The return of inflation

Key findings from the 49th OeNB Annual Economic Conference and 35th SUERF Colloquium, Vienna, 23 and 24 May 2022[1]

Ernest Gnan, Kilian Rieder, OeNB and SUERF, Teresa Messner, Fabio Rumler, Mirjam Salish, OeNB[2]

37 speakers and some 750 experts gathered to discuss "The return of inflation"

After several years of persistently below-target inflation rates, global inflation has been increasing sharply since 2021. Several driving factors have been identified: the vigorous post-pandemic economic recovery; disruptions in global value chains for intermediate and final goods, due in part to short-term pandemic-related factors and in part to a possible reversal of globalization; cycles in commodity and energy production and prices, some of which may also be related to actual or anticipated climate protection measures; and labor market shortages resulting from pandemic-induced structural changes in labor demand and supply. Whether the rising inflation rates are temporary or more permanent is the subject of lively debates. Among other things, the answer hinges on the reaction of expectations and wages to the rise in headline inflation. Central banks worldwide have come under pressure to tighten their policy rates. The risk of missing the right moment for a timely response and of inflation becoming entrenched contrasts with concerns of strangling the economic recovery from the COVID-19 shock amid the fallout of the war in Ukraine and the Western sanctions against Russia. At a political economy level, the interplay between monetary policy, fiscal policies and financial stability has become more complicated as high debt, high asset market valuations and climate challenges potentially hamper central banks' perceived anti-inflationary resolve.

*Against this background, on May 23 and 24, 2022, some **750 participants** gathered at the OeNB premises in Vienna and online to discuss the underlying drivers of inflation, the short to medium term prospects for price developments, policy implications as well as the latest findings from economic research to shed light on these questions. The conference brought together **37 top expert speakers and decision-makers** from central banking, the finance industry and academia.*

*Instead of following the sequence of presentations in the conference program, this report aims to extract key insights, grouping the topics under **three overarching themes**: first, **longer term-trends and drivers** of (global) inflation (demographics, (de)globalization, as well as climate change and protection); second, the role of **inflation perceptions and expectations as well as the use of granular price data** to improve our understanding and **forecasting of inflation**; and third, **lessons for policy.***

[1] The conference program, including presentation slides and video replays, can be found at SUERF's and the OeNB's websites.

[2] This conference summary reflects the authors' understanding of conference findings, presentations and interventions. It has not been approved by any of the speakers nor does it reflect the official views of any of the institutions with which the authors or any of the reported speakers are affiliated. For the detailed presentations and records of the conference, please see the conference video replays (here and here).

1. Long-term drivers of (global) inflation: ageing, (de)globalization, and climate

Taking a longer-term perspective, inflation will be driven by structural forces, including ageing…

In his keynote lecture, **Manoj Pradhan**, Chief Economist and Founder of Talking Heads Macro Ltd, analyzed **secular inflation trends in the 2020s**. Before sharing some of the main insights of his book "The great demographic reversal" of 2020, co-authored with Charles Goodhart, Manoj Pradhan stressed that inflation is going to be with us for a long time. We are currently seeing three inflation cycles affecting us simultaneously: the inflation related to Covid-19 (supply bottlenecks, pent-up demand), a cyclical inflation and a demographic inflation. In the last three decades, demographic shocks have kept inflation low. Internal Chinese migration from rural to urban sectors, as well as the increasing participation rate of women have contributed to an upward labor supply shock and exercised downward pressure on wages. As the marginal product of labor usually exceeds wages and workers additionally save a share of their income, a positive labor supply shock has a deflationary effect. Yet, the working age population continues to increase only in Africa and India, while in China and Eastern Europe it has already started to decrease. The non-working population only consumes (and consumption does not decline with age) and hence, as the labor force shrinks and the share of the elderly grows, inflationary pressures rise. One consequence of these demographic developments is that the debt to GDP ratio will increase, and that productivity and economic growth will not be sufficient to deal with the increasing burden of debt. As a solution, apart from taxation and aggressive rate hikes, Manoj Pradhan suggested an expansion of central banks' balance sheets. This can serve to turn bonds into variable coupon consols, thereby forgiving debt over a long horizon.

Mister Pradhan then analyzed the current inflation surge in the light of the arguments previously presented. How to respond to this surge, depends on how large the disturbances are. Expectations, wages and prices react to what is happening right now, which means that it is important to respond accordingly here and now, instead of solely focusing on future inflation expectations. Bringing inflation back to its target will be a demanding task for central banks, as curbing inflation might result in high unemployment. Stagflation may pose a challenge to central bank independence, result in a possible fragmentation in the EU and have adverse effects on politics in general (e.g., high food inflation can easily derail governments and the World Bank argues that food prices will rise until 2024).

…(de)globalization…

The afternoon started off with the SUERF Marjolin Lecture, in which Professor **Harold James,** Princeton University, offered a **long-term perspective of the relationship between inflation and (de)globalization**, in the form of a short preview of his book on inflation and globalization that will come out next year. He started by looking at the year 1975 in the UK, when Harold himself was a student in Cambridge and CPI inflation in the UK had reached 25%. Back then, a combination of unfortunate events, lack of political will and insufficient understanding led to a backwards movement. Globalization was by many perceived as a potential threat to price stability. Similarly to now, an active discussion of deglobalization and focus on domestic production was the consequence.

According to Harold James, higher inflation in times of supply shocks is not a sign that globalization is on the retreat. It is rather an indication that more globalization is needed. After a supply shock, the initial impact is usually deflationary followed by an uptake which results in a boom in asset prices and innovation. Afterwards inflation gradually declines, asset price volatility decreases, and stability is reestablished. Historically, three factors pushed inflation: Fiscal and financial dominance both imply that the central bank must keep the interest rate low if it wants to avoid a financial crisis or sovereign default. Social dominance, the third factor, results in inflation being used to buy social peace. Given the widespread consensus that high inflation is traumatic and undesirable as it is a strain on federal systems and leads to distributional wars, central banks should guarantee price stability. Historically, episodes of high inflation were followed by a return to monetary policy to keep prices and expectations controlled (e. g. the gold standard or the inflation targeting regime in the 20th century). The demand for stability, including social stability, cannot be answered by the private sector.

Globalization has a big impact on inflation. It has reduced the long-run level of inflation and it has altered the relationship between economic slack and inflation. Economists that claim otherwise err according to Harold James on the identification of when globalization began. Many assume that it was at the beginning of this century when China was admitted to the WTO, when in fact, globalization began way earlier. There were two phases in which globalization took up – after the 1970s and after the 1840s. In light of the supply shocks after crop failures all over Europe in the 1840s, the view emerged that Europe needed more trade to gain wider access to resources. In the 1970s the first reaction to the supply shocks was protectionism. Only gradually the idea that an open world would be better for everyone developed. In the aftermath of the Covid 19-pandemic and the war in Ukraine, low inflation again is in threat. Shifts in labor and energy markets pose a challenge to the construction of fiscal relief packages; shifts in relative prices after technology and supply shocks pose a challenge to inflation targeting; and finally, costs of government borrowing are much more uncertain. When asked about the factors that will push for globalization this time, Harold James answered that each globalization period is different. This time it will be future artificial intelligence, electronic communication and the globalization of services that will characterize the new period of globalization. He was convinced that more globalization is needed, and we will see it!

…and climate change and protection

Session 3 of the conference, moderated by **Birgit Niessner**, Director, Economic Analysis and Research Department, OeNB, dealt with **climate and climate mitigation related aspects affecting inflation**. Climate related shocks constitute a major risk factor for economic and price stability, as these shocks alter supply (e.g. bad harvests and resulting food shortages) and demand factors (e.g. higher demand for green technologies and skills) and may affect the transmission of monetary policy. Not only climate change itself, but also its mitigation can affect relative prices and inflation. Governments' decarbonization efforts and the respective investments still need to be drastically scaled up around the globe to meet the net zero emission goals within the next decade – in particular so in emerging market economies as **Blandine Barreau,** Coordinator at the International Energy Agency, highlighted in her presentation. But not only governments and parliaments need to address climate change, also central banks need to take climate change and its mitigation into account. **Christiane Nickel,** Head of the Prices and Costs Division at the ECB, elaborated that the "green transition" is most likely going to put pressures on energy prices and inflation in the short-to-medium-run. According to her, only a well-managed energy transition is capable of safeguarding the economy in the long run against high

and volatile prices, as economies around the globe experience it at the moment. In addition, **Luiz de Mello,** Director of the Policy Studies Branch at the OECD, noted that the transition on supply and demand side factors affects the economic performance of companies across sectors quite differently and also depend on the substitutability of brown with green technologies (investments) and the progress with upskilling labor force towards green jobs. In the new higher inflation regime characterized by persistently higher inflation, stronger supply side constraints and likely higher output volatility, as **Elga Bartsch,** Managing Director at the Blackrock Investment Institute (BII), described it, central banks might need to critically rethink their inflation targeting frameworks and include the costs of climate change in their policy decisions.

2. Role of inflation perceptions and expectations as well as granular price data to improve inflation analysis and forecasts

Inflation expectations are heterogenous across agents and driven by psychological and sociodemographic factors…

The evolution of inflation expectations is key for the further course of inflation and the appropriate monetary policy response. As long as inflation expectations are well-anchored at the central bank's inflation target, so the argument goes, the central bank can pursue a gradual path of reactions to steer inflation. If, however, inflation expectations were to become "unanchored", the central bank would need to take far more decisive action, which might include triggering a sharp recession, to "break" inflation expectations. It is thus of utmost importance for central banks to understand how to measure inflation expectations in real time. Recent research has particularly focused on the types of agents whose inflation expectations should be monitored, their heterogeneity, the way how such expectations are formed, and possible non-linear, abrupt changes in inflation expectations, once certain thresholds are passed. The conference reflected the importance of this theme for policy makers by covering the topic both in a policy panel and in an academic session.

A panel (Session 2) of top economists from the ECB, the asset management Amundi, and the University of Chicago, moderated by **Ernst Gnan,** Head, Monetary Policy Section, OeNB, discussed what role inflation expectations play for the path of inflation, what drives them and whose inflation expectations should be monitored. In this first session on inflation expectations three presentations discussed the main drivers of inflation expectations of households, firms and financial markets. **Pascal Blanqué**, chairman of the Amundi Institute, emphasized the role of psychology as a driver of inflation expectations of financial market participants. He argued that there is a regime shift happening on the financial markets from financial capital to physical assets which has the potential of driving up inflation in the future. Central banks, despite their hawkish tone, he argued, are behind the curve of the tightening cycle which on financial markets leads to a repricing of portfolios and risk. **Geoff Kenny,** Head of Section, Monetary Policy Research Division, European Central Bank, presented some new results on inflation expectations in the euro area from the Consumer Expectations Survey (CES) conducted by the ECB. While medium-term (3-years ahead) inflation expectations remained broadly stable at 2% since April 2020 they increased only lately in March 2022 to 3%. According to a randomized controlled trial (RCT) analyzing the effect of communication on inflation expectations and on the credibility of the central bank, ECB researchers find that communication on the symmetric 2% price stability target augmented with a broader explanation of the role of the target and of monetary policy in general significantly increases the credibility of the central bank and has a

dampening impact on inflation expectations. **Michael Weber,** Associate Professor, University of Chicago, reviewed inflation expectations of consumers and firms drawing on different data sources used in his research. He emphasized the large heterogeneity in individual inflation expectations of households and firms: inflation expectations are found to be higher for the main grocery shoppers in the household (mostly women), for respondents with a lower IQ and those exposed to higher actual inflation (poorer households). He also showed that inflation expectations of firms are not very different from those of consumers.

… but inflation expectations and perceptions of households and firms are broadly similar and driven by the same forces

This topic was further deepened in Academic Session A, moderated by **Fabio Rumler**, principal economist at the OeNB's Monetary Policy Section, in which key findings in cutting-edge academic research from around the world aimed at pinning down the **determinants of inflation perceptions and expectations of households and firms** were presented. **Angelo Gutiérrez-Daza,** Universitat Pompeu Fabra and Barcelona School of Economics, presented the first paper which incorporates learning by shopping into the benchmark New Keynesian model. He finds that with the learning mechanism stabilizing inflation by the central bank helps to anchor inflation expectations and, as a result, monetary policy shocks have stronger effects on real activity, i.e. the slope of the Phillips curve flattens. In the second presentation **Daria Minina,** University of Amsterdam, investigated the close link between inflation perceptions and expectations and showed that the pass-through from the former to the latter is affected by sociodemographic factors, the source of information on inflation news and the individual uncertainty of inflation perceptions/expectations. A paper presented by **James Moberly,** University of Oxford, analyzed the parameters of the individual laws of motion of household inflation expectations, derived from data stemming from a Bundesbank survey on consumers' inflation perceptions and expectations. He showed that, given heterogeneity in individuals' inflation perception and expectation formation, the response of aggregate consumption to an inflation shock is stronger and more persistent than in a representative agent model. Based on a new Banque the France survey on inflation expectations of firms **Frédérique Savignac**, Banque de France, showed that expectations of firms are substantially less biased and also less dispersed than those of households. She furthermore showed that expectations of firms differ depending on the position of the respondent in the firm, i.e. whether the CEO/CFO or a lower-level manager/employee filled the survey. **Xuguang Simon Sheng,** American University, argued – based on data from a representative firm survey in the US – that aggregated expectations of unit costs of firms are highly correlated with aggregate inflation as unit costs are an important determinant of firms' pricing decisions. Thus, unit cost expectations can serve as an alternative measure of inflation expectations if they are not directly observable. In the last presentation of this session **Pierre Siklos,** Wilfrid Laurier University, introduced a novel indicator of expectations disagreement derived from firm-level data collected in South Africa. He showed that disagreement in inflation expectations is highly correlated with disagreement in other macroeconomic variables such as wage growth, interest rates, capacity utilization.

New advances in inflation forecasting and inflation (expectations) modelling

Academic Session B of the conference, chaired by **Kilian Rieder**, principal economist at the OeNB's Monetary Policy Section, was dedicated to new advances in inflation forecasting and inflation

(expectations) modeling. The common theme running through all academic contributions in this session was a clear strive to improve upon the current standard New Keynesian framework of inflation forecasting and modelling. **Roland Meeks,** International Monetary Fund, demonstrated the importance of incorporating more information on the entire distribution of heterogenous inflation expectations in forecasting models, instead of merely relying on simple aggregate measures of survey expectations. **Philippe Goulet Coulombe,** Université du Québec à Montréal, noted the problematic, yet important role of unobservables in the estimation of Phillips curves and proposed an innovative way of overcoming the weaknesses of traditional proxy variables by drawing on a hemisphere neural network model. **Alistair Macaulay,** University of Oxford, winner of this year's **SUERF Marjolin Prize**, investigated the consequences of departures from the full information rational expectation assumption in a model in which rational inattention and subjective beliefs about the economy are endogenous. Macaulay's model can capture key empirical facts about the interaction of information and subjective beliefs on (the impact of) inflation emerging from the Bank of England's Inflation Attitudes Survey. **Sebastian Rast's,** European University Institute, contribution drew on panel data from the U.S. Survey of Professional Forecasters to show that news about long-term inflation have a stronger bearing on forecasters' long-term expectations than incoming actual data on inflation. These findings imply that the coordination of beliefs through effective central bank communication may be a more effective and cheaper tool to keep inflation at target than monetary tightening. **Fabio Verona,** Bank of Finland, closed the session by highlighting the insights that can be reaped from using a frequency-domain decomposition of inflation data and its components in the New Keynesian Phillips curve (NKPC) framework for inflation forecasting. Verona showed in particular that low-frequency versions of the NKPC can significantly outperform benchmark models.

Micro, scanner and webscraped price data enhance inflation analysis capacity

The use and analyses of micro price data, such as those underlying the CPIs, webscraped data or scanner data has gained importance in inflation research in the past decade. In the final session of the conference, moderated by **Martin Summer**, Head of the OeNBs Research Section, acclaimed academics present and discuss their recent research, making use of such data sources. **Oleksiy Kryvtsov**, Senior Research Officer at the Bank of Canada, presented his work on how webscraped data, i.e. price data from web shops of supermarkets and other types of retailers, can inform us about consumer product shortages and their impact on inflation. With this type of data, it is possible to construct high-frequency measures of product shortages for different sectors and several countries. In the paper, they identify temporary and permanent stockouts and find that a higher share of stockouts significantly increases prices within 1 to 3 months. The inflation response is particularly pronounced for imported goods. Furthermore, from prices and the stockout measure, they can estimate the cost of replenishing goods. The co-movement of stockouts and prices suggests that higher cost of replenishing inventories was an important driver of inflation during the pandemic. A respective cost shock has a sizeable but less persistent effect on inflation, driven again by imported goods. **Chiara Osbat**, Adviser at the ECB, presented the webscraping projects within the ESCBs research network PRISMA (PRice-Setting Microdata Analysis Network). First, she presented the advantages and disadvantages of using webscraped data and the challenges of building a respective database, such as validating, storing, and classifying those data. Subsequently she elaborated on the fields of application of webscraped data, which are in particular nowcasting (which can help reduce forecast error), inflation measurement (applying and experimenting with different price index

methodologies) and inflation monitoring (real time analysis). One implication from the research projects is that these data are particularly useful, when they are complemented with other data sources, such as scanner data, which are available at a lower frequency, but richer, as they also contain information on quantities purchased. **Fabio Rumler**, Principal Economist at the OeNB's Monetary Policy Section, complemented the previous presentation, by showing research projects within the PRISMA network using scanner data. There are two main types of scanner data, namely supermarket scanner data, i.e. data of all items scanned at the cashiers desk of a retailer and household scanner data, i.e. data of shopping trips of households. With the former type of data, it is for example possible to study price elasticities, the passthrough of costs to prices (such as VAT changes) and price setting behavior. Analyzing the latter group of data, helps to understand heterogeneity of experienced inflation across different demographics and countries. Households experience very heterogenous inflation rates, and this heterogeneity results from differences in products bought and prices paid but cannot fully be explained by household characteristics, such as household income and size. In his presentation, **Raphael Schoenle**, Associate Professor at Brandeis University, took up a general criticism of inflation measures namely that aggregate measures often hide underlying or changing price dynamics. In particular, the cross-sectional distribution of disaggregated inflation rates has systematically changed over the last decades. It has become thus important to look at different measures and statistics of inflation and account for such changes in economic models and in the policy frameworks of central banks.

3. Lessons for policy

Inflation is a major concern for citizens and policy makers alike

The conference offered immediate insights for practical policy in several instances. In his opening remarks, OeNB Governor **Robert Holzmann** emphasized that the recent surge in inflation rates in Europe had been a core concern of Europeans already in early 2022, even before the start of the war in Ukraine had started. Governor Holzmann raised the question why the speed and scale of the return of inflation surprised so many policymakers and academics alike. The OeNB Governor argued that there was only a fine line between unexpected events, on the one hand, and missing creativity in interpreting the data, limited foresight, and too narrow forecasting scenarios, on the other. In this context, Governor Holzmann drew the audience's attention to large global trends, geopolitics and Europe's dependency on fossil energy sources as factors that may have been partly overlooked in the recent past. At the same time, Governor Holzmann also emphasized that the current synchronization of inflation due to global shocks and the spillovers of large idiosyncratic or regional shocks was not a new phenomenon. Looking beyond purely macroeconomic and econometric explanations for the return of inflation, the OeNB Governor highlighted the importance of behavioral factors in shaping inflation and inflation expectations. For this purpose, Governor Holzmann put the spotlight on recent research showing that how individuals react to inflation surprises depends to a considerable extent on the "data series" of inflation experiences they have accumulated during their lifetime. The OeNB Governor also argued that the concerns and ideas of younger generations should be turned to for guidance when policymakers set out to address the present challenges. The best contribution to social peace monetary policy makers could make was to abide by their price stability mandate. SUERF President **Jakob de Haan** took a more academic perspective on the recent return of inflation. The ECB may lag behind when it comes to tightening monetary conditions, in particular compared to the U.S. Federal Reserve and the Bank of England. Yet, the SUERF President also acknowledged that

underlying second round price pressures may still be weaker in Europe. Euro area wages recently did not pick up at the same pace as elsewhere. He closed with a plea for more discussions on current cross-country differences in inflation performances and emphasized the weaknesses of the standard New Keynesian framework for modelling and forecasting inflation.

Why did central banks fail to see inflation coming?

In a high-level panel (video), moderated by Governor Holzmann, top decision makers discussed timely questions related to the overarching topic "Monetary policy, policy interaction and inflation in a post-pandemic world with severe geopolitical tensions". Governor Holzmann structured the panel around two questions regarding inflation. First, **why did we not see inflation coming?** Were we too much focused on a low-inflation environment? For instance, he asked, whether the discussion of forward guidance neglected the possibility that inflation targets might be approached from above rather than from below. **Andrew Bailey**, Governor of the Bank of England, recalled the very large economic shocks we are experiencing (energy and food prices notably). It is the succession of events without break which poses the challenge. The resulting price rises hurt the poor most. What can and should monetary policy do in this case? When pandemics and wars happen, monetary policy must still take the necessary measures to bring inflation back as fast as possible. **Joachim Nagel**, President of the Deutsche Bundesbank, recalled that the Bundesbank had never been a proponent of the very expansionary monetary policy in the first place. Central banks should be self-critical. It is too easy to just state inflation is due to supply shocks. Our monetary policies were very accommodative for over a decade. It is no surprise that after such a long period of monetary expansion inflation rises.

According to **Claudio Borio**, Head of the BIS' Monetary and Economic Department and SUERF Fellow, the BIS, like most observers, had also been also surprised by the strength and persistence of inflation. In his view, we need to be very humble trying to understand ex post what we did wrong. The current inflation surge is due to many post-Covid specific factors. We underestimated pent-up demand. The rotation from goods to services demand was more persistent than thought. The global supply bottlenecks were also stronger and more persistent than anticipated. The Ukraine war – a huge negative supply shock – was not expected either. What is currently neglected is what happens to aggregate supply in response to aggregate demand. Such shocks are more persistent. Furthermore, what may appear as a supply shock from individual countries' perspectives, at the global level may actually be a demand shock. The way expectations are modelled in the Philipps curve implies that bygones are bygones. But in negative terms of trade shocks, one might try to recover purchasing power losses suffered, and this can create a self-propelling inflation process. Finally, there are no non-linearities in the Philipps curve in the sense that inflation itself may propel inflation. Once inflation breaks out of the realm of rational inattention and moves into focus, then the inflation process can become more entrenched. What is important now, is that going forward we do not repeat mistakes. Monetary policy was trying very hard to push inflation up pre-Covid, and it was very hard to achieve. But with the current shocks, monetary policy may or may not accommodate the rise in prices. In many countries, demand is below what it would have been without Covid. In other countries, output is higher than pre-Covid. But it is not only the level but also the speed of output growth that matters. If supply does not reply at the same speed, inflation will rise.

According to **Tobias Adrian**, Financial Counsellor and Director of the IMF's Monetary and Capital Markets Department, the shift in central banks' monetary policy strategies and towards make-up

strategies was motivated by the proximity to the zero lower bound on interest rates. Inflation expectations pre-pandemic were on a downward trend. The Philipps curve became ever flatter. The US is different from other countries. In the UK, output today remains at the pre-pandemic level. In the US, it is clearly above that level. The link between the money supply and inflation is far from clear. The supply shocks are the key inflation drivers now. Central banks have been facing an extreme confluence of severe shocks. The risk of recession is quite high in a number of European countries. China's economy is seriously slowing down. This explains why central banks do not act as fast as some might expect. Labor markets have largely recovered in many countries (although to different extent), creating potential for upward wage pressures. Central bank credibility is key now. It is very strong now, so you can look through supply shocks in AEs. In EMEs, central bank credibility is lower, so they cannot look through the supply shocks. Therefore, they tightened earlier and more aggressively to react to strongly increasing inflation; as a result, inflation is coming down rapidly again. By contrast, in AEs due to the higher credibility, central banks can react more moderately. But they have to be careful about second round effects.

Do central banks' inflation forecasting models need a fundamental review?

In this context, a question from the audience was whether central banks' inflation forecasting models, which have not managed to forecast inflation well over the past two years, should be subject to an external review. **Claudio Borio** argued that the Philipps curve can be useful, but central banks need to think more broadly, notably during transitions between low and high inflation. These two regimes are quite different. When inflation is high, the common component of inflation is much bigger, there is a self-reinforcing nature of inflation. This is not included in standard models. An external review of central banks' models would not be very helpful, Borio argued, since all institutions' models are the same. Forward guidance now should not be the preferred go-to tool as there is a premium on flexibility in the current context. **Joachim Nagel** emphasized the need for checks and balances in all tools used. Whether this requires an external auditor is unclear, but central banks have sufficient resources to evaluate forecasting performance internally. Regarding wages, it seems to be clear that the German wage moderation of the last years is over. In the second half of 2022, we will see high wage settlements. According to **Andrew Baily**, the question is what you use models for. They are no machines which ensure internal consistency. But they are also open to incorporating judgement. According to **Tobias Adrian**, the baseline typically behaves in a linear way. By contrast, scenarios are where non-linearities happen. Inflation can be higher and more persistent than you thought. In financial markets, there are already concerns about a de-anchoring of inflation expectations. On the real economic side, there are huge downside risks at this point, including in China and due to the war in Ukraine. At the moment, probability distributions unfortunately have very fat tails.

Why do central banks not react as forcefully to inflation as one might have expected?

The second question raised by Governor Holzmann was **why central banks have not reacted quite so forcefully to the rise in inflation**. Is it due to their high credibility that allows a wait and see attitude? Or due to the uncertainties of the sources of current shocks? Or are there deep-rooted historical drivers? Or does the composition of central bank decision-making committees explain differences in the speed of reactions? Or is a very cautious and gradual response appropriate anyway? **Tobias Adrian** explained that what central banks are trying to achieve is a soft landing. Central banks always

have to balance trade-offs. In EMEs negative output gaps were much larger when inflation hit, nevertheless they responded more aggressively since their central banks lacked credibility. Asset markets have strongly corrected downwards. But these corrections were so far orderly. Financial conditions have to become tighter, but in an orderly manner. **Claudio Borio** pointed to different circumstances in different countries. In Latin America a very strong rise in inflation required a sharp monetary policy reaction. At turning points, central banks usually wait a bit. There is "reversal aversion". While this is not a good reason, it may explain behavior partly. Gradual responses are not mistakes: when circumstances change, this needs to be recognized (which takes time) and also communication needs to be adjusted gradually. Indeed, the size and speed of the inflation surge surprised the entire economic profession and all policy makers. Debt levels worldwide are very high, financial vulnerability is high. Financial markets have taken on a lot of risk. Under the current circumstances, a given extent of monetary tightening may have a stronger effect than historically. **Joachim Nagel** recalled that there were some institutions, like the BIS, that highlighted inflation dangers early on. Our inflation forecasting models failed to adequately deal with structural and serial shocks. **Andrew Bailey** pointed out that shocks have become bigger over time. The aim now must be to bring inflation back to target without undue damage to output. What role should forward guidance play now? It has a tendency to stay, but one should seriously reconsider it. Regarding financial stability, household balance sheets are now more robust to shocks than in the past, due to post-GFC action to reinforce financial stability.

How to deal with the risk from monetary tightening to financial stability in an already fragile situation?

On a question from the audience on possible risks to financial stability from monetary policy, **Joachim Nagel** responded that if inflation rates are so high, the central bank mandate is clear on the required course of action. To reduce the risk of financial market turmoil, it is paramount to give markets clear guidance, in order to reduce uncertainty and support financial stability. **Claudio Borio** emphasized that central banks have a clear mandate which they need to fulfil, while taking financial stability into account. Whenever central banks exercise this judgement, they must not fall into the trap of financial dominance. This is possible if the financial system as a whole is regulated properly. Since the GFC, a lot of progress has been made in banking systems. By contrast, in non-bank financial firms, progress is lacking. Central banks and securities markets regulators have different views on this. On the question of a possible loss of credibility if central banks tighten monetary policy too fast in a crisis and have to reverse course if the economy falls into a recession, **Andrew Bailey** recognized the reversal risk, which is the challenge to be mastered by central banks now.

Improve models and pay closer attention to tail risks to avoid a repeat of the current inflation crisis

In her concluding remarks, OeNB Vice President **Barbara Kolm** thanked the organizers and all the participants for this very inspiring conference. The Vice President offered her thoughts about what can be done to be better prepared for future inflation surges by, inter alia, incorporating non-linearities into our (forecasting) models, paying closer attention to tail risks, monitoring the anchoring of inflation expectations closely and trying to counteract the adverse effects of high inflation on vulnerable households in a timely manner. The Vice President thanked the OeNB and SUERF teams involved in the organization of the conference. She concluded with the hope that at the next OeNB and SUERF Conference we will be able to discuss the current inflation surge in retrospect.

Box: Central role of (geo)politics for economic and price developments

The development of inflation needs to be seen in the broader context of global and longer-term (geo)political, societal and economic developments. **Martin Selmayr**, Head of Representation to Austria, European Commission, and Professor, University of Saarbrücken, in his dinner speech raised the question whether we are currently seeing a *Zeitenwende*. While Russia's war against Ukraine indeed implies a tectonic shift, several other events - which of course cannot and should not serve to relativize Russia's aggression - have also fundamentally changed circumstances over past decades, e.g. 9/11, the Global Financial Crisis, Russia's annexation of Crimea in 2014, the election of Donald Trump as US President, or the Covid pandemic.

Where does this *Zeitenwende* lead us to? There are five views: *First*, some claim it marks the start of the age of strong men, who shape our future, since democracies have failed. In Selmayr's view the contrary is true: Western democracies have shown that they are able to cope very well with the various crises over the past decades, and they likely fare better than totalitarian regimes. A *second* view claims we are now in an era of deglobalization. Again, Selmayr disagreed: The EU benefits tremendously from globalization, and a halt to trade with Russia, with its modest 3% of world GDP, does not imply a halt to globalization. The EU will instead even further intensify its links with other parts of the world. A *third* claim is that this is the end of peace. In Selmayr's view, after 30 years of relying on the US, it is high time for the EU to build its own defence capacities. Of course, this does not mean that Europe now wants war. A *fourth* concern is that the energy crisis triggered by the war entails an end to climate protection policies. In Selmayr's view, the EU's efforts to find substitutes for Russian oil and gas with other oil and gas sources is needed to ensure energy supply in the short term. But overall, the energy crisis will boost Europe's greening and decarbonization. *Fifth* and last, many claim that Russia's invasion of Ukraine is the end of the rules-based international order. On the contrary, as Selmayr pointed out, the international court of justice has clearly declared the illegality of Russia's actions. Now, not only the Western Balkans want to join the EU, but also Ukraine and Moldova. The war has made obvious thatthe EU is a model for the future, not of the past. To conclude, instead of dwelling in dystopia, we should recognize how successful our route of democracy, a rules-based global system, openness and European integration is.