Dear Member,

The Public Company Accounting Oversight Board has hosted its 10th annual International Institute on Audit Regulation, discussing topics including cybersecurity and emerging audit technology.

Nearly 90 officials from 36 non-U.S. audit regulators as well as 11 officials from four international organizations attended the Institute in Washington December 12–14. The event opened with a dinner address from political analyst, journalist, and American Enterprise Institute Resident Fellow Michael Barone, and featured remarks from the new Securities and Exchange Commission Chief Accountant Wesley R. Bricker and a keynote address from U.S. Treasury Deputy Secretary Sarah Bloom Raskin.

The Institute provides a forum for robust dialogue among regulators from all over the world on timely and relevant audit issues that affect investor protection and the health and stability of the global financial markets.

"We are honored to host this program for the 10th year," said PCAOB Chairman James R. Doty. "The PCAOB's long-term strategy of collaborating with our international counterparts has delivered significant positive results for the investing public over the past decade."

Chairman Doty led a panel discussion with several heads of audit regulatory bodies from around the world on moving audit regulation forward in the current environment.

The panel included the leaders of:
The Institute also featured panel discussions that covered a wide selection of other topics including investor perspectives and regulatory enforcement.

"It is always instructive to hear at every Institute a diverse mix of ideas and approaches on a wide range of issues that affect audit regulation," said PCAOB Director of International Affairs Bruce Wilson. "It was particularly interesting this year for these officials from around world to hear from the U.S. Treasury's top point person on cybersecurity, Deputy Secretary Raskin, about what our government is thinking in this area."

Approximately 900 audit firms currently registered with the PCAOB are located outside the United States in 89 jurisdictions. The PCAOB established the International Institute in 2007.
PETs control matrix: A systematic approach for assessing online privacy tools

Following previous work in the field of privacy engineering, in 2016 ENISA presents the ‘PETs control matrix’, an assessment framework and tool for the systematic presentation and evaluation of online and mobile privacy tools for end users.

![PETs control matrix diagram]

**Figure 1: Schematic representation of the PETs assessment framework**

The defined framework relies on a set of assessment criteria, which can be broken down into specific parameters and assessment points, acting as indicators of certain properties and features of the tools. A distinction is made between generic criteria (applicable to all tools) and specific criteria (addressing technical characteristics of different categories of tools).
International Association of Potential, New and Sitting Members of the Board of Directors (IAMBD)

For the purpose of this work, the following categories of PETs have been considered: secure messaging, virtual private networks (VPNs), anonymizing networks, and anti-tracking tools (for online browsing).

The ‘PETs control matrix’ is the implementation of the proposed methodology into a practical tool that can be used for performing the assessment of a PET and presenting the relevant results.

As such, it comprises different sets of detailed assessment questions (and relevant closed sets of answers) corresponding to the predefined assessment criteria.

In this way, the ‘PETs control matrix’ can facilitate a standardized and clear presentation of different privacy tools, supporting in this way the possibility of comparative assessments.

To read more:

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**Figure 2: Use case scenario for secure messaging apps**

For the purpose of this work, the following categories of PETs have been considered: secure messaging, virtual private networks (VPNs), anonymizing networks, and anti-tracking tools (for online browsing).

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To read more:

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International Association of Potential, New and Sitting Members of the Board of Directors (IAMBD)
Smart Airports: How to protect airport passengers from cyber disruptions

ENISA publishes a study on "Securing smart airports" providing airport decision makers and security personnel a concrete guide on preventing cyber-attacks and disruptions.

In response to new emerging threats, ENISA’s report provides a guide for airport decision makers to implement available good practices to date, in order to secure passengers and operations.

This study also identifies gaps such as disparity of cyber security practices and lack of awareness and skills.

The study aims to support airport decision makers and information security professionals in their security efforts and risk management.
Eight recommendations for enhancing the security and resilience of smart airports in Europe are presented in the report, tailored specifically towards decision makers, airport operators and industry.

Key recommendations include:

- Prioritising cyber security for safety
- Establishing a clear airport cyber security posture and allocating cybersecurity experts and resources
- Constant revision of cyber security policies and practices based on good practices monitoring
- Implementing network-based, holistic risk and threat management policies and processes for cyber security
Prof. Udo Helmbrecht, Executive Director of ENISA, said: "Integrating IoT on the existing airport infrastructure brings new security challenges. To ensure safety, operators need to incorporate cybersecurity in all stages of the security life cycle."

Smart airports are those airports making use of integrated Internet of Things (IoT) components to bring added-value services. By integrating smart components, airports are exposed to a larger attack surface and new attack vectors.

As such, airports need to guarantee everyday higher levels of cyber security due to the potential impact that cyber-attacks and disruptions can have on the safety of passengers and operators.

Increasing awareness on cyber security risks and improving the security and resilience of the entire lifecycle of airport operations is now a priority.
ENISA’s future work in the field, aims in enhancing the security and resilience of air transport in Europe together with all relevant key stakeholders and agencies.

In the context of the NIS Directive, ENISA will assist Member States and the European Commission by providing expertise and advice, as well as developing and facilitating the exchange of good practices, with the ultimate goal to enable higher level of security for Europe’s air transport infrastructure.

To read more: https://www.enisa.europa.eu/publications/securing-smart-airports
Joint Statement on U.S. - EU Negotiations for a Bilateral Agreement on Insurance and Reinsurance Measures

The United States and European Union released the following joint statement on negotiations for a bilateral agreement on insurance and reinsurance measures:

“U.S. and EU representatives met in Brussels, on December 19-20, 2016, to discuss a bilateral agreement relating to prudential insurance and reinsurance measures.

“Both sides continued to discuss in good faith matters relating to group supervision, exchange of confidential information between supervisory authorities on both sides, and reinsurance supervision, including collateral.

“U.S. and EU representatives made significant progress on steps identified toward a possible agreement.”

In November 2015, the U.S. Department of the Treasury and the Office of the U.S. Trade Representative (USTR) announced their intention to begin negotiating a covered agreement with the European Union. Under the Federal Insurance Office Act of 2010, the Secretary of the Treasury, through the Federal Insurance Office (FIO), and USTR are authorized to jointly negotiate a covered agreement.
The number of major cyber events continues to increase sharply every year, taking advantage of weaknesses in processes and people as well as technologies.

There has been widespread recognition that some of these cybersecurity (cyber) events cannot be stopped and solely focusing on preventing cyber events from occurring is a flawed approach.

Organizations should improve their prevention capabilities with modern technology and tools while augmenting their cyber event detection and response capabilities.

In 2015, members of the Federal Government reviewed cybersecurity capabilities and, as documented in the Cybersecurity Strategy and Implementation Plan (CSIP), identified significant inconsistencies in cyber event response capabilities among federal agencies.

The CSIP stated that agencies must improve their response capabilities.

Although there are existing federal policies, standards, and guidelines on cyber event handling, none of them focuses solely on improving cybersecurity recovery capabilities, and the fundamental information is not captured in a single document.

The previous recovery content tends to be spread out in documents such as security, contingency, disaster recovery, and business continuity plans.

Recovery is one part of the enterprise risk management process lifecycle; for example, the Framework for Improving Critical Infrastructure Cybersecurity, better known as the Cybersecurity Framework (CSF), defines five functions: Identify, Protect, Detect, Respond, and Recover.

These functions are all critical for a complete defense. At a more fundamental level, the capabilities in the Recover function have a significant effect across the organization by providing realistic data for improving other capabilities. Recovery can be described in two phases focused on separate tactical and strategic outcomes.
The immediate tactical recovery phase is largely achieved through the execution of the recovery playbook planned prior to the incident (with input from Detect and other CSF functions as required).

The second phase is more strategic, and it focuses on the continuous improvement of all the CSF functions to mitigate the likelihood and impact of future incidents (based on the lessons learned from the incident as well as from other organization and industry practices).

This document is not an operational playbook; it provides guidance to help organizations plan and prepare recovery from a cyber event and integrate the processes and procedures into their enterprise risk management plans.

This document is not intended to be used by organizations responding to an active cyber event, but as a guide to develop recovery plans in the form of customized playbooks.

As referred to in this document, a playbook is an action plan that documents an actionable set of steps an organization can follow to successfully recover from a cyber event.

While many fundamental activities are similar for organizations of different sizes and from different industry sectors, each playbook can focus on a unique type of cyber event and can be organization-specific, tailored to fit the dependencies of its people, processes, and technologies.

If an active cyber event is discovered, organizations - including those that do not have in-house expertise to execute a playbook - can seek assistance from a trustworthy external party with experience in incident response and recovery, such as through the Department of Homeland Security (DHS) or an Information Sharing and Analysis Organization (ISAO), or a commercial managed security services provider.

To learn more:  
FSB publishes progress report and 2017 workplan to assess and address the decline in correspondent banking

The Financial Stability Board (FSB) published its latest progress report on the implementation of its four-point action to assess and address the decline in correspondence banking.

The progress report includes a set of deliverables for 2017 to implement the action plan.

The report describes progress in taking forward the four-point action plan published by the FSB in November 2015, namely:

- **Further examining the dimensions of the problem**, and its causes and effects;

- **Clarifying regulatory expectations**, as a matter of priority, including through guidance by the Financial Action Task Force (FATF);

- **Domestic capacity-building** in jurisdictions that are home to affected respondent banks;

- **Strengthening tools for due diligence by correspondent banks**.

Since the August progress report the FSB’s Correspondent Banking Coordination Group (CBCG) has taken further steps to implement the action plan:

- **A one-off survey of national authorities and banks** has been undertaken by the FSB in September to collect additional information on correspondent banking.

Authorities in some 50 countries participated in the survey, collecting data on approximately 300 banks.

The survey is intended to provide additional evidence to support a deeper understanding of the causes and consequences of the decline in the correspondent banking relationships, and thereby help to inform the policy responses and initiatives underway to address the issue.

- The FATF published its guidance on correspondent banking, which clarifies that the FATF Recommendations do not require financial
institutions to conduct customer due diligence on the customers of their respondent bank clients (so-called “know your customer’s customer”).

The guidance highlights that not all correspondent banking relationships carry the same level of money laundering or terrorist financing risks, hence any enhanced due diligence measures have to be commensurate to the degree of risks identified.

The Basel Committee on Banking Supervision (BCBS) published a consultation on revisions to its guidance on correspondent banking to take into account the FATF work and clarify regulators’ expectations in areas such as Know-Your-Customer (KYC) utilities.

- The FSB, International Monetary Fund and the World Bank held a roundtable bringing together senior representatives of banks with officials from central banks, finance ministries and other public sector bodies.

The roundtable discussed steps that need to be taken to address this issue.

A comprehensive set of deliverables for 2017 have been agreed to ensure effective implementation of the action plan.

The actions include the following:

- **By April 2017** the FSB will publish findings from the CBCG survey on correspondent banking and the FSB and SWIFT will set out a process for ongoing monitoring of trends in correspondent banking.

- **By June 2017** the BCBS will publish its finalised revised guidance on correspondent banking and the FATF expects to finalise its work on the definition of correspondent banking.

- Further steps will also be taken by the official sector and the correspondent banking community to share information and support coordination of capacity building.

- **By March 2017** the FSB will publish suggested main elements of communication strategies jurisdictions could implement to effectively communicate the steps taken to improve their frameworks for anti-money laundering and combating the financing of terrorism (AML/CFT) and the quality of their supervision of financial institutions.

- **By June 2017** an action plan will be developed by SWIFT Payments Market Practice Group and the Wolfsberg Group to strengthen market
guidance on payment messages used for correspondent banking, and SWIFT and the Global Legal Entity Identifier Foundation are expected to take further steps to contribute to streamlining KYC due diligence.

Alexander Karrer, Chair of the CBCG and Deputy State Secretary at the Swiss Federal Department of Finance said: “A well-functioning correspondent banking system is essential for ensuring international payments. A decline in correspondent banking relationships can adversely affect growth, financial inclusion, remittances flows as well as the stability and integrity of the global financial system.

Since the creation of the CBCG earlier this year, good progress has been made to assess and address this issue, but additional steps are needed to move from awareness raising to action. Given the number of actors involved, international cooperation and coordination are key.”

A further progress report on the work of the CBCG will be published in advance of the G20 Leaders’ Summit in Hamburg in July 2017.

Europol set up the European Cybercrime Centre (EC3) in 2013 to strengthen the law enforcement response to cybercrime in the EU and thus to help protect European citizens, businesses and governments from online crime.

Cybercrime costs EU Member States EUR 265 billion a year. For the global economy, that figure is around EUR 900 billion. And that’s just the financial side.

Cybercrime is actually a wide and varied problem. And the EC3 is a key part of Europol’s, and the EU’s, response. The EC3 takes a three-pronged approach to the fight against cybercrime: forensics, strategy and operations.
FRIENDS?

Interacting with friends and meeting new people online can be great! But, always remember to stay safe while using the internet:

- Do not befriend random people, even if you have friends in common.
- Do not share access to your passwords, email accounts or any other online accounts with anyone, not even your closest friends.
- Before you make someone a friend, remember that you may be giving them access to everything you share.
- Do not take anything for granted! If your friends send you suspicious emails, double check that they really are coming from them.
- Think about reviewing your friends list occasionally and consider removing contacts you don’t recognise.
- If you feel uncomfortable talking to your online friends because they are using a strong language or are harassing you in any way, block them and report it to the police if need be.

Be mindful of what information you share about you, your home, family and job. Ask yourself “Why am I sharing this?”.

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International Association of Potential, New and Sitting Members of the Board of Directors (IAMBD)
Legacy booking systems disclose travelers’ private information

Travel bookings worldwide are maintained in a handful of systems. The three largest Global Distributed Systems (GDS) administer more than 90% of flight reservations as well as numerous hotel, car, and other travel bookings.

The most important security feature lacking from all three GDSs is a proper way to authenticate travelers.

While the rest of the Internet is debating which second and third factors to use, GDSs do not offer a first authentication factor.

Instead, the booking code (aka PNR Locator, a 6-digit alphanumeric string such as 8El29V) is used to access and change travelers’ information.

The authenticator is printed on boarding passes and luggage tags. Any person able to find or take a photo of the pass or tag can access the traveler’s information – including e-mail address and phone number – through the GDS’s or airline’s web site.

Traveler information is also at risk to online hacking because authenticators are brute-forceable.

The way 6-digit booking codes are chosen makes them weaker than a 5-digit password (<28.5 bits), which would be considered insecure for most applications.

Two of the three main GDSs assign booking codes sequentially, further shrinking the search space.

Finally, many GDS and airline web sites allow trying many thousand booking codes from a single IP address. Given only passengers’ last names, their bookings codes can be found over the Internet with little effort.

To read more:
https://srlabs.de/bites/travel-hacking/

https://hasbrouck.org/blog/archives/002279.html
EBA to run its next EU-wide stress test in 2018

The Board of Supervisors of the European Banking Authority (EBA) decided to carry out its next EU-wide stress test in 2018, in line with its previous decision to aim for a biennial exercise.

The EBA will start immediately to prepare the methodology for the 2018 stress test exercise, which will also include an assessment of the impact of IFRS 9, which will be implemented on 1 January 2018.

This decision has been communicated to the European Parliament, the Council and the Commission. In 2017, the EBA will perform its regular annual transparency exercise.

The decision to run the next EU-wide stress test in 2018 was driven by an acknowledgement of the ongoing progress that EU-banks are making in strengthening their capital positions.

Competent Authorities as well as market participants will, in the meantime, use the significant quantitative and qualitative information generated by the 2016 EU-wide exercise.

Risks and vulnerabilities in the EU-banking sector will continue to be monitored by Competent Authorities and the EBA as part of their regular assessment of banks.

The potential benefits and risks of Big Data for consumers and financial firms

The Joint Committee of the European Supervisory Authorities (ESAs) launched a public consultation about the potential benefits and risks of Big Data for consumers and financial firms to determine whether any further regulatory or supervisory actions may be needed.

Big Data is a phenomenon linked to the ever increasing availability of data and advances in Information Technology tools, applications, platforms and systems to collect, process and analyse it.

Big Data can generate ideas, solutions or predict certain events or behaviours and is already used in the financial industry.

The purpose of the consultation is for the ESAs to understand better what the Big Data phenomenon means for consumers, the financial industry and regulators, and they invite all stakeholders to share their views.

Existing EU legislation on data protection, competition and consumer protection, which share the common goals of promoting economic growth, innovation and the welfare of individual consumers, are relevant for financial firms while not explicitly addressing Big Data.

The Discussion Paper asks whether the existing regulatory framework is sufficiently flexible to cover Big Data, has gaps which need to be filled and how it impacts the use of Big Data technologies.

The consultation closes on 17 March 2017.

To read more: https://www.esma.europa.eu/sites/default/files/library/jc-2016-86_discussion_paper_big_data.pdf
EBA sees considerable improvement in the average LCR across EU banks

The European Banking Authority (EBA) published its third impact assessment Report for the liquidity coverage ratio (LCR), together with a review of its phasing-in period.

The Report shows a constant improvement of the average LCR across EU banks since 2011.

At the reporting date of 31 December 2015, EU banks' average LCR was significantly above the 100% minimum requirement, which will have to be fully implemented by January 2018, and no strong evidence was found suggesting that the EBA should recommend an extension of the phasing-in period of the LCR.

The Report, which is based on liquidity data from 194 EU banks across 17 Member States, is the first publication after the implementation of the minimum binding standards in 2015 and accounts for the provisions of the Commission's Delegated Regulation on the LCR.

Key findings

The Report shows that as of end-December 2015, EU banks' average LCR was 134% and the aggregate gross shortfall amounted to EUR 10.9 billion.

The increase in the LCR can be mainly attributed to an increase in liquid assets, which, since June 2011, have almost doubled.

In contrast, net cash outflows have remained relatively stable.

In addition, the Report shows that, on average, banks in various business models reach the 100% minimum requirement, despite large dispersions amongst them.

The Report also provides a quantitative analysis on the comparison between the LCR under the Commission's Delegated Regulation and the LCR under the Basel III framework.

Overall, the findings show that, under the Delegated Regulation, smaller banks (Group 2 banks) and specialised credit institutions, such as automotive and consumer credit banks, benefit from the EU-specific rules,
while the average LCR for large cross-border universal banks (Group 1 banks) is lower with respect to the Basel III framework.

The Report further analyses operations with central banks and identifies, in particular, the importance of central bank exposures in banks' liquidity buffers for their compliance with the LCR regulation.

The Report also finds evidence for liquidity mismatch in the liquidity coverage requirements of the banks with activities in significant currencies.

For a large number of these banks, while the LCR is above the 100% threshold in reporting currency, it is below this threshold in USD, one of the significant foreign currencies considered for the analysis.

**Legal basis and background**

This Report has been drafted in accordance with Article 509(1) of the Capital Requirements Regulation (CRR), which mandates the EBA to monitor and evaluate the liquidity measures and their impact on the EU banking sector on an annual basis.

**Article 461 of the CRR also mandates** the EBA to review the phasing-in of the liquidity coverage requirement.

Due to complementary and overlapping aspects of the two assessments, after an agreement with the European Commission, the EBA has decided to deliver a merged report.

**Solvency II: Reporting format of National Specific Templates and reporting clarifications**

This Prudential Regulation Authority (PRA) Policy Statement (PS) provides feedback to responses to Consultation Paper (CP) 40/16 ‘Solvency II: Reporting format of National Specific Templates and reporting clarifications’.

It sets out final rules to incorporate National Specific Template (NST) information requirements within the Reporting Part of the PRA Rulebook (see Appendix 1) for financial year end 2016 and future financial year ends.

It also:

- sets out the requirement for firms to report their NSTs in Excel templates designed using XBRL principles; and

- provides updated LOG files to accompany NSTs to reflect changes in cell references, reporting clarifications and technical corrections.

The Excel templates and accompanying LOG files are available on the Regulatory reporting for Solvency II firms webpage – see Related links.

This PS is relevant to all UK Solvency II firms required to submit NSTs and to Lloyd’s.

To learn more: [http://www.bankofengland.co.uk/pra/Pages/publications/ps/2016/ps3816.aspx](http://www.bankofengland.co.uk/pra/Pages/publications/ps/2016/ps3816.aspx)
INTERPOL operation targeting phone scams nets 1,500 arrests

More than 1,500 people have been arrested in an INTERPOL-coordinated operation targeting multi-million euro telephone and e-mail scams across Asia.

Operation First Light 2016 saw police across the region conduct raids of suspicious call centres, with the largest in the Philippines where police arrested some 1,300 Chinese nationals working in a single location as part of a massive criminal operation.

The suspects were engaged in a range of criminal activities from the same building, including telephone scams aimed at victims in China, money laundering and illegal online gambling.

Based on intelligence exchanged in the framework of the operation, in December police in Spain arrested more than 200 Chinese nationals and shut down 13 call centres in Madrid, Barcelona and Alicante which scammed thousands of victims out of some EUR 16 million.

In this case, the suspects posed as law enforcement or justice officials, telling the victims in China that their bank accounts had been targeted by criminals and directing them to transfer a sum of money into a designated bank account in order to track the criminals.

The two-month operation targeted a variety of social engineering fraud scams – including telephone deception, romance scams and e-mail deception – and related financial crimes.

‘Social engineering fraud’ refers to scams which manipulate or trick people into giving out confidential or personal information which can then be used for financial gain by the criminals involved.

“By sharing information through INTERPOL, police can overcome the challenges in investigating international telephone fraud, such as criminals frequently changing locations or IP addresses, and build working relationships to prevent similar criminal activity in the future,” said Makoto Tanase, Coordinator of INTERPOL’s Financial Crimes unit.

INTERPOL’s Financial Crimes unit, in conjunction with the Liaison Office in Bangkok, facilitated the exchange of information and coordinated the
joint police action during the operation, which took place between 1 October and 30 November.

Korean, Thai and Indian nationals were also among those arrested, with additional countries in Europe and the Americas contributing intelligence or providing investigative support. In addition to social engineering fraud, the suspects also face charges of payment card fraud and related financial crimes.

Countries participating in Operation First Light 2016 included: Austria, China, Hong Kong (China), Japan, Korea, Philippines, Thailand, Timor-Leste and the United States.
Good morning, ladies and gentlemen. Welcome to the BIS.

Let me first thank Thomas Hoenig, President of the International Association of Deposit Insurers (IADI), for inviting me to address this distinguished group.

I would also like to thank the organisers - IADI and our Financial Stability Institute - for bringing together supervisors, deposit insurers, central bankers, representatives of international organisations and market participants from 75 jurisdictions.

This is a forum for exchanging views on issues that are critical for maintaining financial stability. I believe that our interaction and our sharing of experiences and perspectives are crucial for ensuring that we "get it right" in the design of the financial architecture.

In the presence of so many deposit insurance practitioners here, I thought it might be appropriate to start with the question: what makes an effective deposit insurance scheme for promoting financial stability? I believe an effective scheme is one that would be called upon only rarely - but if and when called upon, would be available and ready to work well.

For this to happen, it is necessary to have not only a well designed scheme, but also the support of other elements in the architecture:

(i) resilient financial institutions that can weather shocks and remain going concerns in periods of stress; and
(ii) loss-absorbing capacity that underpins the resolution of banks that have reached the point of non-viability. Most importantly, the system as a whole - not just the individual components - must be sound and resilient.

In my remarks this morning, I would like to look at three main areas in which a lot of effort has been made since the global financial crisis:
- regulation and supervision that enhance banks' resilience;
- resolution arrangements that limit fallouts in case a bank does fail; and
- deposit insurance, which completes the picture by further enhancing confidence in the banking system.

For each of these three areas - or, one can say, three lines of defence - I will reiterate the key lessons learned from the global financial crisis and outline what has been done so far in response. I will then conclude with some reflections on the evolving nature of systemic risk and a word of caution on the challenges we still face.

**Prudential regulation and supervision: enhancing resilience**

First, on prudential regulation and supervision. A strong prudential regime is, in my view, the first line of defence - and it should support the private sector's own defences: earning capacity, risk management/culture, and capital cushions.

The global financial crisis demonstrated that this line of defence was not as strong as we had thought. Both the quantity and quality of capital were found wanting in some banks. Not enough attention was paid to liquidity risk. Systemic risk was vastly underestimated. Shortcomings in corporate governance, risk culture and disclosure remained unquestioned until it was rather too late.

The introduction of Basel III seeks to address the identified weaknesses in the banking sector through better regulation to increase the resilience of banks, and also stronger supervision to help identify and manage risks more proactively.

**In terms of regulation**, the minimum requirements for the level and quality of capital have been raised, and the treatment of specific risk categories strengthened. Attention is now conscientiously paid to capital loss absorption at the point of non-viability, better control of leverage as a backstop, and better management of liquidity risks.

**In addition to microprudential regulation**, Basel III also includes a macroprudential overlay that calls for the use of capital buffers to address system-wide risks that can build up across institutions as well as over time. Most elements of Basel III are already being phased in. In fact, even though full implementation will not be required until 2019, most of the banks
monitored by the Basel Committee on Banking Supervision have already met and exceeded the Basel III minimum requirements.

In terms of supervision, supervisors are called upon to be more demanding with banks' corporate governance, internal culture - including at the board level - and risk management, among other things. Supervisors are also asked to pay more attention to forward-looking analysis and expand their supervisory tools.

For example, stress tests are now being used more extensively to evaluate the ability of an institution to deal with a variety of risks, both internal and external. Being subject to supervisory stress tests - where the stress scenarios can vary each time - has encouraged banks to hold prudential cushions above the regulatory minima.

In addition to supervisory pressure, market discipline has also incentivised banks to hold cushions above the regulatory minima. Since the global financial crisis, shareholders and creditors alike seem to have become much more ready to sanction banks that are deemed not well capitalised, even when regulation is not the binding constraint.

While there is no easy answer to the question of what the optimal level of capital is, one thing is sure: capital is the foundation for bank lending. Recent BIS work finds that a 1 percentage point increase in the equity-to-total-assets ratio of a bank reduces its cost of debt by approximately 4 basis points.

And a 1 percentage point increase in a bank's equity-to-total-assets ratio is associated with a faster pace of lending growth of around 0.6 percentage points per year. In other words, a stronger prudential position is not only good for building greater resilience, it also supports banks in their role as intermediaries in the real economy.

That being said, challenges remain. Some details and calibrations in the Basel III framework are still to be finalised, leaving room for regulatory uncertainty. The process of finalising Basel III has also generated debate over the role of internal models and standardised approaches in the Basel capital framework. The Basel Committee is working hard to finalise these details as soon as possible.

Resolution arrangements: limiting the fallout from failures
Greater resilience can help banks withstand shocks, but one cannot rule out the possibility of failure. The question is: how well prepared are we for that?

Experience from the global financial crisis suggests that our preparedness on that front was also not as great as we would have liked. Many jurisdictions lacked the necessary powers and tools for resolving banks. They were left with the limited choice of either a disorderly liquidation or a bailout with public resources.

The presence of systemically important banks, especially G-SIBs, posed special challenges for home and host authorities in terms of information and coordination. For their part, banks were also underprepared, with not enough loss-absorbing capacity to allow an orderly workout in case of failure and little advance planning on how to cope with such emergencies.

A key post-crisis response to these lessons was the development of the Financial Stability Board's Key Attributes of Effective Resolution Regimes for Financial Institutions.

The Key Attributes set out the responsibilities, instruments and powers that national resolution regimes should have to enable orderly resolutions of failing financial firms, without exposing the taxpayer. For global systemically important institutions, there are specific requirements for Crisis Management Groups (CMGs), institution-specific cross-border cooperation agreements between the home and host authorities, recovery and resolution planning, and resolvability assessments.

Complementing the Key Attributes is the new standard for G-SIBs on the adequacy of Total Loss-Absorbing Capacity - or TLAC, for short. It is designed to ensure that a failing G-SIB would have sufficient loss-absorbing and recapitalisation capacity available to implement a resolution that is orderly and avoids exposing public funds to loss.

How much of these have been put in place? The FSB's second annual report on the implementation of the agreed reforms notes that, as of end-August 2016, only a subset of the FSB membership - primarily the home jurisdictions of G-SIBs - has implemented bank resolution regimes with powers that are broadly in line with the Key Attributes. Elsewhere, there are considerable gaps in resolution regimes.
While there has been progress in reforming the resolution framework, there is scope for further refinements to ensure the legal certainty of resolution actions. Moreover, the new framework has not yet been tested.

CMGs have been established for all G-SIBs. But CMGs by themselves have no legal authority. Cross-border cooperation agreements still need to be put in place before the resolution plans can become operational.

**Recovery and resolution planning processes** are in place in many jurisdictions, but actually producing credible plans that are acceptable to supervisors is proving rather more challenging.

Since the TLAC standard was released in November 2015, a majority of G-SIB home authorities have published policy proposals or consultation documents on TLAC implementation. Banks have issued substantial amounts of TLAC-eligible liabilities. The key question is: will TLAC instruments work as intended?

Observations from the market for contingent convertibles (CoCos) suggest some challenges on this front. **CoCo instruments are meant to enhance loss absorption.** Market tensions in early 2016 revealed that investors liked the fixed income component of these instruments but were not willing to sit still and take on losses.

As soon as losses became a possibility, CoCo investors started hedging, undermining the value of banks' equity and increasing banks' costs of debt finance. Under market stress, such behaviour could generate a **vicious spiral.**

Thus, with the improvements in loss-absorbing capacity, there are also new dynamics that we need to understand better.

**Deposit insurance: protecting depositors and confidence**

What about deposit insurance?

The global financial crisis illustrated the importance of maintaining depositor confidence and limiting contagion - and the key role that deposit protection plays in this regard. Indeed, one of the earliest and most widely adopted crisis responses in 2008 was the increase in deposit insurance coverage. In some jurisdictions, blanket guarantees were issued.
This experience also exposed some weaknesses in deposit insurance systems. These included depositors' limited understanding of the compensation schemes, delays in payment to depositors in some jurisdictions, and the lack of clear funding arrangements for the schemes.

To reflect the lessons from the crisis, the IADI Core Principles were revised in 2014. The revision strengthened several key areas, including speed of reimbursement, deposit insurance coverage, funding and governance.

Measures have also been taken to strengthen depositor protection in practice. Within the G20, almost all members have deposit insurance schemes in place. Two of the three FSB jurisdictions identified in the 2012 FSB peer review as not having such systems (China and Saudi Arabia) introduced them in 2015, while the third (South Africa) intends to follow suit in the near future.

Outside the G20, new systems are being established, particularly in Africa. These new systems are more aligned with the revised Core Principles, with explicit but limited coverage levels and financed by the industry through an ex ante premium.

Notwithstanding the progress, important challenges remain. In particular, the speed of payout needs to be accelerated in most jurisdictions. Currently, few systems can reimburse depositors within the seven-working-day objective recommended by the Core Principles.

Emergency backup liquidity facilities, needed to ensure depositor confidence, can be enhanced and made more explicit.

Finally, there is still room to strengthen the role of the deposit insurer in the safety net, especially as regards the communication and coordination with other authorities (prudential supervisors and resolution agencies) in the context of system-wide crisis preparedness and management.

Indeed, tackling these challenges in a focused manner is very much at the heart of the three current strategic priorities of IADI, namely: to promote compliance with the IADI Core Principles, to advance related research and policy development, and to support members with training and capacity building.

**Closing thoughts on systemic risk: reasons to be cautious**
To summarise, the global financial crisis exposed the gaps in our lines of defence. It is heartening to see the tremendous efforts made by both national and international authorities to apply the lessons learned. It is also encouraging to see the private sector on board to a great extent, even though tougher rules are understandably not what they like.

Much progress has indeed been made. But the task is big, and there is still a lot of pending work. Usually, we would finish here by emphasising that it is therefore crucial to complete the reform agenda and focus attention on implementation and monitoring.

But we should ask ourselves a deeper question: is the system as a whole safer now?

To address this question, we need a broader perspective. We need to look at stocks, in addition to flows. We need to look at balance sheets and incentives. Systemic risk is an elusive and dynamic concept. Since the crisis, financial intermediation has changed, balance sheets have changed, incentives have also changed. So where do we stand in terms of the whole system?

I will cite three reasons why we should be cautious and avoid being too sanguine.

Stocks of debt

One is that although banks have deleveraged since the crisis, the world as a whole is more leveraged today than when the crisis started in 2007.

We can think of the world as many interconnected balance sheets. This is how I think of the system. It goes well beyond the banking or even the financial system.

At a global level, credit extended to households, non-financial corporates and governments combined has been growing rapidly, though unevenly, since the crisis. As a consequence, the system of interconnected balance sheets I have just described has also grown rapidly.

The speed of credit growth has been shown to be a good indicator of risk, as it relates to the capacity of repayment of the whole economy and to the quality of the assets on the other side of the balance sheet.
As of mid-2016, the debt of households, non-financial corporates and governments as a percentage of GDP had reached 250%.

The reason to feel perturbed - or at least not be sanguine - is the combination of growing debt with the declining trend in productivity growth. This combination would indicate that there are some difficulties in generating sustainable income with which to repay the debt.

**Persistent low rate environment**

A second reason to be cautious is the persistent low interest rate environment. I would emphasise that my concern is about the persistence of low rates, rather than just low rates per se.

*Interest rate is the cost of leverage; long periods of low rates could incentivise increased borrowing.* The resulting accumulation of debt would render the whole system more sensitive to the future interest rate scenario, which affects the ability to repay or refinance the stock of debt. The longer that interest rates have stayed unusually low, the greater the risk of a sharp snapback of interest rates.

Low rates for long could also incentivise additional risk-taking through the search for yield. The valuation of financial assets would be boosted, flattering the assessment of their riskiness. This is often referred to as the risk-taking channel of monetary policy.

Persistently low or even negative interest rates also make for a difficult environment for financial institutions, putting pressure on their earning capacity. *Weaker profits would slow the build-up of equity over time, which would in turn affect banks’ capacity to lend to the real economy.* Indeed, pressure from the low rate environment is one of several challenges facing the banking sector in advanced economies.

The relatively subdued performance of banks in capital markets reflects investor scepticism. For example, even with general stock market indices hitting all-time highs in recent years, the price-to-book ratios of European and Japanese banks are only at or below 0.5.

This suggests that banks are still to varying extents burdened by unresolved issues in terms of asset quality, excess capacity, business model and profitability, making the return to normality more arduous than one would like.
**Asset managers and search for yield**

A third reason to be cautious is the changing nature of risks. With all the post-crisis efforts to improve the resilience of banks, it would not be a big stretch to conjecture that the next major crisis will originate not in the banking sector but somewhere else in the system.

Since the global financial crisis, bond market finance has surged, shifting international finance to non-bank intermediaries. This growth in market-based finance has partly filled the void left by declining international bank credit.

My colleague Hyun Song Shin refers to this as "the second phase of global liquidity", in which bond market finance dominates. In the first phase (roughly 2003 to 2008), the protagonists were global banks and the mechanism was leverage.

In the second phase (starting from around 2010), the protagonists are asset managers and the search for yield is the driving force. And with the main action being in bond markets, movements in the term premium, i.e., the portion of bond yields not explained by the expected path of future short rates, play a key role in influencing the demand for bond financing.

There is much in this new phase that we do not yet understand well. **There may be leverage-like behaviours that can create stress similar to that resulting from classic bank leverage.**

Specifically, even though asset managers are not themselves leveraged like banks, their lack of willingness or capacity to absorb temporary losses could still result in runs on capital markets. Recent policy initiatives - notably those coordinated by the FSB - are seeking an international response to these new sources of risk.

Of course, shocks from capital markets could also affect banks at some point. In a complex financial system, how shocks are transmitted or amplified is hard to predict. Therefore, being prepared ex ante, strengthening all three lines of defence, is still recommended and necessary.

**Conclusion**

In sum, despite the improvements in many areas since the crisis, the system as a whole is facing new and evolving risks. I would like to think of
these new challenges in systemic risks as encouragement for all of us here to persevere with finalising and implementing the post-crisis regulatory reforms in a timely fashion.

These challenges are also **a reminder to be humble** and to recognise that, in this complex world, mitigating systemic risk requires a wider perspective and action in a variety of policies. The key areas in the regulatory reform agenda - regulation and supervision, resolution and deposit insurance - are no doubt very important, but they may not be enough.

Reforms are also needed to raise productivity growth, generate earning and repayment capacity, and improve the outlook for the longer term. Monetary policy and fiscal policy, for their part, would do well to take financial stability considerations and their longer-term impact on the real economy into account.

Indeed, **financial stability is a joint responsibility**. For our community of supervisors, deposit insurers, central bankers and representatives of international organisations, interaction and cooperation are more crucial than ever.

I hope this conference represents another valued opportunity for all of us to work towards this common goal. I wish you all a very productive time here.
How quantitative easing works

The ECB started buying assets from commercial banks in March 2015 as part of its non-standard monetary policy measures. These asset purchases, also known as quantitative easing or QE, support economic growth across the euro area and help us return to inflation levels below, but close to, 2%.
3. As a consequence, a wide range of interest rates fall and loans become cheaper.

4. Businesses and people are able to borrow more and spend less to repay their debts.
5. As a result, consumption and investment receive a boost.

6. Higher consumption and more investment support economic growth and job creation.
As prices rise, the ECB achieves an inflation rate below, but close to, 2% over the medium term.
Examples of websites, emails, letters, text messages and phone calls used by scammers and fraudsters to get your personal information.

HM Revenue and Customs (HMRC) examples.

If you think you have received an HM Revenue and Customs (HMRC) related phishing/bogus email or text message, you can check it against the examples shown in this guide.

You may visit:  
Digital Base Money - an assessment from the European Central Bank's perspective

Yves Mersch, Member of the Executive Board of the European Central Bank, at the Farewell ceremony for Mr Pentti Hakkarainen, Deputy Governor of the Bank of Finland (Suomen Pankki), Helsinki

We are living in digital times. The internet and portable online devices have radically transformed the way we use and exchange information, and the way we exchange money. Money has been digitalised in many ways and we can now, for instance, transfer bank deposits electronically and pay with e-money.

Today I will focus on one type of digital money - Central Bank Digital Currency, or Digital Base Money (DBM).

This is money that is characterised by two features:

(1) like banknotes in circulation, DBM is a claim on the central bank;

(2) in contrast to banknotes, it is digital.

Of course, DBM already exists. Commercial banks and some other types of institution hold digital claims on central banks in the form of deposits. But there has been more recent discussion about whether central banks should provide DBM to a wider range of counterparties, allowing non-banks, including households, to hold accounts at the central bank.

The People's Bank of China, the Bank of England and Sveriges Riksbank have published on this topic or have indicated that they are conducting some work on it.

I see two main reasons why this discussion on DBM has been started.

First, electronic payments have become increasingly popular. There are already a number of electronic payment methods provided by the financial industry, such as credit, debit and pre-paid cards.

But these methods are based on commercial bank money and people may prefer to hold claims on the central bank to avoid the risk that the commercial bank defaults. From this perspective, an increasing demand for DBM could emerge.
Second, some technological developments may now render the introduction of DBM much easier and potentially less expensive than ten years ago. This includes Distributed Ledger Technology, or DLT, a variant of which is used for Bitcoin.

These are good reasons to start a discussion on DBM and for research to understand better the options available for DBM and their implications for central banks in fulfilling their mandates.

In some European countries, for instance in Sweden and Denmark, electronic payments have started crowding out the use of cash.

This may give the discussion an additional drive. In the euro area, however, we do not see a trend away from cash.

By contrast, in recent years the growth in demand for banknotes in the euro area has by far exceeded that of economic output.

For the ECB, the discussion is therefore mainly an analytical one.

The ECB would in particular have to understand the impact - positive or negative - of DBM on our primary objective of price stability before considering introducing it.

Moreover, any value judgement on DBM needs to be assessed against a number of high-level principles, namely

(1) technological safety,

(2) efficiency,

(3) technological neutrality, and

(4) freedom of choice for users of means of payments.

Today, I would like to outline some of the various options for designing, issuing and managing DBM, and discuss some of their potential consequences.

This will not be an exhaustive list, but it can give first insights into the complexity of the issue at hand.
Account-based versus value-based Digital Base Money

Let me start with a primarily legal dimension, which is the distinction between account-based and value-based DBM. Current DBM in the form of commercial bank deposits at the central bank is account based.

A transfer of DBM from one bank to another reaches finality when the funds are debited from the account of the payer and credited to the account of the payee. The central bank is directly involved, as it registers the transfer.

Cash is different: it is value based and accounts are not involved. A transfer of cash is final when the payer hands the cash over to the payee. The central bank does not register transfers of cash, only the initial issuance and the final return.

DBM held by non-banks could either be account-based - in this case, the central bank would open an account for every interested non-bank - or it would be value-based like cash.

In this case, interested non-banks would need to be equipped with electronic wallets for holding and using DBM.

A transfer of DBM would require that the funds be debited from the payer's electronic wallet and credited to the payee's device without the involvement of the central bank.

Whether DBM is account based or value based might matter for several reasons.

Let me mention two.

First, value-based and account-based DBM may require very different types of technology with specific safety features and costs.

DLT may be fit for both, but in different ways.

Second, anonymity towards the central bank can be achieved only with value-based DBM.

These factors may influence the demand for DBM by non-banks and whether DBM would be used more to substitute cash or bank deposits.
Options for providing DBM

With that distinction in mind, let me now turn to the way DBM could be provided to non-banks.

A straightforward approach would be to allow non-banks to convert commercial bank deposits into DBM at a rate of 1 to 1. As cash can always be paid into a bank account, this would of course also allow non-banks to convert cash into DBM.

It may be argued that with such an approach bank runs could unfold more easily and faster. Non-banks could react to bad news about a certain bank by quickly switching their deposits into default-free DBM - there would be no need to keep the cash under the mattress.

This would counteract important regulatory efforts to reduce excess volatility in the movement of funds between types of investment.

Yet it is already easy to switch deposits from a bank hit by bad news to another commercial bank that is perceived as safe, so I don't see an additional risk of bank runs in the event of an idiosyncratic banking event.

The situation would be different in a systemic banking crisis, though. If depositors perceived the entire commercial banking sector as fragile, a sector-wide run might be made more likely and severe by DBM, negatively impacting the efficiency of financial markets.

Depending on how attractive DBM is for non-banks, a more gradual substitution of commercial bank deposits by DBM is of course possible too. This could have different effects on commercial banks.

For example, commercial banks with excess central bank reserves could reduce their excess reserves when they experience a DBM-induced deposit outflow. This could increase their profitability in the current situation, as deposits bear a higher interest rate than excess reserves.

But banks without excess central bank reserves might need to replace deposits by central bank credit.

They would need to provide more collateral to the central bank. And the interest rate to be paid on central bank credit may, at least in normal times, be higher than the average rate on customer deposits.
The profitability of these banks might suffer. A consequence could be higher interest rates on bank loans. These effects may require an adjustment of central bank policy rates and could make monetary policy more difficult until a new steady state is reached.

More restrictive approaches to providing DBM may also be considered. For example, the central bank could provide DBM to non-banks exclusively in the context of asset purchases.

That would mean that, to obtain DBM, non-banks would need to sell certain assets to the central bank. They would not be able to convert commercial bank deposits or cash into DBM directly.

With this more restrictive approach, the central bank would keep the amount of DBM under its full control. It would decide how much assets it would buy. Bank runs or gradual outflows of deposits from commercial banks would not be induced.

However, this approach would create some difficult policy decisions for central banks. Which assets should be purchased, how much and at which prices?

If the demand for DBM was high relative to the amount of DBM the central bank would like to provide, two different prices for eligible assets could emerge: a market price in trades between two market participants; and a price below the market price when the same assets are sold to the central bank against DBM.

As a consequence, DBM would be worth more than cash and commercial bank deposits. DBM would truly be a currency on its own. The central bank would be the issuer of two different currencies, an outcome that does not seem to be in line with fundamental ECB principles.

If the central bank wanted to avoid such a situation, it would either need to increase the amount of DBM it provides or make DBM less attractive, for example by lowering the remuneration of DBM. I will come to this later.

Given these challenges, the more straightforward approach which would allow non-banks to convert bank deposits directly into DBM at a rate of 1 to 1 may therefore appear more attractive, provided that non-banks mainly substitute cash rather than bank deposits with DBM.
As long as DBM mainly replaces cash, negative side effects of DBM might be unlikely. In this context, consideration could be given to making DBM as cash-like as possible, at least initially, until more experience is gained.

**Remuneration of DBM**

This brings us to the next important question: how should the central bank remunerate DBM held by non-banks?

For the euro area, one option could be to remunerate DBM at the same rate as excess central bank reserves held by commercial banks, i.e. at the rate on the deposit facility.

This would mean applying a policy rate directly to funds held by non-banks. This could potentially strengthen the transmission of monetary policy rate decisions to the economy.

The deposit facility rate is currently -0.4%. At this interest rate, demand for DBM may be low. But in normal times, when it is positive, remunerating DBM at the deposit facility rate may be risky.

It could make it too attractive to convert commercial bank deposits into DBM. As I argued a few minutes ago, this could have negative side effects.

An alternative option would then be to remunerate DBM at a rate of 0%. This is the rate at which cash (i.e. banknotes and coins) is de facto "remunerated".

With a rate of 0%, non-banks are unlikely to convert commercial bank deposits or cash into DBM if their motive is only to obtain a better remuneration.

Even in times of negative central bank rates, retail bank customers rarely receive a negative remuneration on commercial bank deposits.

Even so, a 0% interest rate on DBM held by non-banks is not without policy risks. If banks have large amounts of excess central bank reserves remunerated at a negative rate, they could try to find ways of replacing their excess reserves by DBM, such as by setting up a non-bank subsidiary.

This may counteract monetary policy.
If the central bank considered this risk important, it could combine the two approaches I have mentioned so far.

It could remunerate DBM held by non-banks at a rate of 0%, if the deposit facility rate is positive. And if it is negative, we could remunerate at the deposit facility rate. This may, however, entail strong movements out of DBM when the deposit facility rate turns negative.

Moreover, there is a risk that a negative remuneration of claims of non-banks on the central bank would substantially undermine the confidence in the central bank.

**Technology for DBM**

Finally, let me mention the technological dimension of DBM. I said that one reason why the discussion on DBM for non-banks has started is that we now have technologies that could make it easier to issue DBM.

This includes, in particular, Distributed Ledger Technology (DLT).

DLT carries great potential, but is it already advanced enough to be applied by central banks?

Reputation is crucial for central banks. We cannot afford mistakes in the technologies we employ.

Before the central bank can start providing DBM to non-banks, we need to be sure not only that DBM is unlikely to have negative economic side-effects, but also that the relevant systems are operationally efficient and safe.

**But we should not be dogmatic, either.** If a more efficient, but absolutely safe, technology for central banking operations can be found, introducing it could reduce costs for both the central bank and users, and therefore for society as a whole.

**Conclusions**

Let me conclude.

There are many ways to design DBM for non-banks. The different options have potential impacts - both positive and negative - that need to be studied and considered carefully.
Only when the best way of designing DBM has been identified, can a decision be made as to whether DBM of non-banks should be introduced at all.

The most important question for the ECB is whether introducing a DBM would affect our ability to honour our mandate.

The impact may be negative if non-banks replace commercial bank deposits with DBM to a significant extent.

More generally, any materialisation of DBM would have to be assessed against four principles:

(1) technological safety,

(2) efficiency,

(3) technological neutrality, and

(4) freedom of choice for users of means of payments.

As there has been some speculation about a possible intention of central banks to abolish cash, please let me stress one aspect relating to the principle of freedom of choice: if DBM for non-banks were introduced, it would exist alongside cash for the foreseeable future.

It would merely be an additional option for non-banks to hold funds.

In particular, those who are sceptical about digital devices would naturally continue to use cash.

Even where efficiency gains are possible when people substitute some of the cash for DBM, this would still require that the technology used for DBM be operationally reliable and secure against attacks.

Technological feasibility and cost considerations alone will not change our mandate. Thank you!
Welcoming remarks by Chair Yellen at a Conversation with the Chair: A Teacher Town Hall Meeting

Janet L. Yellen, Chair of the Board of Governors of the Federal Reserve System, at a Conversation with the Chair: A Teacher Town Hall Meeting, Washington DC

Thank you, and thank you to all the educators who have come to the Board this evening or travelled to one of the Fed's regional Reserve Banks to watch and listen via the webcast.

I am very much looking forward to hearing from you about teaching economics, and I am eager to respond to your questions. For that reason, and also because I expect that school starts very early tomorrow for many of you, I will try to keep my remarks brief.

But I do have a message to impart about the work you do, which is vitally important not only to your students, but also, I believe, to the world they will soon inherit and even to the mission of the Federal Reserve.

First and foremost, of course, like all teachers, you are helping prepare your students for successful and rewarding lives. The knowledge you impart and the intellect and talents you help develop are powerful tools your students can use to build those lives.

Like some other subjects students encounter in school, economics teaches analytical and critical thinking skills that can aid in the development and success of anyone.

Part of success for your students is economic success—as capable, creative, and productive members of the workforce and as consumers adept at managing their finances.

Economics provides knowledge and skills of practical use in college and in the workplace, and it also provides skills to plan and make wise financial decisions, which are some of the most important and consequential that we face in life.

Your students benefit very directly from this education, but so does everyone else in society.
Everyone is engaged in and depends on the economy, and nothing is more critical to a healthy and growing economy than the capability, creativity, and productiveness of its workforce.

Whenever I am asked what policies and initiatives could do the most to spur economic growth and raise living standards, improving education is at the top of my list.

In addition to the role you play in preparing students for jobs and careers, you also help prepare them to be responsible consumers. The economy needs productive workers, and it also depends on consumers, whose individual spending decisions, as most of you surely have taught in class, collectively account for two-thirds of economic activity.

Consumers skilled in managing their finances are better prepared to weather bad times, and stronger household finances overall can help sustain growth, stabilize the economy, and mitigate an economic downturn.

Stabilizing the economy and mitigating a downturn, of course, also happen to be among the Federal Reserve’s primary responsibilities.

When successful, monetary policy can be a powerful and effective tool to these ends, but its capabilities are dwarfed by larger factors such as the productivity of the workforce and the strength of household finances.

By educating students and directly supporting their contributions to the economy as producers and consumers, all teachers, especially teachers of economics, are effectively furthering our mission at the Fed, so let me offer my thanks for making that job a little easier.

To help support your important work as teachers, the Federal Reserve Board and the 12 Reserve Banks conduct programs, organize events, and publish books and other materials to spread knowledge of the role of the Fed—and economics in general—and to promote financial literacy.

Before I get to those events and programs, let me say a word about what is probably the most important pedagogical aid that the Fed produces—the 182-page book called The Federal Reserve System: Purposes and Functions.
The 10th edition of Purposes and Functions, published in October of last year, offers a detailed and comprehensive account of what, why, and how the Fed carries out its different responsibilities. I think it is a wonderful resource for teaching about the Fed, and copies are available via the Board's website.

(Note: You may visit: https://www.federalreserve.gov/pf/pf.htm)

Each of the Fed's Reserve Banks has community outreach and educational initiatives in the areas of the country they serve, and the outreach to economics teachers is coordinated by the group chaired by Amy Hennessy, the Federal Reserve System Economic Education Group.

At the Board, we have for some years operated a program called FedEd, which sends Fed employees into schools throughout the Washington, D.C., metropolitan area and sponsors events for students here at the Eccles Building.

FedEd's outreach to schools depends on the time and sacrifice of several dozen research assistants, who are typically recent college graduates who work for two or three years at the Board. Research assistants who volunteer for FedEd visit schools; help teach about the Fed, economics, and finance; and answer questions about work opportunities at the Board.

The Federal Reserve is committed to promoting diversity in our ranks and in the economics profession, and FedEd has furthered these goals by making sure to include schools with significant numbers of minority students.

This past school year, FedEd sent research assistants into nine different schools and FedEd volunteers have visited 38 different schools since 2012. FedEd was back in schools last fall, drawing from 48 research assistants who volunteered to participate.

FedEd also sponsors several speaker events a year that bring students into this Board Room. Students recently heard a presentation from Scott Alvarez, who oversees the Board's Legal Division, and, in February, Vice Chairman Stanley Fischer will speak to students at another event. FedEd is overseen by two research assistants, Caroline Shinkle and Jamie Lenney, along with Karen Pence, who is an economist at the Board. All three are with us this evening and prepared to answer further questions about the program.
Online resources for teachers can be found on the Board's website at federalreserve.gov, and additional resources available throughout the System are at federalreserveeducation.org. The websites include videos in which policymakers and the staff describe the Fed's functions. Also, the sites include historical materials and a wealth of information related to the financial crisis and the Fed’s response.

Let me leave it there, and again thank teachers for participating in this town hall, and offer my thanks, on behalf of the Board of Governors, for the valuable work you do every day. I would be very happy to respond to your questions.
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