Monetary policy in uncertain times: toward robustness and resilience

Key findings from the 50th OeNB Economics Conference and 60th SUERF Anniversary Conference (May 22 and 23, 2023)

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When central banks of advanced economies conducted monetary policy strategy reviews in the early 2020s, they did so during a period characterized by a persistent undershooting of inflation targets. Thus, the key objective of the reviews was to explore ways of increasing the effectiveness of monetary policy in bringing inflation and inflation expectations back to target at the effective lower bound. Given that in 2021 the tides turned to a dramatic overshooting of inflation targets, the question arises whether the analyses made at the time were overly focused on a particular state of the world and failed to be adequately robust to accommodate the possibility of dramatically and fast-changing circumstances. The current environment is characterized by higher volatility and increased uncertainty about economic conditions and has shown how large and sudden shocks can sharply change economic and financial conditions in a matter of months, not only locally but also globally.

Marking the 50th anniversary of the OeNB's Annual Economic Conference and SUERF's 60th anniversary, the OeNB and SUERF jointly organized a two-day high-level research and policy conference, which was attended by 781 participants (315 at the Vienna Museumsquartier and 466 online). The conference explored avenues to render central banks' strategies and analytical tools more robust and resilient to unexpected changes in the conditions under which they may need to operate; how to make monetary policy decisions robust and resilient to uncertain outcomes; the importance of interaction between fiscal policy and monetary policy and how to tailor central bank communication to high inflation and high uncertainty. Additionally, the conference presented research by a select group of young economists on inflation and the transmission of monetary policy.

1 Robustness and resilience in an uncertain and complex world: implications for monetary policy

The opening keynote "Robustness and resilience in an uncertain and complex world: implications for monetary policy" was held by *Markus Brunnermeier* (Edwards S. Sanford Professor of Economics, Princeton University). In his presentation, Brunnermeier explained that, in order to deliver on their mandate, central banks may seek to put in place a robust monetary policy framework to block shocks or disruptions in the first place, and/or take measures to build resilience, i.e. aim at contributing to strengthening the ability of the economy to recover from significant shocks. As the economy is often confronted with shocks that cannot be avoided, resilience is, at any rate, key to fostering stability and promoting sustainable economic growth.

Proper risk management by central banks includes not only quantifying the probability that a shock materializes but also the size of its effect. Trying to avoid all risks and focusing on robustness would imply pursuing a rather aggressive

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policy, which might dampen the growth path of the economy. Alternatively, following a resilient strategy instead, the main aim would be to work toward enabling the economy to recover from shocks and transform to a "new normal." If this "new normal" leaves the economy and society even better off, this is known as over-resilience. One recent example of over-resilience is the COVID-19 pandemic, which boosted the development of new technologies and innovations in various sectors of the economy. A resilient system is a highly dynamic and flexible one, which fluctuates around a solid growth path. In this sense, volatility does not necessarily relate to weakness but can also mean strength.

Resilience can be enhanced, or destroyed, by a range of factors. The resilience of the economy can be fortified through the implementation of buffers. For instance, high equity capital buffers, such as those enforced by macroprudential policies, create a safeguard against severe shocks. For resilience to thrive, it is moreover essential to increase flexibility and reduce redundancies. This ensures that the system can withstand shocks while retaining the ability to redeploy resources and adapt swiftly. The two approaches reinforce each other: Liquidity acts as a lifeline during crises while adaptability empowers entities to adjust their strategies and operations in the face of change. Resilience is further strengthened when there is social cohesion, a shared aim and an environment that allows for thinking outside the box and learning from smaller crises to effectively manage larger ones. Together, these factors create the basis for a bounce-back in the event of disruptions.

On the other hand, the economy may lose resilience when it is being caught in a feedback loop or hits a tipping point. Traps like liquidity traps or the zero lower bound on interest rates, i.e. situations where the economy is unable to bounce back after a severe shock, are best avoided with the pursuit of robust policies. The same applies to situations where the negative effects of second-round shocks will likely lead to adverse repercussions spreading to the entire system. Examples include the negative effects of climate change or financial bubbles. Cases like this would best be tackled with a robust policy strategy rather than a resilient one.

When it comes to monetary policy, its power lies in the ability to promote resilience and to facilitate a bounce-back through monetary stimulus. For resilience, maintaining a stable and credible inflation anchor is crucial. An inflation anchor serves as a convention and, to be effective, should be well known and its level needs to be widely accepted. A credible inflation anchor ensures that central banks can react to shocks without risking a permanent deviation from target. However, according to Brunnermeier there is a resilience barrier, where insufficient credibility or an excessively large shock can de-anchor inflation expectations, hindering the ability to recover. Moreover, high uncertainty adds complexity to understanding other agents' perspectives, making it harder to gauge their possible reactions to a large shock. Hence, central banks need to act decisively to avoid the costly consequences of de-anchoring. Clear and effective communication is essential in maintaining the credibility of the inflation anchor. Changing the inflation target (as is currently advocated by some commentators) would weaken resilience, as it would blur the clarity of the central bank's signal on its inflation anchor.

Monetary policy is confronted with two critical traps: the financial and the fiscal dominance traps. The financial dominance trap poses the question of whether a central bank remains in a position to raise interest rates to combat inflation when

financial stability is at risk. Good macroprudential regulation, such as ensuring well-capitalized banks, aids monetary policy in avoiding this trap. In a low inflation environment, there is often a concurrence between price stability and financial stability. However, when inflation is high, a trade-off emerges, with price stability and financial stability moving in opposite directions. The belief that monetary policy interventions are infeasible due to concerns about risks to the financial sector can lead to the de-anchoring of inflation expectations and a weakening of resilience.

The fiscal dominance trap pertains to the link between fiscal and monetary policy. When policymakers perceive that inflation is much higher than the policy rate, they may engage in unrestrained spending. This, however, gives rise to the risk of central banks being pressured to keep the policy rate low. While central banks are legally independent, pressures from policymakers can undermine their independence. A well-capitalized central bank with a strong balance sheet is vital to mitigate the risk of being pressured by fiscal authorities.

Proper risk management also includes being aware of transition phases. In recent times, those encompass green transition, remote work, demographic changes, de-globalization, and the digital euro. Monetary policy may not be designed for structural change but must accommodate change and must be prepared for its implications. For example, a green transition leading to increased investment can result in a higher natural rate of interest (r*), necessitating higher nominal and real interest rates. Demographic changes implying dissaving among the elderly, de-globalization and the consequent loss in efficiency may also affect r*. Moreover, the emergence of a digital euro introduces additional complexities that need careful consideration.

To sum up, adopting a risk management approach is crucial for fostering resilience. It involves assessing the entire distribution of potential scenarios and gauging the severity of their impact. By anticipating different outcomes and their consequences, policymakers and central banks can develop strategies to effectively respond to such challenges and promote stability.

2 Shock identification and optimal monetary policy responses in an uncertain and complex environment

A key question for future successful monetary policies is how to correctly identify the nature of shocks, their duration, their relative strength (e.g. supply versus demand), and their transmission in an increasingly uncertain and complex environment. What lessons have we learned during the COVID-19 and energy crises to improve central banks' tools? Would such improvements change monetary policy strategies and the conduct of monetary policy? These key questions were discussed in a session moderated by *Ernest Gnan* (Secretary General of SUERF and Honorary Economic Advisor to the OeNB Governor).

Boris Hofmann (Research Advisor, Monetary and Economics Department, Bank for International Settlements – BIS), offered insights into current BIS thinking on how to identify the shocks driving inflation and how fiscal and monetary policy may have to change to ensure a return to macroeconomic stability soon. He showed that, using straightforward analytical tools, it is possible to extract signals of surging inflation in a very complex environment: Inflation was driven by very strong demand, which hit very tight supply conditions. This applies to the United States and to the euro area alike. Also, money growth signaled the inflation surge quite

clearly, and the use of monetary aggregates helps explain inflation forecast errors. This possibly reflected the state-dependent relationship between money and inflation during high-inflation regimes. He also argued that monetary and fiscal policy responses in the period 1985–2019 were, overall, far more expansionary than in the period 1970–1984. While policy responses in recent crises were always compelling at each point in time, cumulatively they pushed policies to their limits. Policymakers should thus look beyond the short-term challenges and aim to preserve policy buffers over the cycle.

Raffaella Giacomini (Professor at University College London and Economic Advisor, Federal Reserve Bank of Chicago) highlighted the many open issues which economic researchers face in identifying and measuring economic shocks. What we call a shock depends on the identifying assumptions. As we cannot compare studies using different shock identification assumptions, there is no uncontroversial answer to what the effect of shocks is. To address uncertain shock identification, Giacomini proposed two broad approaches: First, researchers might rely on identifying assumptions. This allows the data "to speak." However, this approach yields intervals rather than clear points; if the intervals are overly wide, the findings become less informative. Second, instead of intervals, one might report a point that minimizes the maximum loss over the interval. This is easier to communicate but the loss function applied is arbitrary. Regarding uncertainty about the measurement of shocks, a first approach is to use a narrative, i.e. to measure shocks directly by text analysis and changes in market expectations around policy announcements. If these are true shocks, one can get dynamic causal effects by performing local projections of point estimates. However, it is uncertain whether the narrative captures the true shocks. Hence, one may also treat the narrative measures as instruments for the shock and then use instrument variable estimation. This approach does not need to assume that shocks are correctly measured. At the same time, the instrument may be invalid and weak or not exogenous. As a case in point, some historical episodes that we call "shocks" were in fact anticipated. A solution to this problem is to apply narrative restrictions by focusing on a few historical episodes that we can agree are shocks and then impose these as identifying assumptions. While this approach imposes minimal assumptions, it only yields range estimates. A final approach is to use sparse instruments, considering the above-mentioned few historical episodes as an instrument. This approach yields point estimates that efficiently extract information from a few episodes that are truly exogenous. To sum up, Giacomini identified as the most promising approaches a) to relax identifying assumptions and accept intervals and uncertainty; and b) to extract information from only a few historical episodes that are noisy measurements of shocks. She concluded with a quote from Charles F. Manski: "Knowing what we do not know is an important premise for policy decisions without incredible certitude."

Adrian Penalver (Deputy Director, Monetary and Financial Studies, Directorate-General Statistics, Economics and International, Banque de France) then zoomed in on monetary policy, asking the question whether caution and gradualism – as advocated in some of the economic literature and by several policymakers – are really the best approach for monetary policy decisions in a world where inflation expectations cannot be taken to be firmly anchored forever and unconditionally. He recalled that "Brainard uncertainty," a principle developed by the economist

William Brainard, only refers to uncertainty about the strength of the policy instrument but not to uncertainty about the state of the economy. This drives Brainard's result to attenuate the policy response to avoid large mistakes. But what if inflation is driven by expectations? If economic agents realize that the central bank will fight inflation only with attenuated policy responses, then inflation and inflation expectations will rise. If the central bank then again reacts with policy attenuation, inflation deviates further from target, and so on. The more the central bank is forced to act, the greater the policy-induced variance will become, and the more the central bank will be willing to trade off a deviation from the inflation target for a reduction of this variance. So, with full information, the central bank should not attenuate its policy. There is some room for attenuation if inflation expectations are not based on full information; but the central bank will eventually have to track the natural rate of interest. The current policy challenges include uncertainty about the transmission of policy measures, the possibility of a financial crisis and uncertainty about the effects of new instruments. Penalver also emphasized the distinction between attenuation (doing less) as opposed to gradualism (the timing of policy steps). Central banks should, however, not ignore uncertainty about the effectiveness of their instruments. Indeed, there is the risk of overshooting. But one should also not ignore the risk that inflation expectations might become de-anchored. Having put in place the Transmission Protection Instrument (TPI) as a backstop against sovereign debt crises, the ECB has increased its policy scope for decisive action in combating inflation, which in turn should increase the ECB's credibility.

Inspired by Alfred Einstein's quote "Problems cannot be solved with the same mindset that created them," *Sandra Eickmeier* (Research Economist, Economic Research Center, Deutsche Bundesbank) questioned established methods and approaches to respond to current shocks. She advocated a wider and deeper view of the world's current multiple crises, or meta crisis. An understanding of the world's current problems requires thinking beyond the economic sphere; it needs to go back to humankind's worldview, mindset, and values to re-align economic and ethical values. The dominating view in economics that "separate individuals maximize their own material well-being and compete with others for scarce resources" is not conducive to solving current challenges. Markets are fraught with externalities; the market mechanism fosters narrow thinking, which neglects the bigger picture that includes well-being and environmental sustainability. A change in mindset, which encompasses economic goals, leadership, communication, dealing with uncertainty, etc. is needed to act as an effective coordination mechanism. This way, crises would be addressed jointly and thus more effectively, and mankind would switch from reacting to crises toward shaping change consciously.

3 The Great Volatility: How to cope? What is different this time? How to manage side effects and trade-offs

In this panel moderated by *Robert Holzmann* (Governor of the OeNB), *Tobias Adrian* (Financial Counselor and Director of the Monetary and Capital Markets Department at the International Monetary Fund), *Claudio Borio* (Head of the Monetary and Economic Department at the BIS and SUERF Fellow), *Sarah Breeden* (Executive Director at the Bank of England), and *Philip Lane* (Member of the Executive Board of the ECB) discussed the policy reactions and measures taken during volatile times. Two broad topics were debated.

The first topic addressed the question of whether the recent increase in volatility and elevated financial risks has posed a threat to the separation principle, which suggests that monetary policy and financial stability can be treated separately with different instruments. While the consensus was that a regime of uncontrolled risks prioritizing financial stability was not currently present, the panelists debated whether rising risks necessitated a shift in policymaking. They also discussed the influence of recent bank failures on the current assessment.

Borio highlighted the policy challenges and risks associated with a focus on financial markets. He emphasized the vulnerability resulting from a combination of unprecedented monetary policy tightening and macroeconomic factors. Drawing comparisons to past tightening episodes since World War II, such as the inflation-reducing episodes in the mid-1980s, he pointed out that the difference to today stems from financial liberalization that has increased the scope for financial expansions and contractions. Borio expressed concerns about interest rate and credit risks materializing and stressed the importance of assessing the resilience of banks and nonbank financial institutions (NBFI) in the face of potential stress. According to him, private credit markets, commercial real estate markets, and vulnerabilities in government bond and foreign exchange (FX) markets, particularly FX swap markets, may serve as pressure points within the NBFI sector.

Breeden argued that the separation principle between monetary policy and financial stability still applies. While the UK's financial system experienced stress quite recently, including distortions in the gilt market, she praised the resilience of the banking system in the United Kingdom. She attributed this resilience to enhanced supervision, stress tests, and capitalization measures implemented since the 2008 financial crisis. However, Breeden acknowledged the need to monitor conditions more broadly and highlighted the importance of cooperation among the committees responsible for monetary policy and financial stability. She discussed the measures taken to build resilience and contain risks, such as stress-testing major banks and implementing countercyclical capital buffers, given the need to build up resilience in advance of periods of stress.

Lane also supported the notion that the separation principle still applies and emphasized the ECB's commitment to price stability. He reassured that the ECB has successfully managed liquidity provision, and markets have demonstrated confidence in its ability to maintain price stability. Lane emphasized the importance of anchoring inflation expectations and stressed the need to keep inflation at its target.

Adrian discussed the resilience of global financial stability, which has been tested over the past year. He highlighted the evolving factors driving volatility and the interconnectedness between monetary policy, financial conditions and vulnerabilities. Adrian noted that bank lending conditions have tightened further, but financial stability concerns have not yet undermined monetary policy. While acknowledging the presence of downside risks, he reassured that the global economy is currently experiencing a soft landing. However, Adrian cautioned that if more systemic issues arise, central banks may need to provide additional liquidity, potentially leading to a trade-off between financial and price stability.

The second question focused on the development of a resolution regime for banks under stress to prevent financial instability and government intervention in the form of bailouts. The panelists continued to discuss recent developments in the

United States and Switzerland, where resolution regimes were not utilized and where government and central bank support became necessary.

Breeden cited the example of the resolution process for a UK subsidiary of the Silicon Valley Bank, highlighting the importance of maintaining enhanced standards and developing a prudential framework for small domestic firms with international financial exposure. Borio emphasized the need for fiscal policy to work in tandem with monetary policy to address both price stability and financial stability concerns. Adrian pointed out the significance of the interaction between monetary and fiscal policies in combating inflation and addressing weak bank performance. Finally, Lane stressed the importance of having a comprehensive toolkit that includes resolution regimes but cautioned against over-reliance on them. He suggested focusing on credit conditions and their impact on monetary transmission channels to better understand the strength of the transmission mechanism.

In conclusion, the panelists acknowledged the challenges posed by volatile times and discussed the appropriate policy reactions and measures. They reiterated the application of the separation principle between monetary policy and financial stability, while recognizing the resilience of the banking system. However, concerns were raised regarding nonbank financial institutions, and the need for monetary and fiscal policies to cooperate was emphasized. The panelists also discussed the development and effective implementation of resolution regimes, as well as the importance of monitoring credit conditions.

4 Fiscal and monetary policy interactions: side effects, trade-offs, and complementarities – need for coordination?

The shocks that the global economy and in particular the euro area have faced in recent years have required very strong fiscal and monetary policy responses. This has raised the issue of side effects, trade-offs and spillovers between these two policy areas. In a session moderated by *Maria T. Valderrama* (Head of the OeNB's Monetary Policy Section), experts on the interaction between monetary and fiscal policy attempted to answer three main questions: 1) How can monetary and fiscal policies interact optimally to achieve complementarities and synergies? 2) How does fiscal policy affect the effectiveness of monetary policy? 3) What useful role can fiscal rules play? Four speakers offered complementary perspectives on the matter: *Aaron Mehrotra* (Principal Economist, Bank for International Settlements) presented the global and long-term view, while *Dennis Bonam* (Principal Economist, De Nederlandsche Bank) zoomed in on the euro area perspective and offered theoretical underpinnings of the interaction of monetary and fiscal policies. *Sven Langedijk* (Advisor, Directorate-General for Economic and Financial Affairs at the European Commission) gave the institutional and fiscal policy perspective about the policy mix. Finally, *Francesco Papadia* (Senior Fellow at Bruegel) offered a broader perspective, building on his knowledge of central banks from inside and out.

Looking at data for the past five decades, Mehrotra and his co-authors showed in greater detail that the policy regime matters for the strength of the relationship between fiscal deficits and inflation. They look at two combinations of policy regimes: First, a "monetary-led" regime, where fiscal policy stabilizes debt over time and monetary policy enjoys a high degree of independence. The second regime

is the "fiscal-led" regime, where fiscal policy does not stabilize debt, and monetary policy is only weakly independent. Fiscal-led regimes were common in the 1980s and 1990s, but since the year 2000, monetary-led regimes have been predominant. They also show, after controlling for other cofounding variables within a Phillips curve framework, that there is a strong effect from fiscal deficits on inflation in the fiscal-led regime, compared to smaller effects in the monetary-led regime. Moreover, they look at the entire inflation forecast distribution and find that, when fiscal deficits increase, the probability of higher and more volatile inflation outcomes is higher in the fiscal-led regime. Thus, when inflation is high, like it is at the time of writing, monetary policy accompanied by fiscal tightening has larger effects on aggregate demand and there are fewer risks to financial stability because interest rates must rise by less. On the question whether fiscal rules have helped historically, their analysis shows that fiscal rules have been stabilizing factors, in the sense that there are more primary surpluses during periods of monetary tightening, which coincides with today's situation and monetary-led regimes.

Bonam zoomed in on the euro area experience and showed that the euro area has gone through cycles where monetary and fiscal policy have moved sometimes in tandem and sometimes in opposite directions. Bonam and his co-authors analyze whether this matters for the effectiveness of monetary policy. Their model shows that, indeed, the effectiveness of monetary policy depends very much on whether fiscal policy is supportive (i.e. moves in the same direction). Moreover, they show that this difference is driven by different responses of private consumption to a monetary policy shock, depending on the given fiscal policy regime. The innovation of their analysis is that they model a wealth effect (on consumption) that is influenced both by monetary and fiscal policies. Moreover, they show that the net effects of both shocks depend on whether consumers/households expect Ricardian effects or not. This implies that a contractionary monetary policy shock is less effective if consumers expect fiscal policy to react procyclically and/or if they believe there are risks of fiscal dominance. To prove their hypothesis, they look at a sample of euro area member states with high debt. They find that consumers do not fear fiscal dominance. Thus, their analysis clearly calls for fiscal rules that would reduce the risk of fiscal dominance or procyclical fiscal policy, which would undermine the effects of monetary policy.

To complete the theoretical view from the last paper, Langedijk offered the policy perspective. He presented a detailed account of the European Commission's proposal to reform the European Union's Stability and Growth Pact (SGP) dated April 26, 2023, as well as the motivation for reform. The European Commission's review of the SGP yielded that the SGP had not been effective in reducing debt levels, or in guaranteeing countercyclical fiscal policies. Moreover, governments tended to reduce investment, which had negative effects on potential growth. Hence, the current reform of the SGP is aimed at strengthening debt sustainability while at the same time promoting inclusive and sustainable growth in the European Union. The reform proposal attempts to make governments commit to a binding reform path, while at the same time giving them more discretion about how to achieve these goals. For example, governments can extend the time to reach their goals to 4 or 7 years, but they will not be able to backload reform efforts. More importantly, the European Commission acknowledges the importance of keeping escape clauses in place for periods of crisis such as the COVID-19 pandemic. On

the other hand, fiscal policy should be countercyclical to support monetary policy and reduce the risk of fiscal dominance.

Finally, Papadia delved into the consequences of the ongoing review of the SGP for the ECB as a backstop to fiscal policy. He asked two questions: 1) Will the new SGP reduce the risk that the ECB must act again as a backstop for fiscal policy and 2) If the ECB must take this role again, will the SGP help the ECB? Papadia reviewed the experience of the ECB and concluded that, while it was undesirable for the ECB to act as a fiscal backstop, doing so was inevitable. Despite this, there is no risk of fiscal dominance in the euro area and thus no threat to price stability from the side of fiscal policies. This is so because in the past, the ECB's action helped bringing back the economy from a bad to a good equilibrium, by sparking a change in expectations. Looking ahead, Papadia listed some elements which are in his view crucial for the new SGP. First, he recommended that the SGP differentiates across countries and allows for an intertemporal approach. In general, there should be more room for discretion and the rules should be linked to growth and investment as well as to macroeconomic imbalances. He considered the European Commission's proposal dated April 2023 to be in line with his recommendations. However, he thought that the main obstacle is to agree on a debt sustainability analysis framework given the lack of trust among member states. Finally, what does this mean for the ECB? He thought that the proposal was a good basis to build the conditionality required for the ECB to act as a backstop, but the SGP will need to be respected and there should be enough incentives for governments to comply. He concluded that the SGP proposed by the European Commission has the potential to mitigate the risk that the ECB will again be forced to act as fiscal backstop and can also help manage the ECB backstop when needed again.

In conclusion, the discussion highlighted the importance of fiscal policy for central banks, but at the same time showed how complicated this interaction is, and how difficult it is for these areas to act optimally without coordination. Coordination, on the other hand, would risk weakening central bank independence. Thus, a new SGP that can achieve its objectives is much needed to increase the effectiveness of monetary policy.

5 Central banks as risk managers: long-term side effects, risks, and limitations

The second keynote lecture was delivered by *Jon Danielsson* (Director of the Systemic Risk Centre, London School of Economics and Political Science). Drawing from his recent book "The illusion of control," Danielsson challenges the common assumption that risks to the financial system originate from outside the system. Instead, he argued that critical risks originate from within the system through individual interactions, making them difficult to accurately measure or manage.

If central banks were to assume the role of risk managers, it would entail enhancing positive outcomes and increasing their likelihood, while minimizing the probability and severity of negative outcomes. The focus lies on the extremes of the distribution, while the available data reside in the center. Traditional risk models assume that risk is exogenous and therefore relatively easy to measure. However, Danielsson asserted that financial risk is generated through the interactions of market participants and is thus endogenous. This endogenous risk emerges due to

the prolonged time span between decisions and crises, and any efforts to stabilize the financial system inadvertently incentivize agents to misbehave.

In the decade after the financial crisis of 2008, the three key objectives of economic growth, low and stable inflation and financial stability, were achieved. It took monetary policy accommodation to accomplish these objectives, but as monetary policy remained accommodative for an extended period, systemic financial risks increased. This was not considered problematic, as regulations were expected to contain systemic risk. Yet, this perceived control is illusionary. The complexity of the financial system makes it impossible to identify and manage all risks. The fundamental question now is whether the focus should be on building robustness through buffers or on fostering resilience with shock absorption capabilities. Buffers are costly and fail to protect against large shocks. Hence, it is more effective to leverage the inherent shock absorption capacity of the system. Diversifying the portfolio of financial institutions enhances resilience and reduces regulatory costs. To achieve this diversification, regulations should be tailored to different types of institutions. Furthermore, barriers to entry should be eliminated (embracing fintech, decentralized finance, and possibly central bank digital currencies), and shadow banking should be acknowledged. However, the adoption of these measures is hindered by a combination of conservatism, risk aversion, local optimization and lobbying, which leads to new initiatives being perceived as potential threats that must be prohibited.

If central banks were to act as risk managers, they would need to aggregate all private risks into a measure which can be directly controlled by the central bank and give it more say in political decision-making. Considering the limitations of such an approach, Danielsson concluded his presentation by quoting Friedrich August von Hayek, who wrote, *"If we possess all the relevant information, if we can start out from a given system of preferences, and if we command complete knowledge of available means, the problem which remains is purely one of logic... This, however, is emphatically not the economic problem our society faces."* Therefore, central bankers cannot function as risk managers, and diversity is the best approach to safeguard our financial system.

6 Monetary policy communication in uncertain times

A panel discussion on monetary policy communication in uncertain times moderated by *Birgit Niessner* (Director of the OeNB's Economic Analysis and Research Department) marked the last session of the conference. In her opening remarks, Niessner stressed that the effectiveness of monetary policy measures relies to an important extent on clear communication by policymakers. While this statement necessarily applies to both tranquil and challenging times, Niessner emphasized that the current high inflation environment requires particular efforts to explain how exactly central banks address inflation above target and when their measures will bear fruits.

In her opening statement, *Klodiana Istrefi* (Senior Economist, ECB) emphasized that, while clear communication of monetary policy decisions is essential, it is crucial to consider the trade-off between accuracy and simplicity. She argued that simplification intended to avoid an in-depth discussion of uncertainties faced by policymakers in the decision-making process may convey a false sense of certainty and understanding of central banks' power to the public. Istrefi made a plea for

central bankers to remain transparent about the complexity they face in their day-to-day decisions. She also highlighted the progress monetary policy has made in fighting inflation since the 1970s when its credibility still largely hinged on the personality of single policymakers. Today, Istrefi opined, clear central bank communication about monetary policy objectives and the reaction function can substitute for the persuasiveness and credibility formerly conveyed by individual policymakers like Paul Volcker.

The second panelist, *Michael McMahon* (Professor of Economics, Oxford University), started his introductory remarks by paraphrasing former Federal Reserve chairman Alan Greenspan, who had stated that uncertainty was not just one feature of the monetary policy landscape, but in fact its very defining feature. In this sense, while monetary policy would always have to operate in a context of high uncertainty, policymakers cannot use this fact as an excuse for not being clear in their communication efforts. McMahon also stressed that academics, while advancing our understanding of the effects of complex future-oriented policies such as forward guidance, may have partly overlooked an important aspect of central bank communication, i.e. how to clearly communicate the central bank's assessment of the current economic situation. In his view, a substantial part of monetary policy surprises simply derives from a divergence of market participants' and central bankers' interpretations of current economic conditions, rather than from what academics like to describe as random variation in policy measures.

Emanuel Mönch (Professor of Financial and Monetary Economics, Frankfurt School of Finance & Management) addressed three key issues by way of introduction. First, he underlined the key importance of anchoring long-term inflation expectations for effective monetary policy via nominal interest rate setting. Mönch highlighted that learning models can provide valuable insights about how central bank communication can contribute to strengthening the anchoring process. Second, he argued that the reason why central banks remained behind the curve during the recent rise in inflation may be explained by the communication of, and commitment to, asymmetric reactions functions as in recently revised monetary policy strategies (e.g. the adoption of average inflation targeting by the Federal Reserve). Third, drawing on recent research based on survey experiments, Mönch emphasized that central banks should stick to the "KISS" principle (Keep it short and simple) whenever engaging in monetary policy communication, in particular when inflation expectations are already drifting away from the target.

The fourth panelist, *Kilian Rieder* (Principal Economist, Monetary Policy Section, OeNB), pointed out that an analysis of formal central bank communication alone (e.g. official policy announcements and attributable speeches by policymakers) may be too narrow when it comes to devising approaches to stabilize and anchor inflation expectations. Based on recent research on the effects of anonymous monetary policy leaks from the Eurosystem, he argued that informal communication channels targeting the financial market and the public can represent powerful tools to shape public expectations that often counteract the effect of official central bank communication. He suggested that, even if central bankers were able to craft perfectly clear and simple policy announcements, and even if they succeeded in reinforcing these announcements with attributable statements and concrete measures, informal central bank communication may still be able to create enough noise to undo their efforts at least partly.

After the introductory round, the panelists engaged in a discussion about the promises and pitfalls of central bank communication with the general public, including the role of the so-called three "E's" (explanation, engagement and education) in this respect. Subsequent questions from the audience circled around the empirical evidence on the effect of central bank communication on people's behavior, the extent to which central bank communication may have been overburdened and the impact of humility in monetary policy communication in terms of acknowledging past mistakes. Niessner closed the discussion by asking the panelists whether they thought a particular central bank had done an especially good job in communicating during the recent challenging times of high inflation. In response, panelists highlighted the difficulty of coming up with objective criteria for evaluating the quality of central bank communication given central banks' very different communication strategies. Moreover, the consensus on the panel was that there was substantial room for improvement across all institutions. Second, Niessner asked panelists to name a specific policymaker who could serve as a role model for clear central bank communication. The panel mentioned the rhetorical talents and wit of Andy Haldane's speeches and noted Isabel Schnabel's outstanding ability to discuss complicated and controversial monetary policy topics in an accessible way.

7 Academic session A: prices, wages, and expectations

In the first academic session on day two of the conference, chaired by *Fabio Rumler* (Head of the OeNB's International Economics Section), cutting-edge empirical evidence was presented on the question whether the price-wage nexus, i.e. the slope of the Phillips curve, had been changing, and if and how inflation expectations and labor market institutions may affect the transmission of monetary policy.

The first paper presented by *José-Elías Gallegos* (Banco de España) explained the fall in inflation persistence observed in recent decades in a New Keynesian setting with noisy information on the state of the economy. The resulting Phillips curve including these information frictions can successfully explain the evolution of US inflation dynamics of the past three decades and indicates only a modest decline in the slope of the Phillips curve. Furthermore, the paper finds that the Phillips curve has become considerably more forward-looking than backward-looking over this time.

A paper presented by *Alex Grimaud* (Vienna University of Economics and Business) introduced endogenous price-setting frequency in a New Keynesian model and derives a nonlinear Phillips curve that is consistent with micro data on price setting and at the same time generates a time-varying slope coefficient that can explain inflation dynamics in the US without relying on assumptions of very large cost-push shocks. This Phillips curve also generates asymmetric transmission of shocks with comparatively stronger inflation effects in the case of demand-driven expansions versus demand-driven recessions.

Aleš Maršál (National Bank of Slovakia) also investigated the effect of a nonlinear Phillips curve on the conduct of monetary policy. Assuming Calvo price-setting and applying nonlinear solution methods, the Taylor principle (i.e. the central bank reacting by more than one for one to the inflation gap) is no longer found sufficient for achieving macroeconomic stability. Instead, a so-called stability region is formulated that replaces the determinacy region in the nonlinear case to avoid self-reinforcing inflationary spirals. The setup implies that monetary policy should

be even more reactive to deviations of inflation from its target to avoid such a spiral.

Matija Lozej (Central Bank of Ireland) investigated the role of labor market institutions and regulation for the transmission of a common monetary policy shock in a monetary union. The theoretical model used in this paper includes search and matching frictions and heterogeneity in labor market institutions within a monetary union. Given this heterogeneity, a central bank responding more strongly to the unemployment gap in case of a negative demand or cost-push shock leads to smaller output losses but higher inflation and reduces the cross-country differences in consumption in a monetary union.

The last paper, presented by *Roshni Tara* (University of Surrey), finds that agents' expectations of house prices, despite not being part of the consumption basket, are an important determinant of overall inflation expectations. The authors set up a two-sector New Keynesian model where one sector's prices are overweighted in agents' inflation expectations and derive optimal monetary policy from the model. In this environment, the central bank should be especially attentive to the overweighted sector and react more actively to developments in this sector even if this implies reacting to asset prices.

8 Academic session B: monetary policy transmission and implementation

Academic session B, chaired by Claudia Kwapil (Senior Principal Economist, Monetary Policy Section, OeNB), featured four research papers revolving around the topic of monetary policy transmission and implementation. Two of these papers specifically focused on nonbank financial intermediaries.

Denis Gorea (European Investment Bank) presented the work of Cucic and Gorea (2022), who examine the question of whether nonbanks transmit monetary policy shocks in the same way as banks. Their findings reveal that nonbanks increase their credit supply following a contractionary monetary policy shock. After such a shock, banks experience a reduction in long-term debt funding, while nonbanks witness an inflow of funds that enables them to lend more. Consequently, nonbanks mitigate the actual impact of the traditional bank lending channel on the economy: nonbank credit safeguards corporate investment and household consumption against the adverse consequences of monetary contractions. Consequently, an expanding nonbank sector may diminish the effectiveness of monetary policy to restrain credit growth. At the same time, the borrowers who receive credit from nonbanks (and would not have received credit from banks) are not riskier. In this sense, nonbanks contribute to financial stability.

The topics of financial stability and nonbanks are also addressed in the paper by Haas and Kanngiesser (2023), presented by *Alexander Haas* (University of Oxford). According to the authors, the rise of nonbank financial intermediation in recent years has two contrasting effects. On one hand, nonbanks contribute to the deepening of capital markets, resulting in efficiency gains. On the other hand, nonbanks are susceptible to runs, posing a risk to financial stability. The authors demonstrate that during times of crisis, central bank liquidity provision can prevent runs on nonbanks. However, this action creates an ex ante moral hazard because nonbanks anticipate the central bank's intervention and increase their leverage, thereby increasing the risk of future financial panics. Nevertheless, the preliminary results

of the model indicate that the higher leverage of nonbanks does not lead to a higher frequency of runs. Additionally, asset prices remain consistently higher and overall welfare increases. Consequently, central bank intervention can support efficiency gains that finally outweigh the concerns regarding financial stability.

A paper presented by *Ander Perez-Orive* (Federal Reserve Board) investigated whether monetary policy shocks affect the economy asymmetrically, and the reasons behind it. Perez-Orive and Timmer (2022) observe that in the current US tightening cycle, there is a high proportion of financially distressed firms compared to previous tightening episodes. They discover that these financially distressed firms drive the asymmetric impact of monetary policy on investment and employment. When faced with contractionary monetary policy shocks, financially constrained firms exhibit a greater responsiveness in their borrowing and investment decisions compared to healthy firms. Furthermore, they are also more responsive to contractionary shocks than to expansionary shocks. These findings provide evidence of a financial mechanism contributing to the asymmetry of monetary policy. During the ensuing discussion, the question arose as to whether these financially constrained companies differ from healthy companies also in terms of their price-setting behavior. Preliminary evidence suggests that financially distressed firms indeed tend to increase their prices (or are more reluctant to decrease them) to address their liquidity issues. Consequently, they may contribute to a more inflationary environment.

Lastly, *Ryan Rholes* (University of Oxford) addressed the question, "Do central banks influence inflation expectations through their publicized forecasts, and what role does the accuracy of these forecasts play?" Managing inflation expectations is crucial for central banks that have adopted inflation-targeting frameworks. Furthermore, many of these banks rely on communication strategies to shape and manage these expectations. Specifically, they publish inflation forecasts and provide additional information related to these forecasts. Therefore, the question arises as to whether the credibility of central banks' forecasts is important for effective monetary policy. McMahon and Rholes (2022) demonstrate that forecasts and their performance do indeed matter. Specifically, individuals assign greater importance to central bank forecasts that have exhibited better accuracy in the recent past. Additionally, they find that effective communication can mitigate the impact of poor forecast performance.

The conference program, presentations and video replays can be found on the websites of SUERF and the OeNB.