

Editorial

Asset-liability management with ultra-low interest rates

Insights from a conference jointly organized by SUERF, the OeNB and the Austrian Society for Bank Research

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In reply to the financial crisis, the Great Recession and sovereign debt crisis, many central banks have pursued ultra-easy and far reaching unconventional monetary policies for several years. Yields on various bond classes – including euro area sovereign bond yields since the sovereign debt crisis has subsided – have reached extremely low levels. Prices on stocks and real assets have soared. In several countries, markets have been expecting a reversal of the interest rate cycle for some time now. As a result, the risk of – possibly substantial – price corrections in all these asset classes may be seen to have increased.

This environment poses challenges for banks' asset-liability and risk management as well as earnings. Institutional investors facing yield pressure may resort to more risky strategies, established forms of investment strategies may no longer be viable. Also official investors, like central banks and sovereign wealth funds, feel the pressure from lower current or future earnings and potential future risk from the current ultra-low yield and rather high pricing levels.

To discuss relevant issues, scenarios, options and risks in this environment, SUERF in cooperation with the Oesterreichische Nationalbank (OeNB) as well

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as the Austrian Society for Bank Research (BWG) organized a full-day conference, which brought together financial practitioners, academics, supervisors and policy makers. Lessons from history were explored, a bird's eye perspective from academia and international institutions as well as inside views from industry practitioners were provided. Possible consequences for financial stability, the macroeconomy at large as well as adequate policy responses were discussed.

The **main findings** were the following:

- Pressure on profitability, excessive risk taking, delayed balance sheet repair (evergreening of loans) and distortion in credit allocation are among the potential risks to the **banking sector** arising from ultra-low interest rates and unconventional monetary policy.
- There is evidence that banks initially profit from ultra-low interest rates (lower funding costs, positive effects of a downward shift of the yield curve as the duration of deposits is shorter than that of assets); but a protracted period of ultra-low interest rates **harms banks' profitability** (interest margin compression because of a flattening of the yield curve, zero interest rate floor on deposits).
- From a microprudential perspective, in response to negative rates, banks also need to pay attention to the following three areas: first, whether their business infrastructure (e.g. derivative models) and their IT systems can handle negative rates; second, whether customer behaviour will change and deposit models are still valid with negative interest rates; third, interest rate risk arising from a lengthening of duration needs to be adequately captured.
- Low interest rates have become a threat to the solvability and stability of **life insurers**. Austrian and German life insurers are particularly strongly exposed to interest rate risk (high guaranteed returns, large duration mismatch). There are two possible consequences from this: one is that insurance firms diversify into higher risk investments thus hoping for survival ("gambling for resurrection"). Alternatively, they might be locked into low-yielding low-risk fixed income securities, just barely being able to cover their guarantees.
- Currently, not only are interest rates low, but so are expected returns in any investment class (such as equities, corporate bonds, or real estate) because any investment now has an underlying negative real return. Investors need to recognize this new reality. It is at this point not clear **how long the current period of ultra-low nominal and real returns will last**. In a benign scenario, as the European economy would recover gradually, so would the level of interest rates normalize over the medium run. In a scenario of "secular stagnation", the current situation might last for many years to come. Conversely, in the longer run, some observers would not rule out a period of considerably higher

*inflation, implying a substantial increase in nominal yields as well. These three scenarios have very different implications for banks' and institutional investors' optimal asset liability management strategies, requiring a careful evaluation of **risks and shock-bearing capacity under the different scenarios.***

- *For **central bank reserve management** the current situation implies that first of all central banks should consciously position themselves within the “reserve management triangle” as central bank reserve management has elements of economic policy, market liaison and of financial management. On this basis, a central bank should determine the relative importance of security, liquidity and return among its investment objectives and how it can pursue these objectives in a sustainable manner.*
- *Historically, **bubbles** occurred in a wide range of assets. Most bubbles were largely financed by debt, and importantly bank credit, thus increasing the likelihood of a banking crisis. Bubbles were usually triggered by technological or financial innovations or by political events.*
- *In response to bubbles, a policy of **early leaning against the wind is preferable to a late pricking of bubbles.** The use of macroprudential instruments was sometimes (but by no means always) successful. Macroprudential measures are more targeted than interest rate policies because they can focus on specific sectors but at the same time they can be more easily circumvented. All in all, there are therefore **no simple prescriptions** – no instrument works in all circumstances.*
- *Currently, there is a **build-up of risk** in many markets due to search for yield. However, there is no clear threat to financial stability as long as there is no sharp expansion of credit. Furthermore, financial crises usually only arise from ultra-low interest rates if additionally other incentives to take on risk are present. It is therefore unlikely that the current ultra-low interest rate environment will lead to a financial crisis as long as there is no substantial macroeconomic upswing.*
- *However, the **exit from ultra-low interest rates will pose risks to financial stability.** Thus, the exit should be carefully planned and well communicated. Furthermore, policy makers should be aware of a potential **shifting of risks to other, less regulated sectors** (e.g. shadow banks).*

The conference was opened by *SUERF President Professor Urs Birchler* and *OeNB Vice Governor Andreas Ittner*. *Andreas Ittner* in his **introductory remarks** mentioned that the conference is highly topical and that the questions addressed at the conference are more and more on the agenda of financial stability committees at both the national and the European levels. Central banks substantially lowered

policy rates and engaged in various forms of unconventional monetary policy in order to achieve their inflation targets and to ensure the smooth functioning of the monetary transmission mechanism. In addition, the current ultra-low interest rates can be traced back to structural factors that increased the supply of loanable funds and reduced the demand for capital. Regarding banks, ultra-low interest rates could lower net interest income and as a consequence negatively affect their profitability. In recent years important changes in the asset and liability structure of euro area banks took place. They considerably increased their capital and reduced their assets. However, deleveraging did not substantially affect loans to the real economy as it mainly took place through the decline of interbank loans. These developments are welcomed from a financial stability perspective. However, a protracted period of ultra-low interest rates poses also a number of risks to financial stability: Low interest rates provide incentives to increase indebtedness, they could lead to a search for yield and compromise the sustainability of the business models of banks and insurance companies. Furthermore, there are serious risks associated with a reversal of the interest rate cycle.

According to *Urs Birchler* the current situation of ultra-low or even negative interest rates reminds one of the theories put forward by Silvio Gesell who argued that negative interest rates are beneficial. However, the current low interest rate environment creates difficulties for various groups, e.g. baby boomers that need to save for their pension income, portfolio managers, supervisors, banks and central banks. Referring to the theories of capital and interest by Böhm-Bawerk and Mises, Birchler observed that Austria is the natural place for a conference on this topic.

Session 1 chaired by *Doris Ritzberger-Grünwald, Director of the Economic Analysis Department, OeNB*, featured a presentation by *Professor Richard S. Grossman, Wesleyan University in Middletown, CT and Visiting Scholar at the Institute for Quantitative Social Science at Harvard University*, on **Interest rate cycles and implications for the financial sector – a long term view**. In his presentation Grossman focused on the relationship between the level of interest rates and financial crises. From a historical perspective, interest rates are currently not only low when compared to the recent past but also when compared to the 19th century. Data from 20 countries and the period from 1880 to 1970 reveal that interest rates remain low after a financial crisis for quite some time. Specifically, after four years interest rates were about four percentage points lower than at the outbreak of a crisis. A prolonged period of ultra-low interest rates could lead to asset-price inflation, greater risk-taking and boom and bust cycles. Historically, boom-bust crises were preceded by rapid economic growth (e.g. good harvest, recovery from war or some other aggregate demand shock), speculation aided by new techniques (e.g. trains) or new financial instruments (e.g. establishment of limited liability companies) and they were fed by the expansion of liquidity. Busi-

ness cycles that culminate in banking crises exhibit a higher rate of GDP expansion. Furthermore, there is a stronger increase in the number of commercial banks, a larger increase in commercial bank assets, higher inflation and higher interest rates because of the stronger expansion of aggregate demand. However, crises are not always preceded by low interest rates. Even if this is the case, this does not necessarily imply that the crisis was caused by low interest rates. For example, low interest rates contributed to the subprime crisis but they would not have caused the crisis without the massive incentives brought about by the tremendous fiscal stimulus. Furthermore, a prolonged period of ultra-low interest rates does not necessarily lead to a crisis. The clear counter example is Japan with ultra-low rates for a very long time. Financial crises usually only arise if in addition to low interest rates other incentives to take on risk are present. As a consequence, without some substantial macroeconomic upswing, there is no imminent danger of a financial crisis because of the current low interest rate environment.

Session 2, chaired by *Professor Otto Lucius, Österreichische Bankwissenschaftliche Gesellschaft*, treated the conference topic from a **banking perspective**.

Philip Molyneux, Professor of Banking and Finance, Bangor University, talked on **Banking – Conceptual and Related Issues** taking into account what we have learned about the impact of ultra-low interest and quantitative easing (QE) on banks from the experience of Japan, the USA and the UK. Research from the Bank of Japan suggests that quantitative easing (i.e. zero interest rates and the commitment to maintain zero interest rates, expansion of the central bank's balance sheet and changes in the composition of assets held by the central bank) primarily affects the yield curve as it has effectively lowered long-term yields. Regarding the effect on financial markets, there is some evidence that it depends on the type of assets the central bank acquires and the US experience indicates that the purchase of mortgage based securities is particularly effective. Concerning the impact on the wider economy, quantitative easing has a modest impact on output, growth and inflation. The impact on banks is relatively small and rather indirect. This is also a likely reason why there has been little research of the effects of quantitative easing on banks. The limited available evidence suggests a modest influence on bank lending. In addition, banks are potentially affected by quantitative easing by, amongst other things, a compression of net interest rate margins or revaluation of assets. It was also discussed that exchange rate effects, i.e. the depreciation of the euro, could be an important channel in the euro area. However, this question needs to be investigated in more detail.

Frederic Lambert, IMF, addressed **the effects of ultra-low interest rates and unconventional monetary policy on bank profitability, risk-taking and soundness** showing results from a joint paper with his colleague Kenichi Ueda from the IMF's Global Financial Stability Review. The research is motivated by the idea that

a protracted period of low interest rates can create incentives for banks to take on greater risk thereby undermining financial stability. Different types of unconventional monetary policy entail different risks. A prolonged period of low interest rates (including forward guidance) is associated with pressure on the profitability and solvency of financial institutions, excessive risk taking (“search for yield”) and evergreening of loans. Quantitative easing as conducted e.g. by the FED implies the risk that banks become dependent on central bank financing. The same risk is involved in indirect credit easing (e.g. the ECB’s LTRO) which could additionally lead to delays in balance sheet repair, distortion in credit allocation, and a possible weakening of underwriting standards. Direct credit easing (e.g. the ECB’s CBPP) is associated with the risk of a distortion to price and market functioning. An event study approach that observes the effect of new information about monetary policies on the prices of banks’ stocks and bond spreads suggests that unconventional monetary policy entails a significant negative effect on bank credit risk as measured by the spread between bank bond yields and government bond yields. A regression approach using data from US banks and including explanatory variables that account for unconventional monetary policy points to a small negative effect of unconventional monetary policy on the profitability of banks. This effect becomes the more pronounced, the longer unconventional monetary policies are pursued. Note that from a theoretical point of view, the impact of unconventional monetary policy is ambiguous as on the one hand there are positive effects from lower funding costs and asset price valuation but on the other hand the flattening of the yield curve lowers the return from maturity transformation (interest margin compression). Concerning the risk taking of banks, the empirical results suggest that – in contrast to theoretical reasoning – banks reduce their leverage, though only to a very small degree. Furthermore, as expected, banks increase their risky assets. Regarding balance sheet repair, there is empirical evidence for both effects that should be expected from a theoretical point of view. First, low interest rates reduce the cost of rolling over non-performing loans (evergreening), and, second, banks take advantage of lower long term interest rates to extend the maturity of their debt and reduce the risk of maturity mismatches. Overall, empirical results do not point to an imminent negative impact on financial stability. However, risks are likely to rise if ultra-low rates remain in place for a longer time. Additional challenges arise from the eventual exit from ultra-low interest rate policy. Here the main channels are the effect on the interest rate margin and on the value of fixed income securities. To contain risks, changes in policies should be gradual and predictable. The exit from unconventional monetary policies should be carefully planned and well communicated. Furthermore, policy makers should be aware of a potential shifting of risks to other sectors (e.g. shadow banks).

Claude Moser, Head of Group Asset Liability Management, UBS, presented **the perspective of a large global bank**. Swiss banks are in a special situation

because of the earlier introduction of the exchange rate peg and the recent lifting of this peg. Market data suggest that Swiss and euro area forward curves price in a Japan-like outcome in Europe. The unprecedented easing by central banks could be regarded as a currency war and increases the risk of policy mistakes. Concerning banks, a protracted period of ultra-low interest rates is likely to influence the balance sheet structure of banks. On the liability side, customers tend to move from fixed-term deposits into non-maturing deposits and on the asset side customers increasingly prefer longer tenors for fixed rate loans. As a consequence, duration on both sides of the balance sheet increases. As asset duration is likely to increase more than the duration on the liability side, the net asset duration gap widens. As a result, the balance sheet exhibits a lower degree of natural duration netting capacity. This implies a higher reliance on external markets to hedge interest rate risk. Furthermore, low interest rates tend to compress net interest margins. Initially, banks profit from a downward shift in the yield curve because the duration of deposits is shorter than the duration of banks' assets. However, after some time the zero floor on deposit interest rates becomes binding and banks do not profit anymore from lower rates. As a result net interest rate margins become compressed. Furthermore, net interest rate income is less sensitive to interest rate changes when interest rates are low. Potential mitigating measures are amongst others the introduction of deposit fees for wholesale clients or improving the liability structure and reducing unwanted balances.

Paul Kocher, Chief Treasury Officer, Raiffeisen Bank International, talked about **the perspective of an Austrian internationally diversified universal bank**. He started with an overview of the potential drivers of net interest income. Net interest income is affected by competition (e.g. pressure on loan margins), the level of interest rates (e.g. lower interest rates tend to lower liability margins), balance sheet structure (e.g. tenors or currencies), the liquidity profile (when low interest rates provide incentives to hold higher liquidity buffers net interest income is under pressure), capitalisation (e.g. the increased need for high quality capital), non-performing loans (as low yields are normally observed in a low growth environment), the interest risk position (the yield curve does not provide incentives to take interest rate risk), and funds transfer pricing (as deficiencies lead to wrong pricing of products and hence eventually result in lower income). For an internationally active bank it is important to note that net interest margins in different currencies are quite different. Furthermore, although interest rates in Central and Eastern Europe are on a downward trend, they are still relatively high compared to e. g. the euro area. However, rates in Central and Eastern Europe are quite volatile and a slight positive correlation between net interest margin and risk can be observed. Regarding a flattening of the yield curve, Kocher noted that the flatter the yield curve, the more difficult it becomes to enter into a receiver position in an interest rate swap as a rebound is more likely and the reward for risk taking is lower. However, less risk

taking also implies that the net interest income suffers. Concerning negative rates, their impact on profit and losses depends on a bank's asset and liability structure. A bank that is active in various countries can react to the current situation by increasing flexibility (e.g. changing the currency structure into local currency), adapting the product structure (e.g. from term accounts to current accounts) or a shift in the client structure (more retail and fewer corporate customers). Franchise value is also quite important as it allows lowering deposit rates without losing too many customers. Higher stickiness of deposits provides longer term liquidity.

Session 3, chaired by *Ernest Gnan, Secretary General SUERF and Head of Division OeNB*, took an **institutional investor's perspective**.

Professor Helmut Gründl, Goethe University Frankfurt, offered an **introduction** to the topic. German banks' profitability has been falling since the mid-1990s, reflecting decreasing yields in government bonds. Since 2008, the decline in banks' interest income has accelerated. As banks' financing costs have hardly fallen, banks' interest income has also significantly fallen since 2008. For the life insurance industry, low interest rates are becoming a threat to stability. This is especially so in countries such as Germany and Austria where products sold in the past had high guaranteed returns and still represent a large fraction of their portfolio. Given the duration mismatch between assets and liabilities, the low interest rate income reduces insurers' equity capital. Solvency II will make this problem very visible and urgent from 1 January 2016. A prolonged period of ultra-low interest rates will entail high cumulative default probabilities for less capitalized insurers. Thus, the safety of defined-benefit pension schemes is seriously at risk owing to the protracted ultra-low interest rates. For defined-contribution pension plans, in the future, lower investment returns will translate into lower annuities, unless employers and employees choose to increase their contributions or unless pension funds take on higher risk in their asset portfolios. There are two possible consequences from this: one is that the insurance firms diversify into higher risk investments thus ensuring their survival ("gambling for resurrection"). Alternatively, they might be locked into low-yielding low-risk fixed income securities, just barely being able to cover their guarantees and not having any leeway for higher-yielding investments. New insurance products with lower guarantees, with a shorter duration or with revolving guarantees, would create space for higher-yield, higher-risk policies. While the share of defined-contribution pension schemes differs across countries, a general trend towards this form of contracts has been observed over the past ten years. This helps to mitigate insurers' insolvency risk. The introduction of Solvency II as from 1 January 2016 offers an example of both regulatory capture and forbearance: there were several postponements as a result of pressure from the insurance industry and of regulators' fear of insolvencies becoming apparent once regulation enters into force. Another example is the introduction of the term structure of interest rates that

will be used for evaluating long-term guarantees. With a fairly high so-called ultimate forward rate of more than 4%, the combination with a volatility dampener leads to a lower value of insurers' long-term liabilities and thus a more favourable appearance of their solvency situation. Finally, insurers will have a very long 16 years of transition period during which the term structure will adjust to the Solvency II rules.

Antti Ilmanen, AQR Capital Management, took a **fund manager's perspective**. After all the rather pessimistic views in the conference so far, he announced he would add an even worse one. Not only are we in a world of low interest rates, but so are expected returns in any investment, such as equities, corporate bonds or real estate, the lowest seen over the past decades. The reason is that any investment now has an underlying negative real return. Investors need to recognize this reality. Within this overarching constraint, there are, however, some options to optimize portfolios in terms of their risk/return ratio. Referring to over a century of data, and using a combination of the Shiller earnings yield and the sum of dividend discount yield plus an estimate of long-term real growth of earning per share, he showed that not only does expected real return of 10-year US Treasuries currently lie in negative territory, but also the expected real return on US stocks at 3.7% currently is historically very low. By contrast, the expected real equity yield in emerging markets (6.6%), the UK (6.2%) and a weighted average of the five largest euro area countries (5.5%) is substantially higher. Combined bond-equity portfolios can currently expect a real yield of 2.2% (US-type 60/40 equity/bond ratio) and 1.1% (European-type 30/70 equity bond ratio). The period between the mid-1980s and the financial crisis was characterized by historically high and falling real yields, creating high current yields combined with big windfall valuation gains. Now is "pay back time". He sees two scenarios for the period lying ahead. In a "fast pain" scenario, the high real yields of the past return, but only after a sharp correction in bond and stock prices. A "slow pain" scenario, which he regards as more likely, implies that the current low real returns are going to stay for a long time. "Contrarian timing" investment strategies look promising in such a situation but are difficult in practice. Contrarian investors, aiming to avoid large losses from a bursting of the bubble, might for instance choose to switch into cash years too early, thus foregoing substantial return. Two further strategies to enhance yield are to attach a higher share to equities versus bonds, while staying in liquid instruments ("Norwegian Sovereign Wealth Fund approach") or into less liquid assets ("Yale approach"). These approaches have in common that their return is 90% correlated with equity performance, falling short of risk diversification potential. A good investment strategy should aim at harvesting diverse return sources, using many market and alternative risk premiums in a balanced way. In his view, tactical timing, illiquid investments and "star" managers are secondary to such core return sources. Using "alpha" strategies in the sense of selecting in a discretionary way specific investment is costly, faces volume con-

straints and ultimately is a zero sum game. By contrast, as shown by an increasing body of empirical academic literature, value investment strategies, i.e. long-run strategies which systematically scan the market for undervalued investments (buying last year's winners, high yielders, "boring" quality companies, low volatility titles) are more promising. While Ilmanen regards the "slow pain" scenario as more likely, he also showed some comparative historical case studies on how different portfolios performed in the event of sharply rising real yields. While bond portfolios of course suffered in all such episodes, in most episodes (except the Volcker recession) equity and commodity portfolios were doing well. Mixed 60/40 equity/bond portfolios did well most of the time as well. Long-short strategies did well in virtually all episodes because they are zero-duration investments. To conclude, Ilmanen emphasised that in low yield situations, investors pay more attention to costs, putting pressure on management fees and calling for efficient portfolio management techniques.

John Nugée, Laburnum Consulting Ltd., gave an overview of **current issues in central bank reserves management**. Central bank reserves management has elements of economic policy (foreign exchange management, maintaining a country's creditworthiness, managing of a country's foreign exchange debt), market liaison (collecting information on foreign exchange and bond markets, communicating policy intentions, etc.) and of financial management (balance sheet and risk management, income generation, wealth preservation). These three very different objectives require different skills, their relative weightings may differ across central banks, and as a result also individual central banks' investment objectives and style will differ. Any central bank must thus first of all position itself in this "reserve management triangle", on the basis of which it can then determine the relative importance of security, liquidity and return among its investment objectives. Particularly for large central banks, and for those investing in smaller less liquid markets, central banks may become important price makers or even dominant players. Then timing, sensitivity to the market situation, effective order management, a strategic choice of counterparties as well as confidentiality pre- and post-trade become central. Central banks feel the current ultra-low yields much the same as many other market participants, since they need the return on their reserves to fund themselves (or are expected to pay large dividends to the Finance Ministry). Similarly to other large investors, central banks might in principle diversify into higher-yielding bonds (e.g. corporate), into second-tier developed markets (e.g. CAD, AUD, NZD, NOK, SEK, DKK) and emerging markets (especially RMB), establish equity and alternative asset portfolios, increase the role of gold and outsource non-core portfolios to external managers. However, in practice central banks face many constraints such as size, liquidity, transparency, knowledge of markets, and available counterparties. Central banks must also do cost-benefit analyses, ask whether they can afford to hire and hold staff with the very specialized skills required, and question whether

the central bank's management would understand the new investment vehicles and could explain them to the public. Also, interference with other official investors and the potential recipient markets (and its authorities) needs to be considered. Finally, central banks' large scale involvement in markets – particularly through QE – is bound to influence the signalling properties from these markets, depriving central banks from important information and increasing policy uncertainty. Many central banks have turned from lenders of last resort to funders of last resort. Thus, some markets have turned from being a window of the outside world into a mirror of central banks' own operations. Also investors' response functions to central bank actions is changing, with investors paying less attention to inherent market value but increasingly on expectations of central bank actions. Thus, a change in policy can produce bigger market responses than hitherto. This is compounded by a fall in market maker capacity and reduced bond market liquidity, further restricting the number of markets considered investable by central banks.

The session concluded with a presentation by *Dario Focarelli, Director General of the Italian Insurance Association*, on **ALM with ultra-low interest rates from a (life) insurance perspective**. Almost three quarters of the European life insurance industry's individual premiums (EUR 667 billion in 2013) are related to traditional life insurance products, which offer capital and/or return guarantees. National markets differ vastly by size. However, life premiums as a share of GDP give a distorted picture since for asset and liability risk management, the duration of liabilities is also crucial. Therefore, e. g., while in Italy the share of life insurance premiums in GDP is much higher than in Germany, the required provisioning in percent of GDP is roughly the same in both countries, since the duration of insurers' liabilities is much shorter in Italy. According to EIOPA's (European Insurance and Occupational Pensions authority) assessment dated December 2014, the risk from low interest rates continues to be the major risk factor for insurers. Stress tests by EIOPA with insurance companies have shown that central and northern European insurers are more exposed to risks from gaps between financial guarantees and low yielding assets than firms in southern Europe and France. Guaranteed rates have already tended to decrease between 2009 and 2013, thus adapting new business to the low yield environment. A major challenge for insurers is how to cope with these risks without failing commitment to policy holders and maintaining competitiveness. A second important risk is liquidity risk, if insurers take illiquid assets into their books. For the future, Focarelli sketched three scenarios: 1) a gradual rise in interest rates – as the European economy recovers gradually thanks to reforms and QE, inflation and inflation expectations also gradually return to 2%; as a result, nominal and real interest rates will gradually increase. 2) a prolonged period of ultra-low interest rates – QE turns out to be ineffective because overly leveraged banks and consumers choose to deleverage rather than to lend and spend; bond yields would remain close to their current levels for the next ten years. 3) an infla-

tion-driven surge in interest rates, as the ECB reacts too slowly to prevent a rapid rise in inflation; increasing inflation expectations would lead to a sharp rise in nominal bond yields. He regarded Scenario 1 – the most favourable for insurers – the most likely. Scenario 3 is in his view very unlikely for the next 2 to 3 years. EIOPA seems to be mostly concerned with Scenario 2. This is what Japan experienced: there, the prolonged period of low interest rates led to a number of insolvencies among insurers. Japanese insurance firms responded by shifting their focus away from traditional endowment products towards protection products. As regards the European insurance industry, Focarelli concluded that, even if a Japan-type scenario 2 were not to materialize, insurers should vigorously shift their business strategy from savings towards protection products, including the restructuring of financial guarantees. In terms of their asset composition, insurers should reallocate assets towards corporate and structured bonds. In this way, they can make minimum financial guarantees sustainable in a prolonged low interest rate scenario.

The final session 4, chaired by *Vice Governor Andreas Ittner, OeNB*, was devoted to **policy perspectives**.

Isabel Schnabel, Chair of Financial Economics Gutenberg School of Management and University of Economics Mainz and Member of the German Sachverständigenrat, gave a presentation on **bubbles and central banks: historical perspectives**. She started from the controversy of whether central banks should be passive about bubbles and only “clean up the mess” once a bubble bursts (Green-span view) or whether they should actively “lean against the wind” (BIS view); and in the latter case, whether they should use interest rates or macroprudential tools to deflate bubbles. While the recent crisis experience seems to have shifted the balance of views towards a more pro-active role by central banks, the question is still unresolved. To shed more light on this issue, Schnabel analysed 23 prominent asset price booms from the past four decades, classifying them by types of asset classes involved, asset holders, the economic environment during the build-up of the bubble, the severity of the crisis and the policy responses. A first finding is that bubbles occurred in a wide range of assets; in most instances, bubble assets were held widely, banks were often among the speculators; most bubbles were largely financed by debt, and importantly bank credit, thus increasing the likelihood of a banking crisis; bubbles were usually triggered by technological or financial innovations or by political events; they emerged when monetary policy was expansionary and were often accompanied by lending booms and sometimes capital inflows. While real estate bubbles often led to severe recessions, a narrow focus on them would be misleading, since also other markets are prone to bubbles. Crises were sometimes amplified by fire sales by banks of bubble assets, and weak bank balances sheets due to asset depreciation sometimes laid the ground for later crises. Regarding policy responses, pure “cleaning up the mess strategies” were found only in rela-

tively immature financial systems and were associated with severe disruptions of the financial sector and real economy. There were historical examples of successful “leaning against the wind” interest rate policies but in most instances they could not prevent severe recessions. Often, they were too weak and came too late. For lack of counterfactuals, Schnabel could not confirm the hypothesis that too strong “leaning against the wind” may be harmful. Also, the pricking of bubbles historically did not always lead to recessions. A policy of early leaning against the wind is preferable to a late pricking of bubbles. When prices have already risen to unsustainable levels, all policy options will likely be expensive. Macroprudential instruments were not used in the early parts of the sample but became more common in the 20th century. They were sometimes (but by no means always) successful. While macroprudential measures have the advantage of being more targeted than interest rate policies, since they can focus on specific sectors, they can at the same time be more easily circumvented. As with interest rates, timing and dosage are essential. All in all, there are therefore no simple prescriptions – no instrument worked in all circumstances. Currently, there is a build-up of risk in many markets due to search for yield, which is the consequence of “cleaning up the mess”-oriented highly expansionary monetary policy. However, there is no clear threat to financial stability as long as there is no sharp expansion of credit. The risks from “leaning against the wind” interest rate policy are particularly acute after financial crises; therefore, at the current juncture, macroprudential policies may be better suited to deal with current emerging asset price booms.

Korbinian Ibel, Director General at the Single Supervisory Mechanism, offered a **macroprudential bank supervisor’s perspective**. Low interest rates are as such nothing special; however, negative nominal rates are very rare both for banks and for supervisors. Banks need to look out for three areas in particular: A first area concerns business infrastructure. Most derivative models cannot handle negative nominal interest rates. Pricing assets or risk becomes difficult in such an environment. Also, the functioning of Value at Risk Models is unclear with zero or negative rates. But even if models can be made to work, it is open whether the associated IT systems can. Bankers thus need to make very careful plausibility checks of any model results and to generally check all their infrastructure. A second area concerns customer behaviour and deposit modelling. Models assume deposits are stable and safe assets. But this may no longer be the case with negative nominal interest rates. If customers were to dislike negative interest rates sufficiently, would they shift financial balances to alternative investments? This needs to be played through with scenarios. Also the competitive position may be affected. Even if customers were to accept negative deposit rates (also through higher fees), banks need to assure that national consumer protection legislation allows this. Third, a lengthening of duration implies huge interest rate risk. The 1990s US savings and loans crisis reminds us that in such a situation, a hike in interest rates can threaten many banks’

solvency. Interest rate risk is currently not adequately captured. Supervisors need to take four measures. First, they need to reinforce horizontal analysis. For instance, within the SSM, the fact that 120 large banks from 19 different countries are supervised by one institution allows extensive cross-checking and peer learning for best practices. Second, the intensity of supervision by the SSM's joint supervisory teams is determined on the basis of risk levels. Third, onsite inspection is central: the SSM's joint supervisory teams also check IT systems, operational aspects, interest rate management and risk management. Fourth, stress testing will remain important. While no AQR-type of stress test is planned for 2015, the SSM will challenge banks' business models to ensure a stable banking system also in an ultra-low interest rate environment.

Wolfgang Herold, Austrian Financial Market Authority, presented a **supervisor's perspective on asset liability management at insurance companies**. He started with explaining the recent 2014 EIOPA stress test (based on 2013 balance sheet and interest rate data), which comprised 167 insurance firms and groups from across the EU, Switzerland, Iceland and Norway. The stress test checked for the impact of applying Solvency II on the robustness of insurance firms' financial situation, under certain macro stress scenarios, including a low-yield "Japanese"-type scenario. The aim was to check the preparedness of both the industry and insurance supervisors, and to provide some input on the final calibration of the level 2 guidelines for Solvency II. With the benefit of hindsight, the interest rate assumptions of the EIOPA stress test, which were fixed in December 2013, were much more benign than the current actual interest rate level. Even the "low yield scenario", which was at the time heavily criticized for being too extreme, has been surpassed by far on the downside by actual interest rate developments. Comparing pre- and post-stress solvency capital requirement coverage ratios (i.e. the ratio of pre- and post-stress test own funds over the equity required according to Solvency II), the stress test showed that Austrian and German life insurers are strongly exposed to interest rate risk as compared to firms in other countries such as Italy. A decomposition of the pre-stress solvency capital requirement shows that market risk (the most important component of which is interest rate risk) dominates. For the European insurance industry as a whole, market risk even exceeds the aggregate net solvency capital requirement. A comparison of the duration of liabilities and assets shows that German and Austrian insurance firms have a very large duration mismatch of about 10 years. Given Austrian insurance firms' leverage, a 1 percentage point fall in interest rates wipes out 30% of their equity. He then showed simulation results in which the yield curve is not shocked equally across maturities but where a marked flattening is involved. Depending on the assumed asset composition, very different time profiles for cash flow mismatch result, with strongly diverging implications for equity over time. Comparing the internal rate of return on assets to the discount rate of liabilities showed a positive return margin of 1% for Austrian insurers, compared

to $-0,5\%$ for German firms. Finally, using the risk-free yield curve published by EIOPA in February 2015, taking the average maturity of Austrian insurers liabilities of 16 years as a basis, Herold showed that currently insurers need to earn around 2 percentage points of yield through taking credit risk over and above the risk-free rate, in order to earn the average guaranteed rate of close to 3% inherent in their liabilities. This is why Solvency II provides for very long transition periods for capital requirements to be fully met, in order to give insurance firms the time needed to adjust their product portfolios and contracts to the low yield environment in a sustainable way.

The session was concluded with a presentation by *Olivier Garnier, Group Chief Economist, Société Générale*, on **ultra-easy monetary policies: risks and benefits for the financial system**. Ultra-easy monetary policy implies lower risk-free short rates, a steeper yield curve (“bull steepening”), lower risk premiums and higher equity prices. For banks this may imply wider net interest margins, lower delinquency and default rates, a revaluation of legacy assets and stronger credit demand. On the other hand, easy monetary policy risks a zombification of the economy, excessive risk taking (including carry trades) and asset price bubbles. But the current situation is different. Central banks’ bond purchases result in a zero or even negative term premium. Negative official interest rates imply a tax on banks’ excess reserves. And top of this, financial re-regulation requires tougher capital/leverage ratios, tighter liquidity ratios, new resolution and bail-in rules have been introduced, and in a number of countries various levies on bank balance sheets have been introduced (systemic risk tax, contributions to resolution fund etc.). The term premium for 10-year US Treasuries has been depressed into negative territory, not only due to the Fed QE purchases, but also due to distortionary regulatory rules of Basel 3 and Solvency II as well as increased demand for government bonds as collateral (because of rules aiming to make wholesale markets safer). The negative term premium is a key risk to financial stability if sustained for a long time. The term premium is the price for maturity transformation. If distorted to zero or even into negative territory by state intervention, savers become even more reluctant to invest long-term, while borrowers will be eager to borrow long-term. Thus the maturity mismatch between the supply and demand of savings will be exacerbated, while discouraging bank maturity transformation, and maturity transformation risk will be shifted outside the banking system into more opaque areas. If maturity risk is priced negatively, investors will react by assuming increased liquidity risks, which results in increasing liquidity mismatch between assets and liabilities in investment funds (which guarantee daily liquidity to their customers) and other institutional investors, at a time when secondary market liquidity is already drying up as a result of investment banks reducing their market maker activities in response to regulation. The exit from this current negative term premium regime will be challenging. Once central banks start hiking official rates, the adjustment in the term premium could

be either too slow (as happened in the US in 2005 when risk neutral yields strongly surged while the term premium remained at zero) or too abrupt. To smooth the adjustment and “guide” the term premium, central banks might consider interventions in interest swap markets. Regarding negative interest rates, Garnier expects that we are just at the beginning, since the euro area banking system’s excess reserves will be boosted over the next 18 months as a result of the ECB’s Expanded Asset Purchase Program, and the EONIA will move towards the ECB’s deposit rate. How will markets react to this? There might be a flight to paper currency. For instance, “cash reserve accounts” (that only hold currency) or “vault cash bonds or ETFs” might be created. As a result the money multiplier would fall and become more unstable. Retail banks’ profitability will be depressed by the negative rates, since charging significant fees on retail deposits is unlikely due to legal, commercial and political obstacles. Finally, liquidity will be forced out of the banking system by discouraging banks to take wholesale deposits through multiple “taxation”: Regulatory liquidity coverage ratios discourage banks to take on corporate deposits, and liability taking is discouraged by various levies. As a result, liquidity may be shifted into the shadow banking system. Summing up, the combination of reregulation and ultra-low/negative interest rates may encourage “bad” (rather than “good”) disintermediation, which is driven by regulatory arbitrage and search for yield.

With around 170 registered participants, the conference demonstrated impressively how useful and crucial an interdisciplinary dialogue between practitioners, policy makers and academics is, in particular when it comes to new, complex and multidimensional topics such as the one addressed in this conference. To fully grasp relevant scenarios, challenges and possible solutions to the topic at hand, the conference combined insights from economic history, macroeconomics, finance and business administration as well as legal and institutional expertise on relevant supervisory frameworks, including various operational aspects. Only such a holistic view allows financial firms and policy makers to make adequate assessment and decisions, and enables academics to tailor their analysis and research to the needs of practitioners and policy makers and society at large. SUERF thanks its co-organisers, its members as well as conference speakers and participants for supporting activities like this.

*This volume contains policy oriented contributions by seven of the conference speakers. We thank all conference speakers as well as in particular the authors to this volume for their time, effort and willingness to share their expertise and experience with a wider community. The power point presentations of all conference presentations can be found at www.suerf.org/vienna_2015. In addition, we have published a synthetic overview of the topic in the OeNB’s quarterly bulletin *Monetary Policy and the Economy*, Q2/15.*