

The financial system of the future

Summary of the 44th OeNB Economics Conference in cooperation with SUERF
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Conference Report

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Modern economies need a functioning financial system. In principle, the financial system has four main functions: providing a payment system, matching borrowers and lenders, enabling people to manage their personal finances across their lifetimes and between generations, and sharing and managing risk.

Despite the implementation of a series of reforms in 2010, including enhanced capital requirements for banks, new banking resolution legislation and the centralization of derivatives markets, the question whether the current financial system is fit for the future remains unanswered. Critics claim that the financial system today is still very similar to what it was before the financial crisis started in 2007.

So is the financial system fit for the future? Will its current structure allow it to fulfill its main functions? Do we need further structural changes? If so, what kind of changes? Are tighter banking regulation, an increasing role for shadow banking and the EU's project of establishing a capital markets union the way to go? What opportunities and potential risks do such changes involve? How will technological developments like fintech and digital money shape the future financial system?

To shed light on these issues, the OeNB joined forces with SUERF – The European Money and Finance Forum to organize its 44th Annual Economics Conference in Vienna on May 29 and 30, 2017, on the topic “The Financial System of the Future”.



In his opening remarks, OeNB Governor **Ewald Nowotny** welcomed the long-standing, close and excellent cooperation of the OeNB with SUERF, and on this year's Annual Economic Conference in particular. He emphasized central banks' commitment to long-term economic stability. This is all the more important – but also difficult – in times of fast changes. Our ability to forecast future developments and crises has proven to be quite limited. This also applies to technological innovation: we should be wary to draw deterministic conclusions on their implications for future developments. This applies both to the future path of innovation and the future sources of financial crises. It seems reasonable, though, that, whatever impact digitalization will have on the future shape of the financial sector, it is reasonable to expect job losses in the banking sector. Both globally and in Austria, downsizing is already ongoing, and this trend is going to continue. The other important change is the rise of market-based financing, also in countries like Austria, which have traditionally been dominated by bank-based finance. The EU's capital market union will foster cross-border integration of financial markets and promote the development of new forms of finance. These

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trends will, however, be shaped less by technology than by deep macroeconomic parameters, such as growth, demographics, employment, and social developments. Nonetheless, framing technological change in a way that best adapts to macroeconomic circumstances and contributes most to favorable economic development is important. **Thomas Drozda**, Austrian Federal Minister for Arts and Culture, Constitution and Media, thanked the organisers for bringing together policy makers and economists, bankers and academics to exchange views and learn from each other. In principle, financial systems may enhance growth and welfare, if they served their original purpose to collect savings in order to finance the creation of new productive capacity. However, if credit is used to buy existing real estate, no value added is created and the risk of housing price bubbles arises. To prevent boom-bust cycles, regulators and supervisors need to have adequate macroprudential instruments at hand. Income and wealth inequality may also be a source of financial instability by prompting the less wealthy to take out loans beyond their capacity, to maintain their standard of living. The resulting financial fragility may deepen recessions. Thus, strengthening crisis resilience requires a strengthening of the middle class and ensuring the sustainability of the welfare state. While in theory, integrated financial market facilitate international risk-sharing and the allocation of capital from surplus economies with ageing societies to catching up economies, in practice this process does not run smoothly. Excessive fiscal restraint may lead to deteriorating domestic public infrastructure.

While there is consensus that financial system stability is key, we may be trapped in a cycle of complacency as long as financial stability prevails, which leads to crises, which trigger better regulation, which in turn leads to financial stability, complacency, and so forth. To avoid this vicious cycle, those parts of the financial sector that serve a useful economic purpose should be safe in crisis situations, while the rest should be unwound. This requires a workable and credible resolution framework. The legally enacted EU framework now has to be put into practice. Recent global tendencies to roll back post-crisis regulatory reforms should be regarded critically. Policy makers in EU member states should stick to the rules they agreed to at the EU level. Regarding future means of payment, Drozda, while having some sympathy

with private competing currencies, emphasized network externalities which may work in favor of existing legal tender issued by central banks. Reports on the death of cash are greatly exaggerated. The Austrian government has no intention to take away cash from citizens. To conclude, Drozda urged that we should avoid falling into the trap of „unknown knowns“: the crisis was also caused by our neglect of insights gained decades before but which had been forgotten in the run-up to the crisis. We should avoid this trap in the future, and conferences like this may also serve to uncover some forgotten important earlier insights.



Session 1 chaired by **Doris Ritzberger-Grünwald**, Director, Oesterreichische Nationalbank, dealt with „Digital money and digital banking“.

Michael Kumhof, Senior Research Advisor, Bank of England discussed „The macroeconomics of central bank-issued digital currencies“. In his view, the emergence of distributed ledger technology (DLT) and bitcoin was a watershed in the history of e-monies. It may, for the first time in history, be technically feasible for central banks to offer universal access to their balance sheet. Kumhof suggests a scheme for central-bank digital currency (CBDC) in the form of a universally acceptable and interest-bearing central bank liability, issued against government debt and implemented through DLT, which competes with bank deposits as medium of exchange. The central bank would grant universal, electronic, continuous national-currency-denominated and interest-bearing access to its balance sheet. The majority of transaction balances would continue to be held as deposits with commercial banks. Credit would continue to be the purview of existing

financial intermediaries. While the use of DLT is not strictly required for the operation of such a CBDC system, Kumhof argues that it would be necessary in practice, to ensure system resilience.

Is such universal access economically desirable? Using a DSGE model calibrated to match the pre-crisis United States, Kumhof finds that CBDC issuance of 30% of GDP (an amount calibrated to be similar in magnitude of QE conducted by various central banks in response to the crisis), against government bonds, could permanently raise GDP by as much as 3%, due to reductions in real interest rates, distortionary taxes, and monetary transaction costs. Countercyclical CBDC price or quantity rules, as a second monetary policy instrument, could improve the central bank's ability to stabilise the business cycle. At the same time, the speaker acknowledged that there remains concern with managing risks arising in the transition to a different monetary and financial regime.

Thomas Puschmann, Head of Swiss FinTech Innovation Lab, University of Zurich, gave a presentation on „Banking without banks? How will technology transform financial intermediation?“ He started out with the prediction that in the future we will transfer values among individuals and organizations directly without intermediaries. After the internet of information (1985-2000) and the internet of services (2000-2015), now the internet of values is the big development until 2030. DLT removes dependency on time and location. It rests on decentral (rather than central) organization, transaction validation by consensus (rather than through an intermediary), a chronological (rather than relational) data structure, the impossibility of hidden data changes, and pseudonymy (rather than transparency) of users. The blockchain enables new business models, which can be categorized by degree of complexity and coordination, and by the degree of novelty. It forms the foundation of a global peer-to-peer economy. Firms need to re-position themselves in the evolving new financial system. The development of standards and new services requires time and will not happen overnight. Nevertheless, as the first two phases of the internet have shown, early movers may benefit. Financial institutions need to act if they do not want to experience a fate similar to Kodak's or Olivetti's.



In Session 2, chaired by **Andreas Ittner**, Vice Governor, Oesterreichische Nationalbank, **Sir Paul Tucker**, Chair, Systemic Risk Council and Senior Fellow, John F. Kennedy School of Government, gave a keynote speech on „The political economy of central banking in the digital age“. The financial crisis has not triggered a fundamental change away from the established fractional-reserve banking system. It has, however, re-established the insight that financial system stability is integral to monetary stability because there can be no monetary stability without stability of the private part of the monetary system: banks. Monetary stability includes stability of the purchasing power of central bank money and stability of the private-banking system deposit money, in the sense that payment services by the system as whole are maintained. A „money-credit constitution“ needs to have five components: a target for inflation, a requirement for banks to hold reserves in relation to their riskiness, a liquidity-reinsurance regime for illiquid but solvent banks, a resolution regime for insolvent banks, and constraints on the central bank's balance sheet. Typically, central banks (with some regulatory functions) manage both the state's consolidated balance sheet (by issuing money against public and/or private debt) and constrain the banking system's balance sheet with a view to safeguarding financial stability. This implies a lot of tasks, need for explanations and justifications, and power, raising issues of the separation between fiscal and monetary policies and about who sets the rules of the game for the financial system.

Will new technology challenge or even undermine the broad conception of central banking as it is currently done? Tucker argued that it will not, unless central banks move into providing banking services for everyone,

which would make them more like a latent state-credit bank. An important qualification to “things stay the same” is that central banks will need to re-engage with the integrity of the deep plumbing of the financial system. They must, though, be vigilant in not taking on roles that give them excessive power or which do not fit with their core purpose of maintaining monetary system stability.



Session 3, chaired by **Martin Summer**, Head of the OeNB’s economic studies division, dealt with “Technological change and the future of financial intermediation”.

The first presentation in this session, on “The future – banks or platforms” was given by **Patricia Jackson**, Head of the Board Risk Committee at the digital challenger bank ATOM and member of the EY Global Regulatory Network. In her presentation, Jackson argued that recent technological progress, in particular digitalization will lead to fundamental changes with long-term implications for the value chain in banking in the near future. Jackson pointed out that for existing financial services providers, in particular for retail and SME banks, these changes will give rise to opportunities as well as threats. While the entry of new, specialized players will represent a threat to existing banks, the possibility of increasing efficiency and decreasing costs constitute opportunities. The latter is particularly relevant against the background that today many banks are facing pressure due to high cost-income ratios and increasing regulatory costs. Moreover, Jackson explained that the financial services industry is lagging other industries, such as airlines, from a technological point of view. Comparing the US and Europe, Jackson highlighted that in contrast to the US, regulators in Europe are leading the way in terms of open banking.

An important regulatory development that will change the landscape of the banking industry in Europe is the revised directive on payment services (PSD2) which is planned to be implemented in 2018 and 2019. PSD2 is intended to improve the level of customer protection as well as to increase competition in the EU payments market by creating a level playing field for all payment service providers, including new players. It changes the amount of data that becomes portable and drives how payments are initiated and processed through various payment systems. PSD2 enforces the unbundling of banking services, i.e. services that are typically offered in a package will be broken out and offered by different service providers. This has the potential to severely affect the whole value chain of credit cards. Another effect of PSD2 is an increase in the access to information about payment behavior, specifically, the aggregation of data from banks and savings institutions that an individual or company holds accounts with. Jackson also addressed the challenges of PSD2, in particular highlighting that there is still some regulatory uncertainty associated with this directive, specifically in the areas of customer authentication and secure communication. The enhanced data that the digital revolution as well as relevant regulatory changes has made available has the potential to fundamentally change the banking industry.

“Do we have too much intermediation?” was the title of the presentation by **John Kay**, economist, writer and fellow of St John’s College, Oxford. Kay started with the notion that the current financial system is too complex and that there is the need for simplification and reduction to its fundamental functions. To a large extent trading activity in financial markets results in a zero sum game with limited value-added. Global trade in foreign exchange is about a hundred times the volume of underlying trade in goods and services and the volume of outstanding exposures under derivative contracts far exceeds the value of global assets. The financial sector has lost sight of its four core purposes: providing a payment system, matching borrowers and lenders, enabling people to manage their personal finances across their lifetimes and between generations, and sharing and managing risks. Over the last 50 years there has been more and more activity in secondary financial markets trading rather than in primary market operations

intended to raise fresh capital. The insurance market shifted from a market of sharing and mutualization of risks to a market for trading risk. The latter concentrated on the transfer of risks from people with information advantages to people with little knowledge of the traded risks. The transfer of risks to less informed market participants played a crucial part in the latest financial crisis in which loans were securitized, split into tranches, repackaged, and eventually sold to people with a lack of understanding of the underlying risks.

Addressing recent developments in Europe, Kay expressed doubts about the aspiration of creating simple, transparent, and standardized securitization in Europe, arguing that from his perspective capital allocation and risk transfer are activities that are by their nature difficult to standardize. Furthermore, he disagreed with the frequent argument, as brought forward for example in the discussion about the European capital markets union, that continental Europe should follow the “Anglo-American model” of financial markets. Kay concluded that we need less intermediation in financial markets than we have today. However, despite the technological developments that we have seen in the last decades, there still is, and will be in the future, the need for financial intermediation. Lending and equity financing of new businesses requires experience, judgment, and skepticism and these are characteristics for which it is very hard to find technological replacements.

Session 4 on “The capital markets of the future” was chaired by **Ernest Gnan**, Secretary General, SUERF, Counsel to the Board and Head of the OeNB’s Economic Analysis Division.

The first presentation of this session was given by **Nikolaus Hautsch**, Professor at the University of Vienna, who elaborated on “High Frequency Trading: Costs and Benefits”. Hautsch emphasized that the discussion about the costs and benefits of high frequency trading is very controversial and his aim is to clarify the different points of view. While there is no unique definition of high frequency trading there are certainly some clear characteristics. In particular, it is automated trading that employs algorithms for order execution and routing, low-latency technology and co-location services as well as high message rates. High frequency trading is mainly carried out by proprietary firms, broker-dealer proprietary desks and hedge funds. The central



characteristics of high frequency trading are very short holding periods, no significant over-night positions, very low margins per trade, as well as a focus on highly liquid instruments. In particular, high frequency trading typically avoids taking high risks, i.e. it typically avoids taking highly leveraged positions.

Hautsch then elaborated on typical high-frequency trading strategies. One is high-frequency market making in which high-frequency traders offer the best ask and bid rates and earn the bid-ask spread. Another type of strategies are order detection strategies in which traders use small test orders (“pinging”) in order to detect and exploit hidden liquidity. Further frequently employed strategies include statistical arbitrage, in which traders try to exploit inconsistencies in prices between different products or markets that typically occur only in very short periods of time, or latency arbitrage, which is based on receiving market information just a very short period of time earlier (typically a few milliseconds) than other market participants. Finally, an illegal high-frequency trading strategy is “quote stuffing”, which involves quickly placing and cancelling bids and offers in the market in order to slow down the access of other market participants to the market as well as the matching engine of the respective exchange.

Hautsch highlighted that high frequency trading is a natural part of market evolution and the consequence of both technological as well as regulatory changes, starting with the change from classical floor trading to electronic trading and the introduction of so-called electronic communication networks in the 1990s. Most research papers find that high frequency trading improves liquidity, reduces transaction costs, and improves the

informativeness of quotes. However, it is also argued that high frequency trading has the potential, especially in turbulent and crises periods, to have a destabilizing effect, increasing volatility in the market and increasing the risk of tail events. He concluded that the question whether high frequency trading overall provides social benefits is still controversial and further research is needed. The future of high frequency trading depends crucially on regulatory developments. There is currently significant regulatory uncertainty regarding high frequency trading due to recent regulatory initiatives in both the US and Europe. He warned of both insufficient as well as too rigid and misguided regulation.

The second presentation of this session was given by **David Yermack**, Professor at NYU Stern School of Business, on “Smart contracts and corporate governance”. The basic idea behind smart contracts is that many kinds of contractual clauses (such as collateral, bonding, delineation of property rights, etc.) can be embedded in the hardware and software that is dealt with, in such a way as to make a breach of contract expensive. This provides security superior to traditional contract law and reduces transaction costs. The idea of creating a trustless system of contract law that is behind smart contracts resembles the idea of a trustless payment system upon which cryptocurrencies such as Bitcoin are based on. Smart contracts economize on contracting and enforcement costs and deter strategic behavior. Prominent examples of smart contracts include vending machines and recurring payments. Pointing to possible applications in corporate finance, Yermack explained the use of smart contracts in secured corporate debt. For example, he outlined the idea to convey collateral upon default automatically, which reduces enforcement and contracting costs as well as moral hazard problems, thereby reducing the cost of debt. Further possible applications of smart contracts in corporate governance involve self-exercising executive stock options or convertible debt that converts automatically. There are also risks of smart contracts, in particular, the risk of using excessive automated decision-making in business operations. There is the need for businesses to fully understand smart contracts and the technologies based on which they are implemented before they are introduced.



The first conference day was closed by the traditional Kamingsgespräch with the Austrian Federal Minister of Finance, **Hans Jörg Schelling**. Governor **Ewald Nowotny** opened the Kamingsgespräch by stressing the importance of the interlinkages between monetary and fiscal policy measures. In addition, he addressed the successful resolution of the Hypo Alpe Adria crisis and highlighted the successful management of this crisis by Schelling. Regarding the current economic situation in Austria, Nowotny assessed the economy as well as the banking sector in Austria to be in good shape despite today’s turbulent environment and highlighted the clear improvements that were made over the last year.

Schelling pointed out that current uncertainties are to a large part driven by political risks, referring in particular to the US, the UK, Turkey, and Russia. Looking at the European banking sector, Schelling noted that declining revenues, insufficient cost-reduction, and low interest margins led to net income falling by almost half in recent years. The gap between European banks and their US peers is currently widening as US banks continue to grow relative to their European counterparts. In particular, Schelling noted that European banks are running into a crisis of profitability with the most important challenges represented by the high number of outlets, new specialized financial services providers that pick only the most profitable banking services (“category killers”), as well as new technologies that have emerged in the course of the ongoing digitalization. In this context, Schelling also urged that, in light of the strong economic recovery in most European economies, it would be desirable to raise interest rates to non-negative levels.

Digitalization is already changing the economic landscape. It is crucial to adapt regulation accordingly. An example for the challenges associated with digitalization is the taxation of internet businesses. Discussing the situation of Austrian banks and the successful resolution of the Hypo Alpe Adria case, Schelling noted that even though the capitalization of the Austrian banking sector has improved significantly since the onset of the financial crisis, capital ratios are still below the European average and that there is potential for additional regulatory challenges ahead, for example due to Basel IV. Banks need to adapt to today's changing regulatory, technological, and economic environment, which involves questioning their business models and making necessary adjustments.



Kurt Pribil, Executive Director of the OeNB, opened the second day with a session on “Technological change and the future of cash.”

François Velde, Senior Economist and Research Advisor at the Federal Reserve Bank of Chicago, spoke about “Money and Payments in the Digital Age: Innovations and Challenges.” The lack of information and enforcement and as a consequence the need for trust are recurring themes in monetary history. According to Velde bitcoin and the distributed ledger technology use long standing tools to solve the problem how to issue and manage online tokens without a central authority. Bitcoin is unique in monetary history because it is intrinsically worthless, dematerialized (i.e. no physical tokens exist) and neither inside nor outside money. However the need for trust is not eliminated with a distributed ledger but only displaced. Instead of having to trust a counterparty, one has to trust the protocol. When transferring this technology to applications

outside the monetary and payment context, it should be kept in mind that properties of the distributed ledger technology stem from the solution to a particular problem involving decentralization and lack of trust. If this technology does come into broad use, central banks will become involved, among other things, to set standards and ensure safety or by using the new possibility to pay (negative) interest rates on digital money.

Helmut Stix, Senior Expert at the OeNB, spoke about “The surprising resilience of cash.” Using data reaching back to the 19th century, he demonstrated that – notwithstanding a downward trend because of financial innovations – currency in circulation over nominal GDP was quite resilient. Recently, demand for currency even increased in many economies including the euro area and the U.S.A. Cash allows for expenditure control and to economize on fees. The use of payment instruments is largely in line with consumers’ preferences. Regarding the drivers of the recent increase in cash demand, to some extent the increase is due to the current low interest rates. This effect becomes smaller as interest rates approach zero. There is no effect of the size of the shadow economy. In higher GDP economies the evolution of cash demand cannot be fully explained by GDP and the interest rate. It seems that there was a shift in cash demand in economies that experienced a financial crisis and that this was not the case for economies that did not experience a financial crisis.

Peter Mooslechner, Executive Director of the OeNB, chaired a panel discussion on “Fintech: opportunities and challenges for banks and regulators.” Mooslechner asked panelist whether we will see fintechs in the productivity statistics and whether technological progress will be evolutionary or revolutionary.

Reinhold Bierbaumer, managing partner of MEP Mobile Equity Partners, sees the key opportunities for fintechs in B2B platforms. The reason why there are less interesting start-ups in Vienna than in e.g. Berlin or London is attributed by Bierbaumer among other things to a lack of cooperative attitude. **Klaus Kumpfmüller**, Executive Director of Austria’s Financial Market Authority, stated that regulators support innovations as long as they comply with the law. The regulator applies



both technological neutrality and neutrality between newcomers and incumbents. The Financial Market Authority has established a Fintech contact point. Kumpfmüller invited market participants to make regulators aware if legislation hinders innovation. **Marc Niederkorn**, Senior Partner at McKinsey & Company, confirmed that enormous investment in fintechs has taken place. The larger part of these investments focuses on retail banking especially payment systems. Fintechs and banks are increasingly moving towards working together. Customer disintermediation targets origination and sales, which is the most profitable activity in banking. Furthermore, fee based businesses are likely to experience the largest margin reduction. **Thomas Schaufler**, Member of the Management Board of Erste Bank, described the approach of Erste Bank as having established a fintech inside the bank. Clients are asked to participate in the development of applications. Schaufler thinks that advice will remain important for clients and therefore bank branches will still play a role in the future. **Valentin Stalf**, Founder and CEO of N26 Bank, expects a massive shift in user behavior and sees the bank of the future on the mobile phone. For banks to be successful, customer relationship, technology and design are important. He claims that successful start-ups need an ecosystem. Such an ecosystem exists in Berlin or London but only to a smaller degree in Vienna. According to the panelists there will be an impact of the technological developments on employment in the banking sector. In the future qualification profiles will change.

In the final session, chaired by **Urs Birchler**, president of SUERF, **Erkki Liikanen**, the Governor of Suomen

Pankki – Finlands Bank, delivered the SUERF annual lecture entitled “Is the post-crisis financial system more resilient?”. According to Liikanen, the financial crisis was caused among other things by underlying macroeconomic factors (e.g. current account imbalances between the US and China, a false sense of security as a result of the great moderation), deficient monetary and macroprudential policies, and imbalances in financial market developments (e.g. liberalization of the global financial markets and deregulation, too-big-to-fail financial institutions). In response to the crisis, banks’ loss absorption capacity and banks’ ability to withstand a liquidity crisis were strengthened. Furthermore, no bank can be regarded as too-big-to-fail anymore, as authorities have been granted new powers to resolve banks efficiently. Supervisors were also given a stronger mandate to ensure stability of the financial system as a whole. It is essential that the profitability of banks is no longer based on banks’ funding being supported by public safety nets. The new rules regarding bank recovery and resolution allow for a genuine transfer of risks to bank owners and investors. A key remaining task for Europe is finalizing the banking union, i.e. establishing the single deposit protection. Furthermore, the banking union should be complemented by the implementation of the capital markets union. The links between banks and the shadow banking sector are now regulated more effectively which helps to transform shadow banking into resilient market-based finance that will not transmit excessive risks to the banking sector. Governor Liikanen concluded by warning that regulatory fatigue should not bring financial regulation and market infrastructure reform to a premature end.



Conference presentations are available at:

www.suerf.org/vienna2017