed on a quarterly basis, equal to the negative market value of the transaction.

Banking assets and liabilities

Banking assets and liabilities are stated on the respective sides of the balance sheet. These consist of the following:

- assets and liabilities not directly related to central bank functions and bank operations (such as settlements relating to taxes, contributions, payments to employees, creditors);
- liabilities arising from banknotes no longer accepted as legal tender but not yet exchanged;
- investments; and
- assets required for operating the organisation (such as intangible assets, tangible assets, and inventories).

The MNB's balance sheet does not state cash among liquid assets. The central bank is the exclusive issuer of banknotes and coins. Notes and coins held at the Cashier and the Depository are not in circulation and are therefore deducted from banknotes and coins on the liabilities side of the balance sheet.

Depreciation rates applied by the Magyar Nemzeti Bank

Description	<i>Per cent</i>
	31 Dec 2022
Concessions, licences and similar rights	14.5–17
Trademarks patents and similar assets	10–50
Owned and managed buildings	2–3
Vehicles (cars) *	20
Telecommunication devices, office equipment, machines	10–50
Office equipment	5–50
Computer hardware	13–33
Cash-processing equipment	5–50
Instruments	20
Bank security devices	2–50
Other equipment and devices	3–50
<i>* Residual value of vehicles: 20 per cent</i>	

The depreciation rates are determined individually based on estimated useful economic life. Depreciation is charged on a straight-line basis in every case. The MNB records no depreciation if the assets do not lose their value in use or if the value increases from year to year, given the particular nature of the assets (e.g. land, works of art, art treasures).

4.2 EFFECTS OF MACROECONOMIC TRENDS ON THE 2022 BALANCE SHEET AND INCOME STATEMENT OF THE MAGYAR NEMZETI BANK

In 2022, the MNB incurred a loss of HUF 402 billion. The most significant item was interest and interest-related losses, the increase in which was only partially offset by the higher income from exchange rate changes. The balance sheet total as of 31 December 2022 amounted to HUF 28,060.8 billion, showing an increase of HUF 1,753.4 billion compared to the end-2021 balance.

On the assets side, the increase in gold and foreign currency reserves, which was primarily linked to exchange rate changes, contributed significantly to the expansion of the balance sheet total. In terms of the asset purchase programmes, the purchase of corporate bonds within the BFGS increased the balance sheet total, while the decline in FGS loans reduced the balance sheet total. On the liabilities side, as a result of the issues in December the volume of discount bonds and

the balance of coins in circulation rose to the largest extent. In addition, the liabilities in foreign currency increased the balance sheet total, due to the expansion of the foreign currency deposits of the central government and the decline of other foreign currency liabilities. On the other hand, the volume of the forint deposits of the central government and the forint deposits by credit institutions also decreased. The decline in forint deposits by credit institutions (current accounts, O/N, one-week and variable rate deposit deposits) amounted to HUF 95 billion. The MNB's equity was also lower, due to the decrease in the sum of the balances of the revaluation reserves and to the loss in 2022.

A net interest and interest-related loss of HUF 1,062.3 billion was recorded in 2022, which was HUF 989.8 billion higher compared to the loss registered in 2021. The forint interest and interest-related result showed a loss of HUF 968.2 billion, an increase of HUF 898.2 billion versus 2021. This was largely due to the fact that the interest paid on the liquidity-absorbing instruments (one-week deposits, required reserves, deposit quick tender) rose in connection with the higher central bank base rate. Another explanation for the increase in the loss is that the result of the interest rate swap transactions concluded with credit institutions turned negative in 2022. The FX interest and interest-related loss was HUF 94.1 billion, which was HUF 91.6 billion higher than the previous year's loss. The reasons for the deterioration are that the result of forward transactions concluded to cover the risk of reserves turned out unfavourably, due to the rise in foreign exchange yields, and that the volume of transactions providing euro liquidity concluded with domestic credit institutions rose.

Net income from exchange rate changes, driven partly by the volume of foreign currency sales and partly by the difference between the official exchange rate and the average cost rate of the given currencies, continued to be a significant profit item in 2022. Realised net gains on exchange rate changes amounted to HUF 797.7 billion in 2022, with the contributing factors being the higher conversion volume versus 2021 and the depreciation of the forint.

The banking crisis in the USA and collapse of Credit Suisse that occurred after the balance sheet date in early 2023 did not have any direct effects on the MNB or its balance sheet. At the same time, as the institution responsible for supervising the financial system, the MNB monitored the stability of the banking sector and potential risks very carefully during this period.

For more details on the factors affecting net income, see Section 3.12. of the Business Report.

4.3 FORINT RECEIVABLES FROM THE CENTRAL GOVERNMENT

HUF millions

B/S line	Remaining maturity	Balance		Change
		31 Dec 2021	31 Dec 2022	
	Government bonds maturing within 1 year	0	0	0
	Government bonds maturing within 1 to 5 years	175,623	280,317	104,694
	Government bonds maturing in over 5 years	3,127,146	3,031,552	-95,594
I.1.	Total receivables from the central government	3,302,769	3,311,869	9,100

The balance of forint receivables from the central government was HUF 3,311.9 billion at the end of 2022, reflecting a small rise. This increase is linked to the stock of government bonds withdrawn as collateral when the FGS loans of Sberbank, which is in liquidation, were terminated. Compared to the end of 2021, the face value of the stock of fixed-rate, typically long-term government bonds rose by HUF 15.8 billion, while the related positive exchange rate difference decreased by HUF 6.7 billion. The majority of government securities had a maturity of more than 5 years as at 31 December 2022.

4.4 FOREIGN CURRENCY RECEIVABLES FROM THE CENTRAL GOVERNMENT

Neither at end-2021 nor at end-2022 was any amount listed in the item for foreign currency receivables from the central government. The balance of currency swaps with the central government showed a net credit balance, and thus these items were stated as 'Foreign currency liabilities of the central government' (see Section 4.5).

4.5 FORINT AND FOREIGN CURRENCY LIABILITIES OF THE CENTRAL GOVERNMENT

Forint deposits of the central government

HUF millions

B/S line	Description	Balance		Change
		31 Dec 2021	31 Dec 2022	
	Single Treasury Account (KESZ)	1,355,080	909,270	-445,810
	Deposit by Government Debt Management Agency (ÁKK Zrt)	234	191	-43
	Public sector instant payment accounts	978	3,263	2,285
	Other	58	58	0
VI.1.	Forint deposits of the central government	1,356,350	912,782	-443,568

The balance of central government forint deposits declined by HUF 443.6 billion. The change was mainly in the KESZ account, due to budgetary and financing processes. The balance of the instant payment accounts rose by HUF 2.3 billion.

Foreign currency liabilities of the central government

HUF millions

B/S line	Description	Balance		Change
		31 Dec 2021	31 Dec 2022	
	Foreign currency deposits of the central government	345,521	608,005	262,484
	Swap and forward transactions with the central government	0	250	250
	Currency swaps with the central government	232,526	332,543	100,017
VII.1.	Foreign currency liabilities of the central government	578,047	940,798	362,751

The total amount of the foreign currency deposits and currency swaps of the central government was HUF 940.8 billion on 31 December 2022, up HUF 362.8 billion versus the end of 2021. The increase of HUF 262.5 billion in government foreign currency deposits was triggered by the debt management activities of the Government Debt Management Agency. The total amount of forward transactions concluded to set the interest and currency structure of foreign currency debt was HUF 332.8 billion at the end of 2022.

Foreign currency liabilities of the central government, broken down by remaining maturity

HUF millions

B/S line	Remaining maturity	Balance		Change
		31 Dec 2021	31 Dec 2022	
	- within 1 year	345,521	763,894	418,373
	- within 1 to 5 years	191,070	117,946	-73,124
	- over 5 years	41,456	58,958	17,502
VII.1.	Foreign currency liabilities of the central government	578,047	940,798	362,751

4.6 NET POSITIONS VIS-À-VIS THE CENTRAL GOVERNMENT

HUF millions

B/S line	Description	Balance		Change
		31 Dec 2021	31 Dec 2022	
I.1.—VI.1.	Net forint position	1,946,419	2,399,087	452,668
II.2.—VII.1.	Net foreign currency position	-578,047	-940,798	-362,751
	Total	1,368,372	1,458,289	89,917

4.7 FORINT RECEIVABLES FROM AND LIABILITIES TO CREDIT INSTITUTIONS

Forint receivables from credit institutions

HUF millions

B/S line	Description	Balance		Change
		31 Dec 2021	31 Dec 2022	
	FGS refinancing loans	2,865,189	2,562,163	-303,026
	Covered mortgage bonds	671,415	690,914	19,499
	Collateralised loans	2,623,373	2,623,373	0
	Securities issued with government guarantees	153,005	153,109	104
	Other receivables	5,252	184,102	178,850
	Total gross receivables from credit institutions	6,318,234	6,213,661	-104,573
	Impairment loss for receivables from credit institutions	-8,478	-10,547	-2,069
I.2.	Total receivables from credit institutions	6,309,756	6,203,114	-106,642

Forint receivables from credit institutions totalled HUF 6,203.1 billion on 31 December 2022, which is HUF 106.6 billion lower than at the end of 2021. The balance of FGS loans dropped by HUF 303 billion overall, and due to maturities the stock decreased by HUF 484.7 billion. The stock of loans used (already drawn) under the FGS Green Home Programme, which was launched in October 2021, increased from HUF 7.3 billion at the end of 2021 to HUF 188.9 billion in one year. The volume of mortgage bonds rose by HUF 19.5 billion in 2022, also considering maturities during the year, due to the purchases under Green Mortgage Bond Purchase Programme and the Mortgage Bond Renewal/Rollover Facility. In addition to the amount of overdue receivables from credit institutions under liquidation, the item 'Other receivables' contains the receivable-type amounts of HUF 178.8 billion of collateral (margin) placed due to changes in the market value of forward transactions concluded with credit institutions as at 31 December 2022. The sign-dependent breakdown of margin accounts took place as of 1 January 2022, while before that it was included in forint liabilities to credit institutions with a negative sign (amounting to HUF 13.4 billion at the end of 2021).

Gross forint receivables from credit institutions by remaining maturity

HUF millions

Remaining maturity	Balance		Change
	31 Dec 2021	31 Dec 2022	
- matured	5,252	5,252	0
- within 1 year	196,698	926,464	729,766
- within 1 to 5 years	4,514,839	3,762,555	-752,284
- over 5 years	1,601,445	1,519,390	-82,055
Total gross receivables from credit institutions	6,318,234	6,213,661	-104,573

Forint liabilities of credit institutions

HUF millions

B/S line	Description	Balance		Change
		31 Dec 2021	31 Dec 2022	
	Current accounts	1,369,371	2,491,194	1,121,823
	Variable rate deposit tender	0	2,135,000	2,135,000
	Deposit quick tender	0	3,641,460	3,641,460
	O/N deposits	570,690	15,271	-555,419
	One-week deposits	6,447,280	0	-6,447,280
	Instant payment accounts	88,059	97,184	9,125
VI.2.	Deposits of credit institutions	8,475,400	8,380,109	-95,291

The liquidity-absorbing deposits of credit institutions fell by HUF 95.3 billion compared to end-2021 and amounted to HUF 8,380.1 billion as of 31 December 2022. This change was the result of several larger-volume items. Due to the new liquidity-absorbing measures launched by the MNB in October 2022, a significant restructuring of deposits occurred. With the increase in the level of required reserves, the stock of banking system liquidity placed in the reserve account at the end of 2022 rose to HUF 2,491.2 billion (from HUF 214.7 billion at 31 December 2021). Due to the phase-out during the year (April), the stock of preferential deposits fell by HUF 1,163.1 billion. The longer-term variable rate deposit (up to 6 months), which amounted to HUF 2,135 billion on the last day of 2022, serves the long-lasting absorption of liquidity. From 14 October, the MNB announced overnight deposit quick tenders on a daily basis, the amount of which was HUF 3,641.5 billion on 31 December 2022. As a result of the measures, the stock of former O/N deposits declined by HUF 555.4 billion to HUF 15.3 billion, while the stock of one-week deposits gradually decreased and then ran out on 20 October due to the suspension of tenders, causing a change of HUF 6,447.3 billion between the periods under review.

4.8 NET POSITIONS VIS-À-VIS CREDIT INSTITUTIONS

HUF millions

B/S line	Description	Balance		Change
		31 Dec 2021	31 Dec 2022	
I.2.—VI.2.	Net forint position	-2,165,644	-2,176,995	-11,351
II.3.—VII.2.	Net foreign currency position	-174,869	-183,074	-8,205
	Total	-2,340,513	-2,360,069	-19,556

Net liabilities to credit institutions increased overall by HUF 19.6 billion to HUF 2,360.1 billion by end-2022. Within this, the net forint liabilities changed somewhat more (see Section 4.7).

Net foreign currency liabilities to credit institutions rose by HUF 8.2 billion versus end-2021, amounting to HUF 183.1 billion as of 31 December 2022. Within this, the significant decline in the stock of credit institution's foreign currency deposits and the aggregate change in the balance of foreign currency swaps with credit institutions worsened the net foreign currency position, while the decrease in foreign currency deposits placed by domestic credit institutions at the MNB improved it.

Foreign currency receivables from and liabilities to credit institutions, broken down by remaining maturity

HUF millions

B/S line	Remaining maturity	Balance		Change
		31 Dec 2021	31 Dec 2022	
	- within 1 year	20,306	5,420	-14,886
	- within 1 to 5 years	4,209	5,108	899
	- over 5 years	12,208	16,191	3,983
II.3.	Foreign currency receivables from credit institutions	36,723	26,719	-10,004
	- within 1 year	211,592	209,793	-1,799
	- within 1 to 5 years	0	0	0
	- over 5 years	0	0	0
VII.2.	Foreign currency liabilities to credit institutions	211,592	209,793	-1,799
II.3.-VII.2.	Net foreign currency position	-174,869	-183,074	-8,205

4.9 GOLD AND FOREIGN EXCHANGE RESERVES OF THE CENTRAL BANK

HUF millions

B/S line	Description	Balance		Change
		31 Dec 2021	31 Dec 2022	
	Gold reserve	1,799,194	2,071,789	272,595
	Reserve position in the IMF	137,296	150,581	13,285
	Foreign currency deposits	4,044,768	6,097,681	2,052,913
	Foreign currency securities	8,143,037	7,144,628	-998,409
	Foreign currency repo transactions	16,839	0	-16,839
II.1.	Gold and foreign exchange reserves	14,141,134	15,464,679	1,323,545

For statistical purposes, the MNB regularly publishes the amount of foreign exchange reserves. According to the statistical rules, foreign exchange reserves also include accrued interest, and consequently foreign exchange reserves differ in amount according to statistical and accounting rules.

Excluding accrued interest, foreign exchange reserves amounted to HUF 15,464.7 billion as of 31 December 2022, exceeding the figure for end-2021 by HUF 1,323.5 billion. The amount of foreign exchange reserves was increased by euro transfers from the European Commission, transactions concluded with international and other foreign financial institutions, and changes in cross rates. By contrast, the reserves declined due to disbursements by the Government Debt Management Agency to repay debt, the foreign exchange expenditures of the Hungarian State Treasury and the expiry of FX swaps providing forint liquidity to credit institutions. Foreign exchange sales to cover foreign exchange needs for energy imports also contributed to the decline. The difference between the value of the swap transactions providing euro liquidity announced at the end of 2022 and the repurchase agreements used to finance them had a temporary effect on the evolution of the reserve level. As a result of these factors, the size of foreign exchange reserves denominated in euros rose by only EUR 0.3 billion to EUR 38.6 billion at 31 December 2022. The stock of reserves denominated in forints increased by a larger amount due to the weakening of the forint exchange rate versus the euro.

The end-2022 balance of foreign currency securities contained the securities managed by an external trustee based on a mandate amounting to HUF 967.3 billion (13.5 per cent in total).

4.10 OTHER FORINT AND FOREIGN CURRENCY RECEIVABLES

Other forint receivables

HUF millions

B/S line	Description	Balance		Change
		31 Dec 2021	31 Dec 2022	
	Total other gross forint receivables	1,440,453	1,702,396	261,943
	Impairment loss for other receivables	-99,190	-143,681	-44,491
I.3.	Other forint receivables	1,341,263	1,558,715	217,452

The aggregated balance of other gross forint receivables was HUF 1,702.4 billion on 31 December 2022, of which 99 per cent was accounted for by the central bank's purchases of securities as part of the monetary policy instruments. The balance of receivables from supervisory activities fell from HUF 9.6 billion to HUF 6.2 billion as of 31 December 2022 as a result of the year-end write-off of magisterial and supervisory claims classified as irrecoverable. An impairment loss was recognised for 97.3 per cent of these receivables, in line with the MNB's regulations. The item 'Impairment loss for other forint receivables' also contains impairment on securities, which represents 8.8 per cent of the portfolio. The total amount of preferential property loans and personal loans granted by the MNB to its employees amounted to HUF 6.2 billion as at 31 December 2022. The MNB had lending claims of HUF 7.5 billion from KELER KSZF Zrt. at the end of 2022. The company provides settlement services in natural gas market transactions, which, in connection with VAT financing, required temporary fundraising to manage its liquidity situation.

Other foreign currency receivables

HUF millions

B/S line	Description	Balance		Change
		31 Dec 2021	31 Dec 2022	
	Forint payment of IMF quota	747,072	819,361	72,289
	Foreign hedging transactions*	6,806	191,095	184,289
	Other	917	790	-127
II.4.	Other foreign currency receivables	754,795	1,011,246	256,451

* The revaluation difference of hedging derivative transactions is stated in net terms, in accordance with the MNB Decree.

The forint payment of the IMF quota rose, due to the 9.7-per cent depreciation of the forint exchange rate against the SDR. The item 'Foreign hedging transactions' includes the net debit balance of swap and forward transactions with non-resident counterparties concluded by the MNB.

4.11 OTHER FORINT DEPOSITS AND LIABILITIES

Other forint liabilities

HUF millions

B/S line	Description	Balance		Change
		31 Dec 2021	31 Dec 2022	
	International financial institutions' forint deposits	1,085,372	2,342,224	1,256,852
	Discount Bills issued by the MNB	796,000	1,375,650	579,650
	Other legal entities' bank accounts	13,586	81,127	67,541
	Other legal entities' instant payment accounts	1,329	1,464	135
	Other liabilities	827	764	-63
VI.4.	Other forint deposits and liabilities	1,897,114	3,801,229	1,904,115

The amount of other forint deposits and liabilities doubled, amounting to HUF 3,801.2 billion as of 31 December 2022. The forint deposits of the European Commission and other foreign financial institutions increased the most. The stock of central bank discount bills issued in December 2022 and outstanding on the last day of the year exceeded the stock at the end of the previous year by HUF 579.6 billion. The balance of the bank accounts of domestic and foreign other legal entities also increased between the two dates.

Other foreign currency liabilities

HUF millions

B/S line	Description	Balance		Change
		31 Dec 2021	31 Dec 2022	
	Repo transactions	2,952,000	2,539,811	-412,189
	IMF deposits	2,047,309	2,245,433	198,124
	Foreign deposits	72,947	213,549	140,602
	Foreign hedging transactions*	56,033	39,076	-16,957
	Other liabilities	20	295	275
VII.3.	Other foreign currency liabilities	5,128,309	5,038,164	-90,145

* The revaluation difference of hedging transactions is stated in net terms, in accordance with the MNB Decree.

The balance of other foreign currency liabilities declined by HUF 90.1 billion to HUF 5,038.2 billion as of 31 December 2022. Within this, the total amount of repo transactions concluded with foreign partners and repo calls from international organisations was HUF 412.2 billion lower, amounting to HUF 2,539.8 billion at the end of 2022. The aggregate credit balance of foreign hedging transactions decreased by HUF 17 billion. The stock of the IMF deposits rose by HUF 198.1 billion, due to exchange rate changes. The amount of foreign deposits rose by HUF 140.6 billion, owing to an increase in the accounts reflecting changes in the market value of hedging transactions and a rise in the deposit of the European Commission.

Other foreign currency liabilities by remaining maturity

HUF millions

B/S line	Remaining maturity	Balance		Change
		31 Dec 2021	31 Dec 2022	
	- within 1 year	3,797,555	3,613,022	-184,533
	- within 1 to 5 years	29,731	0	-29,731
	- over 5 years	1,614	0	-1,614
	- without maturity	1,299,409	1,425,142	125,733
VII.3.	Other foreign currency liabilities	5,128,309	5,038,164	-90,145

The item 'Liabilities without maturity' includes liabilities derived from SDR allocations carried out by the IMF in the amount of SDR 2,850.5 million; the increase was due to exchange rate changes.

Currency structure of other foreign currency liabilities – without foreign hedging transactions

HUF millions

Description	Balance		Change
	31 Dec 2021	31 Dec 2022	
- EUR	3,040,873	2,605,503	-435,370
- USD	-15,876	310	16,186
- SDR	1,441,195	1,639,218	198,023
- Other	606,084	754,057	147,973
Other foreign currency liabilities	5,072,276	4,999,088	-73,188

Most of the item 'Other' amounting to HUF 754.1 billion on 31 December 2022 consists of the forint coverage of the IMF quota adjusted by revaluation.

4.12 INVESTMENT ASSETS

In addition to intangible assets, tangible assets and capital expenditure (HUF 46.4 billion), investment assets also include shares in investments (HUF 13 billion in foreign investments and HUF 224.3 billion in domestic investments).

Changes in the gross value, depreciation and net value of intangible assets, tangible assets and capital expenditure

HUF millions

	Assets							Intangible assets, tangible assets and capital expenditure
	Intangible assets		Tangible assets				Capital expenditure and advances given	
	Rights and intellectual property	Software under development	Buildings and accessories	Equipment	Cultural goods	Money Museum collection		
Gross value								
31 Dec 2021	23,222	1,964	15,646	28,850	11,492	248	655	82,077
Commissioning/acquisition	3,421	702	369	4,365		1	476	9,334
Acceptance of assets free of charge								0
Other addition/reclassification						1,112		1,112
Retirement			-143	-3,751				-3,894
Selling	-10		-10	-158	-93			-271
Transfer free of charge			-3	-89				-92
Other disposal/reclassification	-675		-88	-212	-1,118			-2,093
31 Dec 2022	25,958	2,666	15,771	29,005	10,281	1,361	1,131	86,173
Details of depreciation								
31 Dec 2021	17,773	0	6,553	14,081	0	0	0	38,407
Ordinary depreciation	2,465		278	3,447				6,190
Other addition due to reclassification								0
Derecognition	-676		-188	-3,927				-4,791
Decrease due to reclassification								0
31 Dec 2022	19,562	0	6,643	13,601	0	0	0	39,806
Balance								
31 Dec 2021	5,449	1,964	9,093	14,769	11,492	248	655	43,670
31 Dec 2022	6,396	2,666	9,128	15,404	10,281	1,361	1,131	46,367
Change	947	702	35	635	-1,211	1,113	476	2,697

The net book value of state-owned, managed real estate (three buildings and two plots of land) in the amount of HUF 55.1 million was derecognised after the contract with the Magyar Nemzeti Vagyonkezelő Zrt (Hungarian National Asset Management Inc.) ceased on 31 August 2022 and the properties were returned.

'Equipment' increased as a net effect of the installation IT equipment and the retirement of office and IT equipment which became superfluous, due to removals from the building of the headquarters on Szabadság tér and from the rented building at Krisztina körút 39.

In February 2022, the Banknote and Coin Collection of the Magyar Nemzeti Bank became a national specialised museum under the name Hungarian Money Museum and Visitor Center (hereafter: Money Museum). The MNB remained the owner of the cultural goods which form part of the repository of the Money Museum. MNB-EduLab Kompetencia Központ Kft. is the maintainer of the Money Museum. In 2022, the Törő coin collection with a book value of HUF 1.1 billion was reclassified from the category of cultural goods, due to its transfer to the Money Museum.

Foreign investments and dividends from investments

HUF millions

Description	Ownership share (%)		Book value		Dividends received	
	31 Dec 2021	31 Dec 2022	31 Dec 2021	31 Dec 2022	2021	2022
BIS	1.43	1.43	9,385	10,503	1,919	1,182
<i>SDR millions</i>			10	10		
<i>CHF millions</i>			14	14		
European Central Bank	1.55	1.55	2,320	2,516	-	-
<i>EUR thousands</i>			6,287	6,287		
SWIFT	0.03	0.03	17	19	0	0
<i>EUR thousands</i>			46	46		
Total investments			11,722	13,038	1,919	1,182

Ownership distribution in the ECB as of 31 December 2022

National Central Banks (NCBs)	Subscribed capital	Paid-up capital	Capital key %
	EUR thousands		
Nationale Bank van België/ Banque Nationale de Belgique	320,745	320,745	2.9630
Deutsche Bundesbank	2,320,817	2,320,817	21.4394
Eesti Pank	24,800	24,800	0.2291
Central Bank of Ireland	149,082	149,082	1.3772
Bank of Greece	217,767	217,767	2.0117
Banco de España	1,049,820	1,049,820	9.6981
Banque de France	1,798,120	1,798,120	16.6108
Banca d'Italia	1,495,637	1,495,637	13.8165
Central Bank of Cyprus	18,944	18,944	0.1750
Latvijas Banka	34,304	34,304	0.3169
Lietuvos banka	50,953	50,953	0.4707
Banque centrale du Luxembourg	29,000	29,000	0.2679
Central Bank of Malta	9,234	9,234	0.0853
De Nederlandsche Bank	515,941	515,941	4.7662
Oesterreichische Nationalbank	257,678	257,678	2.3804
Banco de Portugal	206,054	206,054	1.9035
Banka Slovenije	42,391	42,391	0.3916
Národná banka Slovenska	100,824	100,824	0.9314
Suomen Pankki – Finlands Bank	161,715	161,715	1.4939
Subtotal for euro area NCBs	8,803,826	8,803,826	81.3286

National Central Banks (NCBs)	Subscribed capital	Paid-up capital	Capital key %
	EUR thousands		
Bulgarian National Bank	106,431	3,991	0.9832
Česká národní banka	203,445	7,629	1.8794
Danmarks Nationalbank	190,423	7,141	1.7591
Hrvatska narodna banka	71,391	2,677	0.6595
Magyar Nemzeti Bank	167,658	6,287	1.5488
Narodowy Bank Polski	653,127	24,492	6.0335
Banca Națională a României	306,229	11,484	2.8289
Sveriges riksbank	322,477	12,093	2.9790
Subtotal for non-euro area NCBs	2,021,181	75,794	18.6714
Total NCBs	10,825,007	8,879,620	100.0000

Hungary joined the European Union on 1 May 2004, as a result of which the MNB became a member of the ESCB. The ESCB comprises the European Central Bank (ECB) and the national central banks of the EU Member States. The Eurosystem is composed of the ECB and the national central banks of Member States that have already adopted the euro. Pursuant to the provisions of Article 28 of the Statute of the ESCB and the ECB (hereinafter referred to as 'the Statute'), the MNB became an owner of the ECB. Subscriptions depend on shares which are fixed in accordance with Article 29 of the Statute and must be adjusted every five years based on demographic and GDP data provided by the European Commission. Shares can also change with a new accession to the EU, a Member State leaving the EU, or due to a capital increase.

On 1 February 2020, due to the Bank of England's withdrawal from the ESCB, the subscriptions were adjusted again, resulting in the MNB's capital key rising to 1.5488 per cent and its subscribed capital increasing to EUR 167.7 million. On 1 January 2023, Croatia adopted the euro, and thus Hrvatska narodna banka belongs to the group of euro area NCBs.

Pursuant to Article 47 of the Statute, non-euro area NCBs are required to pay 3.75 per cent of their subscribed capital to the ECB as a contribution to the operational costs of the ECB. As a non-euro area NCB, the MNB is not entitled to receive any share of the distributable profits of the ECB, nor is it liable to fund any loss of the ECB.

The MNB's participation in the ECB is presented in the sub-item 'Investment assets' under 'III. Banking assets' in the balance sheet of the MNB. The value of the investment (i.e. paid-up capital) amounted to EUR 6.3 million (HUF 2.5 billion) in the MNB's balance sheet as of 31 December 2022.

Domestic investments and dividends from investments

HUF millions

Description	Ownership share (%)		Book value		Dividends received	
	31 Dec 2021	31 Dec 2022	31 Dec 2021	31 Dec 2022	2021	2022
Pénzjegynyomda Zrt. 1055 Budapest, Markó utca 13–17.	100.0	100.0	11,827	11,827	0	0
Magyar Pénzverő Zrt. 1239 Budapest, Európa u. 1.	100.0	100.0	1,309	1,309	0	350
Pénzügyi Stabilitási és Felszámoló Nonprofit Kft. 1055 Budapest, Bajcsy-Zsilinszky út 78.	100.0	100.0	50	50	-	-
MNB-Biztonsági Zrt. 1123 Budapest, Alkotás utca 50.	100.0	100.0	1,317	1,317	0	0
GIRO Zrt. 1054 Budapest, Vadász utca 31.	100.0	100.0	14,779	14,779	0	0
MNB-Ingatlan Kft. 1013 Budapest, Krisztina körút 32.	100.0	100.0	162,302	167,403	0	0
MNB-EduLab Kompetencia Kft. 1013 Budapest, Krisztina körút 55.	100.0	100.0	280	15,414	0	0
Budapesti Értéktőzsde Zrt. 1013 Budapest, Krisztina körút 55.	81.4	81.4	11,555	11,555	0	410
KELER Zrt. 1074 Budapest, Rákóczi út 70–72.	53.3	53.3	643	643	0	0
KELER KSZF Zrt. 1074 Budapest, Rákóczi út 70–72.	0.1	0.1	10	10	0	0
Total investments			204,072	224,307	0	760

Participations of domestic investments

Description	Participations		
	Name Headquarters	Ownership share (%)	Share capital (HUF millions)
		31 Dec 2022	
Pénzjegynyomda Zrt.	DIPA Diósgyőri Papírgyár Zrt. 3535 Miskolc, Hegyalja út 203/1.	100.0	4,196
GIRO Zrt.	BISZ Központi Hitelinformációs Zrt. 1205 Budapest, Mártonffy utca 25–27.	100.0	217
Budapesti Értéktőzsde Zrt.	KELER Zrt. 1074 Budapest, Rákóczi út 70–72.	46.7	4,500
	KELER KSZF Zrt. 1074 Budapest, Rákóczi út 70–72.	0.1	3,423
KELER Zrt.	KELER KSZF Zrt. 1074 Budapest, Rákóczi út 70–72.	99.9	3,423
MNB-Ingatlan Kft.	Optimum-Gamma Ingatlanbefektetési Kft. 1013 Budapest, Krisztina körút 32.	100.0	4
	Optimum-Omega Ingatlanbefektetési Kft. 1013 Budapest, Krisztina körút 32.	100.0	20
	WINDIRECT Kft. 1013 Budapest, Krisztina körút 32.	100.0	3

Pénzjegynyomda Zrt. (Hungarian Banknote Printing Plc.) produces forint banknotes, secure documents in paper and plastic card format, banderole and securities, and provides document personalisation services for domestic and foreign clients. Its primary aim is to produce banknotes in adequate quantity and excellent quality, as well as to increase foreign penetration in market segments other than banknote production and to develop integrated IT systems and services related to the products. The company is a prominent actor in the production and personalisation of domestic documents. The production of banknotes ordered by the MNB and the fulfilment of civil orders for personalised documents is high priority. Pénzjegynyomda Zrt.'s subsidiary, **DIPA Diósgyőri Papírgyár Zrt.** (DIPA Zrt., Diósgyőr Papermill Plc.), is the sole security paper manufacturer in Hungary, the primary function of which is to produce domestic banknote papers. At the centre of the company's product strategy are quality products bearing high-level security elements. In addition to banknote papers, DIPA Zrt. produces papers for a significant share of documents used in public administration, base papers for tickets, as well as papers for passports and documents for numerous countries, in relation to which it also offers solutions providing complex protection against forgery. In addition to fulfilling customer needs related to domestic banknotes, the focus in 2022 was on satisfying public demand for personalised documents, which emerged due to termination of the moratorium on document production introduced during the coronavirus pandemic and to other negative external factors.

Based on MNB orders, the primary duty of **Magyar Pénzverő Zrt.** (Hungarian Mint Plc.) is to produce circulation coins for secure cash turnover, as well as the collector and commemorative coins issued by the MNB as legal tender. The company is operating in accordance with the shareholder's strategy for 2021–2025. Utilisation of the company's free capacity allows for the production of non-legal tender, collector coins and other medals, on the basis of its own coin programme and customised orders, and of the national awards on behalf of the President's Office. As part of its commercial activities, the company is the primary distributor of commemorative and collector coins, in Hungary and abroad, both as a wholesaler and retailer. In addition, the company sells collector banknotes, medals, packaged circulation coin series and commemorative coin versions, and imported gold investment products. The company provides the Money Museum's souvenir shop with goods. By the end of the current strategy period, the company aims to introduce the ISO 14.001 environmental management system, for which the preparation phase has already been completed, and the first audit is expected to be carried out in autumn 2023. The company met the orders and deadlines related to the circulation coin and collector coin issuing programme covering 16 thematic schemes in 2022.

Pénzügyi Stabilitási és Felszámoló Nonprofit Kft. (PSFN Kft., Financial Stability and Liquidator Non-profit Ltd.) is a company exercising public service functions with the exclusive right to perform the liquidation or winding-up proceedings of financial institutions and to phase out venture capital funds. It participates in the resolution process of financial institutions and performs supervisory commissioner work for financial institutions with suspended authorisation for operations. When assigned to a financial institution as a supervisory commissioner, PSFN Kft.'s main duty is to perform tasks related to administration and operational management. If the prudent and legal operation of the financial institution is not ensured, despite the supervisory measures by the MNB or the designation of supervisory commissioners, the company performs the liquidation or winding-up proceedings for the institution following the withdrawal of its authorisation for operations by the MNB, in the interests of a smooth exit from the market. The primary purpose of these procedures is to enforce creditors' interests and to satisfy their claims, prior to the end of the termination proceedings. PSFN Kft. performs its functions for the public good, protecting the interests of the customers of financial services. Its express objective is to terminate financial institutions in accordance with a uniform approach and methodology, emphasising prudence and transparency. Furthermore, it works to complete resolutions as quickly as possible, bearing in mind the complex nature of the undertaking and the interests of customers, and to maximise creditors' recovery.

MNB-Biztonsági Zrt. (MNB-Security Services Plc.) performs personal guarding and protection activities, i.e. the company carries out the personal guarding and protection of the office objects and premises of the MNB with armed security guards under legal obligation. It is also involved in performing the tasks of money and valuables transport and the maintenance tasks of cash-in-transit vehicles. MNB-Biztonsági Zrt. provides security for events for the central bank, performs evaluative/analytical and advisory activities and helps the MNB prepare preventive measures. Moreover, the company provides information security and technical security services for the central bank, performs operating tasks related to the reception and call centre as well as to personal, physical and information security of the MNB's subsidiaries. MNB-Biztonsági Zrt. operates the workplace buffets and provides catering services for the MNB and its employees, performs some operating tasks of the Money Museum, and is responsible for the MNB's nursery.

GIRO Zrt. operates the payment system for domestic interbank forint credit transfers and direct debits, the so-called Interbank Clearing System. The key objectives in its strategy include stable and safe operation, development of clearing services, implementation of new services and increasing the competitiveness of clearing fees. The company's most important development so far has been the implementation of the instant payment system which ensures the settlement of domestic electronic payments up to HUF 10 million within 5 seconds 24 hours a day, every day of the year. The scope of the innovative payment solutions based on the central infrastructure provided by GIRO and the MNB is constantly expanding, offering an improving service quality in more and more payment situations to customers.

MNB-Ingatlan Kft. (MNB-Real Estate Ltd.) leases and operates real estate, and provides real estate management and development services for the MNB and its subsidiaries. Based on a contract with the MNB, the company is coordinating the reconstruction of the building of the headquarters on Szabadság tér. According to the MNB-Ingatlan Kft.'s financial plans for 2021–2023, the net budget for the whole reconstruction is HUF 54.9 billion (the total net cost of the construction works, including advance payment, amounted to HUF 22.9 billion up to end-2022, with HUF 4.7 billion of this amount incurred in 2022). After completion, the project will be recorded in the MNB's books in the year of capitalisation (in the amount of the total gross project cost, increased with the coordination fee paid and other costs arose up to the day of the capitalisation). The MNB is financing the reconstruction by increasing the capital and reserves of MNB-Ingatlan Kft. The company owns the Bölcs Vár, the MNB Felügyeleti Központ és Pénzmúzeum, the MNB Budai Központ, and the MNB Képzési, Szabadidő- és Sportközpont in Balatonakarattya via the investment in **Optimum-Gamma Ingatlanbefektetési Kft.** (Optimum-Gamma Real Estate Investment Ltd.). The book value of the investment amounted to HUF 167.4 billion as at 31 December 2022, following a HUF 1.6 billion addition to capital and reserves financing the acquisition of **Optimum-Omega Ingatlanbefektetési Kft.** (Optimum-Omega Real Estate Investment Ltd.) that owns the Burg Hotel, and following a HUF 3.5 billion addition to capital and reserves to provide financing for the construction works of the Felügyeleti Központ és Pénzmúzeum.

MNB-EduLab Kompetencia Központ Kft. (MNB-EduLab Competence Centre Ltd.) was founded by the MNB in 2021, with the objective of developing educational and digital learning materials, and raising financial consciousness, in relation to the MNB's activities. Content development and service is an important branch, with the focus on the production and publishing of e-learning materials. From 2 March 2022, MNB-EduLab Kft. is responsible for the Money Museum, which presents the operation of economic and financial processes, the fundamentals of money usage and the MNB's activities. The national specialised museum also operates a research service, performs educational and museum pedagogical tasks, and safeguards and expands the repository of the museum. The book value of the investment changed to HUF 15.4 billion as at 31 December 2022, as a net result of the additions to capital and reserves, related to the maintainer's tasks of the Money Museum, amounting to HUF 18.4 billion, and of the year-end write-down of HUF 3.3 billion. In early 2023, a further addition to capital and reserves took place in an amount of HUF 3 billion.

With the strategic ownership of **Budapesti Értéktőzsde Zrt.** (BÉT, Budapest Stock Exchange Plc.), the basic aim of the MNB is to develop the market and achieve an adequately sized, effectively operating capital market, as a developed capital market and diversified financial intermediary system form the basis for a competitive economy and sustainable growth. The main elements of its strategic policy for the period 2021–2025 are: BÉT IPO, focus on profitability, making the most of core business growth potential, and creating secure IT operations supporting the business strategy. The BÉT IPO was postponed in 2022, however the MNB, the main shareholder, is still committed to the achievement of this key element of its strategic goals which is expected to attract new investors in the interests of the success of the Hungarian and regional capital markets. Despite adverse capital market factors, the Hungarian corporate bond market continued to develop. The achievement of 2022 is that the number of issuers increased significantly on the BÉT's Xtend platform, which is specialised for medium-sized companies. The number of participants in the ELITE programme, the international business development training adopted by the BÉT, rose further in 2022. The company has a minority interest in the KELER Group, consisting of **KELER Zrt.** and **KELER KSZF Zrt.**, in which the MNB holds a majority share. Therefore, as the majority owner of the Budapest Stock Exchange, the MNB holds a strategic share in the KELER Group as well. As the operator of the back-office infrastructure of the Hungarian securities market, the KELER Group settles, guarantees and clears BÉT stock exchange transactions and transactions with dematerialised securities issued in Hungary.

KELER Zrt. (KELER Plc.) provides central depository services in the Hungarian capital market and acts as a specialised credit institution. KELER is the issuer of Hungarian ISIN codes and participates as a provider in all domestic securities issues. The company has a CSDR licence, in accordance with the European regulation on central depositories. The company uses the TARGET2-Securities (T2S) securities settlement platform operated by the ECB, which aims to make cross-border securities trading more efficient. To enable the participants of the domestic capital market to fully enjoy all of the advantages offered by T2S, KELER implemented the KELER Service Development Programme (KSDP), in which the IT infrastructure of the company was renewed. The first phase of the programme went live at end-2021: this modernised the core process and tracking of securities settlement, as well as the treatment of depository master data, reports and fees. This was followed by the go-live of the fine module on 1 May 2022, which, by ex-post calculation of the fines for the February–April 2022 period, ensured compliance with the EU Settlement Discipline Regime (SDR). The executive board of the company approved KELER's strategy, and thus the elaboration of the detailed action plan can commence in line with that.

As a subsidiary of KELER, **KELER KSZF Zrt.** (KELER KSZF Plc.) handles the clearing service and CCP function in Hungary. As a clearing house, the company accounts the spot and derivative transactions traded on the Budapest Stock Exchange, and as a CCP, it also guarantees that the transactions are completed. In addition to the capital market segment, transactions with electricity and natural gas trading have also become significant in recent years. In several markets (e.g. the Hungarian power exchange HUPX), KELER KSZF Zrt. provides its services as a member of ECC AG, headquartered in Leipzig, while in other markets (e.g. the Central European gas exchange CEEGEX) it acts as a CCP. KELER Zrt. increased the capital of the company by HUF 3 billion as at 27 April 2022, causing the MNB's ownership share to decrease marginally. The executive board of the company approved KELER KSZF's strategy, and thus the elaboration of the detailed action plan can commence in line with that.

Equity of domestic investments

The latest data available upon the compilation of the Annual Report are shown in the following table.

HUF millions

Investment	Share capital	Reserves	Profit/ loss for the year	Equity
	31 Dec 2022			
Pénzjegynyomda Zrt.	11,827	8,337	3,118	23,282
Magyar Pénzverő Zrt.	1,309	2,249	566	4,124
Pénzügyi Stabilitási és Felszámoló Nonprofit Kft.	50	3	0	53
MNB-Biztonsági Zrt.	1,066	160	-35	1,191
GIRO Zrt.	7,496	10,385	-563	17,318
MNB-Ingatlan Kft.	15	166,821	2,177	169,013
MNB-EduLab Kompetencia Központ Kft.	50	18,568	-3,229	15,389
Budapesti Értéktőzsde Zrt.	541	15,402	-213	15,730
KELER Zrt.	4,500	22,118	1,707	28,325
KELER KSZF Zrt.	3,423	9,016	3,533	15,972

MNB's receivables from and liabilities to affiliated companies

HUF millions

Investment	Receivables	Liabilities
	31 Dec 2022	
Pénzjegynyomda Zrt.	275	412
Magyar Pénzverő Zrt.	24	3
Pénzügyi Stabilitási és Felszámoló Nonprofit Kft.	0	1,282
MNB-Biztonsági Zrt.	39	406
GIRO Zrt.	0	22
MNB-Ingatlan Kft.	2,647	102
MNB-EduLab Kompetencia Központ Kft.	0	1
Budapesti Értéktőzsde Zrt.	4	1
KELER Zrt.	23	34
KELER KSZF Zrt.	7,536	0
Total	10,548	2,263

Receivables from Pénzjegynyomda Zrt. arose solely from the refinancing of employee real estate loans, while receivables from Magyar Pénzverő Zrt. and MNB-Biztonsági Zrt. were due partly to this factor. Receivables from MNB-Ingatlan Kft. resulted from deposits related to rents. Receivables from KELER Zrt. and KELER KSZF Zrt. contained the collateral required for BÉT trading, and, in the case of KELER KSZF Zrt., a HUF 7.5 billion credit to the subsidiary as well.

Liabilities to PSFN Kft. were related to the subsidy agreed to finance the company's operation in 2023; the amount was paid and recorded as expenditure in January 2023. Other liability items are mostly from the invoicing of contract-based services provided to the MNB.

Receivables from collaterals required for BÉT trading will exist until the end of the MNB's clearing membership. Receivables from rent-related deposits and real estate loans of subsidiaries' employees will be settled in accordance with the conditions of the underlying contracts. All other receivables and liabilities in the table are short-term in nature.

4.13 PROVISIONS AND IMPAIRMENT LOSSES

HUF millions

B/S line	Description	31 Dec 2021	Interim changes		31 Dec 2022
		Impairment losses / provisions	Increase	Use / Reversal	Total impairment losses / provisions
1	2	3	4	5	3+4+5
I.2.	Forint receivables from credit institutions	8,478	2,069	0	10,547
I.3.	Other forint receivables	99,190	47,790	-3,299	143,681
III.	Invested financial assets	3,117	3,284	0	6,401
III.	Other receivables	71	15	0	86
VIII.	Off-balance sheet liabilities	1,111	676	-878	909
	- litigation related liabilities	826	91	-726	191
	- FGS+ refinancing loans	133	0	0	133
	- derivatives	152	585	-152	585
	Total	111,967	53,834	-4,177	161,624
	Effect of the recognition of impairment losses/provisions on the profit/loss (VI.+VII.)-(XVI.+XVII.)		53,834	-4,177	49,657

On 31 December 2022, the cumulated balance of provisions and impairment losses was HUF 161.6 billion, owing to the increase during the year.

In relation to forint receivables (B/S line I.2 and I.3), an impairment loss totalling HUF 49.9 billion was recognised in 2022, due to the increasing balance of monetary policy securities. A impairment loss of HUF 3.3 billion was used because of the write-off of irrecoverable magisterial and supervisory claims.

The impairment of invested financial assets increased by HUF 3.3 billion, due to qualification of the MNB-EduLab Kompetencia Központ Kft. based on the preliminary equity data.

In connection with litigation-related contingent liabilities, the provision at the end of 2022 was reduced by HUF 0.6 billion, for the reason of winning legal proceeding, compared to the end of 2021.

The provision created for the negative market value of the open derivative transactions was HUF 0.6 billion at end-2021.

4.14 DEFERRED EXPENSES/ACCRUED INCOME AND ACCRUED EXPENSES/DEFERRED INCOME

HUF millions

B/S line	Description	Balance		Change
		31 Dec 2021	31 Dec 2022	
	Due to banking transactions	155,515	193,408	37,893
	Due to internal operation	3,662	3,914	252
IV.	Deferred expenses/accrued income	159,177	197,322	38,145
	Due to banking transactions	64,479	181,381	116,902
	Due to internal operation	700	530	-170
X.	Accrued expenses/deferred income	65,179	181,911	116,732

Deferred expenses, accrued income, accrued expenses and deferred income include interest received/charged and interest related income/charges and expenses incurred in the reporting period because of banking transactions, independently of the date of financial settlement.

4.15 CHANGES IN EQUITY

HUF millions

B/S line	Description	31 Dec 2021	31 Dec 2022	Change
XI.1.	Subscribed capital	10,000	10,000	0
XI.2.	Retained earnings	208,333	151,239	-57,094
XI.3.	Valuation reserves	0	0	0
XI.4.	Revaluation reserves due to exchange rate changes	654,452	774,944	120,492
XI.5.	Revaluation reserves of foreign currency securities	-16,789	-278,352	-261,563
XI.6.	Profit/loss for the year	-57,094	-401,954	-344,860
XI.	Equity	798,902	255,877	-543,025

The subscribed capital consists of a single registered share with a nominal value of HUF 10 billion.

The decrease of HUF 57.1 billion in retained earnings was the effect of the transfer of the 2021 loss.

Equity declined by HUF 543 billion to HUF 255.9 billion as of 31 December 2022, due to the loss for the year and the lower aggregate positive balance of the revaluation reserves.

The amount of MNB's equity exceeded the subscribed capital at the end of 2022, and therefore the central government has no reimbursement obligation in 2023, according to the amended MNB Act. For the legislative changes affecting equity, in relation to the MNB's dividend payment and the central government's reimbursement obligation, see Section 4.1.1.

For more details on revaluation reserves, see Section 4.16.

4.16 REVALUATION RESERVES

HUF millions

B/S line	Description	31 Dec 2021	31 Dec 2022	Change
XI.4.	Revaluation reserves due to exchange rate changes	654,452	774,944	120,492
XI.5.	Revaluation reserves of foreign currency securities	-16,789	-278,352	-261,563
	Total revaluation reserves	637,663	496,592	-141,071

Revaluation reserves due to exchange rate changes are determined by the amount of revalued foreign exchange holdings and the difference between the official and average cost rate. The depreciation of the forint relative to year-end 2021 increased the revaluation reserves, with the balance changing by HUF 120.4 billion to HUF 774.9 billion. The MNB took on foreign exchange rate exposure mainly in euro: as at 31 December 2022, the exchange rate was 400.25 HUF/EUR, and the average cost rate was 365.23 HUF/EUR.

Revaluation reserves of foreign currency securities are calculated as the difference between the market value and the amortised book value of securities. The market value difference on the securities in the MNB's portfolio showed a negative balance of HUF 278.4 billion as at 31 December 2022.

4.17 OFF-BALANCE SHEET MNB LIABILITIES AND OTHER SIGNIFICANT OFF-BALANCE SHEET ITEMS

Hedging transactions and derivatives for purposes other than hedging

HUF millions

No.	Description	31 Dec 2021			31 Dec 2022		
		Receivables	Liabilities	Net market value	Receivables	Liabilities	Net market value
1.	Interest rate swap transactions	2,659,054	2,659,054	-135,895	2,897,883	2,897,883	-350,883
	- IRS facility of monetary policy (MIRS)	1,099,617	1,099,617	-142,086	1,099,617	1,099,617	-308,112
	- IRS contracted with domestic credit institutions	175,200	175,200	-14,587	175,200	175,200	-42,335
2.	Futures	54,644	37,156	-328	0	122,725	1,100
3.	FX swap, FX futures and forward transactions	9,105,606	9,163,930	-99,418	12,835,397	12,747,716	-271,530
	- FX swaps with domestic banks providing HUF liquidity	518,904	528,777	-17,700	0	0	0
	- FX swaps with domestic banks providing EUR liquidity	1,989,648	1,984,640	6,226	2,647,254	2,677,519	-25,157
4.	Currency swap transactions (including transactions without capital swap)	2,945,305	3,059,273	-213,522	3,068,902	3,163,748	-212,543
	- Currency swap transactions linked to FGS	106,386	89,956	29,513	96,769	75,450	46,010
5.	Total hedging transactions (1+2+3+4)	14,764,609	14,919,413	-449,163	18,802,182	18,932,072	-833,856
6.	Options	0	0	0	751	796	2
7.	TBA transactions	252,224	14,235	87	116,490	32,801	-1,219
8.	Futures	30,697	0	86	32,410	0	-417
9.	Interest rate swap transactions	0	0	0	18,079	18,079	-35
10.	Total derivative transactions for purposes other than hedging (6+7+8+9)	282,921	14,235	173	167,730	51,676	-1,669
11.	Total (5+10)	15,047,530	14,933,648	-448,990	18,969,912	18,983,748	-835,525

The above table includes all types of off-balance sheet receivables and liabilities arising from derivative transactions; it also includes FX swaps, interest-bearing currency swaps, FX futures and forward transactions for hedging purposes, which are part of the net foreign currency position and are recorded in the balance sheet, except for interest-bearing currency swaps without a capital swap. Hedging transactions reduce risks related to the net foreign currency position arising from cross-rate fluctuations and from interest rate changes, and support the creation of the benchmark foreign currency structure.

Just over one half of the interest rate swaps are transactions with foreign partners for hedging purposes linked to specific bond issuances, which are concluded with the aim of achieving the interest structure deemed desirable by the MNB. The tenders of the monetary policy interest rate swaps (MIRS) launched in early 2018 were terminated at the end of the same year, and the balance at end-2018 remained unchanged at 31 December 2022. Since 2014 and in relation to the self-financing programme, the MNB has concluded interest rate swap transactions with domestic credit institutions to reduce their interest rate risk. The balance of these interest rate swaps also remained unchanged.

Bond futures transactions are hedging transactions maturing within 1 year to reduce the average remaining duration of the reserve portfolios.

FX swap, FX futures and forward transactions are primarily the main instruments for hedging foreign exchange risk, based on expectations related to foreign exchange rate changes; their aim is to achieve the targeted foreign currency position. FX swaps providing forint liquidity and FX swaps providing EUR liquidity are for monetary policy purposes; the MNB holds these tenders on an ad-hoc basis for domestic credit institutions depending on liquidity. Since November 2021 the MNB has not conducted FX swap transactions providing forint liquidity.

Currency swaps are used to manage foreign exchange and interest rate risks jointly over the long term. As at 31 December 2022, 27 per cent of the currency swap transactions consisted of transactions without a capital swap maturing in 2023, and the EUR/HUF swaps linked to FGS refinancing loans amounted to 2 per cent.

The remaining maturity of hedging transactions and the derivatives for purposes other than hedging is presented in the following table.

Liabilities from derivative transactions by remaining maturity

HUF millions

Remaining maturity	Balance		Change
	31 Dec 2021	31 Dec 2022	
- within 1 year	8,175,962	14,252,599	6,076,637
- within 1 to 5 years	5,477,024	3,425,331	-2,051,693
- over 5 years	1,266,427	1,254,142	-12,285
Liabilities from hedging transactions	14,919,413	18,932,072	4,012,659
- within 1 year	14,235	33,597	19,362
- within 1 to 5 years	0	18,079	18,079
- over 5 years	0	0	0
Derivative transactions for purposes other than hedging	14,235	51,676	37,441
Total (1+2)	14,933,648	18,983,748	4,050,100

Other off-balance sheet liabilities

HUF millions

Description	Balance		Change
	31 Dec 2021	31 Dec 2022	
FGS credit facilities	642,776	356,259	-286,517
Credit facilities to subsidiaries	1,939	44,275	42,336
FGS+ related contingent liabilities	133	133	0
Litigation-related contingent liabilities	1,567	247	-1,320
Guarantees	1,994	2,464	470
Other off-balance sheet liabilities	2	2	0
Total	648,411	403,380	-245,031

The contracts concluded but not yet disbursed in the framework of FGS *fix* and FGS *Go!* are reported as off-balance sheet liabilities, as credit facilities within 3 years from the conclusion of the contracts, thus until May 2023 and September 2024 due to the termination of these facility.

Credit facilities to subsidiaries partly include the funds still available from the contracted amount for employee housing loans of Pénzjegynyomda (Hungarian Banknote Printing Plc.), Pénzverő (Hungarian Mint Plc.) and MNB-Biztonsági Zrt. (MNB-Security Services Plc.). (The total value of these credit facilities is HUF 2.1 billion and they will expire on 31 December 2028 and 2031.) On the other hand, they contain the funds still available in line with the credit agreement concluded with KELER KSZF Zrt. in December 2022 in connection with VAT financing for the purpose of managing the liquidity situation. (According to the contract, the credit limit of HUF 50 billion is available until 30 April 2023, the maturity date of the drawn loans is 30 June 2023.)

In accordance with the contracts concluded in the framework of FGS+, the MNB reimburses credit institutions up to 50 per cent of the capital loss of credit institutions arising from SME loans, subject to a portfolio-level limit. FGS+ related contingent liabilities are used to record the expected reimbursement for which provisions have been made, in line with the qualification rules.

On 31 December 2022, the legal proceedings are proceedings against penalty resolutions connected to supervisory activities. The related contingent liabilities are used to record paid but litigated penalties. The decrease occurred mainly because during the year the indemnity cases were terminated, and thus the related expected compensation amounts for which provisions were formed in the total amount of HUF 1.4 billion were removed from the off-balance sheet liabilities.

In 2022, the increase in the forint value of the guarantees is partly the result of the HUF 0.2 billion owner's guarantee issued in March related to the collateral required in a subsidiary contract, and partly due to the HUF 0.3 billion exchange rate change in relation to the export guarantees. The item 'Guarantees' consists of export guarantees amounting to HUF 2.3 billion, to which an irrevocable indemnity bond is always linked. When exercising a guarantee, the MNB has the right to a reverse guarantee if needed.

Recording off-balance sheet securities transactions

HUF millions

Description	Balance		Change
	31 Dec 2021	31 Dec 2022	
Face value of securities lent - automatic securities lending	23,939	4,337	-19,602
Face value of securities lent - agency securities lending	270,257	172,548	-97,709
Purchase cost of the non-cash hedge arising from security lending transactions	22,543	17,211	-5,332
Purchase cost of investment of cash hedge arising from security lending transactions	253,816	147,842	-105,974
Market value of investment of cash hedge arising from security lending transactions	253,816	147,842	-105,974
Face value of securities bought under repo transactions	16,328	0	-16,328
Face value of securities sold under reverse repo and blocked for ECB repo transactions	2,953,651	2,694,891	-258,760

4.18 NET INTEREST INCOME AND REALISED NET INCOME OF FINANCIAL OPERATIONS

Net forint and foreign currency interest and interest-related income

HUF millions

P/L line	Description	2021	2022	Change
(I.1.+II.2.)—(X.1.+XI.1.)	Central government	46,908	-11,604	-58,512
(I.2.+II.3.)—(X.2.+XI.2.)	Credit institutions	-119,677	-898,412	-778,735
(I.3.+II.1.+II.4.)— (X.3.+XI.3.)	Other	75,464	104,427	28,963
	Net profit/loss from interest	2,695	-805,589	-808,284
	Forint securities	-21,275	-22,168	-893
	Foreign currency securities	-38,965	-28,924	10,041
	Derivative transactions for hedging and other purposes*	-14,976	-205,623	-190,647
	Other	0	0	0
(I.4.+II.5.)—(X.4.+XI.4.)	Net interest-related profit/loss	-75,216	-256,715	-181,499
(I.+II.)—(X.+XI.)	Net interest and interest-related income	-72,521	-1,062,304	-989,783

* For details on derivative transactions for hedging and other purposes, see the related table in this section.

In 2022, the MNB recorded a net interest and interest-related loss of HUF 1,062.3 billion, which was HUF 989.8 billion higher compared to end-2021.

Net interest income decreased by HUF 808.3 billion compared to the previous year, as a combined effect of the following:

The main negative factors in net interest income were:

- an increase of HUF 804.1 billion in interest expenses on the forint deposits of credit institutions, stemming from the rise in the amount of deposits and from the higher interest rates of liquidity-absorbing instruments. In relation to these, the most significant items were the HUF 461.3 billion increase in interest paid on one-week deposits, the HUF 108.5 billion increase in the amount of required reserves and the interest expenses of HUF 170 billion on the deposit quick tenders;
- interest paid on the forint deposits of the central government was HUF 79.2 billion higher compared to 2021;
- an increase of HUF 21.1 billion in interest expenses on other forint deposits, as these include interest expenses on discount bills issued by the MNB.

The main positive factors in net interest income were:

- an increase of HUF 41 billion in interest income on foreign exchange reserves compared to 2021;
- interest income on other forint receivables rose HUF 33.6 billion compared to the previous year, as a result of the corporate bonds purchased under the Bond Funding For Growth Scheme (however, this effect was mitigated by the increase of HUF 6.7 billion in the amortised net purchase price loss, which was recognised in net interest-related expenses);
- an increase in interest income on loans to and on bonds issued by credit institutions (mortgage bonds and securities issued with government guarantees or sureties) in the amount of HUF 26.4 billion, primarily as a result of interest income on margin deposits with banks related to derivative transactions concluded with credit institutions. The increase in margin deposits was caused by the change in the market price of derivative transactions, which resulted from the rise

in forint interest rates (the result was further improved by the decrease of HUF 2.4 billion in the amortised net purchase price loss related to mortgage bonds, which was recognised in net interest-related expenses);

- forint interest income received from the central government rose by HUF 24.3 billion compared to 2021, stemming from the larger stock of government bonds (which was further improved by the decrease in the amortised net purchase price loss of HUF 3.2 billion, which was recognised in net interest-related expenses).

Net interest-related income fell by HUF 181.5 billion; this item mainly includes the amortisation of the purchase price difference of securities and the net gain or loss on derivative transactions which are not related to exchange rate changes. The change was related to the derivative transactions, for details on these, see the table below in Section 4.18.

Negative interest income/expenses in net forint and foreign currency interest and interest-related income

HUF millions

P/L line	Description	2021		2022	
		Total	of which: Negative sums for interest	Total	of which: Negative sums for interest
	INCOME				
II.	Interest and interest-related income denominated in foreign currency	204,623	-24,172	287,018	-16,250
II. 1.	Interest on foreign currency reserves	54,131	-17,096	95,152	-11,297
II. 3.	Interest on receivables from credit institutions	-40	-40	-25	-29
II. 5.	Interest-related income	150,532	-7,036	191,891	-4,924
	EXPENSES				
X.	Interest and interest-related expenses denominated in forints	206,829	-34	1,188,789	0
X. 2.	Interest on deposits by credit institutions	158,347	-34	962,423	0
XI.	Interest and interest-related expenses denominated in foreign currency	207,181	-5,411	381,145	-5,390
XI. 1.	Interest on central government deposits	-3,190	-3,193	377	-1,974
XI. 2.	Interest on deposits by credit institutions	-507	-507	540	-767
XI. 3.	Interest on other liabilities	-390	-784	24,135	-520
XI. 4.	Interest-related expenses	211,268	-927	356,093	-2,129

Note: Table includes only P&L lines affected by negative sums for interest.

In accordance with the interest structure stated in the MNB Decree, negative interest income and expenses are recorded in the original P&L lines related to assets/liabilities (in net terms). For example, interest income on deposits of the central government, arising from negative yields, is recorded in the line 'XI. 1 Interest expense on central government deposits'. This method caused the negative balances in the statements.

Details on income from derivative transactions for hedging and for purposes other than hedging represented in interest-related income

HUF millions

Description	2021	2022	Change
Interest margin on interest rate swaps	19,646	-68,747	-88,393
Net interest result of currency swaps	-21,816	-21,752	64
Net interest result of FX swaps, FX futures and forward transactions	-10,864	-82,758	-71,894
Net interest result of futures transactions	-8	-1,083	-1,075
Net interest-related result of hedging transactions	0	2,234	2,234
Net interest and interest-related result of other transactions	-1,934	-33,517	-31,583
Net result of derivative transactions	-14,976	-205,623	-190,647

Interest rate swaps include derivative transactions concluded with domestic credit institutions and with foreign partners. The decrease of HUF 88.4 billion in interest income on interest rate swaps stemmed mainly from the deterioration of interest income on interest rate swaps concluded with domestic credit institutions (IRS facility of monetary policy and IRS facility related to self-financing programme), due to the change in market interest rates.

Currency swap transactions comprise derivative transactions concluded with the Government Debt Management Agency, with foreign partners and with domestic credit institutions. The transactions concluded with foreign partners are mainly hedging transactions concluded with the Government Debt Management Agency. The transactions concluded with domestic credit institutions include the currency swaps related to Pillar II of the FGS. Net interest income on currency swaps showed a loss of HUF 21.8 billion, unchanged compared to the loss for 2021.

Hedge FX swaps include short-term transactions concluded with foreign partners, with the Government Debt Management Agency and with domestic credit institutions. FX futures and forward transactions comprise short-term transactions concluded with foreign partners. Net interest expenses on these transactions increased by a total of HUF 71.9 billion. The change was mainly related to net interest expenses on FX swaps: in the case of transactions concluded with foreign partners owing to the change of foreign exchange yields; in the case of transactions providing euro or forint liquidity to domestic credit institutions due to the rise or expiry of stocks, respectively.

The net interest result of hedging futures transactions declined by HUF 1.1 billion, which was caused by the increase in net interest expenditures of bond futures.

Net interest-related income on hedging transactions includes the exchange rate gains or losses on swap transactions and the option fee of option transactions. Net interest-related income amounted to HUF 2.2 billion in 2022, mainly in relation to exchange rate gains on hedging swap transactions.

Net interest and interest-related income on other transactions decreased by HUF 31.6 billion because of TBA transactions due to the rise in USD market returns and because of bond futures transactions other than hedging.

Realised gains/losses from financial operations

HUF millions

P/L line	Description	2021	2022	Change
	Realised gains on coupon-bearing bonds denominated in foreign currency	9,837	1,308	-8,529
IV.	Realised gains from financial operations	9,837	1,308	-8,529
	Realised losses on bonds issues by the Hungarian government	20,803	1,144	-19,659
	Realised losses on bonds issued by enterprises	8	191	183
	Realised losses on coupon-bearing bonds denominated in foreign currency	14,059	27,402	13,343
XIV.	Realised losses from financial operations	34,870	28,737	-6,133
IV.-XIV.	Net financial gains/losses	-25,033	-27,429	-2,396

In 2022, net realised losses from financial operations amounted to HUF 27.4 billion, reflecting an increase of loss of HUF 2.4 billion compared to 2021. Realised losses arose predominantly from sales of bonds denominated in foreign currency, owing to the increase in foreign exchange market returns.

4.19 COMPONENTS OF INCOME FROM THE REVALUATION OF FOREIGN EXCHANGE HOLDINGS

HUF millions

Description	2021	2022
Net income from exchange rate changes (realised and conversion spread)*	146,221	797,659
Change in revaluation reserves in the balance sheet** (due to unrealised revaluation net income)	68,044	120,492
Total effect of exchange rate changes	214,265	918,151
* P/L line: III.-XII.		
** Revaluation reserves due to exchange rate changes (balance sheet line XI.4.).		

In 2022, the total net exchange rate change effect was a gain of HUF 918.2 billion. The MNB realised a gain of HUF 797.7 billion on sales involving a decrease in the daily net FX position, while the revaluation reserve amount was increased by unrealised exchange rate gains of HUF 120.5 billion during the year. In 2022, foreign currency sales occurred mainly in relation to the debt management transactions of the Government Debt Management Agency, to the management of gold and foreign currency reserves and to the hedging of energy-importing companies' needs for foreign currency. In 2022, the MNB decided to reduce the risk arising from fluctuations in the gold price, while continuing to hold the gold reserves in physical form.

For more details on revaluation reserves, see Section 4.16.

4.20 COST OF ISSUING BANKNOTES AND COINS

HUF millions

P/L line	Description	2021	2022	Change
	Cost of banknote production	7,582	7,436	-146
	Cost of coin production	3,512	4,347	835
	Cost of production of commemorative and collector coins	1,333	1,399	66
XIII.	Cost of issuing banknotes and coins	12,427	13,182	755

The total cost of issuing banknotes and coins amounted to HUF 13.2 billion in 2022, an increase of HUF 0.8 billion compared to the previous year.

The cost of banknote production amounted to HUF 7.4 billion in 2022, showing a decline of HUF 0.1 billion versus 2021, due to the shrinking production volume. The cost of coin production was HUF 4.3 billion, reflecting an increase of HUF 0.8 billion compared to the previous year, which was a result of the coin replacement orders and higher raw material prices.

The cost of producing commemorative and collector coins amounted to HUF 1.4 billion in 2022, exceeding the figure for 2021 by HUF 0.1 billion. Costs increased due to higher raw material prices, but this was offset by the volume of coins issued during the year.

4.21 OTHER INCOME/EXPENSES

HUF millions

P/L line	Description	2021	2022	Change
V.1.	Income from fees and commissions	1,593	2,653	1,060
XV.1.	Expenses of fees and commissions	2,367	2,815	448
	Net income from fees and commissions	-774	-162	612
V.2.	Income other than fees and commissions	3,533	4,954	1,421
XV.2.	Expenses other than fees and commissions	5,351	4,615	-736
	Net income other than fees and commissions	-1,818	339	2,157
V.3.	Income from supervisory activities	22,332	25,684	3,352
V.-XV.	Other net results	19,740	25,861	6,121

Net income from fees and commissions includes the balance of income from and expenses on fees and commissions linked to payment services, income from fees related to account management, cost of securities trading as well as expenses on fees related to holding foreign currency reserves. Income from commissions related to payment services and to account management increased in 2022, due to higher rates. The rise in expenses on commissions was caused by the rise in the fees paid to KELER for securities trading resulting partly from the increase in the volume and number of transactions and partly from the increase of asset management fees due to exchange rate changes.

For more details on income other than fees and commissions, see Section 4.22.; in respect of income related to supervisory activities, see Section 4.23.

4.22 INCOME OTHER THAN FEES AND COMMISSIONS

HUF millions

P/L line	Description	2021	2022	Change
	Dividends from investments	1,919	1,942	23
	Income related to coins and commemorative coins	1,466	1,603	137
	Recommitment of financial money transfer	78	254	176
	Income from assets assigned free of charge	26	12	-14
	Other income	44	1,143	1,099
V.2.	Income other than fees and commissions	3,533	4,954	1,421
	Expenses related to coins and commemorative coins	1,393	1,278	-115
	Financial money transfer	3,811	3,170	-641
	Expenses related to public proceedings	44	0	-44
	Expenses from assets assigned free of charge	70	117	47
	Other expenditures	33	50	17
XV.2.	Expenses other than fees and commissions	5,351	4,615	-736
V.2.-XV.2.	Net income/expenses other than fees and commissions	-1,818	339	2,157

Dividends from investments amounted to HUF 1.9 billion in 2022. BÉT and Pénzverő each paid a dividend of HUF 0.4 billion, while BIS paid a dividend of HUF 1.2 billion (EUR 2.9 million) to the MNB.

Net income related to coins and commemorative coins depends on the commemorative coin programme, and arises mainly from the difference between the income from sales of commemorative coins and expenses related to the removal of the coins' face value. Related income and expenses are almost equal, since by agreement, the sale of commemorative coins is accounted with Magyar Pénzverő Zrt. at face value, except when the production cost exceeds the face value (the latter is typical for gold coins). In 2022, net income arose partly from the sale of several gold commemorative coins issued in the previous years and partly from the issue of the gold commemorative coins 'The Golden Bull of Andrew II' and 'The Gold Florin of János Hunyadi'.

The item 'Financial money transfer' includes donations to professional organisations and foundations, as well as to organisations for charitable and other purposes. In 2022, the MNB gave HUF 3.2 billion as donations, down HUF 0.6 billion on the previous year. The two highest amounts were HUF 0.9 billion paid for the annual operation of PSFN Kft. and HUF 0.6 billion paid to Pénziránytű – Alapítvány a Tudatos Pénzügyekért (a foundation for financial education). According to the MNB Act, 6 per cent of the penalties received in the previous year can be used for promoting and supporting environmental goals. Based on the law, in 2022 HUF 0.1 billion was paid to WWF Hungary as donation. During the year, HUF 0.3 billion was returned to the MNB as an unused donation affecting previous years.

The item 'Expenses from assets assigned free of charge' includes books and coins transferred to foundations and to other organisations as well as the value of the state-owned, managed buildings (three buildings and two plots of land) that were returned to Hungarian National Asset Management Inc. The latter did not have any impact on the net result, since the related liabilities were recorded as other operating income.

Other income in 2022 comprised default interest in a total of HUF 1 billion related to the liquidation proceeding of Sberbank, to the cancellation of credits drawn by the bank as well as to the penalty fee of HUF 0.1 billion imposed on credit institutions for not complying with the reserve requirement.

4.23 INCOME FROM SUPERVISORY ACTIVITIES

HUF millions

P/L line	Description	2021	2022	Change
	Supervisory fee and default interest	20,451	23,595	3,144
	Received penalties and reimbursement from public proceedings	1,626	1,867	241
	Administrative service fee from public proceedings	247	208	-39
	Late payment surcharge for supervisory claims	3	5	2
	Other income arising from administrative procedures	5	9	4
V.3.	Income from supervisory activities	22,332	25,684	3,352

The main component in income from supervisory activities is supervisory fees received from the supervised institutions obliged to pay such fees. In 2022, the income arising from the assessment of the minimum charges for the entire year and of the variable-rate fees due quarterly amounted to HUF 23.6 billion, while in 2021 the set fee obligation amounted to HUF 20.5 billion. The increase in the supervisory fee was related primarily to the banking sector and to insurance institutions. Income from penalties imposed by the MNB and from reimbursements totalled HUF 1.9 billion.

4.24 OPERATING INCOME AND EXPENSES

HUF millions

P/L line	Description	2021	2022	Change
	Income from assets and inventories	12	83	71
	Income from subcontracted services	77	545	468
	Income from invoiced services	128	152	24
	Other income	23	86	63
VIII.	Total operating income	240	866	626
	Expenses of materials	21,601	31,214	9,613
	Cost of materials	626	1,005	379
	Services contracted	20,931	30,157	9,226
	- Maintenance, operation and rent of properties	4,573	11,043	6,470
	- Maintenance and rent of equipment	1,051	2,810	1,759
	- Consultancy services	1,548	1,656	108
	- IT systems services	3,645	4,329	684
	- Membership fees	1,067	1,172	105
	- Guarding services, transport of banknotes and coins	3,037	4,087	1,050
	- Advertisements, market research	3,753	2,158	-1,595
	- Other, non-significant services*	2,257	2,902	645
	Other services	44	52	8
	Personnel-related costs	27,722	32,533	4,811
	Depreciation	5,668	6,191	523
	Transfer of costs of other activities	-563	-656	-93
	Total operating costs	54,428	69,282	14,854
	Expenses incurred on assets and inventories	52	385	333
	Expenses incurred on subcontracted services	74	538	464
	Expenses incurred on invoiced services	127	150	23
	Other expenses	595	3,413	2,818
	Total operating expenses	848	4,486	3,638
XVIII.	Total operating costs and expenses	55,276	73,768	18,492
VIII.-XVIII.	Net operating expenses	-55,036	-72,902	-17,866

* In particular, 'Other, non-significant services' contains postal and telecommunication services, preparation of publications, travel and hotel services, services for education, translation and audit, as well as distribution of commemorative coins.

In 2022, net operating expenses amounted to HUF 72.9 billion, an increase of HUF 17.9 billion (32.5 per cent) compared to 2021.

Operating costs rose by HUF 14.9 billion (27.3 per cent) in 2022 compared to the previous year. 2022 expenditures were increased mainly by expenses of materials, but the amount of personnel-related costs and depreciation also rose versus 2021.

In 2022, expenses of materials exceeded the expenses incurred in 2021 by more than HUF 9.6 billion (44.5 per cent).

As part of expenses of materials, the increase in the costs of services contracted was a major factor, especially the item 'Maintenance, operation and rent of properties'. In addition, the costs of 'Maintenance and rent of equipment', 'Guarding

services, Transport of banknotes and coins', 'IT systems services' and 'Other, non-significant services' increased, by smaller amounts than mentioned above. At the same time, expenses for 'Advertisements, market research' fell.

- Compared to the previous year, the cost of 'Maintenance, operation and rent of properties' increased in 2022 (from HUF 4.6 billion to HUF 11 billion), while the costs of 'Maintenance and rent of equipment' also rose (from HUF 1.1 billion to HUF 2.8 billion). The increase in the case of both items is related to the new properties (MNB Felügyeleti Központ és Pénzmúzeum, MNB Budai Központ) with their parking area, and the full-year maintenance and rental costs of the Bölcs Vár property. In the case of other properties, the costs of maintenance rose, due to the contract fees concluded in 2021 Q4 as a result of the joint public procurement tender with MNB-Ingatlan Kft., and due to the increase in expenses for electricity service according to the new contract.
- In 2022, the cost of 'Guarding services, transport of banknotes and coins' was HUF 1.1 billion higher compared to 2021, mainly due to the increase in the number of guarded properties and the fee for guard protection services.
- The increase in the costs of 'IT systems services' (from HUF 3.6 billion to HUF 4.3 billion) basically stemmed from additional costs due to IT investments previously implemented (functional expansions, higher availability levels, automation of existing processes), and the maintenance and support contracts concluded in previous years. In addition, the MNB continued to pay special attention to maintaining and increasing IT security, which was also accompanied by rising expenditures.
- The costs of 'Other, non-significant services' increased in 2022 mainly in relation to mission-related travel, non-personnel and accommodation costs, after the number and cost of missions were significantly lower in 2021 due to the pandemic. The costs of news service also rose due to fee increases and the purchase of additional Bloomberg subscriptions. Furthermore, the amount of education costs was significantly higher than in 2021 in connection with the increase in the number of in-person trainings.
- The financial statements and audit costs (due diligence based on accounting documents, ad-hoc financial/accounting analyses, consulting) amounted to a gross sum of HUF 57 million, of which the MNB's annual audit fee was HUF 45 million in 2022.
- The costs of 'Advertisements, market research' in 2022 decreased, mainly due to the reduction in the use of communication services since some of the costs for 2021 were one-off expenditures and some of them were incurred in 2022 at a lower value than before.

Personnel-related costs increased by HUF 4.8 billion (17.4 per cent) compared to 2021. The major factor in this regard was the decision by the MNB Board of Directors to increase the annual wage bill by 10 per cent from 1 January 2022 and under set conditions by an additional 7 per cent from 1 July 2022, in order to secure and retain highly skilled employees in the long run. Over and above this, as in previous years, the MNB Board of Directors decided to give staff an extra Széchenyi Recreation Card benefit. The average headcount rose by 2.5 per cent.

Representation costs in 2022 almost doubled compared to 2021, when they were significantly lower, due to the pandemic.

The depreciation and amortisation of tangible and intangible assets in 2022 was 9.2 percent higher than the previous year. This is mainly due to the investments, predominantly in IT, made in 2022, within which the acquisition of intangible assets (software) was significant.

Prime cost transfers are intended to ensure that the total amount of operating expenses reflects only actual expenses incurred by the MNB (e.g. rent paid by Magyar Pénzverő Zrt. for the partial use of MNB Logisztikai központ; reimbursed expenses related to payment system – VIBER, instant payment system). The transfer amounts increased compared to the previous year, mainly because of the joint participation fee with MNB's subsidiaries at a foreign conference, from which the non-MNB part of the fee was invoiced to the subsidiaries. In addition, the reimbursement of expert fees (which are subsequently reimbursed to the MNB) and the SWIFT service's fee invoiced to GIRO Zrt. also rose in 2022.

Net expenses incurred on assets and inventories amounted to HUF 0.3 billion, arising mainly from the disposal of office equipment and tools which became redundant after moving out from the headquarters under reconstruction and as a result of the return of the rented property on Krisztina körút 39.

The increase in income and expenses from subcontracted services was mainly due to the fact that on 2 March 2022 MNB-EduLab Kft. became the maintainer of the Money Museum, and from this date onwards all operating expenses related to the Museum and incurred by the MNB were to be invoiced to MNB-EduLab Kft. (These items, including invoiced costs of rent of properties and of operation of properties, amounted to HUF 0.3 billion.)

In 2022, other (operating) expenses included receivables – mainly supervisory receivables – written down because of uncollectibility in the amount of HUF 3.4 billion, which did not have any impact on the result, as the related provision was used.

4.25 INFORMATION ON WAGES AND NUMBER OF STAFF, REMUNERATION OF EXECUTIVE OFFICERS

Wage and headcount data

Description	HUF millions		
	2021	2022	Change (%)
Payroll costs incurred on staff	19,566	23,135	18.2
Other staff costs*	624	712	14.1
Payroll	20,190	23,847	18.1
Other payments to personnel	3,750	4,916	31.1
Social contribution tax	3,351	3,622	8.1
Contribution to vocational training	316	0	-100.0
Contribution to rehabilitation	105	131	24.8
Sick-allowance	10	17	70.0
Taxes on personnel-related payments	3,782	3,770	-0.3
Payments to personnel	27,722	32,533	17.4

* Other wage costs include absence payments for notice periods and amounts paid to staff off payroll and non-MNB workers.

Description	person		
	2021	2022	Change (%)
Average number of staff	1,529	1,568	2.5

Remuneration of executive officers

Bodies	HUF millions	
	2021	2022
Monetary Council*	426	426
Supervisory Board	222	222

* Includes the salaries and other payments to internal and external members of the Monetary Council in an employment relationship with the MNB pursuant to Article 9 (4) c) of the MNB Act.

Loans of executive officers

Bodies	Amount of loans	Outstanding at 31 Dec 2022	Maturity	Rate of interest
	HUF millions			
Monetary Council	178	114	2031.10.01.	Fixed or floating*
Supervisory Board	-	-	-	-

** The preferential interest rate for housing loans is 2.5 per cent (fixed rate) or the central bank base rate, the interest rate for personal loans is the central bank base rate +1 per cent.*

16 May 2023, Budapest

Dr György Matolcsy
Governor of the Magyar Nemzeti Bank

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