

# Centre for Central Banking Studies

Annual Review 2016



BANK OF ENGLAND









In our Annual Review we provide an account of our activities in 2016 under our three main pillars of responsibility: central banking seminars, research and the Central Banking Qualification.

### Contents

Director's foreword	2
Summary statistics for central banking seminars and CBQ	4
Central bank seminars	6
International seminars and workshops	16
Video conferencing	21
Research	22
Key speakers	26
Central Banking Qualification	28
Central bank and regulatory authority participants on CCBS events in 2016	31
Regional and international organisations	36



## Foreword from Gill Hammond

Promoting central bank co-operation,  
collaboration and co-ordination.



**Gill Hammond**  
Director of CCBS

The Centre for Central Banking Studies (CCBS) now has three main areas of activity:

- We provide a substantial programme of **international central banking seminars**, attended by experts from central banks and regulators from all over the world — our speciality since 1990.
- Within the Bank of England, we are part of the Research and Statistics area, and contribute to the **One Bank Research Agenda**.
- We are also responsible for the **Central Banking Qualification**, which the Bank has set up in partnership with Warwick University to train the next generation of central bankers.

In 2016 we offered a wide range of **international seminars and training courses** for central banks and regulators. These include high-level meetings of senior policymakers, including our Chief Economists' Workshop, which was held for the 13th year in a row, our 3rd Workshop for Heads of Insurance regulators, our 2nd Workshop for Heads of Banking Supervision and our 6th joint Workshop with the FRBNY on monetary operations.

We also offer a number of training courses, mainly aimed at colleagues from central banks in emerging and developing countries where our objective is to build capacity and skills, particularly in the area of quantitative analysis and econometrics.

“

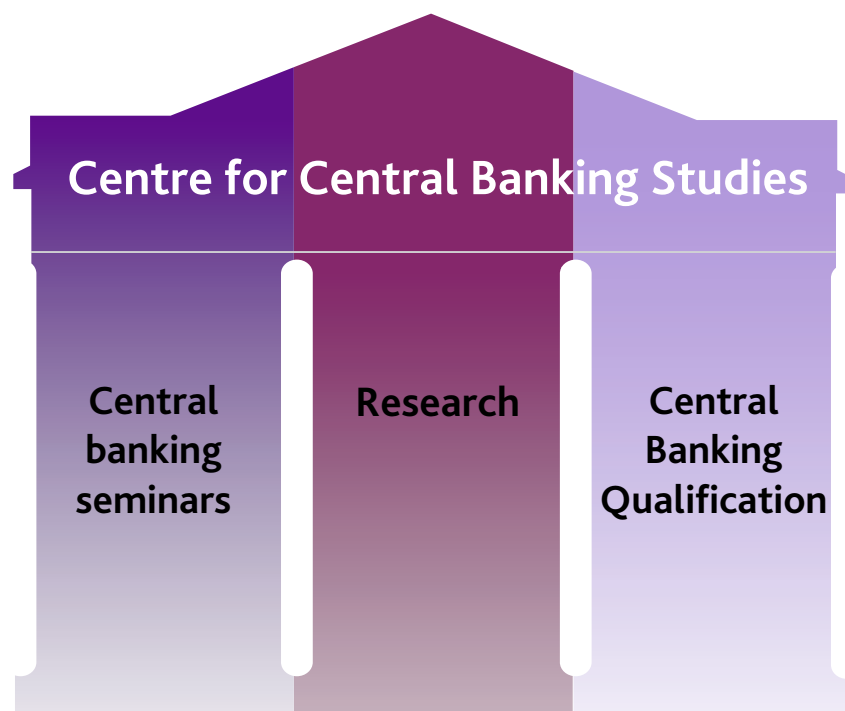
During 2016, delegates from 127 central banks, and 33 regulatory authorities participated in our events.

**Research** is a key part of CCBS's activity and outputs. It both informs and builds on our teaching and events. Much of our research is joint projects with colleagues from other areas of the Bank, as part of the One Bank Research Agenda. We greatly value our engagement with the wider academic community: our staff collaborate with a number of top researchers and in 2016 around 50 academics gave presentations on CCBS events. An increasingly important part of our programme is our series of Research Workshops, which bring together policymakers and academics for a dialogue on key issues facing central banks. In 2016 we hosted our 2nd Research Workshop jointly with the MacCaLM research project on macrofinance.

The third pillar of our activities is the **Central Banking Qualification (CBQ)**, a suite of Masters' level qualifications in Central Banking and Financial Regulation. These have been designed in collaboration with many Bank experts and academics from Warwick University. The result is a unique set of qualifications bringing together a special blend of the theory and practice of central banking.

In 2016 around 160 Bank of England staff took part in the CBQ programme either the in-house Foundation Year or the Masters' course at Warwick University. Looking ahead we will be exploring ways in which we can open up the CBQ to other central bank staff.

We are very grateful for all of the support we receive from the many central banks and regulatory authorities from all around the world who take part in our events, and look forward to extending our collaboration with you in the years ahead.



In 2016,  
160 Bank of England  
staff took part in  
the Central Banking  
Qualification.



## Summary statistics for central banking seminars and CBQ

Central banking seminars in London	2014	2015	2016
Number of London events	33	32	28
Number of participants	803	805	730
Number of central banks	95	94	85
Number of regulatory authorities	30	30	29

Central banking seminars overseas	2014	2015	2016
Number of overseas events	18	16	13
Number of participants	508	466	393
Number of central banks	81	88	91
Number of regulatory authorities	2	5	6

Central Banking Qualification	2014	2015	2016
Number of training days	n.a.	6	33

Source: CCBS.

---

## Total number of participants on central bank seminars



---

## Total number of central banks on central bank seminars (London and overseas events)



---

## Total number of participating organisations (central banks, regulatory authorities and international organisations) on central bank seminars



---

## Total number of participants on the CBQ





# Central bank seminars

The CCBS provides an extensive programme of seminars, workshops and specialist events for central bankers and regulators from around the world. These are all held at the Bank of England in London. In 2016, the Centre organised 28 events, including ten high-level seminars.





# Monetary policy

## Interaction of monetary and financial stability policy

**Directors:** David Barr and Andrew Blake

**Participants:** 23

- The course bridged the gap between technical economic analysis of policy co-ordination and the practicalities of committee decision-making.
- Participants were able to discuss and critique the many different arrangements for co-ordination across the group's 20 countries.
- There was significant discussion of the way in which the constraints facing policymakers in the current low inflation environment will change as our economies return to 'normal'.

## Monetary policy — the state of play

**Director:** Gill Hammond

**Participants:** 24

- This was a policy-oriented seminar, covering strategy, communication and unconventional monetary policy, as well as an overview on forecasting and modelling.
- As usual, it was timed to coincide with the February *Inflation Report*, which offered a great live case study.
- Participants also presented case studies of monetary policy in very diverse economies.

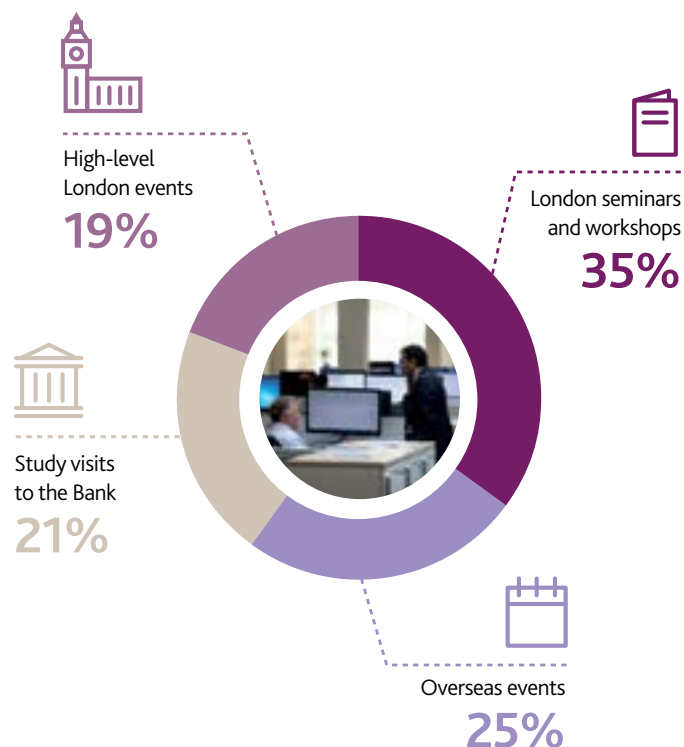
## Macrofinancial modelling and analysis

**Directors:** Ole Rummel and Pawel Zabczyk

**Participants:** 23

- This year's event focused on three main topics: yield curves, volatility modelling and probability density functions derived from option prices.
- The course was structured to combine theory, implementation and practical exercises into each session.
- In response to feedback from previous years, contributors from the Bank's macrofinancial analysis division discussed how they apply the tools covered during the course in their daily policy work.

## Chart 1: Breakdown of CCBS events in 2016



Source: CCBS.



### 13th Chief Economists' Workshop: What can central bank policymakers learn from other disciplines?

High-level



**Directors:** Gill Hammond and Andy Blake

**Participants:** 32

- The key theme was what insights we can learn from social and political sciences, neuroscience and software engineering.
- Sessions explored how we can use these insights to exploit the opportunities for analysis offered by Big Data and new technologies.
- Our keynote speakers were Professors Andrew Lo, Andrew Gelman, Arthur Charpentier and Dr David Halpern.

### The international monetary and financial system

High-level



**Director:** Glenn Hoggarth

**Participants:** 25

- This seminar was run by experts from our International Directorate and covered risks to the IMFS, global institutions supporting the IMFS and policies to improve the function and safety of the system.
- Sessions ranged from speculating about the future of the IMFS to the potential impact of climate change.
- As well as Bank experts, the seminar had speakers from the IMF, BIS, Federal Reserve, Bank of Canada, the Foreign and Commonwealth Office, Goldman Sachs, the London School of Economics and University of London.



All the topics were covered thoroughly, the level of presenter's knowledge and ability and desire to communicate and share is very high.

Participant feedback

## Markets and operations

### 6th CCBS-FRBNY policy forum on the current state of monetary operations

High-level



**Directors:** Céline Gondat-Larralde and Elizabeth Mahoney (FRBNY)

**Participants:** 29

- This policy forum, organised with the Federal Reserve Bank of New York for the 6th year in a row, focused on the changes made to central banks' market operation frameworks following the global financial crisis.
- Non-standard measures, including the setting of negative policy rates, still formed the core of the discussions.
- The forum also reviewed more medium-term challenges, such as how central banks can successfully 'lift-off' after many years of very low rates and the effect of recent prudential regulations on their operations and balance sheets.

### Structure of financial markets

**Director:** Somnath Chatterjee

**Participants:** 27

- This seminar reviewed the structure of specific markets and discussed the overall risk and performance of the financial system.
- Discussions focussed on the pricing of fixed-income securities, options pricing, repo markets and derivatives transactions.
- There were specific sessions on market intelligence, structured finance and the Bank of England's Fair and Effective Markets Review.

# Econometrics and modelling

## Forecasting in central banks

**Directors:** Andrew Blake and Ole Rummel

**Participants:** 19

- This is an intermediate-level course combining theoretical lectures on selected forecasting topics with practical exercises.
- Professor Ana Galvao provided a comprehensive evaluation of the most common macroeconomic forecasting methods.

## Building econometric models

**Directors:** Ole Rummel and Pawel Zabczyk

**Participants:** 22

- The event used the paper of Smets and Wouters (2007) as an organising framework, developing the tools necessary to replicate all the results reported.
- Each day was split into a theoretical and an empirical part, organised around VARs and DSGE models respectively.

## Applied Bayesian econometrics for central bankers

High-level



**Directors:** Andrew Blake and Gabor Pinter

**Participants:** 22

- This is one of the most advanced CCBS technical courses and features lots of MATLAB exercises.
- It is aimed at highly trained participants, with a few of them having PhDs, and includes lots of engaging and technical discussions.
- Professor Haroon Mumtaz guest lectured on Monte Carlo methods which was highly valued by the participants.

## Economic modelling and forecasting

**Directors:** Gabor Pinter and Pawel Zabczyk

**Participants:** 24

- This is a two-week course which provides an all-around training in DSGE and VAR methods for forecasting and structural modelling.
- Feedback suggests that participants appreciated both the high-quality lectures and the practical exercises.
- A number of external speakers contributed, including Professors Galvao, Tamoni and Kapetanios.







# Financial stability and prudential regulation

## 6th Workshop for Heads of Financial Stability

High-level



**Directors:** David Barr, Somnath Chatterjee and Mark Robson

**Participants:** 25

- This popular annual workshop covers a range of topical financial stability issues.
- Martin Taylor, a member of the Bank's Financial Policy Committee, presented his perspective on current threats to financial stability.
- Other highlights included new international approaches to stress testing, the Basel III countercyclical buffer and the FSB's total loss-absorbing capital requirements, cyber and operational resilience and the effect of conduct issues on financial stability.

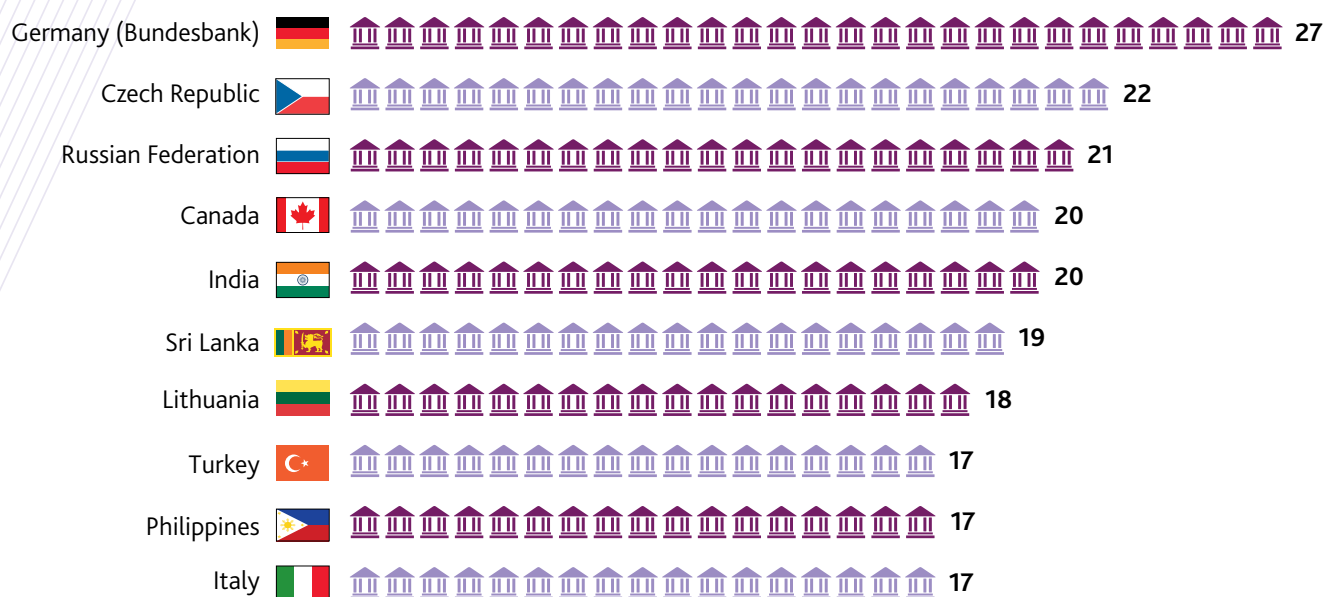
## Financial supervision and capital adequacy

**Directors:** Matthew Pegg and Somnath Chatterjee

**Participants:** 17

- The seminar covered topics relevant to both micro and macroprudential supervision, and how the two approaches work in combination to maintain capital adequacy and financial stability.
- Topics covered included stress testing, TLAC, and a very topical session on the subject of a new capital requirement framework for banks' trading activities.

## Chart 2: Top ten central banks at 2016 London events



Source: CCBS.

## Joint CCBS-Toronto Leadership Centre Seminar on management and corporate governance for microprudential supervisors or banks and insurers

**Directors:** Matthew Pegg and Hooi Eng Phong (Toronto Leadership Centre)

**Participants:** 23

- The seminar was delivered jointly with the Toronto Leadership Centre, a not-for-profit organisation providing training that develops the capacity of financial regulators and supervisors particularly in emerging markets.
- The seminar focused on case studies and industry views to explore approaches to supervising corporate governance and management in banks and insurance companies.

## 2nd Workshop for Heads of Banking Supervision

High-level



**Directors:** David Barr and Matthew Pegg

**Participants:** 19

- CCBS's second annual workshop for Heads of Banking Supervision was attended by senior supervisors from 18 countries and 6 continents.
- Presenters included the Deputy Governor of the Bank of England and Executive Directors from the PRA.
- The workshop focused on the practical aspects of supervision. Lively sessions on financial inclusion and IT risk generated significant interest.



The programme was well structured. The sessions were able to provide the right balance between lectures and applications.

Participant feedback

## Analytical tools for financial supervision and risk management

**Directors:** David Barr and Somnath Chatterjee

**Participants:** 23

- Well-known but technically demanding techniques, such as copulas, were discussed alongside innovative methods for estimating the default risk of banks.
- The presentations emphasised that while deep understanding of the technical aspects of technical tools is important, a general awareness of their strengths and weaknesses is invaluable for using the results that they produce.

## 3rd Workshop for Heads of Insurance Supervision

High-level



**Directors:** Matthew Pegg and Sheelagh Killen

**Participants:** 26

- Interest in this workshop for Heads of Insurance Supervision has continued to grow, with senior insurance supervisors from 24 countries and 6 continents attending.
- The workshop covered approaches to insurance supervision, risks relevant to the insurance industry and Solvency II.
- Attendees particularly enjoyed sessions on PRA supervisory priorities for general insurance, climate change and catastrophe risk modelling.



### The shadow banking system

**Directors:** David Barr and Somnath Chatterjee

**Participants:** 27

- The shadow banking system continues to provide a fascinating combination of potential benefits and costs to credit intermediation and financial stability.
- The presentations in this seminar ranged from historical accounts of the role of shadow banks in the crisis to technical analysis of market correlations and systemic risk.
- The participants also discussed the ways in which the shadow banking system may alter the monetary policy transmission mechanism.

### Risk management and prudential supervision

**Director:** Matthew Pegg

**Participants:** 24

- This seminar focused on both broad risk management subjects and specific risks relevant to prudential supervision.
- External speakers from the Financial Conduct Authority, PWC and the Institute of Risk Management contributed excellent presentations.
- The range of subjects covered included risk appetite, cyber risk, algorithmic trading and enterprise risk management governance.



The design of the programme was well balanced — right proportion of theoretical and practical sessions. The lecturers were in general very interesting and knowledgeable.

**Participant feedback**

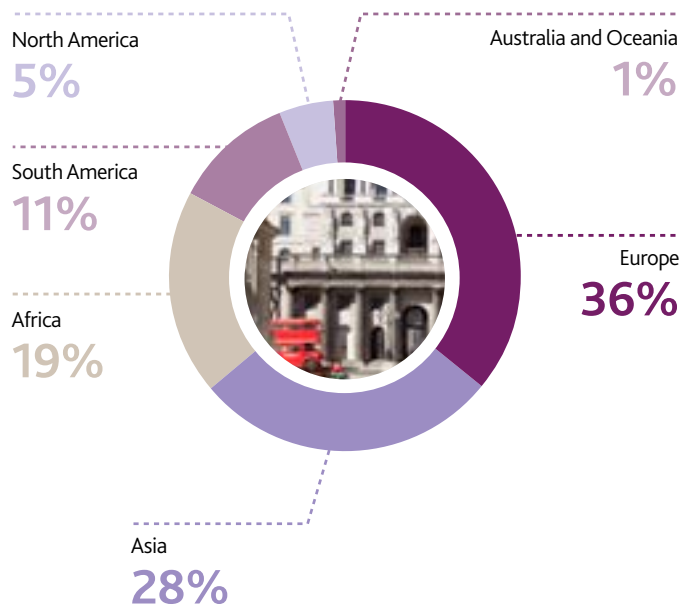
### Systemic risk assessment: identification and monitoring

**Director:** Somnath Chatterjee

**Participants:** 23

- The seminar reviewed some of the approaches for monitoring systemic risk including contingent claims analysis, CoVaR and marginal expected shortfall.
- Presentations on stress testing focused on the Bank of England's concurrent stress-testing framework, stress testing of the trading book and the approach to stress testing followed by the European Banking Authority.
- The seminar also demonstrated a methodology for constructing a financial stress index that could be replicated across different jurisdictions.

**Chart 3:** Dispersion of CCBS central bank participants attending London and overseas events by continent in 2016



Source: CCBS.



## Resolution regimes for financial institutions

High-level



**Directors:** Sam Harrington, Chris Jackson, Alieda Moore and Ruth Walters

**Participants:** 53

- This popular seminar on resolution regimes brought together speakers from a wide range of national authorities, international bodies and industry to share perspectives on how to resolve systemic and cross-border firms.
- Key themes covered included: practical experiences of developing resolution regimes; resolution planning in practice; key elements required for a firm in resolution to open on a Monday morning; and restructuring in and after resolution.

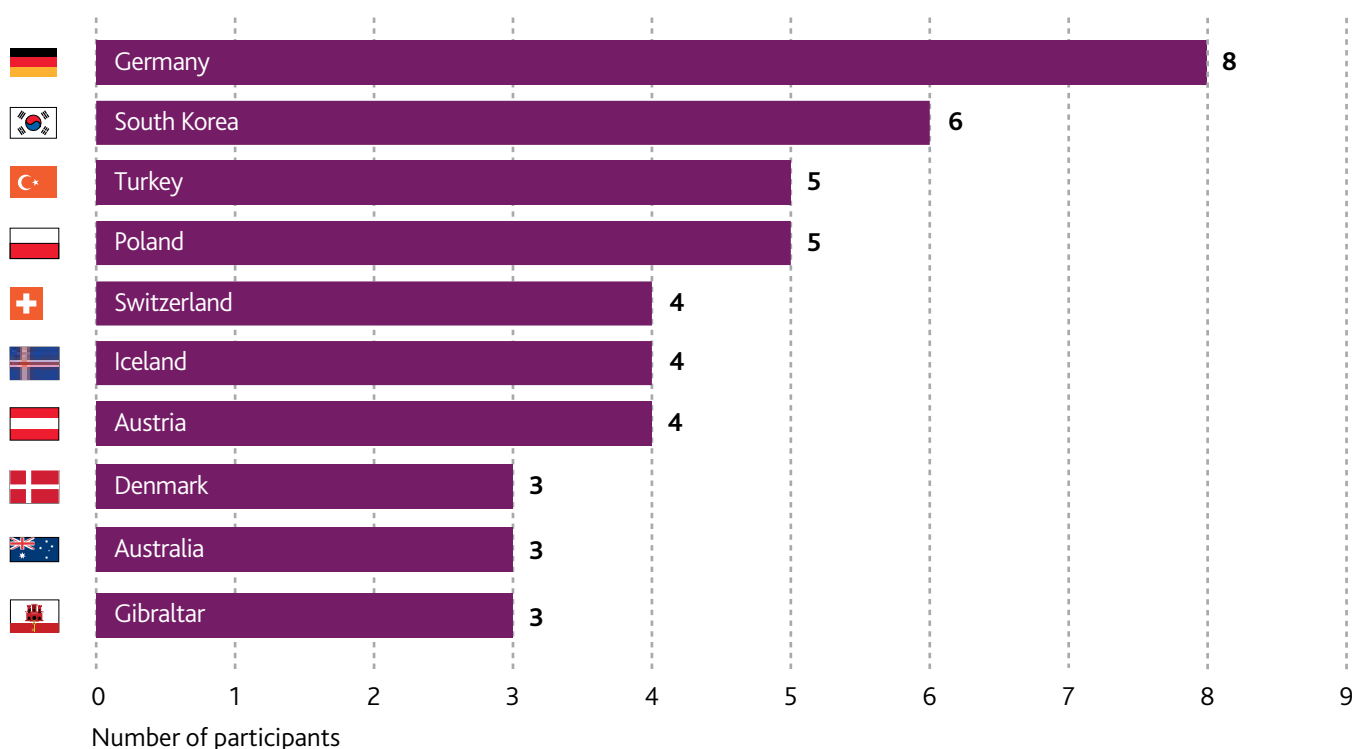
## Microprudential supervisory frameworks

**Director:** Matthew Pegg

**Participants:** 23

- The seminar focused on approaches to microprudential supervision and international regulatory structures including the UK twin peaks model.
- Five participants delivered excellent presentations on their countries' regulatory structures and specific supervisory approaches.
- Because of the important role microprudential supervisors play in maintaining financial stability, there were a number of sessions that highlighted the links between microprudential and macroprudential policy.

**Chart 4:** Top regulatory authorities at London events in 2016



Source: CCBS.



## Aspects of policy and management

### Workshop for legal professionals

High-level



**Directors:** Sheelagh Killen and Catherine Milton

**Participants:** 29

- This workshop was for in-house lawyers working in central banks and financial regulators. The event was hosted in collaboration with the Bank's Legal Directorate.
- It covered the challenges of the expanding remit of the in-house legal professionals; the blueprint for effective legal function and the legal issues presented by the transparency agenda, information sharing and expanding data volumes.
- Case studies looked at how regulatory legislation is operationalised.

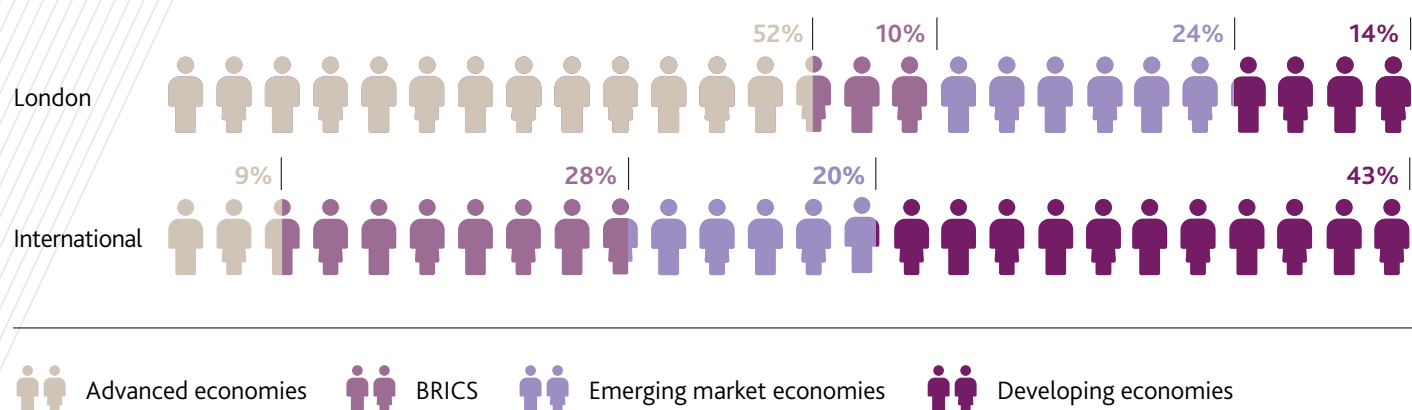
### Central bank communication in a changing world

**Director:** Gill Hammond

**Participants:** 27

- This annual event is very popular with press officers and communications experts from central banks around the world.
- The workshop was very interactive with many participant presentations. Highlights were presentations from Jenny Scott, the Bank's Executive Director of Communications and Mike Peacock, Chief Press Officer.
- The launch of the new polymer fiver proved a great live case study in communications.

**Chart 5:** Distribution of CCBS participants at events in 2016



Source: CCBS.

---

**Chart 6:** Dispersion of CCBS participants attending London and overseas events in 2016



**Roll over map  
to reveal stats**

“

Very good structure,  
content and a good  
mix of speakers.

Participant feedback





## International seminars and workshops

The CCBS has a large programme of activities abroad. Many of these seminars and workshops are regional in scope and hosted by a partner central bank or training institution. In 2016, the Centre organised thirteen events in Asia, Africa, the Americas, Europe and the Middle East.

**393**  
worldwide participants



Columbia University,  
United States

Monetary policy and  
macroprudential  
regulations



Macedonia

Applied Bayesian  
econometrics



Colombia (CEMLA)

Structure of financial  
markets



Rwanda (EAC)

Modelling and  
forecasting



Peru (CEMLA)

Inflation targeting and  
monetary policy

We hugely appreciate the support of our partners in the East African Community (EAC), Centre for Latin American Monetary Studies (CEMLA), the Joint Vienna Institute (JVI), Common Market for Eastern and Southern Africa (COMESA), Macroeconomic and Financial Management Institute of Eastern and Southern Africa (MEFMI) and the Arab Monetary Fund (AMF).



Austria (JVI)

Macroprudential tools



Turkey

Prudential supervision  
of banks and  
microprudential policies



United Arab Emirates  
(AMF)

Macroprudential and  
microprudential policy



Uganda (MEFMI)

Inflation targeting



Kenya (COMESA)

Modelling and  
forecasting



South Africa

A new approach to  
prudential regulation:  
UK and South African  
perspectives

Applied Bayesian  
econometrics



Indonesia

Macrofinancial  
modelling and analysis



## International seminars and workshops



### Joint Vienna Institute (Austria)

#### Macroprudential tools

**Directors:** David Barr, Somnath Chatterjee and Adam Gerstl (JVI)

**Participants:** 24

- The sessions were split equally between presentations with discussion time and exercises.
- The presentations focused on macroprudential tools such as loan to income ratios, current analytical tools, and the policy frameworks in the United Kingdom and participants' countries.



### CEMLA (Colombia)

#### Structure of financial markets

**Directors:** Somnath Chatterjee and Ole Rummel

**Participants:** 36

- A total of 36 delegates from across Central and South America attended this seminar hosted by the Banco de la Republica Colombia.
- The seminar focused on bonds, derivatives and foreign exchange markets along with specific sessions on market intelligence.



### Bank Indonesia

#### Macrofinancial modelling and analysis

**Director:** Ole Rummel

**Participants:** 18

- Our fourth joint event with Bank Indonesia covered a range of topics including options and risk-neutral probability density functions, parametric yield curve models, affine term structure models, volatility modelling and macrofinancial modelling and analysis.
- The event was attended by participants from twelve countries in the region.



### COMESA (Kenya)

#### Modelling and forecasting

**Directors:** Ole Rummel and Pawel Zabczyk

**Participants:** 22

- The event was a follow-up to last year's successful inaugural event with COMESA.
- The programme focused on many of the basic tools needed for economic modelling and forecasting and was attended by participants from most of COMESA's 20 member states.





## National Bank of the Republic of Macedonia

### Applied Bayesian econometrics

**Directors:** Andrew Blake and Gabor Pinter

**Participants:** 21

- The event provided advanced training in Bayesian techniques with special regard to forecasting and VAR analysis.
- Participants came from the Macedonian central bank as well as from a number of neighbouring countries.



## CEMLA (Peru)

### Inflation targeting and monetary policy

**Directors:** Gill Hammond and Andrew Blake

**Participants:** 42

- The event was organised in co-operation with CEMLA and hosted by the Central Bank of Peru.
- The format was a mixture of lectures, exercises and roundtable discussions on the theory and practice of monetary policy.
- Delegates from fifteen countries in the region attended.



## EAC (Rwanda)

### Modelling and forecasting

**Director:** Ole Rummel

**Participants:** 15

- This was the fifth consecutive event on Economic Modelling and Forecasting for the EAC. The aim of the programme is to train up the same group of macroeconomists over a five-year period.



## South African Reserve Bank

### A new approach to prudential regulation: UK and South African perspectives

**Directors:** Sheelagh Killen and Matthew Pegg

**Participants:** 91

- CCBS were invited to deliver a seminar on the United Kingdom's experience of moving to a twin peaks model of regulation at a time when South Africa was moving to a similar model.
- Ninety-one staff from both the South African Reserve Bank and the South African Financial Services Board attended.





## South African Reserve Bank

**Applied Bayesian econometrics**

**Directors:** Andrew Blake and Gabor Pinter

**Participants:** 23

- The event provided advanced training in Bayesian techniques with special regard to forecasting and VAR analysis.
- The participants particularly appreciated the extensive practical MATLAB exercises.



## MEFMI (Uganda)

**Inflation targeting**

**Director:** Gill Hammond

**Participants:** 19

- This was the latest event in a longstanding programme of co-operation between CCBS and MEFMI.
- A number of countries in East Africa are adopting inflation targeting (Kenya, Tanzania, Uganda and Zambia) and were keen to share experiences.
- The policy-related course had a particular emphasis on the communication of monetary policy. It included a lot of exercises, roundtable discussions and some guest presentations which facilitated the sharing of regional experiences.



## Arab Monetary Fund (United Arab Emirates)

**Macprudential and microprudential policy**

**Directors:** Michael Ainley, Somnath Chatterjee and Matthew Pegg

**Participants:** 30

- This seminar covered the Bank of England's approach and powers relating to microprudential and macroprudential policy, and their interaction.
- The programme included lectures and interactive case studies.
- Delegates attended from 16 countries across the Middle East and North African region.



## Columbia University (United States)

**Monetary policy and macroprudential regulations**

**Directors:** Gill Hammond and Andrew Blake

**Participants:** 34

- This was our 9th annual seminar for students on the Program in Economic Policy Management at Columbia University's School of International and Public Affairs.
- The focus was on the challenges of combining monetary and financial stability.
- Case studies from both industrialised and emerging markets were considered.

CCBS is increasingly looking to host video conferences or use video conferencing to contribute to events held in other countries.



### Central Bank of the Republic of Turkey

**Prudential supervision of banks and microprudential policies**

**Directors:** Michael Ainley and Matthew Pegg

**Participants:** 18

- CCBS supported a seminar held at the Central Bank of the Republic of Turkey attended by 18 supervisors from fifteen countries.
- CCBS provided two video presentations on the evolution and structure of UK regulation and the Prudential Regulation Authority's approach to supervision, and a Q&A video conference session.



### Center of Excellence in Finance (Slovenia)

Gill Hammond also gave a presentation on central bank communications to a CEF Conference in Slovenia.



The content was excellent and the directors made a big effort to present the most relevant and thought-provoking research.

**Participant feedback**





# Research

Research is an important part of the Centre for Central Banking Studies' activity and outputs, and supports both our seminars and the Central Banking Qualification. Through its research activities, CCBS also contributes to the One Bank Research Agenda.

Engagement with the wider academic community is an important feature of our research programme, and Research Workshops are becoming a more prominent part of our event programme.

CCBS has a strong research programme both independently and as part of the Bank of England Research Hub.

### Collaborative research

Much of CCBS research consists of joint projects with colleagues from other areas of the Bank as well as external contributors. Many of the projects focus on key issues facing central banks, for example Roger Farmer and Pawel Zabczyk's paper on 'The Theory of Unconventional Monetary Policy'.

### CCBS in the Research Hub

CCBS has also been intensifying its collaboration with the Bank's Research Hub, including projects by Saleem Bahaj, Angus Foulis and Gabor Pinter on the interaction between UK real estate prices, credit and corporate activity. Their results have already influenced several Bank publications and speeches. Moreover Peter Eckley, Alex Michaelides and Pawel Zabczyk combine survey work with text-based and finance approaches in an effort to measure Central Bank credibility.

### Bank Underground posts

The CCBS is an active participant in our staff blog and this year, we contributed posts on 'Why unconventional monetary policy works in theory'; 'House prices and job losses'; and 'DIY macroeconomic modelling on a Raspberry Pi'.

### Research informs our seminars and events

As both CCBS seminar and CBQ participants can attest, the lag from research to teaching remains very small, with many of the frontier research topics subsequently discussed and analysed at CCBS events.

### Selected CCBS research papers

Bahaj, S, Foulis, A and Pinter, G (2016), 'The Residential Collateral Channel', *Centre for Macroeconomics (CFM) Discussion Paper No. 1607*.

Chiu, C, Mumtaz, H and Pinter, G (2016), 'Var Models with Non-Gaussian Shocks', *Centre for Macroeconomics (CFM) Discussion Paper No. 1609*.

Farmer, R and Zabczyk, P (2016), 'The theory of unconventional monetary policy', *NBER Working Paper No. 22135*.



Amazing stuff! I'd like to see more posts like this one often. Great, great job!  
Comment on 'Bank Underground' staff blog



## CCBS research events

### Joint CCBS-MacCaLM Research Forum on macrofinance

High-level



**Director:** Gabor Pinter

**Participants:** 53

- The second Research Forum on macrofinance, co-organised with the University of Edinburgh's Macroeconomy, Credit and Labour Market project (MacCaLM), brought together policymakers, central bank economists and academics, and provided one prominent example of a collaboration successfully shedding light on frontier issues in macroeconomics and finance.
- The event was opened by Gertjan Vlieghe, from the Bank of England's Monetary Policy Committee. Highlights included discussions of 'lean vs clean' (Andy Filardo, Phurichai Rungcharoenkitkul and Lars Svensson); new and innovative ways of modelling interactions between the banking sector and the macroeconomy (Nobu Kiyotaki, John Moore and Helene Rey) and new evidence on the usefulness of measures of household indebtedness as crisis predictors (Amir Sufi).
- Key topics included the interactions between monetary policy, market liquidity and asset prices bubbles (Alberto Martin and Shengxing Zhang) and the links between public finance and business cycle analysis (Ricardo Reis).

### Central bank analytics Research Forum

**Director:** Andreas Joseph

**Participants:** 36

- The Advanced Analytics Division and the Centre for Central Banking Studies jointly organised a two-day research forum discussing novel conceptual and methodological approaches to research and policy analysis, as well as the opportunities and challenges posed by the availability of highly granular (big) data sets.
- The event highlighted that there is a wide range of promising approaches to addressing the real-world complexities of agent heterogeneity, multi-faceted behaviour and expectation formation, uncertainty and risk, complex dependency structures and dynamics.

### Data gaps in the international financial architecture

**Director:** Mark Robson

**Participants:** 17

- This new workshop was devoted to all elements of the data value chain and the steps being taken to improve them.
- It was led by presentations from the Bank's Statistics and Regulatory Data area, the Chief Data Office, Advanced Analytics and Technology areas.
- It featured contributions from seven other central banks on a wide range of topics including the global financial safety net, regional balance sheets, credit databases and pension fund statistics.

In 2016...



**>50**

academics gave presentations on  
CCBS events.

## Handbooks in central banking

The text of all CCBS Handbooks can be downloaded from our website at [www.bankofengland.co.uk/education/Pages/ccbs/handbooks/default.aspx](http://www.bankofengland.co.uk/education/Pages/ccbs/handbooks/default.aspx)

Some Handbooks are available in Arabic, Armenian, Russian and Spanish.

Title	Author	No
Modelling credit risk	Somnath Chatterjee	34
Text mining for Central Banks	David Bholat, Stephen Hansen, Pedro Santos and Cheryl Schonhardt-Bailey	33
Understanding the central bank balance sheet	Garreth Rule	32
Collateral management in central bank policy operations	Garreth Rule	31
Issuing central bank securities	Garreth Rule	30

## Handbooks: Technical series

Title	Author	No
Deriving option-implied probability densities for foreign exchange markets	Andrew Blake and Garreth Rule	5
Applied Bayesian econometrics for central bankers	Andrew Blake and Haroon Mumtaz	4
Solving rational expectations models: a practical approach using Scilab®	Andrew Blake and Emilio Fernandez	2
Estimating general equilibrium models: an application with labour market frictions	Federico S Mandelman and Francesco Zanetti	1

## Joint research papers

Title	Author	No
Financial conditions and density forecasts for US output and inflation	Piergiorgio Alessandri and Haroon Mumtaz	4
Money-based inflation risk indicator for Russia: a structural dynamic factor model approach	Elena Deryugina and Alexey Ponomarenko	3
An application of data-rich environment for policy analysis of the Indian economy	Haroon Mumtaz and Nitin Kumar	2
Asset prices, credit and the Russian economy	Haroon Mumtaz, Alexandra Solovyeva and Elena Vasilieva	1

In 2016 we had more than 100 external speakers on our international seminars and Central Banking Qualification events. These included academics, market practitioners and senior officials in international organisations.

---

**Keynote academic speakers included:**

- Christopher Adam, University of Oxford
- Charlie Bean, London School of Economics
- Wendy Carlin, University College London
- Arthur Charpentier, University of Rennes
- Ana Galvao, University of Warwick
- Andrew Gelman, Columbia University
- Stephen Hansen, University of Oxford
- Juliet Johnson, McGill University
- George Kapetanios, University of London
- Nobuhiro Kiyotaki, Princeton University
- Rosa Lastra, University of London
- Andrew Lo, Massachusetts Institute of Technology
- Michael McMahon, University of Warwick
- James Mitchell, University of Warwick
- John Moore, University of Edinburgh
- Haroon Mumtaz, Queen Mary University London
- Ricardo Reis, London School of Economics
- Helene Rey, London Business School
- Lars Svensson, Stockholm School of Economics
- John Thanassoulis, University of Warwick



I particularly enjoyed the presentations on text mining and statistics! It was particularly interesting to me as a Technology graduate to see how my skills and knowledge can in fact be applied in contexts such as Monetary Policy within the Bank, which is something we don't get to see enough.

**CBQ participant feedback**

“

Excellently designed and well executed.

Participant feedback

### Industry experts who also spoke at CCBS events included:

- Jonathan Calvert Davies, PricewaterhouseCoopers
- James Moseley, PricewaterhouseCoopers
- Harry Taylor, PricewaterhouseCoopers
- Kevin Gardiner, Rothschild
- Mark Nicholls, Rathbone Brothers
- Huw Pill, Goldman Sachs
- David Strachan, Deloitte LLP

### Speakers from international organisations included:

- Babak Abbaszadeh, Toronto Centre
- Sherard Cowper-Coles, Financial Inclusion Commission
- Shamik Dhar, Foreign and Commonwealth Office
- Simon Gray, International Monetary Fund
- David Halpern, Cabinet Office
- Luis Jacome, International Monetary Fund
- Neill Killeen, European Systemic Risk Board
- Petya Koeva-Brooks, International Monetary Fund
- Gus O'Donnell, Institute of Fiscal Studies

- Raza Sadiq, Institute of Risk Management (IRM)
- Philip Turner, Bank for International Settlements (BIS)
- Christopher Woolard, Financial Conduct Authority
- Anna Zabai, Bank for International Settlements (BIS)

### Senior Bank of England speakers included:

- Andrew Bailey, former Deputy Governor, PRA
- Sonya Branch, General Counsel
- Sarah Breeden, Executive Director
- Ben Broadbent, Deputy Governor
- Stephen Brown, Executive Director
- Mark Carney, Governor
- Paul Fisher, Executive Director
- Andrew Gracie, Executive Director
- Andy Haldane, Chief Economist
- Charlotte Hogg, Deputy Governor
- David Miles, Senior Adviser
- Lyndon Nelson, Executive Director
- Joanna Place, Executive Director
- David Rule, Executive Director
- Victoria Saporta, Executive Director
- Jenny Scott, Executive Director
- Martin Taylor, FPC member
- Gertjan Vlieghe, MPC member
- Sam Woods, Deputy Governor, PRA
- Mark Yallop, PRA Board Member

### In 2016...



81

presentations from academic and other invited speakers.



183

Bank of England speakers.



41

Heads of Division and Heads of Department gave presentations.

# Central Banking Qualification

Our Central Banking Qualification is a new initiative, primarily aimed at those joining the Bank on our two-year Graduate Programme. The first or Foundation Year consists of a suite of modules designed by CCBS. In subsequent years students enrol with Warwick University to study for Masters' level qualifications in Central Banking and Financial Regulation.





## Central Banking Qualification

Our Central Banking Qualification is a new initiative, primarily aimed at those joining the Bank on our two-year Graduate Programme. Looking ahead we will be exploring ways in which we can open up the CBQ to other central bank staff.

### What is the Central Banking Qualification (CBQ)?

A suite of postgraduate level qualifications in Central Banking and Financial Regulation aimed mainly but not exclusively at our graduate entrants.

### How does it work in practice?

After completing a Foundation Year (FY) in-house at the Bank of England, staff will enrol with Warwick University for a further year of part-time study leading to an accredited postgraduate Certificate in Central Banking and Financial Regulation. There will then be an opportunity for some staff to study further for a Diploma, Master of Science or Master of Research. The Bank supports staff with study leave and other resources.

### Why is the Bank introducing this qualification?

The Bank wants to invest in the professional development of our staff. We see the CBQ as a way of training the next generation of central bankers, who will not only be expert in their day job, but have a clear understanding of the whole spectrum of the Bank's policy functions — including monetary policy, macroprudential regulation and microprudential regulation and supervision — and how they link together. Central banking is increasingly technical and this new qualification will equip our staff with a deep understanding of central banking and regulation, in a coherent analytical framework.



The qualifications have been designed in collaboration with many Bank experts and academics from Warwick University. The result is a unique set of qualifications bringing together a fantastic blend of the theory and practice of central banking.





## Central Banking Qualification



### CCBS and the CBQ

With our many years' experience in designing and delivering training for central bankers and regulators from around the world, CCBS was a natural home for the Bank's internal CBQ. While the design and content of the new suite of qualifications has been a collaborative effort involving experts from across the Bank of England and Warwick University faculty, CCBS has had prime responsibility for the FY of training for our graduates' population. New entrants can learn more about the key concepts underpinning the economics of central banking and regulation as well as understand the full range of the Bank's mission and responsibilities, mostly from a practitioner's perspective.

### What has been achieved so far?

Our CBQ officially began in October 2015 with our graduate intake of 65 new recruits. This cohort has completed the inaugural FY, and in October 2016 they, and along with other Bank colleagues, enrolled with Warwick University to study for a Certificate in Central Banking and Financial Regulation. Meanwhile in

September 2016, the second cohort of graduates began their FY with a three-week long Graduate On-Boarding Programme. The Centre is now looking after two cohorts totalling more than 160 graduates studying for the CBQ.

Ultimately, by mixing professional with more academic style training, the CBQ will help our staff develop a more coherent analytical framework to critically assess the issues they will face in their careers in the Bank, and giving them the tools and skills for constructive challenge — something that has always been at the heart of the CCBS's mandate and in all of our events with overseas central bankers.

### In 2016...

 **>160**  
graduates studied for the CBQ.

 **>35**  
senior Bank staff, including the Governor and four Deputy Governors spoke on the FY.

 **10**  
presentations from leading academics or experts from the financial industry.



## Central bank and regulatory authority participants on CCBS events in 2016

Central banks	Total participants	London events	Overseas events
<b>A</b>			
Afghanistan	1		1
Albania	6	2	4
Algeria	3	3	
Argentina	1	1	
Armenia	5	3	2
Aruba	1		1
Austria	1	1	
<b>B</b>			
Bahrain	2		2
Bangladesh	3	2	1
Belgium	1	1	
Bolivia	1	1	
Bosnia and Herzegovina	1		1
Brazil	10	9	1
Bulgaria	16	14	2
Burundi	2		2
<b>C</b>			
Cambodia	1		1
Canada	21	20	1
Central African States	1	1	
Chile	7	2	5
China	16	16	
Colombia	14		14

Central banks	Total participants	London events	Overseas events
Congo, Democratic Republic of	1		1
Costa Rica	6	4	2
Croatia	12	11	1
Cyprus	1	1	
Czech Republic	23	22	1
<b>D</b>			
Denmark	4	4	
Djibouti	1		1
Dominican Republic	2		2
<b>E</b>			
European Central Bank (ECB)	15	15	
Egypt	6	2	4
Estonia	2	1	1
Ethiopia	3		3





## Central bank and regulatory authority participants on CCBS events in 2016

Central banks	Total participants	London events	Overseas events
<b>F</b>			
Fiji	1		1
Finland	5	5	
France	2	2	
<b>G</b>			
Georgia	3	2	1
Germany	27	27	
Ghana	5	5	
Greece	5	5	
Guatemala	2		2
<b>H</b>			
Haiti	5		5
Honduras	3		3
Hong Kong	13	12	1
Hungary	15	14	1
<b>I</b>			
Iceland	4	3	1
India	21	20	1
Indonesia	22	16	6
Iran	1		1
Iraq	1		1
Ireland	14	13	1
Israel	13	13	
Italy	17	17	



Central banks	Total participants	London events	Overseas events
<b>J</b>			
Jamaica	2		2
Japan	6	4	2
Jordan	3	2	1
<b>K</b>			
Kazakhstan	3	2	1
Kenya	12		12
Kosovo	5	4	1
Kuwait	2		2
Kyrgyz Republic	3		3

Central banks	Total participants	London events	Overseas events
<b>L</b>			
Latvia	4	3	1
Lesotho	1	1	
Libya	3		3
Lithuania	21	18	3
Luxembourg	3	3	
<b>M</b>			
Macedonia	17	2	15
Madagascar	1		1
Malaysia	7	6	1
Malta	5	4	1
Mexico	20	15	5
Moldova	3	2	1
Mongolia	4	3	1
Montenegro	4	3	1
Morocco	8	5	3
Mozambique	1		1



Central banks	Total participants	London events	Overseas events
<b>N</b>			
Nepal	3		3
Netherlands	8	8	
New Zealand	10	10	
Nicaragua	1		1
Nigeria	2	2	
Northern Cyprus	5	5	
Norway	7	7	
<b>O</b>			
Oman	4	2	2
<b>P</b>			
Pakistan	4	3	1
Palestine	3		3
Papua New Guinea	1		1
Paraguay	3		3
Peru	23		23
Philippines	19	17	2
Poland	10	9	1
Portugal	2	2	
<b>Q</b>			
Qatar	2		2
<b>R</b>			
Romania	14	14	
Russian Federation	22	21	1
Rwanda	9		9





## Central bank and regulatory authority participants on CCBS events in 2016

Central banks	Total participants	London events	Overseas events
<b>S</b>			
Saudi Arabia	7	5	2
Serbia	2	2	
Seychelles	2	2	
Singapore	3	3	
Slovakia	4	4	
Slovenia	3	1	2
Somalia	1		1
South Africa	87	8	79
South Korea	13	12	1
Spain	10	10	
Sri Lanka	21	19	2
Sudan	6		6
Swaziland	2		2
Sweden	4	4	



Central banks	Total participants	London events	Overseas events
<b>T</b>			
Taiwan	4	2	2
Tajikistan	1		1
Tanzania	2		2
Thailand	8	5	3
Timor-Leste	1		1
Tunisia	4		4
Turkey	20	17	3
<b>U</b>			
Uganda	13	1	12
Ukraine	3	3	
United Arab Emirates	1		1
United Kingdom*	54	54	
United States	28	10	18
Uruguay	1	1	
<b>V</b>			
Venezuela	2		2
<b>Z</b>			
Zambia	7	3	4
Zimbabwe	5		5
<b>Total participants</b>	<b>984</b>	<b>639</b>	<b>345</b>

\* Includes other organisations based in the United Kingdom.

Source: CCBS.

	Country	Participants
Australian Prudential Regulation Authority	Australia	3
Austrian Financial Market Authority	Austria	4
Financial Markets Supervisory Authority of Republic of Azerbaijan	Azerbaijan	1
Office of the Superintendent of Financial Institutions	Canada	3
Superintendence of Banking	Chile	2
Croatian Financial Services Supervisory Agency	Croatia	1
Ministry of Finance Insurance Companies Control Service	Cyprus	1
Danish Financial Supervisory Authority	Denmark	3
Financial Supervision Authority	Finland	1
Autorité de Contrôle Prudentiel (ACP)	France	1
BaFin	Germany	8
Financial Services Commission	Gibraltar	3
Guernsey Financial Services Commission	Guernsey (UK)	1
National Banks and Insurance Commission	Honduras	1
Financial Supervisory Authority	Iceland	4
Indonesian Financial Services Authority	Indonesia	2
Financial Supervision Commission	Isle of Man (UK)	1
Financial Services Agency	Japan	1
Jersey Financial Services Commission	Jersey (UK)	1
Financial Market Authority	Liechtenstein	1
Insurance Supervision Agency	Macedonia	1
National Banking and Securities Commission of Mexico	Mexico	1
Finanstilsynet	Norway	1
Superintendencia de Banca, Seguros y AFP	Peru	1
Insurance Commission	Philippines	1
Polish Financial Supervision Authority	Poland	6
Insurance Supervision Agency	Slovenia	1
South African Financial Services Board	South Africa	35
Financial Supervisory Service	South Korea	6
Financial Market Supervisory Authority	Switzerland	4
Banking Regulation and Supervision Agency	Turkey	5
Dubai Financial Services Authority	United Arab Emirates	2
Financial Conduct Authority	United Kingdom	6
<b>Number of participants</b>		<b>113</b>
<b>Number of authorities</b>		<b>33</b>



## Regional and international organisations

Regional and international organisations	Participants
African Development Bank	1
Bank of International Settlements (BIS)	2
COMESA	1
CEMLA	4
DIW Berlin	1
European Banking Authority	2
European Bank for Reconstruction and Development (EBRD)	1
European Insurance and Occupational Pensions Authority (EIOPA)	2
European Securities and Markets Authority	1
European Systemic Risk Board	1
International Monetary Fund (IMF)	2
Latin America Reserve Fund (LARF)	1
Malaysia Deposit Insurance Corporation	3
National Institute of Economic and Social Research	1
South East Asian Central Banks Research and Training Centre (SEACEN)	1
State Secretariat for Economic Affairs (SECO)	1
World Bank	1
<b>Number of participants</b>	<b>26</b>
<b>Number of organisations</b>	<b>17</b>

Source: CCBS.



## Contact details

---

### Centre for Central Banking Studies

Bank of England  
Threadneedle Street  
London EC2R 8AH

#### Tel

+44 (0)20 7601  
3770/3892/4542/5856/5859

#### Web

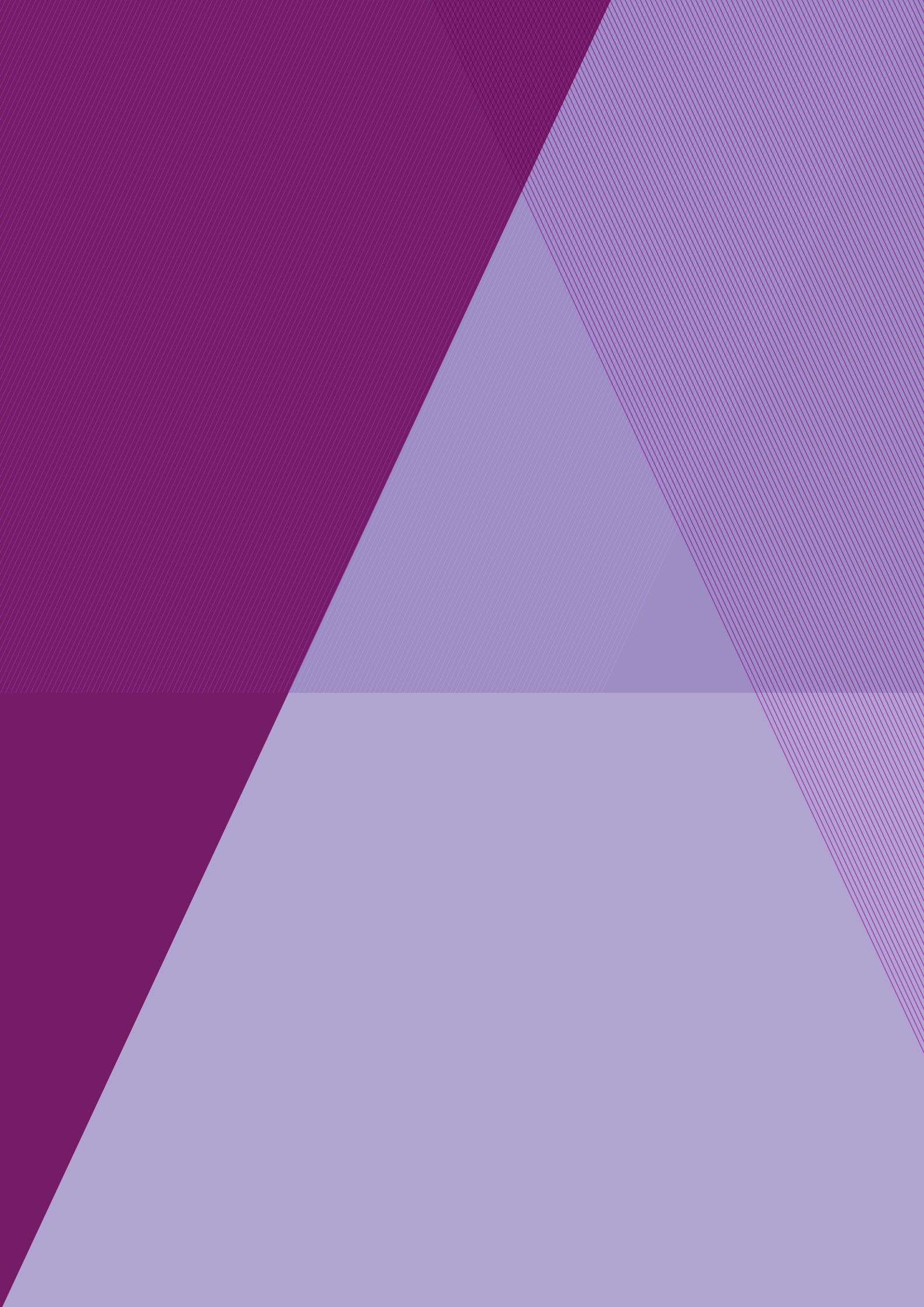
[www.bankofengland.co.uk/  
education/Pages/ccbs/default.aspx](http://www.bankofengland.co.uk/education/Pages/ccbs/default.aspx)

#### Email

[ccbsinfo@bankofengland.co.uk](mailto:ccbsinfo@bankofengland.co.uk)









**BANK OF ENGLAND**

Bank of England  
Threadneedle Street  
London EC2R 8AH

[www.bankofengland.co.uk](http://www.bankofengland.co.uk)