Centre for Technical Central Bank Cooperation

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The past year presented particular challenges for the world of central banks, not only in industrial nations but also in developing countries and emerging market economies. A historically expansionary monetary policy combined with a low-interest-rate environment called for a new set of central banking tools and greater co-ordination. Furthermore, political events heightened volatility on the financial markets.

Rapid changes in the working environment are affecting central banks worldwide. Innovative fintech startups are impacting, for instance, developments in payment systems, investment behaviour or relationships between traditional credit institutions and their customers. Technological innovations, such as distributed ledger technologies – also known as blockchain – or instant payments require forward-looking analyses, not least on the part of central banks. In addition, many of the areas of relevance to central banks are becoming increasingly complex. Particular note should be taken here of the banking regulatory lessons learned from the financial crisis, which have resulted not only in new rules but also in new institutions. For instance, last year, the European Single Supervisory Mechanism ended its second year of operation. And the implementation of the Single Resolution Mechanism at the beginning of 2016 was a further step towards the Europeanisation of banking supervision.

The year 2017 equally has new challenges in store for central banks, for example in the form of cyber security, a topic which we will also be tackling as part of Germany’s G20 presidency.

In light of these dynamic developments and the growing complexity in the fields of central banks’ activity, it came as no surprise that our international colleagues began asking for increasingly specialised seminars. Once again, the cooperation requests a clear focus on practice-oriented courses and solutions. In 2016, we therefore geared our seminars even more closely to the demands of our international colleagues and developed a tailor-made seminar content. The cooperation formats were similarly adjusted to better suit the specialised topic requests, meaning that we also offered multilateral ad hoc expert panels, expert discussions for specific individual questions or consultancy missions for more complex issues. We will continue to pursue this approach in order to help interested central banks around the world to address the challenges at hand.

As in previous years, this Annual Report aims to provide an overview of the wide range of activities of the Bundesbank in the area of technical central bank cooperation. I hope you find the overview informative. May our portfolio of seminars and collaborative ventures again attract your interest in 2017.

Dr Andreas Dombret  
Member of the Executive Board  
Deutsche Bundesbank
The Deutsche Bundesbank’s Centre for Technical Central Bank Cooperation (TCBC) supports central banks around the world in their efforts to set up and expand market-based central bank systems with a focus on stability. Our aim is to share our knowledge and experience, to foster expert and personal dialogue among central banks and thus to contribute to global monetary and financial stability.

The experts at the Centre for Technical Central Bank Cooperation and specialists throughout the Bundesbank cover the entire spectrum of business, economic and legal issues facing central banks today. Our expertise centres around the Bundesbank’s five core business areas – monetary policy, the financial and monetary system, banking supervision, cash management and payment systems – as well as the topics of good governance and statistics.
Exchanging knowledge and experience
Our work focuses primarily on exchanging knowledge and experience in practical central banking business, and less on imparting theoretical knowledge. In dialogue with our partners, we examine specific local circumstances and needs as precisely as possible before jointly seeking to develop solutions to the questions and issues our partners face. The feedback we receive from this exchange of views is hugely important for the Bundesbank’s work.

Networking
Establishing and maintaining close personal relationships is the key to sound and rewarding international cooperation. The work we do with our partner central banks benefits from partnerships we have built up over many years with monetary and financial supervisory authorities around the world. This is our way of fostering dialogue among central bank personnel and creating expert networks worldwide.

Openness and respect
Our offering is open to central banks and financial supervisory authorities the world over. We cultivate frank and unforced debate, giving due respect to foreign cultures and systems. Our overriding aim is to promote the intercultural exchange of knowledge, experience, ideas and opinions and to strengthen mutual understanding and trust. We welcome any suggestions for our future work that result from this.

We would be delighted to work with staff from your institution here in Frankfurt or in your home country.
What we offer

We provide a wide variety of flexible services.

Alongside our standardised international central banking courses, which are outlined in detail in our annual seminar brochure ([www.bundesbank.de/tzk](http://www.bundesbank.de/tzk)), we also offer activities tailored to suit the particular needs of our partner organisations. Besides running our own projects, we also take part in third-party-funded projects, most of which are financed by the EU. We are also increasingly involved in international activities, and work closely with regional cooperation partners.

### International central banking courses

Our international central banking courses cover a wide range of central bank-related topics. Attended by up to 25 participants – all from different countries and institutions – they also provide an ideal platform to exchange views and opinions with international peers. Courses are held in English in the form of traditional seminars, workshops and expert panels. Seminars focus on core aspects of central banking and are mostly aimed at newcomers. Workshops look in greater detail at specific subject areas and are primarily for employees with the relevant expertise. Expert panels, meanwhile, are designed exclusively for highly experienced employees, who are asked to give a presentation during the panel. The various course formats help attract a broad group of participants, from junior central bank staff to specialists. In 2016, we hosted 42 international central banking courses with a total of 637 participants from 77 countries. An online registration form is available to register for courses at [www.bundesbank.de/courseregistration](http://www.bundesbank.de/courseregistration).

### Bilateral projects

Bilateral projects are tailored to suit our partners’ individual needs and demands. They cover the full repertoire of central banking and usually take the form of seminars, study visits, conferences and consultancy services. If the expertise of more than one Bundesbank specialist is required, these projects can be hosted in Germany; if a larger audience is to be reached, they can be organised in the partner’s home country. In 2016, we ran 153 bilateral projects attended by 2,183 participants from 36 countries. A bilateral project can be requested using the form which can be found at [www.bundesbank.de/request](http://www.bundesbank.de/request).

204 activities with 2,862 participants in total.
External projects

The Bundesbank supports EU-funded projects promoting close ties with beneficiary countries. These include TAIEX, Twinning and ESCB projects. Beneficiaries include candidate countries and potential candidates for EU membership, as well as countries covered by the European Neighbourhood Policy. The Bundesbank has participated in these projects since 2004 and will continue to do so in the future. In 2016, the Bundesbank provided experts for nine projects in four countries.

International cooperation

For many years now, we have been liaising with higher education institutions across the world as a way of pooling resources in the sharing of international best practices in central banking. For example, Bundesbank experts deliver lectures as part of the cooperation with the South East Asia Central Banks Research and Training Centre (SEACEN) in Kuala Lumpur, Malaysia, the Center for Latin American Monetary Studies (CEMLA) in Mexico and the Joint Vienna Institute (JVI) in Austria. Contacts also exist with the Arab Monetary Fund (AMF), the West African Monetary Institute (WAMI), the Central Bank of West African States (BCEAO), the Eurasian Economic Community (EurAsEC) and the Kenya School of Monetary Studies (KSMS).

64 % of activities took place in Germany, 36 % abroad.

Cooperation with 82 different countries.
Our team

Back (left to right): Jens Fuhrmann, Daniel Januschka, Dr Sonja Juko, Jan Eckert, Jörn Flegler, Dr Martin Pontzen

Middle (left to right): Natalia Mojaeva-Hähnlein, Anika Hollmann, Ralf Hannemann, Silke Frühklug, Maximilian Paulus, Malte Vieth, Katja Hofmann

Front (left to right): Christoph Stute, Christa Lampe, Birgit Engelmann, Lisa Bauscher, Martin Dinkelborg (Director), Claudia Brune (Deputy Director), Dr Martine Niederkorn, Silke Schrupp

Missing: Dr. Thomas Goswin, Angelika Ißlei, Irina Schatalow, Peter Spicka, André Sturm, Beate Westerberg
Memoranda of Understanding (MoUs) make international cooperation more straightforward by defining a universally applicable framework for cooperation. For many years, MoUs have been a welcome tool enabling the Centre for Technical Central Bank Cooperation to put its partnership with many central banks across the world onto a formal footing. Three such agreements with other central banks were particularly significant in 2016. In February, the MoU signed with the South African Reserve Bank the previous year was expanded to include closer cooperation on research issues and joint handling of G20-related issues. Germany’s G20 presidency in 2017 should provide some interesting openings here. In June, the MoU with Indonesia was reformulated with the emphasis on improving capacity building. The spectrum of agreed measures is very broad, ranging from bilateral staff exchange schemes and training programmes to expert exchanges for lecturing purposes. The third MoU was signed in October with the Iranian central bank during Federal Minister for Economics Sigmar Gabriel’s visit to Tehran. It mainly concerns the provision of technical support to facilitate the Bank Markazi Jomhouri Islami Iran’s return to the international community of central banks.
Monetary policy
Overview of our activities in 2016

The international courses offered by the Bundesbank in its core business area of “Monetary policy” again proved very popular 2016 in view of ongoing uncertainty surrounding the economy and the path of monetary policy in the euro area and the many questions that this raises. Participants said they mainly applied for a place on these courses to discuss monetary policy with central bank experts from all over the world, exchange best practices with other participants and, last but not least, debate the Eurosystem’s monetary policy. As in previous years, the individual course programmes were strongly geared towards current topics in monetary policy.

Key issues in the field of monetary policy in 2016

Monetary policy targets:
What should monetary policy’s operative target be? What can the concept of interest rate control achieve in the current environment, and where are its limits?

Effectiveness of monetary policy:
How should the monetary policy toolkit be designed to maximise its impact and make a lasting contribution to economic stability (price behaviour, potential growth, labour market)?

Monetary policy interaction:
What are the medium and long-term effects of non-standard monetary policy measures, such as negative interest rates and large-volume purchase programmes, on markets and on the macroeconomic development of national economies, and what are their side-effects?

Monetary policy risks:
What risks does monetary policy present to the credibility and independence of central banks, and how can central banks protect themselves against monetary policy risks?

Monetary policy communication:
How can a central bank’s communication effectively support the achievement of monetary policy goals and bolster its credibility?
International central banking courses

The 2-week seminar Monetary policy and the financial system was offered again this year due to positive feedback from participants. The event format was designed to provide a broad insight into strategic and operational aspects of monetary policy and related questions. The first week, which was held at the Bundesbank’s University of Applied Sciences in Hachenburg, began by discussing fundamental monetary policy concepts and interrelationships, which were then explored in more detail through a mixture of presentations, case studies and group discussions. In the second week, which took place at the Bundesbank’s Central Office in Frankfurt, Bundesbank experts gave more detailed presentations on strategic specifics and the implementation of monetary policy within the euro area.

The workshop Implementing monetary policy was offered three times this year; in addition to the two sessions in Frankfurt, a third workshop was held in cooperation with the Joint Vienna Institute (JVI) at their offices in Vienna. Talks and discussions in the Frankfurt workshops focused on the Eurosystem’s monetary policy framework. The programme included presentations on specific topics such as the Eurosystem’s non-standard monetary policy measures and their practical implementation within the euro area, questions relating to liquidity analysis in the euro area, specific features of the collateral framework, and the systematic monitoring of counterparties. Talks were supplemented by interactive elements. In a group workshop moderated by Bundesbank experts, participants discussed the pros and cons of different designs for open market operations. Another group workshop gave participants the opportunity to exchange views on the differences and similarities in their countries’ monetary policy frameworks.

In 2016, TCBC responded to the interest expressed in gaining deeper knowledge of specific aspects of monetary policy implementation by arranging a series of expert panels on the following topics: “Liquidity analysis and liquidity management”, “Monetary policy instruments”, and “Collateral management”. These events focused particularly on the discussion of case studies in the participants’ countries. Attendees were invited to present the approaches taken by their central banks and to highlight the problems and challenges in each area, which provided a basis for discussions and an exchange of views among participants.

Bilateral projects

At the request of the Brazilian central bank (Banco Central do Brasil), the Bundesbank organised a three-day seminar for Brazilian central bank employees on the topic of Implementation of monetary policy, which was held at the central bank’s headquarters in Brasilia. The programme covered a broad range of topics including the design and intended effect of various monetary policy tools, questions on monetary policy strategy and on the monetary policy transmission mechanism. Another topic of interest was risk management in monetary policy operations. Although the training concept was largely based on presentations on the various individual topics, the seminar proved to be highly interactive, thanks to numerous questions and lively input from participants.

An enquiry by the Bank of Albania prompted the Bank to offer a 1½-day bilateral seminar on the topic of Covered bonds for reserve management. The programme was specifically tailored to the interests of our Albanian colleagues. After a short introduction to the covered bond market landscape in Europe, colleagues from Risk Control provided detailed information on risk assessment as applied to this specific asset class. They and the participants discussed a systematic approach to evaluating the advantages and disadvantages of different forms of covered bonds, while also delving into the informative value of ratings. Later in the seminar, Bundesbank front
office experts provided insight into specific selection decisions and the process of trading in covered bonds.

International cooperation

The five-day workshop on Implementing monetary policy, arranged in cooperation with the Joint Vienna Institute (JVI), offered a broad look at key aspects of monetary policy implementation. Beginning with an introduction into liquidity and central bank operations from a balance sheet perspective, participants were familiarised with the different tools and processes used by central banks for liquidity management. A simulation exercise enabled participants to experience the process of central bank auctions from the point of view of a commercial bank and to experience at first hand how different auction procedures work. This was followed by discussions about the pros and cons of differently designed monetary policy tools. These insights into the technical side of monetary policy implementation were augmented by a group workshop on the topic of central bank transparency and monetary policy communication. Rounding off the workshop, colleagues from the Oesterreichische Nationalbank (OeNB) gave an overview of developments concerning the implementation of monetary policy in the Eurosystem.
Questions about supporting the growth of the bond market

In 2016, enquiries were received from various countries as to whether, and if so, how the Bundesbank supports the development and expansion of the German bond market. Central banks and supervisory authorities from Tunisia, Thailand and Iran, among others, all independently expressed an interest in the history of the German bond market.

How was it possible for a bond market which would become the benchmark for the entire euro area to emerge in such a war-torn nation as West Germany? After the First World War, numerous bonds were still being issued in foreign currency, whereas most bond issuance since the Second World War has been in domestic currency.

How and why did the qualitative differences come about which were later adopted by many neighbouring countries?

For example, it is now considered “normal” to use a day count convention of 30 days in each month and 360 days in each year for the purpose of calculating interest. Bonds usually pay interest once a year in Europe, but semi-annually in the USA. How did these differences arise?

For several decades, the bond market experienced far greater volume growth than the stock market. The Bundesbank supports the government – that is, the German Finance Agency – in the issuance of Federal
securities; how is this compatible with independence?

Almost every day, the Bundesbank is involved in the purchase and sale of Federal securities for market management purposes, and yet this does not constitute intervention.

These and other questions concern many observers abroad, who also wish to promote their own markets.

We attempt to answer these and many further questions. Explaining the differences between various developments and the background to them plays an important part in this. Even apparently simple differences can have a complex history.
Financial and monetary system
Given its public mandate to safeguard monetary stability, the Bundesbank has an inherent interest in ensuring a stable financial system. As an integral part of the European System of Central Banks, it is also explicitly tasked with helping to maintain monetary stability.

The Bundesbank’s shared responsibility for safeguarding financial stability stems, above all, from its involvement in macroprudential oversight. The President of the Bundesbank is a member of the European Systemic Risk Board (ESRB), which is responsible for macroprudential oversight at the European level. Bundesbank representatives also sit on the German Financial Stability Committee, which discusses matters pertaining to the stability of the financial system on the basis of Bundesbank analyses. Moreover, the Bundesbank helps to maintain financial stability through its involvement in banking supervision and its role in operating and overseeing payment systems.

Key issues in the field of the financial and monetary system in 2016

Macroeconomic and financial environment encouraging build-up of risks
- Low interest rates increase the incentive to borrow
- The risk of climbing interest rates and prices might be systemically understated

Current developments from the perspective of financial stability
- Fintechs and their implications for the stability of the financial system
- Significance of central clearing for financial stability

Structured evaluation process for the macroprudential policy cycle
- Components of a structured policy cycle
- Evaluation of the impact of macroprudential tools
International central banking courses

Events on the topic of Financial stability, systemic risk and macroprudential policy are our standard vehicle for conveying current developments in financial stability policy. This year’s main seminar topics were the countercyclical capital buffer, the role of big data, indicators for the analysis of real estate markets, financial infrastructures and the shadow banking industry. The workshops also placed increased emphasis on practical, user-driven aspects. In one case study, participants were challenged to identify the risks facing a fictitious national economy and to use macroprudential indicators to assess the state of financial stability.

The expert panel on Recovery and resolution of financial institutions focused on the new European regime governing the recovery and resolution of credit institutions. One of the overarching objectives of the reform initiatives embraced in the wake of the recent financial crisis was to solve the “too big to fail” problem. The new bank recovery and resolution regime introduced in Europe at the beginning of 2015 is designed to enable orderly resolution of even systemically important institutions without endangering financial stability or exposing taxpayers to losses. The expert panel particularly focused on how participants experienced the introduction of the new resolution regime. This year’s key topics were the implementation of recovery plans, the formulation of resolution plans, the analysis and definition of the minimum requirement for own funds and eligible liabilities, and assessment issues in connection with the restructuring of credit institutions. The expert panel benefited greatly from other countries’ experience of restructuring financial institutions.

Bilateral projects

At the end of April, a three-day seminar on the Financial stability framework was organised jointly with the National Bank of the Republic of Belarus in Minsk. The seminar covered current issues regarding financial stability, the role of central banks in macroprudential oversight, and developments in the macroprudential policy cycle. More than 20 experts from the National Bank contributed their own thoughts to the discussion on current aspects of financial stability in Belarus.

The seminar on Financial stability and banking supervision at the Bank of Thailand at the end of October dealt first with institutional issues regarding macroprudential and microprudential supervision and with the coordination of banking supervision and financial stability. Second, it focused on analytical aspects, such as the significance and areas of application of big data in central banking, and the role of early warning systems. Contributions by experts from the Bank of Thailand about current developments relating to financial stability in Thailand rounded out the seminar, in which all participants had the opportunity to engage in an informed exchange of expert knowledge that benefited their own analytical roles.
External projects

The topic of Coordinating macroprudential policy was at the forefront of an EU-funded TAIEX study visit by colleagues from the National Bank of Ukraine. The aim of their visit was to learn from Germany’s experience in the field of macroprudential policy and its coordination with other policy areas. Sessions included an explanation of the German Financial Stability Committee’s tasks and the role of its members. Several experts from the Bundesbank and the German Federal Financial Supervisory Authority (BaFin) were on hand to provide a direct exchange of knowledge and views.
Banking supervision
2016 was an important year for the new European supervisory regime for euro-area banks, which was implemented in November 2014 as the first pillar of the banking union. It is already evident that the core idea of the Single Supervisory Mechanism – integrated supervision of euro-area banks by the national competent authorities and the European Central Bank – has been implemented successfully. However, even with the new European supervisory set-up up and running, there are still challenges to overcome; for example, the exchange of information and coordination among the individual authorities still needs further improvement.

A topic closely related to the supervision of Eurosystem banks is the resolution of banks. At the European level, the second pillar of the banking union – the Single Resolution Mechanism (SRM) – became operational at the beginning of 2015.

Substantive work in the field of banking supervision centred around refining Supervisory Review and Evaluation Process (SREP) under Pillar II. The SREP’s purpose is to give the supervisory authority a comprehensive view of banks’ internal risk allocation and risk control, enabling the authority to assess the adequacy of an institution’s capital and liquidity beyond the requirements of Pillar I. Until now, the emphasis had been on a more qualitative approach which gave institutions a degree of flexibility, particularly with regard to determining their resilience and capital allocation. In accordance with the guidelines published by the European Banking Authority on 19 December 2014, the main components of the SREP are the ongoing monitoring of the risk situation using quantitative key indicators, a business model analysis which particularly focuses on the sustainability of potential earnings as a source of own funds, and an analysis of the adequacy of banks’ internal structures, processes, controls and risk management (corporate governance).

Digitalisation, fintechs and cyber risks remain firmly in the focus of banking supervision.

Key issues in the field of banking supervision in 2016

Further coordination and establishment of cooperation between supervisory authorities within the new Single Supervisory Mechanism

Harmonisation of the Supervisory Review and Evaluation Process (SREP) in Europe
- Increasingly quantitative analysis
- Developing capital assessment concepts

Business model analysis

Digitalisation and fintechs
- Monitoring and analysing this innovative, rapidly growing market
- Developing up-to-date supervisory structures for fintechs
International central banking courses

The seminars Banking supervision under the Basel framework (basic/advanced) and On-site banking supervision have been part of our standard courses in the area of banking supervision for many years now, and they are continuously modified to keep pace with regulatory progress. This year’s seminars focussed particularly also on IT risks, cyber risks, FinTechs and corporate governance. The seminar on on-site banking supervision specifically addressed the planning and implementation of prudential examinations in Germany.

Our expert panel on Stress testing also met with great interest. It focused on current developments in the area of stress testing at the Bundesbank and in Europe, as well as on the foundation work and research conducted by individual participating countries. For example, in addition to the EU-wide stress test, the panel addressed the resilience of small and medium-sized financial institutions in a historically low-interest-rate environment. The case study gave participants the opportunity to generate their own scenarios and to apply them to a specific case.

New to the programme were two courses offered jointly with the Federal Financial Supervisory Authority (BaFin). The expert panel Insurance supervision – current developments from a micro and macro-prudential perspective covered current developments in insurance supervision, such as Solvency II and risk classification issues, as well as on-site and off-site supervision. Key topics from a macroprudential perspective were the low-interest-rate environment and a possible upward interest rate shock. Participants reported on the specific features of their countries’ insurance sector and discussed current developments in the wider context.

The Financial consumer protection expert panel covered one of the most pressing topics for supervisory authorities today, seeing as consumer protection covers a range of topics spanning the entire spectrum of the financial and capital market, its products and services. Participants learned that collective consumer protection – i.e. the protection of consumers in their entirety – is a significant component of the Federal Financial Supervisory Authority’s supervisory role in Germany. This legal mandate contrasts with the approach taken in some other countries of individual consumer protection, focusing on individual consumers and their particular cases.

Bilateral projects

This year’s bilateral projects again focused particularly on the refinements made to the supervisory review and evaluation process (SREP) under Pillar II. On 1 January 2016, the European Banking Authority’s Guidelines on common procedures and methodologies for the supervisory review and evaluation process for institution-specific risks (SREP) took effect for less significant institutions (LSI). This means that German supervisory authorities are now obligated to set institution-specific minimum capital requirements throughout the sector, such that risks which are not covered by the regulatory capital requirements set forth in the Capital Requirements Regulation (CRR) are also backed by capital. Systemically important institutions which are jointly supervised by the ECB and national supervisory authorities in joint supervisory teams (JSTs) may also be required to provide additional risk protection by setting aside more capital or lowering the respective risks.

For German LSIs, this rounds off the implementation of Basel II Pillar 2 by creating an SREP add-on to be calculated systematically in cases where bank balance sheets exhibit certain risks which are not covered by regulatory minimum capital. This part of the SREP add-on, which must be backed by capital at all times, is composed of the institution’s interest rate risk in the banking book (IRRBB) and all other material risks.
identified by the institution’s ICAAP reporting. It is calculated using a defined matrix which, for IRRBB, is based on the Basel 200 basis point interest rate shock and, for the other material risks, on their impact on risk-weighted assets. This institution-specific add-on, as indicated in the relevant segment of the matrix, is then enriched with qualitative elements such as the quality of risk management and compliance. An increased regulatory minimum capital ratio is then set.

This is then supplemented by an additional – soft – capital add-on derived from the results of the previous year’s low-interest-rate survey conducted by the Bundesbank and BaFin. If the low-interest-rate environment persists and indicates a further fall in earnings along with mounting credit and market risks, the resulting additional capital required constitutes a prudential target in the form of an additional stress buffer. As a soft capital add-on, a breach triggers intensified supervision.

Since autumn last year, this institutionalised assessment of risks and the add-ons made in that regard has been embedded in the TCBC’s banking supervision seminars. Bundesbank colleagues compared and contrasted the old and new procedures at various seminars and conferences, using practical examples. We also worked together with partner central banks from various countries to develop methods for implementing the SREP add-on in their countries.

A seminar on Banking supervision of systemically important financial institutions was held in São Paulo, Brazil, in cooperation with an ECB banking supervisor. Thus, the changes made to the European supervisory architecture in response to the financial crisis are also making inroads into the TCBC’s day-to-day operations. The European Central Bank and the national competent authorities have been jointly supervising systemically important banks since November 2014. In recognition of this, the seminar was run by banking supervisors from the Bundesbank and the ECB. This gave participants the opportunity to gain a comprehensive insight into supervisory practices at both the national and European level.

The autumn saw the TCBC run two banking supervision video conferences for the first time with colleagues from the Banco Central do Brasil. The topics addressed were the Implementation of the supervisory review and evaluation process (SREP) for smaller and medium-sized banks and the requirements and procedure for granting licences to financial and payment institutions. Although the TCBC had used this format regularly in the past, it had been predominantly for event preparation and organisation. This time, the technology was employed to share banking supervisory knowledge, answer questions and discuss individual aspects of banking supervision. Video conferences are an excellent way of enabling colleagues from our partner central banks around the world to interact with the relevant Bundesbank experts in Frankfurt quickly, inexpensively and conveniently.

International cooperation

The two banking supervisory conferences in which the Bundesbank participated this year both adopted a highly interdisciplinary approach. The Bundesbank’s contribution to a SEACEN conference in Kathmandu/Nepal consisted of a banking supervisory element focusing on the implementation of Basel II and a financial accounting element on the presentation and recognition of financial instruments in banks’ balance sheets. In San José/Costa Rica, two Bundesbank experts each made a contribution to a conference organised jointly by CEMLA and the DGRV on the topic of “Payment systems and supervision of credit unions” and participated in further discussions during the three-day conference. The supervisory part explored how the constantly evolving supervisory standards, which are chiefly geared towards large banks, can be meaningfully applied to smaller cooperative institutions in Germany and Europe. The example of the
current low-interest-rate environment was used to demonstrate how the supervisory authorities are responding to the dwindling profitability of cooperative banks by tightening requirements as part of the supervisory review and evaluation process (SREP, Basel II). In the area of payments, a comprehensive overview was given of the payment systems already in use in the cooperative sector, both at the bank-client interface and within the network. This was supplemented by a description of the upcoming innovations and technological developments in this rapidly changing field. Participants expressed particular interest in the requirements which would be made concerning the security of the new systems and the monitoring of these standards by the Bundesbank.

The first ever banking supervision seminar to be held together with the Joint Vienna Institute (JVI) and the Oesterreichische Nationalbank (OeNB) took place in Vienna. The main topic of the one-week course Banking supervision within the Basel framework was the implementation of Basel II and III. Experts from the Bundesbank, the OeNB, the Czech National Bank, the Financial Stability Institute (FSI) and the JVI discussed the main elements of the Basel framework (ICAAP, SREP, credit risk, liquidity risk, stress testing) in a mix of formats including talks, case studies and expert panels. The seminar was rounded off by contributions from participants about banking supervision developments in their countries.

Peer-reviewing the top-down and bottom-up stress testing framework for South African banks
1 October – 31 December 2016

In 2015, the Deutsche Bundesbank signed a Memorandum of Understanding with the South African Reserve Bank (SARB) on Technical Central Bank Cooperation aiming for closer collaboration on research topics which are of mutual interest to both central banks. In line with the agreement, the SARB requested the Bundesbank to conduct a desktop peer review of its 2015/16 Common Scenario Stress Testing Exercise in order to build on the robustness of the methodology and processes followed so far for future exercises and to benchmark against international best practices. The experience of the Bundesbank in conducting supervisory stress tests was considered very valuable in this regard.

To facilitate the collaboration, an expert of the Bundesbank’s Risk Analysis Division of the Directorate General Banking and Financial Supervision was seconded for three months to the SARB, where he worked closely with staff from the Stress Testing Division of the Financial Stability Department. Additionally, regular consultations took place with colleagues from the Bundesbank and the European Central Bank for the purpose of the peer review.

For the SARB’s 2015/16 solvency stress test, participating banks were asked to conduct a bottom-up stress test based on a predefined set of scenarios and a common methodological guidance note. The aggregated results of the bottom-up exercise were subsequently validated by the SARB on the basis of a complementary top-down stress test.
The peer review touched upon several dimensions. Besides a review of the documentation detailing the processes followed by the SARB, the scope and the covered risk categories were evaluated in light of the traits of the South African banking sector, its interconnectedness, and the risks banks are considered to be most exposed to.

In addition, the underlying methodological assumptions in both exercises as well as the quality assurance process, ie the feedback links between the top-down model and the banks’ own bottom-up projections, were analysed and compared against best practices of the Bundesbank. Finally, the communication of results and their inclusion in supervisory practice was examined. “We had numerous fruitful discussions and are grateful for the additional input provided by the Bundesbank,” said Nkhangwe Masindi, Head of the Stress Testing Division, upon completion of the peer review. “Further development of our stress testing framework will allow us to better identify vulnerabilities in the South African banking sector and to contribute to financial stability in an even broader scope.”

Since the SARB’s 2015/16 stress testing exercise focused on domestic systemically important banks, the Bundesbank’s experience with stress tests for less significant institutions, for which the extent of reported data is much less comprehensive, was of additional interest to the Stress Testing Division. Drawing on insights gained from the Bundesbank’s recent survey on the low-interest-rate environment, possibilities for implementing a similar approach were demonstrated on the basis of the data available to banks in South Africa. (Benno Schumacher, Deutsche Bundesbank)
Cash management
The Bundesbank has the task of ensuring an efficient and smooth supply of cash. That applies particularly in the event of disruptions to the cash cycle as well as in emergencies and times of crisis. This is a statutory mandate which is enshrined in section 3 of the Bundesbank Act. Fulfilling this mandate depends on maintaining an appropriate level of involvement in the cash cycle. This is done by maintaining a branch network of adequate size and offering a range of services that meets the needs of the other cash handlers, which means that economically efficient and secure cash processes are made possible. Almost 15 billion banknotes with a value of over €450 billion euro are processed annually by the Bundesbank’s 35 branches, thereby ensuring the exemplary quality of the banknotes in circulation in Germany.

In order to further strengthen public confidence in cash, the new series of euro banknotes is being phased in, a process that began in 2013. The new banknote series with its improved security features provides even greater protection against counterfeits. The next banknote to be issued will be the new €50 banknote in April 2017. This is the most frequently used denomination in the euro area. The printing presses have already started producing the new €50 banknotes so that a total of 5.4 billion freshly printed notes will be ready for circulation throughout the euro area on the day of issue. In May 2016, the Governing Council of the ECB decided to end production of the €500 banknote in order to combat illegal activities such as tax evasion and the financing of terrorism. The €500 banknote will no longer be printed or distributed from the end of 2018. The introduction of a maximum amount for cash payments is currently under discussion in Germany in connection with organised crime and money laundering. Limits on cash payments already exist in the euro area in Italy and France, for example.

This and other subjects have been topics of discussion in TCBC courses and seminars.

Key issues in the field of cash management in 2016

How is banknote processing organised at the Bundesbank’s branches?

What is the current degree of automation in branch business?

How are private cash handlers’ cash-recycling machines monitored?

What have we learned about combating counterfeiting with the new Europa banknote series?

The Bundesbank is planning to complete the establishment of its new “superbranch” in 2019. What technological innovations will there be in the new Cash Centre?
The **Cash management and combating counterfeit money** seminar covered all the key tasks performed by the Bundesbank’s Cash Department. There was a lively discussion on the part which the Bundesbank plays in the cash cycle in connection with private cash recycling. By changing the underlying legal setting, the European Union and the ECB have established a binding and harmonised statutory framework for cash processing outside central banks. This means that since 1 January 2011, harmonised regulations and procedures have been in place for checking and reissuing euro banknotes. In addition to the requirements of the ECB, the member states were obliged by a Council Regulation to adopt the necessary legal and administrative provisions for imposing sanctions and conducting monitoring activities at the national level. This entitles the Bundesbank to impose sanctions for non-compliance with checking obligations and to carry out on-site inspections and collect statistical data. The subject of the cash supply was tackled from the perspective of a large German commercial bank. It quickly became obvious that market changes and the legal framework call for constantly new solutions on the part of all the cash handlers concerned. The lecture was a reminder that the commercial banks play an essential and integral part in the nationwide provision of cash. With the Bundesbank’s involvement, an international study has examined what effect banknote quality has on the identification of counterfeits. The results of the study will be presented in the 2017 cash management seminar.

The expert panel on **Current challenges for cash management** focused on the abolition of the €500 banknote as well as possible Federal Government proposals to impose an upper limit of €5,000 on cash payments. Such proposals stand in contrast to the euro’s obvious popularity. An international comparative study of Australia, Austria, Canada, France, Germany, the Netherlands and the United States has shown that customers in all these countries frequently pay in cash at the checkout counter. Relative to the number of transactions, cash still accounts for more than 50% of transactions in all these countries with the exception of the United States.

Although new €500 banknotes will no longer be issued by the new “superbranch” in Dortmund when it starts operation in 2019, the participants nevertheless saw the fact that the new branch was being established as a clear sign of commitment by the Bundesbank to the continued existence of cash in Germany. After all, 12 million members of the general public in the region are going to be supplied with cash by the new “superbranch”. It will then be the largest of the 31 locations throughout Germany and employ roughly 200 persons. Participants were interested in the size of the planned vault in the new building and what machinery and equipment will be used. There was much interest in the fact that the Bundesbank’s plans include not only hi-tech but also tried and tested methods from the Middle Ages, as shown by the moat surrounding the site. The Bundesbank is undoubtedly playing a pioneering role in the use of renewable energy sources. It is putting its faith in sustainability with the installation of photovoltaic and geothermal energy. Participants made extensive use of the opportunity to report on current challenges in cash management in their home countries. Lively debates led to a deeper understanding of the issues facing other central banks while also passing on useful ideas to participants about organising day-to-day operations.

In line with the suggestions made by the previous year’s group, this year’s expert panel discussion on **Combating counterfeit money by the National Analysis Centre** was extended by one day to last four days. Following many requests, there was a heightened focus on hands-on exercises and practical issues. This meant that the exercises could be made more
thorough and individual. In talks given by NAC experts, it was possible to clarify a wide variety of technical issues, such as what new trends can be identified in banknote counterfeiting and what role NAC experts play in legal proceedings. The subject of a prevention strategy was newly incorporated into the lecture series, making it possible to compare and discuss the many different national measures for prevention. The new panel format was extremely successful. For the future, it is planned that a workshop will be integrated into the panel to enable participants to become acquainted with the approach taken by many other central banks in combating counterfeits.

Bilateral projects

Over the past year, TCBC encountered increased demand from Africa, Central Asia and the Middle East in connection with matters relating to cash. Enquiries from central banks were concentrated mainly on consultation and advice with regard to the construction of cash centres and cash management. Seminars and workshops were also held, however, which covered the whole range or individual aspects of issues relating to cash.

In cooperation with the Swiss National Bank (SNB), the Bundesbank’s TCBC is advising the National Bank of the Kyrgyz Republic on the planning and construction of a new cash centre in Bishkek. A number of consultations and workshops on this have taken place in Germany and Switzerland in order to set out the basic parameters and initiate concrete steps in planning. For example, a delegation from the Kyrgyz Republic visited the Munich branch to learn how cash processing is organised at the Bundesbank. The outcome of the visit to the National Bank of the Kyrgyz Republic was that the construction of the new cash centre is to be pursued further. The National Bank of Ukraine and the National Bank of Kazakhstan are also planning to build new cash centres and can draw on the experience of TCBC in the planning and construction of cash centres in Botswana and Georgia that are already in operation.

During the year, workshops and seminars were held at the Central Bank of Kenya and the Central Bank of Iran as well as elsewhere. The Kenyan participants were particularly interested in the subject of how the quality of the banknotes in circulation can be improved. In Iran there were in-depth discussions with participants about how the combating of counterfeits can be organised practically and efficiently.

Members of central banks in South Africa, Morocco, Mongolia, Belarus, Montenegro and Brazil visited the Bundesbank during the year to gain an in-depth picture of various aspects related to the field of cash. A whole range of issues was discussed, covering coin production processes, statistical forecasting of cash in circulation, issuance policy for banknotes and coins, and cash requirement planning as well as questions concerning manufacturer equipment tests by the Bundesbank in the context of cash recycling. Visits to branches in Frankfurt, Mainz, Karlsruhe and Munich demonstrated to the guests how cash processing is performed in practice at the Bundesbank. Matters to do with security in cash handling were also discussed.
Increasing regulatory pressure in combating money laundering and the financing of terrorism


Preventing and helping to uncover and combat crime-related transactions forms part of the duly and properly constituted business policy of all enterprises in the financial sector. This concerns, in particular, transactions which are exploited for money laundering or financing terrorism as well as other punishable offences that may result in an institution’s assets being put at risk. Not only can such criminal activities pose a threat to the standing and soundness of the enterprise misused for this purpose, they may also jeopardise the integrity and stability of the financial centre as a whole.

The workshop on combating counterfeiting has been held for many years and is targeted mainly at money laundering experts from central banks outside the EU. A characteristic feature of the workshop is that participants have an opportunity to exchange ideas with the lecturers on a very wide range of approaches to combating money laundering. Stimulating discussions ensue not only with Bundesbank experts but also with representatives of the local public prosecutor’s office, Federal Financial Supervisory Authority (Bafin), the German customs investigation bureau (Zollkriminalamt) as well as various financial institutions. The workshop also provides a great deal of scope for presentations by those taking part in the workshop, which are then discussed in-depth among the participants themselves. The course showed that, with the Fourth EU Anti-Money Laundering Directive based on the recommendations of the Financial Action Task Force (FATF), the reins are being pulled ever tighter when it comes to combating money laundering. Comprehensive risk analyses and additional demands made on those subject to the regulations mean additional work for them as well as for the government bodies concerned. Stricter penalties under the regime of sanctions, too, are proof of the relevant legislative bodies’ determination to step up the fight against money laundering and the financing of terrorism.

For the participants, it was important to learn that there have been no changes over the past few years with regard to the key identifiable trends in money laundering and the financing of terrorism and that they have essentially continued. Although many countries saw double-digit rates of increase in reports of suspicious transactions and feedback responses by the public prosecutor’s offices to the Financial Intelligence Unit (FIU), there are still obvious shortcomings in the quality of the reports. Moreover, for years now there has existed an identifiable shortcoming in terms of reporting in the non-financial sector, the financial volume of which is estimated at up to €30 billion in Germany alone. In this regard, risks of money laundering are present in the entire economic sector of real estate and construction, with the supervisory authorities also focusing on dealing in highly valuable works of art and antiquities.
Payment systems
Over the course of 2016, the third wave of central securities depositories (CSDs) migrated to TARGET2-Securities (T2S). This system now settles more than 40% of European securities transactions in central bank money. With the fourth and largest wave – which includes the transfer of the German market with its CSD Clearstream Banking to T2S – taking place in February 2017, the migration is virtually complete.

It was therefore not surprising that a number of discussions on the sidelines of our payments seminars revolved around experiences with the Eurosystem’s biggest infrastructure project to date. The outlook for the future was another major topic of focus.

Given the consolidation of financial market infrastructures in Europe, the subject of collateralisation became increasingly prominent in 2016. Partly on account of stricter regulatory provisions as a result of the financial crisis, collateral and collateral management requirements are higher than ever. At the European level, a new market infrastructure (Eurosystem Collateral Management Service, ECMS) is now being considered as a common platform for Eurosystem collateral management, with the aim of realising benefits in the form of efficiency gains and cost savings. This idea was met with much interest from the participants, as was the potential introduction of a Europe-wide payment procedure for instant payments.

In addition, new technologies and market players, such as blockchain technology and fintechs, are conquering the global payments landscape. On 28 November 2016, the Deutsche Bundesbank and Deutsche Börse jointly presented a functional prototype for the blockchain technology-based settlement of securities. The innovative prototype is designed to provide the technical functionality for the settlement of securities on a delivery-versus-payment basis in exchange for a centrally issued digital currency, as well as the pure transfer of either currency or securities alone. In this vein, the Bundesbank will also be offering an expert panel on the topic of blockchain technology and fintechs in 2017, where participants will have the opportunity to discuss, amongst other things, the technical foundations of blockchain technology, its possible uses for payment and securities settlement, and the importance of database technology for central banks.

Key issues in the field of payment systems in 2016

Increasing digitalisation in payment transactions – what steps need to be taken to ensure payment instruments are secure?

Fintechs – where is the boom in payment innovations headed? New competitors or cooperation partners for the banking industry?

Real-time payments for the mass market – is there a real need to introduce instant payments?

Blockchain technology – what are the opportunities and challenges associated with this new technology from the perspective of central banks and other financial market participants?
International central banking courses

The seminar Payment and securities settlement systems is now offered twice a year on account of high demand. The structure of the course gives participants a good insight into strategic and policy-related considerations in the area of payments, with workshops helping to deepen their newly acquired knowledge and facilitating comparison with their experiences in their own country. The participants were particularly keen to find out more about the role the Bundesbank plays in cashless payments, an area that is exposed to much competition, cost pressure and innovation. The Bundesbank plays a key role in the provision of settlement services. As a member of the European System of Central Banks (ESCB), the Bundesbank is involved in the further development of an efficiently functioning European payment system from a policy perspective. With its oversight of payments, the Bank makes an important contribution to maintaining and strengthening the stability of the financial system. Workshop participants were especially interested in the topics of innovations and oversight. For example, questions revolved around whether central banks should play more of a passive or an active role in introducing innovations, or what criteria are relevant for identifying systemically important payment systems.

Bilateral projects

At the request of the State Bank of Vietnam, two Bundesbank payments experts held a seminar in Hanoi, where they provided comprehensive insights into payment and securities settlement at the Bundesbank. The State Bank of Vietnam is currently in the process of upgrading its payment system and is planning to introduce a separate retail payment system, including a facility that will allow for the processing of direct debits for the first time. The participants from the central bank, commercial banks and card network providers were very interested in the developments in Germany. For this reason, the seminar focused on new developments in retail and large value payments, securities settlement and innovative trends in payment systems. Technological developments, user behaviour and regulation are the most important drivers of innovation in these areas. The different sessions provided a platform to raise issues of common interest and potential challenges related to the current and future functioning of payment systems and the various financial market infrastructures. Among the most discussed topics, it was noted that the State Bank of Vietnam has seen significant progress in updating and strengthening the national financial infrastructure, leveraging from available technology to implement more secure and efficient systems. On the whole, it was a very lively and interactive seminar, with much dialogue between the parties.

Following an enquiry from the National Bank of the Republic of Macedonia (NBRM), a three-day bilateral seminar on the topic of TARGET2 was offered in Frankfurt. The specialist programme was closely aligned to the needs of the Macedonian participants. As such, a Bundesbank expert provided more detailed information on TARGET2, explaining, for example, why SWIFT services are used for TARGET2 as well as outlining the benefits of liquidity pooling. Matters related to ISO 20022 were also discussed.

In cooperation with the Akademie Deutscher Genossenschaftsbanken (ADG) in Montabaur, a seminar took place in Frankfurt for employees of the Ghana Interbank Payment and Settlement Systems Limited (GhIPSS), a fully-owned subsidiary of the Central Bank of Ghana. The focus of the Bundesbank’s contribution was on the latest advances in retail and large-value payments, securities settlement and the innovative trends in payment systems. It was highlighted that the GhIPSS contributes to the modernisation
of the national financial infrastructure by providing an automated clearing house and by e-zwitch, a national system for card and electronic payments.

International cooperation

A payment systems seminar was organised in Frankfurt for the first time for participants from the Eurasian Economic Community (EurAsEC). Over the course of the four-day seminar, the participants from Eastern Europe and Central Asia were given an insight into the Bundesbank’s strategies and objectives with respect to cashless payments. The topics discussed included TARGET2, T2S, collateral management and innovations in retail payments. The subject of oversight was looked at in detail during a workshop, giving participants an opportunity to exchange expert knowledge which could be applied to their own analytical tasks.
Eurosystem market infrastructure for payment and settlement systems and oversight

Seminar of the Deutsche Bundesbank with the Bangko Sentral ng Pilipinas
Manila, 21 – 24 November 2016

Like the Eurosystem, the Bangko Sentral ng Pilipinas (BSP) argues that payment and settlement systems play a key role in the smooth functioning of an economy in general and its financial and monetary system in particular. This gives the central bank a strong incentive to ensure that an effective, reliable and secure payment and settlement system is in place. The BSP therefore takes the lead in promoting an efficient payment and settlement system in the Philippines by providing the necessary infrastructure in the form of the Philippine Real Time Gross Settlement System “PhilPaSS”. Additionally, the BSP plays an active role as overseer of the payment and settlement systems of the Philippines.

In this context, the BSP signalled interest in learning more about the Eurosystem infrastructure for payment and settlement systems, ie TARGET2 and TARGET2-Securities, as well as about the Eurosystem’s oversight of payment and settlement systems to help them draw conclusions about their own systems and oversight activities. To meet this request, a tailored three-day training session was held in November 2016, with two experts from the Bundesbank presenting the requested topics in Manila.

The audience consisted of almost 30 participants who were very heterogeneous in terms of age, knowledge and job description. Thus, the level of interest and active involvement was very high, so that a lively discussion and interchange of ideas quickly got underway. It soon crystallised that the BSP has a smooth-running RTGS system. However, the focus of BSP is not to make the national payment and settlement system more efficient for cross-border use like TARGET2 and TARGET2-Securities, but to foster the use of accounts and cashless payments of Philippine customers. Concerning oversight, it is worth mentioning that the BSP has been active in onsite oversight for years, while the Eurosystem is currently gearing itself for this task.

All in all, both sides considered the training session a success. The friendly and open atmosphere and the perfect organisation played a part in this.

(Claus Groth, Johanna Hammes, Deutsche Bundesbank)
Good governance
By offering a range of good governance courses, the Bundesbank plays its part in the general development policy objective of good governance in the field of monetary and financial stability in those countries where its partner central banks are based. As the development policy debate progressed back in the 1990s, good governance became the collective term for best practices in the sphere of governance. While these practices traditionally include the implementation of management and control structures, as well as transparency in corporate communication, the term is also increasingly being used in connection with stemming corruption and nepotism and establishing transparent relationships between the public and private sectors in accordance with the rule of law. As a new topic in this area, we offered for the first time an expert panel on Economic education.

International central banking courses

Many aspects of good governance were presented by Bundesbank experts and discussed with participants at the five-day Central bank governance seminar. Responsible stewardship of public funds is an important aspect of good management, especially for central banks. For example, an entire afternoon was devoted to financial controlling (cost accounting and budgeting). However, a spotlight was also shone on the need to establish anti-corruption and compliance regulations, with focus additionally placed on the role of internal auditing and transparent human resources management. For the first time, the seminar also included a segment on the impact of business decisions on the environment.

The particular significance of efficiently managing public funds in a central bank was addressed as part of an independent seminar entitled Controlling at central banks, during which various concepts, instruments and functions relating to topics such as strategic planning, cost accounting, budgeting and operational risk management were presented and discussed.

Internal auditing is of paramount significance in any central bank. Nowadays, the majority of central banks operate in line with the IIA’s international standards for the professional practice of internal auditing. Expert panels were held on three special topics.

Key issues in the field of good governance in 2016

Approaches to stemming corruption

Ongoing digitalisation as a challenge for good governance

Sustainability as a new aspect of good governance
The IT auditing expert panel examined the challenges posed by ever-expanding IT infrastructures, especially for auditors. Possible auditing methods and approaches were highlighted and discussed by participants.

The technology-driven automation of processes has a major part to play in cash processing, too. The expert panel entitled Cash-related processes at a central bank – risk coverage by the internal audit function offered participants the opportunity to discuss the risks associated with these and exchange views on the matter. In addition to outlining general requirements, the expert panel identified central banks’ country-specific requirements concerning the auditing of cash-related processes. In a workshop setting, participants developed detailed approaches to auditing banknote production and processing. Policy issues relating to internal auditing were discussed as part of the expert panel on the Design and application of a risk-oriented/risk-centric audit approach – best practices. Following the establishment of the IIA’s international standards for the professional practice of internal auditing in recent years, the risk-oriented approach has gained in importance. In a workshop, the participants developed a synopsis of different auditing approaches and summarised the key points for best practice. The discussion showed that audit planning and the choice of auditing approach were critical factors in an audit’s success.

Given that the public purse strings are drawn tight in this day and age, the Bundesbank has also been running a Procurement expert panel for some time now. The focal issue for this panel was how to make external procurement both fair and transparent. In addition to outlining the specific processes involved in putting procurement procedures (e.g., tender procedures) into effect and how these are backed up by IT, the event touched on contract management. A total of 20 participants from various countries attended the expert panel event entitled Accounting from a central bank’s perspective. The participants contributed expertise from all areas of accounting within a central bank. We were delighted to be joined by two representatives of the World Gold Council, who spoke about alternative methods for recognising gold holdings in central banks’ accounts. Over the course of the event, a comprehensive overview of the current best practices was developed. The talks given by speakers from the Bundesbank focused on the latest changes to the IFRS 9 standard and the impact of these new regulations on the work of banking supervisors. In the second half of the expert panel discussion, participants were given an opportunity to present their practical work and report on problems that they were currently facing. It was found that major challenges were posed not only by the changeover from traditional accounting practices to international standards but also by the specific features of central banking operations. During the presentations, however, participants nevertheless succeeded in finding joint solutions to regularly recurring problems.

### Bilateral projects

The Accounting and financial reporting under IFRS seminar, which took place in Kiev, Ukraine, was attended by 53 participants from various departments of the National Bank of Ukraine. While the event was directed, first and foremost, at staff members from its accounting department, the topic was also of great interest to colleagues from controlling and risk management. Ukraine’s central bank is currently undergoing restructuring and undertaking centralisation measures. Over the course of the seminar, an overview was provided of all international accounting standards currently in effect and their impact on other central banking areas. A follow-on seminar focusing on financial instruments was held in December in Kiev.

Another event ran the gamut of questions on training and professional development of Bank Indonesia.
and on the way in which tools employed by the Bundesbank for these purposes interact. The latest developments in the Bundesbank’s toolkit for enhancing and refining its management culture were of particular interest to the participants. Our visitors’ stay in Germany was rounded off with a visit to the Bundesbank’s Training and Conference Centre in Eltville.

A detailed seminar on the Bundesbank’s basic principles of human resources management was held with the Central Bank of Sri Lanka. The topics discussed ranged from the basic features of the Bundesbank’s recruitment and promotion policies to professional development opportunities for employees, rules governing remuneration, and social benefits. Given the demographic outlook, questions concerning human resources policies and future challenges for human resources management also featured heavily. One final area of focus was the assistance provided to staff members affected by change processes at the Bundesbank in connection with the organisational restructuring and streamlining of its Regional Offices and branches. This part of the event took place at the Hanover branch so that participants could get a first-hand impression of what was discussed during the seminar.

### International cooperation

The Operational and financial risk management event for participants from the Eurasian Economic Community (EurAsEC) focused on the presentation and development of valuation models that identify mounting credit and counterparty risk with greater advance notice. Such models have been under development in several participating countries for some years now, with data collection and data verification representing particular technical hurdles in this context. As part of the event, various methods of data collection and valuation were presented as best practices. In addition, a representative from the Directorate General Markets presented a procedure introduced in early 2016 that creates a consensus between independent bank ratings.

### External projects

The two-day IFRS seminar with the Bank of Albania was held in the Albanian capital of Tirana. The participants were from its accounting and controlling departments. The seminar was part of an EU project (TAIEX) that sets out to help fill gaps in expertise between beneficiary countries and EU institutions. This project is also laying some of the groundwork for Albania’s possible accession to the EU. The aim of the event was to gain an insight into the special features of international accounting practices, with a particular focus on the valuation and accounting treatment of financial instruments. Another discussion point centred around ways of solving practical problems, especially the issue of how to value the bank’s properties.
Economic education – the role of central banks

International central banking course:
Expert panel, Frankfurt
27 – 29 September 2016

In the past few years, particularly in the wake of the financial crisis, many educational initiatives have been launched across the globe to strengthen the public’s financial competence and knowledge of economics. Government bodies, central banks, interest groups (eg consumer protection organisations) and other institutions have made considerable efforts to enhance the public’s level of expertise in these areas and make them more aware of money and financial issues.

Central banks all over the world are ploughing resources, in some cases considerable, into improving the public’s level of economic education. For example, the Bundesbank’s range of educational services is designed to impart basic knowledge in the areas of money, currency and central banking as part of its general economic education activities. The aim is to give mainly young people, but also the general public, the opportunity to understand and appreciate the importance of a stable currency and the Bundesbank’s long-term commitment to stability.

The objective of the expert panel discussion, which was held for the first time, was to exchange views and provide central banking experts from all over the world with a forum in which they could present their work in the area of economic and financial education. The discussion focused on questions concerning the concepts, aims and target groups of education programmes, as well as the role of central banks in this context. Contributions by participating central banks on educational initiatives in their countries rounded out the multifaceted picture painted of central banks’ economic education activities.
Core tasks in statistics include supplying high-quality statistics and indicator systems as well as providing data infrastructures and advisory services for analysis and research purposes. Their importance has increased in the context of the second phase of the G20 Data Gaps Initiative, the Macroeconomic Imbalance Procedure (MIP) and in keeping with the public commitment on European Statistics by the ESCB.

The year 2016 involved many projects dealing with new requirements, such as money market statistics. As part of these statistics, transaction-by-transaction data on the secured, unsecured, foreign exchange swap and euro-based overnight index swap markets are collected on a daily basis from a selected sample of banks. These highly granular and timely data help strengthen the assessment of monetary stimuli, monitor the functioning of the money markets and support the central bank in its task of safeguarding financial stability.

As part of the strategic objective of improving data quality in the field of external statistics, further projects were launched concerning, for example, the implementation of electronic data processing systems both for handling statistical reports and for analysing external statistics data. In addition, work was continued on enhancing the capabilities of the seasonal adjustment program JDemetra+ for practical use.

Furthermore, support of data access and data dissemination has become an increasingly important issue. Maintaining the infrastructure for the Bundesbank’s “house of micro data”, which enables the integration, linkage and bank-wide sharing of micro data with a view to ensuring high statistical confidentiality standards, is only one example. Having identified standardisation as a key success factor, we are enforcing the usage of the international data classification standard SDMX in our systems.

Key issues in the field of statistics in 2016

Fulfilling user needs
Identifying new data demands of monetary policy, financial stability analysis, research and finding adequate statistical solutions

International and European initiatives
Conceptual and practical work on international and European standards and their practical implementation (eg in the context of the second phase of the G20 Data Gaps Initiative, the Balance of Payments Manual, and European micro data initiatives on securities statistics)

New techniques
Further fostering statistical quality and efficiency in the statistical production process by developing and integrating new techniques (eg in external statistics, seasonal adjustment and in the context of micro data)
International central banking courses

A rising number of important topics for central banks and supervisory authorities, such as monetary policy and its implementation, macroprudential supervision, high-frequency trading and statistics, require a rigid evaluation of enormous and constantly growing volumes of data. Insufficient knowledge and inadequate technical infrastructures at this point can impair the quality of the assessment and decision-making. Big data is likely to become a topic of increasing interest in central banks and supervisory authorities in the years ahead. A key question will be how big data can help central banks to take timely policy measures and extract information on the impact of their actions within the financial system and the economy at large.

The expert panel on Big data and central banking provided answers to these questions and demonstrated the opportunities that big data could provide, using various examples taken from the areas of economic research and policy, data mining, capital market analysis, and the nowcasting and forecasting of macroeconomic variables. Contributions from participants related to other countries’ experiences with big data, prompting intense debate and the sharing of experience and knowledge.

The discussion also touched on basic statistical concepts for measuring aggregate statistics and how these concepts are applied. Key macroeconomic indicators, such as consumer prices and gross domestic product, are widely used to monitor the state and development of the economy. Movements of such price and volume measures are used in short-term business cycle analysis not least in central banks. In view of this, the workshop on Price and volume measurement in official statistics for economists and statisticians was in high demand. It introduced both index theory and its application in practice. Thanks to the input of participants, individual country practices were shared and discussed.

Seasonal fluctuations constitute a common feature of many countries’ key macroeconomic indicators, such as gross domestic product and industrial production. Usually, such movements hamper the monitoring and assessment of current economic developments. For that reason, Seasonal adjustment of economic data is of fundamental importance for economists and statisticians as well as for decision and policy makers. A five-day workshop at the Bundesbank in Frankfurt and a similar workshop held at the Banco Central do Brasil covered all fundamental aspects of the two approaches used most frequently in official statistics. Numerous practical applications, such as treatment of national calendars, seasonal adjustment of aggregates and revision policies as well as more technical issues related to the software and data storage were discussed. A total of 40 participants from 21 countries attended these workshops.

Bilateral projects

At the request of the National Bank of Ukraine, a three-day seminar was held on specific questions relating to Statistics on securities under the ECB methodology. Given their shared interests, the event was also attended by colleagues from the National Bank of Moldova. The seminar started with a general overview of the ESCB and Bundesbank statistics and the work of the Statistics Department at the Bundesbank. Staff from the capital markets statistics section then went on to address the domestic securities issues statistics, the investment funds statistics as well as the Centralised Securities Database (CSDB) of the ESCB. The seminar ended with presentations by both of the securities holdings statistics sections covering the German securities holdings statistics and the Securities
Holdings Statistics Database (SHSDB) of the ESCB. In November, a seminar on **Balance of payments (BOP) statistics and national accounts** was organised for a delegation from the National Bank of Moldova. Experts from the BOP statistics division, the economics department and the German Federal Statistical Office (DESTATIS) gave insights into compilation and calculation techniques in their respective fields and shared their experiences with the implementation of BPM6 in general. Specific interests in trade in goods and services, FISIM, reinvested earnings, direct investment and financial accounts were addressed and discussed with the participants.
Big data and central banking

Seminar in cooperation between the Deutsche Bundesbank and CEMLA, Mexico City
27 – 29 September 2016

Technological advancement and the digitalisation of both industry and society as a whole have tremendously increased the availability of various sorts of data in recent years. To an extent, these data only arise as a side-product of certain processes; nevertheless, they contain very useful information. Many commercial or public players nowadays are already making use of new methods and IT tools to analyse these new – big – data. For many, the motivation is strategic, as they use quantitative approaches and automated data processing to assess available information about markets, customers, risks, etc.

Public institutions, statistical offices and central banks have recently shown increased interest in big data, while the use of big data is currently still limited. Statistical offices seek to provide new information and indicators, complement existing statistics or cross-check data quality with the help of big data sources. Central banks, besides other institutions, are not interested in big data from a purely statistical viewpoint, but are also looking at how some of the new data sources might be operationalised for an evidence-based policy making approach.

In this context, the CEMLA/Bundesbank seminar on “Big data and central banking” aimed at providing an overview on how new and, as yet, unconventional data sources can support central banks in fulfilling their tasks within various policy areas. The three-day seminar held at the CEMLA headquarters in Mexico City gave an opportunity to over 50 participants from mainly Latin-American central banks to hear about and discuss various issues related to the field of big data. For example, the representatives of the Bundesbank spoke about the current activities of the “Big data” project group as well as opportunities for policy making and research opening up in this field. Another focus was on discussing the motivation for working with new data sources in an increasingly data-driven economy/society and potential pitfalls and risks – such as losing control of your own data – associated with this. Yet another topic was data integration, with the goal of making better and more efficient use of existing (micro) data sets while fulfilling data security and privacy requirements.

Following up on this, representatives from Brazil, Chile, Columbia and Mexico talked about their approaches to the integration of data sets and the use of big data for their tasks. For example, one contribution presented new approaches to measuring GDP in emerging countries with the help of light intensity data. Another looked at measuring analysts’ sentiment
based on text documents. One presentation highlighted the Irving Fischer Committee activities in showcasing big data pilots for exploring the usefulness of big data for central banks. Moreover, a comprehensive overview of methods and tools for analysing big data was given by Professor Julia Lane from New York University. The seminar raised awareness of the fact that many institutions dealing with novel data sources are facing the same issues. This made the exchange of views and the discussion of different approaches between seminar participants extremely useful.

The current trend towards an increasingly interconnected and data-driven economy is likely to continue. This means that many stakeholders – among them academia, statistical offices and central banks – will find themselves confronted with issues of measurement and regulation of these segments of the economy. Ongoing discussion and an exchange of views and best practices therefore seem to be a necessary and fruitful approach. In this sense, the CEMLA/Bundesbank seminar was a success for all concerned. (Stefan Bender, Simon Oehler, Deutsche Bundesbank)
Outlook
We are looking forward to taking on a wide variety of challenges in 2017.

We will assume an active role in the Task Force on Central Bank Cooperation of the ESCB International Relations Committee (IRC). As part of a reorganisation of European-level central bank cooperation with EU accession candidates and potential candidates, the IRC passed the chair of the Task Force on Central Bank Cooperation, including the secretariat, to the Deutsche Bundesbank in the middle of 2016. In addition, a Steering Committee for EU-funded joint Eurosystem/ESCB technical cooperation programmes with EU candidates and potential candidates in the Western Balkans was established. Chaired by the Bundesbank, the committee consists of the central banks of Austria, France, Italy and Poland, as well as the ECB. The tasks of the Steering Committee include not only maintaining regular contacts with central banks in the Western Balkan region but also sounding out and promoting possibilities for joint regional EU-funded projects.

We are also expecting new challenges for technical central bank cooperation to arise from the German G20 presidency in 2017. One topic on the agenda in the Finance Track is partnership with Africa. However, new topics will also come into the focus of our range of services on offer. These include, for instance, the consequences of digitalisation, which represent a major challenge for banks and thus also for central banks and supervisory authorities across the globe.
## List of abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
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<tbody>
<tr>
<td>ADG</td>
<td>Akademie Deutsche Genossenschaftsbanken</td>
</tr>
<tr>
<td>AMF</td>
<td>Arab Monetary Fund</td>
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<tr>
<td>BaFin</td>
<td>Federal Financial Supervisory Authority</td>
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<tr>
<td>BCEAO</td>
<td>Central Bank of West African States</td>
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<tr>
<td>BOP</td>
<td>Balance of Payments</td>
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<tr>
<td>BSP</td>
<td>Bangko Sentral ng Pilipinas</td>
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<tr>
<td>CEMLA</td>
<td>Center for Latin American Monetary Studies</td>
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<tr>
<td>CRR</td>
<td>Capital Requirements Regulation</td>
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<tr>
<td>CSD</td>
<td>Central Securities Depository</td>
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<td>DESTATIS</td>
<td>Statistisches Bundesamt</td>
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<tr>
<td>DGRV</td>
<td>Deutscher Genossenschafts- und Raiffeisenverband e. V.</td>
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<tr>
<td>ECB</td>
<td>European Central Bank</td>
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<tr>
<td>ECMS</td>
<td>Eurosystem Collateral Management Service</td>
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<td>ESCB</td>
<td>European System of Central Banks</td>
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<td>ESRB</td>
<td>European Systemic Risk Board</td>
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<td>EU</td>
<td>European Union</td>
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<td>EurAsEC</td>
<td>Eurasian Economic Community</td>
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<td>FATF</td>
<td>Financial Action Task Force</td>
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<td>FIU</td>
<td>Financial Intelligence Unit</td>
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<td>FSI</td>
<td>Financial Stability Institute</td>
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<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
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<tr>
<td>GhIPSS</td>
<td>Ghana Interbank Payment and Settlement Systems Limited</td>
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<td>ICAAP</td>
<td>Internal Capital Adequacy Assessment Process</td>
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<tr>
<td>IFRS</td>
<td>International Financial Reporting Standard</td>
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<tr>
<td>IIA</td>
<td>Institute of Internal Auditors</td>
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<tr>
<td>IRRBB</td>
<td>Interest Rate Risk in the Banking Book</td>
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<td>IT</td>
<td>Information Technology</td>
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<tr>
<td>IRC</td>
<td>International Relations Committee</td>
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<tr>
<td>JST</td>
<td>Joint Supervisory Team</td>
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<td>JVI</td>
<td>Joint Vienna Institute</td>
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<td>KSMS</td>
<td>Kenya School of Monetary Studies</td>
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<tr>
<td>LSI</td>
<td>Less Significant Institution</td>
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<tr>
<td>MIP</td>
<td>Macroeconomic Imbalance Procedure</td>
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<td>MoU</td>
<td>Memorandum of Understanding</td>
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<tr>
<td>NAC</td>
<td>National Analysis Centre</td>
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<tr>
<td>Acronym</td>
<td>Description</td>
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<tr>
<td>NBRM</td>
<td>National Bank of the Republic of Macedonia</td>
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<tr>
<td>OeNB</td>
<td>Oesterreichische Nationalbank</td>
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<tr>
<td>PhilPaSS</td>
<td>Philippine Real Time Gross Settlement System</td>
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<tr>
<td>SARB</td>
<td>South African Reserve Bank</td>
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<td>SEACEN</td>
<td>South East Asian Central Banks Research and Training Centre</td>
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<tr>
<td>SHSDB</td>
<td>Securities Holdings Statistics Database</td>
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<td>SNB</td>
<td>Swiss National Bank</td>
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<td>SREP</td>
<td>Supervisory Review and Evaluation Process</td>
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<td>SRM</td>
<td>Single Resolution Mechanism</td>
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<tr>
<td>SSM</td>
<td>Single Supervisory Mechanism</td>
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<tr>
<td>TAIEX</td>
<td>Technical Assistance and Information Exchange Instrument</td>
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<tr>
<td>TARGET</td>
<td>Trans-European Automated Real-time Gross Settlement Express Transfer System</td>
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<tr>
<td>TCBC</td>
<td>Technical Central Bank Cooperation</td>
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<td>T2S</td>
<td>TARGET2-Securities</td>
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<tr>
<td>WAMI</td>
<td>West African Monetary Institute</td>
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