Financial Stability Challenges – Report on the "Financial Stability Conference: Turbulent Times" in Budapest*

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For the second time in two years, on 25–26 March 2024, the Magyar Nemzeti Bank (MNB, central bank of Hungary), with the professional support of the Center for Latin American Monetary Studies (CEMLA) and the Official Monetary and Financial Institutions Forum (OMFIF), organised its international conference entitled "Financial Stability Conference: Turbulent Times", addressing the financial stability issues facing central banks. The 2-day conference featured 8 main sessions with 21 distinguished international speakers discussing issues affecting the financial system, the short-term challenges of financial stability and its longer-term future. Participants discussed the risks of geopolitical segmentation, the high inflation and the interest rate environment intended to curb it, as well as the current crisis management framework. The event also provided a platform for knowledge-sharing on financial stability risks associated with climate change and technological developments, which are crucial to our future and are increasingly shaping central bank decision-making.

The conference was opened by *Barnabás Virág*, Deputy Governor of the MNB, *Manuel Ramos-Francia*, Director General of CEMLA, and *Christopher Garnett*, Senior Adviser at OMFIF. In his opening speech, *Barnabás Virág* emphasised that 2024 is a special year, as we celebrate the centenary of the founding of Hungary's central bank. This anniversary also draws attention to the need to assess the current crisis phenomena and geopolitical risks in the light of lessons from a historical perspective. The financial system has recently been hit by a number of extreme shocks, such as high inflation, the high interest rate environment, and the associated high volatility and uncertainty. At the same time, since the great financial crisis of 2008, the efforts of central banks and financial supervisors to keep the financial system stable have been successful. The return to a period of high inflation is another example of the importance of close cooperation between monetary and macroprudential

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policy. Finally, the Deputy Governor of the MNB welcomed the conference as an opportunity to share practical experience and deepen international relations.

In his opening speech, *Manuel Ramos-Francia* highlighted the importance of the long-standing professional cooperation between CEMLA and the MNB and underlined the significance of the strong interaction of the current high inflation and the monetary policy aimed at curbing it with financial stability risks. He argued that in the future, central banks should aim to promote price stability and financial system resilience together, through the coordinated use of monetary and macroprudential measures and supervisory tools. Finally, he also pointed out that the most pressing and complex challenges for central banks worldwide were the megatrends that affect the functioning and risks of the financial system and require significant adjustments, in particular in the context of climate change and the digital transition.

Christopher Garnet also agreed on the topicality of the conference themes and briefly presented OMFIF's activities and commitment to promoting cooperation, research and knowledge sharing among central banks. He also underlined the success of the development of the Hungarian financial system since the change of regime and the many years of successful joint professional work between the MNB and OMFIF.

In his keynote presentation, *Thorsten Beck*, Director of the Florence School of Banking and Finance and keynote speaker of the conference, discussed the current state of financial stability risks and lessons from the turbulent period of 2023, which deserved particular attention for the evaluation and fine-tuning of macroprudential regulatory frameworks. Among other things, he stressed that some business models based on excessively rapid growth remained good indicators of banks' vulnerability. Most bank runs were the result of a combination of solvency problems and coordination failures, and the joint prevailing of market discipline and supervision was key to the stability of the financial system. He argued that, while the financial system was currently in a more resilient position to face emerging systemic risks, further regulatory improvements could be identified in the areas of capital markets and banking union. A stronger resolution framework would be necessary, inter alia, providing institutions with more flexibility and a broader range of tools, in particular at the euro area level and in terms of European deposit insurance.

1. Macroprudential strategies for inflation scenarios and monetary policy normalisation

The first panel discussion addressed the financial stability implications of the high inflation and interest rate environment, and the correlations between monetary and macroprudential policy. The opening speech for the topic was delivered

by *Anke Weber*, Advisor and Mission Chief for Hungary at the IMF, who noted that the macroprudential framework put in place since the 2008–2009 global economic crisis had successfully increased the resilience of the financial system. This allowed central banks to raise interest rates sufficiently without endangering financial stability, thereby increasing the room for manoeuvre of monetary policy. Strengthening shock resilience remained a key macroprudential priority, and thus in the current economic environment it might be advisable to continue to build in a set of usable capital buffers that are available to deplete, including the use of a so-called positive neutral countercyclical capital buffer, which is calibrated to country-specific characteristics, as a new idea that had recently emerged. At the same time, the management of financial stability risks should not be based solely on macroprudential policy in the future, but should be strongly coordinated with microprudential, resolution and fiscal areas.

Barnabás Virág (MNB) moderated the panel discussion following the introductory presentation, and was joined by *Anke Weber* (IMF) and *Jan Frait* (Deputy Governor at the CNB). *Jan Frait* gave a brief overview of the Czech central bank's macroprudential activity over the past 20 years and presented several key components thereof, including the cornerstones shaping decisions on the countercyclical capital buffer and the rationale behind recent changes to the borrower-based measures. The panellists then discussed the key financial stability implications of the turning point in the global credit cycle. According to *Anke Weber*, we had re-entered a period of positive real interest rates following a high inflation and interest rate environment, in which strong labour market and tighter credit market conditions coexisted. She identified the risk of higher interest rates as firms would only be able to refinance low-interest loans taken out before the monetary tightening at higher interest rates when they would have to be renewed in the next few years. Participants agreed that, despite high bank profitability and along with discretionary bank taxes, it should be allowed to continue to build up bank buffers that could be released in the event of a future shock. The final question of the panel was on the relationship between climate change risks to the financial system and macroprudential policy. While the Czech central bank took a more conservative approach due to the overarching nature of climate policies beyond central bank objectives, *Anke Weber* argued for a green calibration of existing macroprudential instruments instead of introducing new ones.

2. Geopolitical and economic fragmentation risks: shifting linkages and financial stability

The second panel discussion of the conference focused on the elevated geopolitical risks, as well as the systemic risks of supply chain disruptions and international financial decoupling. In his opening presentation, *Stefan Thurner* (Complexity

Science HUB Vienna) presented the potential use of deep analysis of corporate supply chains for financial stability purposes. The programme of his research centre involved studying the economy at the "atomic level", i.e. the networks formed by a multiplicity of supply relationships, and assessing how their structural characteristics and the dynamics of their transformation affected macroeconomic processes. Its essential components were the firm's supply and demand relationships, the formal description of production technologies, the possibilities of substituting and replacing partners and the modelling of pricing behaviour. The model also offered new tools for identifying financial system risks, such as network systemic risk indices, which estimated the impact of financial distress or insolvency of a company or group of companies on the financial state of customers and suppliers, but could also be used to detect the indirect losses of financial institutions financing companies vulnerable to supply chain shocks.

In his introductory presentation, *Manuel Ramos-Francia*, moderator of the panel discussion on the risks of global fragmentation, pointed out the multiple drivers of decoupling and the reversal of international economic integration, which were also influenced by political processes. Geo-economic fragmentation had multiple channels of impact, such as rising costs of global trade, disruptions of supply chains, technological decoupling (which could hit technology-importing developing economies particularly hard), restrictions on the free movement of capital and labour, more costly financing of public debt due to creditors forming blocs, and the uncertainty caused by the above processes. Adverse consequences could amplify financial stability risks such as increased funding costs for financial intermediaries, undermining bank profitability, uneven market liquidity conditions in some regional markets and increased market volatility, limited cross-border liquidity management facilities, regional regulatory differences and regulatory arbitrage exploiting this, and increased counterparty risks due to shrinking funding relationships concentrated in regional markets.

Stefan Turner (Complexity Science HUB Vienna), *Carlos Quicazan* (Banco de la República – Colombia, BRC) and *Mahvash S. Qureshi* (IMF) joined the rest of the panel discussion. The participants said that over the last 30 years, diffuse production networks had become longer and less transparent, while interdependence had increased to enhance efficiency and production buffers had decreased. At the same time, countries with a high level of financial development or sufficiently large foreign exchange reserves were less vulnerable to adverse effects. In the future, geopolitical factors may become even more important, and investors may pay more attention to them than in the past. Greater concentration of external exposures would lead to increased macro-financial volatility, and it would therefore be important to ensure that individual financial institutions should adequately be funded, and the global financial safety net must be strengthened overall.

3. Financial stability through the lens of historical economics

In the third session, which assessed financial stability from a historical perspective, *Jorge Ponce*, an expert in historical economics from the Central Bank of Uruguay, illustrated with various examples how reinterpreting financial crisis events in economic history could help us better understand the financial processes of our time and even the risks of innovative financial products. By way of introduction, he recalled the tulip fever in Amsterdam in the 17th century, drawing a parallel between past experiences and the price explosion in cryptocurrencies, which in some respects showed a similar trend. He also recalled that the financial intermediation of the Bank of Amsterdam in the 17th and 18th centuries could be compared to the so-called stable coins, offering many lessons for understanding digital currencies. He summarised the lessons from other historical examples, from the history of the French Banque Générale (1717) to the crisis events of the 20th century: financial stability crises often resulted from regulatory and supervisory failures, excessive risk-taking, and inadequate management and regulation of the risks associated with financial innovation.

4. The optimality and reality of the current financial crisis management framework in light of recent stress events

In the closing session of the first day, *Dominique Laboureix*, Chair of the Single Resolution Board (SRB), gave a speech on the European crisis management framework (regulation, resolution, deposit insurance and other policy interventions). He argued that the framework had basically worked well, as European banks were not severely affected by the banking system stress of 2023. At the same time, several important implementation issues were identified. He suggested that, given the diversity of possible crisis scenarios, resolution authorities should have a choice of resolution strategy and tools and be able to combine them flexibly, tailoring their intervention to the specificities of the crisis at hand. Further work would be needed to ensure that loss-absorbing instruments finance banks across borders with uniformly interpreted rules and information disclosure. Adequate liquidity is essential for the banking system in times of stress. It would be useful to strengthen information sharing and international cooperation in crisis management among the large international banks. In addition to the above, common communication should be improved at all times, even before crisis situations. The recent review of the EU crisis management and deposit insurance legislation also aimed to incorporate these elements.

In the panel discussion that followed, which was moderated by *Krisztina Földényiné Láhm* (MNB), *Dominique Laboureix* (SRB), *Ruth Walters* (BIS) and *Thorsten Beck* (EUI FBF) discussed the experiences of the crisis management framework and the

opportunities for improvement. *Krisztina Földényiné Láhm* noted that by the end of last year, banks had significantly improved their loss-absorbing capacity. The resolvability of institutions has improved significantly, however going forward it would be important to strengthen cross-border resolution capacity, complete the operationalisation of resolution tools, extend resolution strategies to small and mid-sized institutions, facilitate the financing of resolution by making liquidity and DGS resources available, and to shift from resolution planning to resolution testing. During the rest of the discussion, among other things, the panellists pointed out that the EU banking system had entered the last crisis period in a much stronger position than before. They mentioned that the regulatory treatment of unsecured deposits should be reconsidered, including in the liquidity coverage requirements, to ensure that their risks are properly reflected. The current international trend in deposit insurance is that depositors are most effectively protected when the deposit insurance scheme is able to support the resolution process and provide resources for measures to maintain the continuous availability of deposits. Digitalisation and social media have accelerated the pace of deposit withdrawals, which is a novel challenge for resolution authorities. Cyber-attacks are an increasingly important risk factor as well; even if they do not affect a bank's solvency, but they might affect its reputation, which could also increase vulnerability considerably.

5. Turbulent times: The example of Hungary

In his opening speech on the second day, *Ádám Banai*, Managing Director of the MNB, recalled that throughout the history of the MNB, achieving financial stability had always been an important part of the central bank's objectives. After a brief historical overview, he presented the macroprudential policy approach of the MNB. The Hungarian central bank has been given a very strong macroprudential mandate as a result of the excessive risk-taking by banks in the past. Currently, the MNB applies a number of requirements to prevent past lending practices in the form of macroprudential capital buffers, liquidity and funding rules and borrower-based measures. As a result, the banking sector now faces financial stability challenges in a much more resilient state, with banks having more and better quality capital, more liquid assets and a stable funding structure. As an important example of consistency between monetary and macroprudential policies, he mentioned the issue of interest rate fixation on household mortgages. Fixed-rate mortgages offer a number of financial stability benefits, which is why the MNB used a number of instruments in 2017 to steer the mortgage market towards longer interest rate fixation. However, in a tight monetary policy environment aimed at bringing down high inflation, being stuck with high interest rate fixed loans, relatively low loan refinancing activity and banks' hedging of interest rate risks have emerged as new challenges, which the central bank has also addressed with multiple policy responses. Finally, Ádám Banai concluded that a well-timed and proactive macroprudential approach could

strengthen the balance sheets of both borrowers and lenders, limit the interest rate risk exposure of borrowers and promote stable financing structures. This would allow monetary policy to achieve its price stability objectives without jeopardising financial stability.

6. The impact of technological change on the liquidity and financial risks of the financial system

Digital technological advances are revolutionising the delivery of financial services, but they can also present financial institutions and regulators with significant new financial stability challenges. In the session on this topic, *Manuel Ramos-Francia* (CEMLA) presented the turbulence associated with international capital flows of global bond funds and other investment products (such as ETFs) that also used algorithmic trading. In the decade following the Global Financial Crisis (GFC), capital flows in emerging capital markets had become more volatile, which the speaker explained by the increasing role of global asset management firms and the rise of passive investment strategies such as algorithmic, automated and high-frequency trading. Based on weekly bond market flow of capitals for five major Latin American economies, the magnitude of extreme outflows increased when the share of foreign investors in the market became larger or the exposure to the bond market increased in the largest ETF portfolios. Vulnerability due to higher volatility was mitigated if the central bank had adequate foreign exchange reserves. Regulatory options include the use of fees and limits to help control the immediate mass redemption of investments during periods of stress.

In his presentation, *Efraim Benmelech* (Kellogg School of Management NU) examined the decline of bank branches and the role of this aspect in the development of three US bank failures (Silicon Valley Bank, Signature Bank and First Republic Bank) between March and May 2023. The significant digital transformation of the US banking sector was illustrated by the fact that while the number of branches fell by almost one-sixth between 2016 and 2022, deposits nearly doubled at banks with a high level of IT investment. The typical examples of banks going bankrupt were credit institutions that rapidly expanded their uninsured deposit base through digital channels and maintained very small branch networks. Over the same period, the event study conducted by the presenter indicates that banks with a smaller number of branches as a proportion of deposits suffered a larger expected fall in share prices. One of the lessons for supervisors from the bank failures of spring 2023 is that it is worth paying attention to the specific risks of deposit portfolios, which are growing very dynamically through digital channels.

7. Systemic risks associated with the technological transformation of the structure of financial markets and intermediation

In the session on the development of information technology in financial services, *Leonardo Gambacorta* (BIS) spoke about the rise of artificial intelligence. In his presentation, he outlined how AI would affect productivity, the impact on inflation and output, and its opportunities and challenges for the financial system. In his view, the financial system is one of the most exposed sector to AI compared to other industries, due to the high proportion of cognitive tasks and intensive data management. While the application of AI in financial intermediation may bring enhanced credit scoring, improved customer service, enhanced financial literacy and inclusion, easier regulatory compliance, or even further improvements in fraud detection and Anti-Money Laundering (AML) applications, it also poses challenges. The so-called black box mechanism, poor quality of data, increased market concentration, data protection concerns and collusion between actors are problems that need to be addressed. Risks to financial stability include herding and uniformity in robo-advising, pro-cyclical credit supply in digital channels, over-reliance on non-representative samples, and the macroeconomic effects of labour displacement. Given the borderless nature of AI, coordination between jurisdictions is needed for effective regulation.

Ania Zalewska (University of Leicester School of Business) and her colleagues modelled the possible risk-taking consequences of the changing competition in the banking market with open banking. In their theoretical model, following the spread of open banking, some banks specialise in serving passive depositors who do not take advantage of the option of open banking, offering relatively low deposit rates, while other financial institutions pursue an innovative banking strategy to serve active depositors seeking the best service, in an intensely competitive environment and at higher interest rates. The distribution of institutions with these two different business strategies, however, equalises the marginal profit of banks following these two strategies. As capital requirements increase, an intricate situation from a systemic risk perspective may arise whereby some banks that previously served passive depositors switch to the strategy of higher-risk, highly competitive banks. The explanation in the model is that banks serving captive depositors, who are more reluctant about technological change, set deposit rates close to the lower payout of traditional but imperfect deposit substitutes. In turn, this narrows their scope to compensate for the higher cost of capital with lower deposit rates, while innovative banks participating in active price competition are left with the option to do so.

8. Recent contributions of stress tests and systemic risk modelling to macroprudential policy making

In the session on stress testing applications for macroprudential purposes, *Serafín Martínez-Jaramillo* (CEMLA, Banco de México) presented a modelling framework that is one of the first to combine network research methods that can capture forward-looking climate stress scenarios, asset pricing dependencies and financial contagion. Lately much attention has been paid to the analysis of the long and shorter-term financial risks associated with climate change, with the adaptation of stress testing methodologies for financial institutions. To estimate the potential losses of the green transition that has already begun, but is still largely ahead of us, the starting point for modelling in the research is provided by stress scenarios describing late and disorderly economic adjustment shocks to climate policy goals. In the first stage, these cause direct losses on the future corporate bond and loan exposures of banks and investment funds that financial institutions use to finance real economic sectors vulnerable to climate policy tightening (climate policy relevant sectors, CPRS). The subsequent second-round effects then synthesise multiple contagion channels, covering losses on direct inter-bank exposures to credit institutions and funds, on the one hand, and on the other, fire sales of indirect exposures with identical or closely related pricing, and finally, potential losses on external liabilities above bank capital, which are ranked in the order of satisfaction. Lessons from a stress exercise calibrated on the Mexican financial system show that losses can be as high as 2–4 per cent of total assets, depending on the timing of the shocks, and that in a weak financial stability environment, second-round losses can be several times higher than those estimated in a stable system which might even be tighter with climate policies.

After this, *Bence Mérő* (MNB) gave a presentation on the development of the agent-based modelling (ABM), which plays a key role in the impact assessment of financial stability regulations and is currently used mainly for the evaluation of housing market scenarios. One of the achievements of ABM is its ability to exploit individual data from a large number of observation units in granular, anonymous databases: for example, the MNB model estimates regional housing market and macro-financial developments based on data on individual demographic characteristics, localisation, property quality, credit conditions and other characteristics of 4 million domestic households and properties, and 700,000 loan transactions. This allows the MNB's experts to assess the likely impact of borrower-based measures (debt service-to-income ratio and loan-to-value ratio requirements) on house price growth, credit supply, credit risk or economic growth, and also in more detail on narrower social groups, such as young generations who are first-time home buyers.

9. The impact of climate change and natural capital degradation risks on financial markets: Is a macroprudential response warranted?

The final session of the conference featured presentations from speakers whose research is helping to explore whether the potential impacts of climate change and widespread degradation of the natural environment could amplify systemic risks in the financial sector. As discussed in a study by *Matias Ossandon Busch* (CEMLA) and his colleagues, the degradation of natural capital, local ecosystems and biodiversity may be demonstrated by the migration of wildlife, but also by the migration of industries that depend heavily on such, along with the banks that finance their activities. Their empirical study shows that over the past decade, bank branches in some municipalities of Mexico that suffered significant natural capital damage and had extensive, albeit declining productivity, agrarian economies, have shifted their deposit-taking activities to less damaged municipalities, presumably following a reallocation of labour, while bearing the costs of branch relocation. A double consequence of the relocation could be, on the one hand, a deterioration of natural capital in the target area and, on the other hand, an increase in consumer and quick loans in the composition of new lending in the area affected by the partial exodus.

Paola D'Orazio (Chemnitz University of Technology) reviewed the opportunities and elements of a green paradigm shift in central bank strategies in five different categories of financial regulatory instruments: green prudential requirements (capital, liquidity or large exposure rules), direct capital allocation requirements (see for example the Reserve Bank of India's Priority sector lending guidelines), green financial principles to support financial markets that promote sustainable finance, disclosure requirements, and support for green bond issuance. She noted that by 2022 the vast majority of central banks, especially in the slower-moving developed countries, were still in the experimental phase, but that green aspects were already being incorporated into regulations (additional disclosures, extended risk monitoring, fine-tuning of regulatory tools, support for green securities standards, etc.).

In his closing presentation, *András Borsos* (Complexity Science Hub Vienna, MNB) presented his joint work with fellow researchers to map the inter-firm trading network using a highly granular database of millions of transactions between anonymised domestic firms, which records transactions between firms every year. The resulting network model could be used to look beyond the conventional industry breakdown and select subsets of companies on the basis of more specific criteria, or to examine the economic links and role of individual companies in supply chains. A possible topic to be investigated is, for example, whether companies operating with high carbon dioxide emissions or those participating in the EU Emissions Trading Scheme (EU ETS), are subject to climate change shocks, for example through the stricter pricing of carbon allowances. The propagation of

shocks could be traced through the edges of the network, i.e. the sale and purchase links, from the companies directly affected to the real economy partners and the potential losses to the credit institutions that finance them.

More information on the "Financial Stability Conference: Turbulent Times" is available at the event website and the presentations and panel discussions can be viewed on the MNB's official YouTube channel: Financial Stability Conference: Turbulent Times (youtube.com)