CHAPULTEPEC CONFERENCE

CHALLENGES FOR CENTRAL BANKS IN THE DIGITAL ERA

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General purpose technologies accelerate digital change

AI and GEN AI represent a change of paradigm that will enhance pre-existing technological changes such as the Internet, big data, 5G and blockchain technologies.

AI, as a general-purpose technology, could have a widespread and positive transformational impact on the economy and society.

Digital transformation is also transformational for central banks

All central bank tasks are affected by the digital transformation.

Technology will allow central banks to deal with a growing number of complex and novel issues, increasing productivity and containing costs.

At the same time, in performing their tasks, central banks need to have a profound understanding of the impact of technology on economic and social variables and financial system business models.

CHALLENGE 1: CENTRAL BANKING WILL BE AFFECTED BY DIGITAL TRANSFORMATION

MORE FOCUS ON RISK — **MORE FOCUS ON OPPORTUNITIES**

FINANCIAL STABILITY	MICROPRUDENTIAL SUPERVISION	CONDUCT SUPERVISION	PAYMENTS AND FINANCIAL OPERATIONS	MONETARY POLICY

Transitional risks

- Digitalisation can have asymmetric effects across sectors, altering their credit risk profiles
- When investing in new technology, in particular AI, the financial sector faces risks, both of excessive early investment in an inferior technology, and of inefficiently late investment, with a loss of competitiveness

Structural increase in traditional risks

- Greater interdependencies through the use of new technologies (IA, crypto) between financial intermediaries, market infrastructure and technology suppliers => potential for spillovers and contagion
- Greater speed of transactions and increased potential for bank deposit substitution (stable coins) => could aggravate liquidity risk
- *Herding behaviour* in lending decisions and concentration risk through application of common tools / greater focus -on third-party providers

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FINANCIAL STABILITY

MICROPRUDENTIAL SUPERVISION

- Supervision of technology in the financial sector
- New business models in the financial sector: digital banks, banking as a service (Baas), neobanks and big tech

CONDUCT SUPERVISION

- Bias and misuse of technology
- Data privacy concerns

PAYMENTS AND FINANCIAL OPERATIONS

MONETARY POLICY

Artificial intelligence challenges

Complexity of AI models: more focus on data and explainability

Impact of AI on fundamental rights

AI risk mitigation / incident report

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Preserving the role of central bank money as a public good in the digital economy

- Wholesale CBDCs: provision of central bank money compatible with DLT infrastructures and tokenised assets
- Cross-border payments: interoperability, standardisation and harmonisation
- Cybersecurity and resilience: protect market infrastructures and systemically important services from potential new threats with AI, quantum computing and more interconnection between the different actors

Market infrastructures compatible with new technologies

- Access to retail central bank money, in digital form, is critical for trust and financial stability
- Infrastructure design should balance (private) innovation and resilience with national autonomy and data protection
- Avoids fragmentation and improves financial inclusion and competition
- Potentially contributes to enhancing cross-border activity without compromising sovereignty

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Safety, efficiency and integrity of payments and financial markets

- Surveillance, supervision and oversight: review regulation/oversight frameworks to incorporate the new risks
- Public-private collaboration: regulatory sandbox and other innovation facilitators to understand challenges and opportunities and to provide the best regulatory framework (and, depending on public policy goals, to further foster a broader digital transformation of the financial sector)
- Support innovative market initiatives that comply with central bank policies
- Upgrade publicly run FMIs to better address the needs of market players and remain competitive at global level

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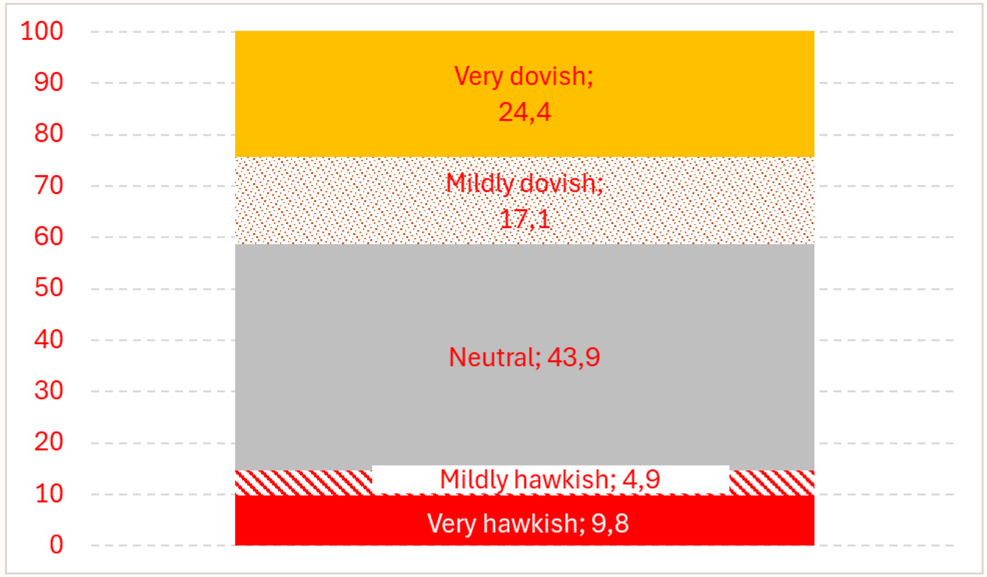
FINANCIAL STABILITY | MICROPRUDENTIAL SUPERVISION | CONDUCT SUPERVISION | PAYMENTS AND FINANCIAL OPERATIONS | **MONETARY POLICY**

Monetary policy tone index (dovish/hawkish) for ECB communication

Application to speeches by members of the ECB Executive Board (inter-meeting communication).

Proportion of speeches in each category of the index



NOTE: The chart shows the proportion of speeches in each category for a sample of 41 randomly selected speeches.

Technology and AI impact on monetary policy

- Impact on monetary transmission: effectiveness of monetary policy decisions
- Changes in economies' potential GDP / employment
- GDP and inflation nowcasting
- Communication: text and sentiment analysis

CHALLENGE 2: CENTRAL BANKS ARE STARTING TO TEST AI OR GENAI, BUT SCALING UP THESE TECHNOLOGIES REQUIRES OVERCOMING SOME BOTTLENECKS

Where we are

- All central banks are beginning to have use cases and develop governance models for AI
- Some central banks are starting to set up digital innovation centres
- AI will mainly pose challenges in conduct supervision and financial stability
- Some central banks will have specific mandates regarding AI: in Europe, market surveillance authorities for high-risk AI systems developed for banks
- Regulatory fragmentation in AI

What we need

- Skilled staff such as data scientists, engineers and software developers
- Computational capabilities and models
- Unstructured data and experimentation
- More collaboration among central banks: pooling resources, sharing best practices and having common guidelines (principles, risk classification, incident reports)
- More collaboration with other institutions: AI safety institutes, AI supervisors, etc.

CHALLENGE 3: CENTRAL BANKS NEED TO HARNESS THE BENEFITS OF DIGITALISATION WHILE KEEPING DATA CONFIDENTIAL

Dilemmas for central banks

- Cybersecurity will help ensure cyber resilience, operational continuity and data privacy, but usability should also be maintained
- Cloud computing expands analytical capabilities, but confidentiality is a critical issue
- Technology increases dependency on third parties: vendor lock-in and supply chain vulnerabilities become an increasing problem that needs to be managed

The way ahead

- Rethink the cloud strategy: hybrid clouds?
- Strategic alliance with the private sector
- More room for sharing information and technology among central banks

CHALLENGE 4: ALTHOUGH THE TECHNOLOGICAL TRANSFORMATION IS GLOBAL, REGULATORY FRAGMENTATION COULD POSE SOME LIMITS

Shortcomings

- Growing regulatory fragmentation could limit or create inequalities in technology adoption across different countries/regions
- Regulatory fragmentation matters even more when facing systemic risk events or growing geopolitical risks

The way ahead

- Reinforce global regulatory standards and coordination among regulators from different sectors (bank and non-bank financial institutions): AI offers an opportunity to build common risk methodologies and incident reporting
- Strike the right balance between sound and well-designed regulation and streamlining regulatory reporting

CHALLENGE 5: CENTRAL BANKS COULD PLAY A MAJOR ROLE IN SPREADING INNOVATION AND AS SUPPORTERS OF NEW DEVELOPMENTS

Role in innovation diffusion

- Central banks could promote the diffusion of innovation in some areas
- Need to rethink incentives for talent and emphasise non-financial aspects of working conditions in fostering innovation
- There is an opportunity to define the risk appetite, avoiding risk-averse behaviours that restrict digital innovation

Support to innovation development

- Central banks could support the development of integrated and complete capital markets: Europe should promote the capital markets union
- Digital innovation requires alternatives to bank financing: venture capital markets, which are currently very uneven, should be developed further. Central bank analyses could play a role in supporting this development

6. OTHER POTENTIAL CHALLENGES

DIGITAL TRANSFORMATION AND GREEN TRANSITION

Central banks have been increasingly involved in the green transition, but digitalisation is particularly energy and water-intensive

DIGITAL PAYMENTS AND THE INFORMAL ECONOMY

Digital payments could help reduce the informal economy in several countries

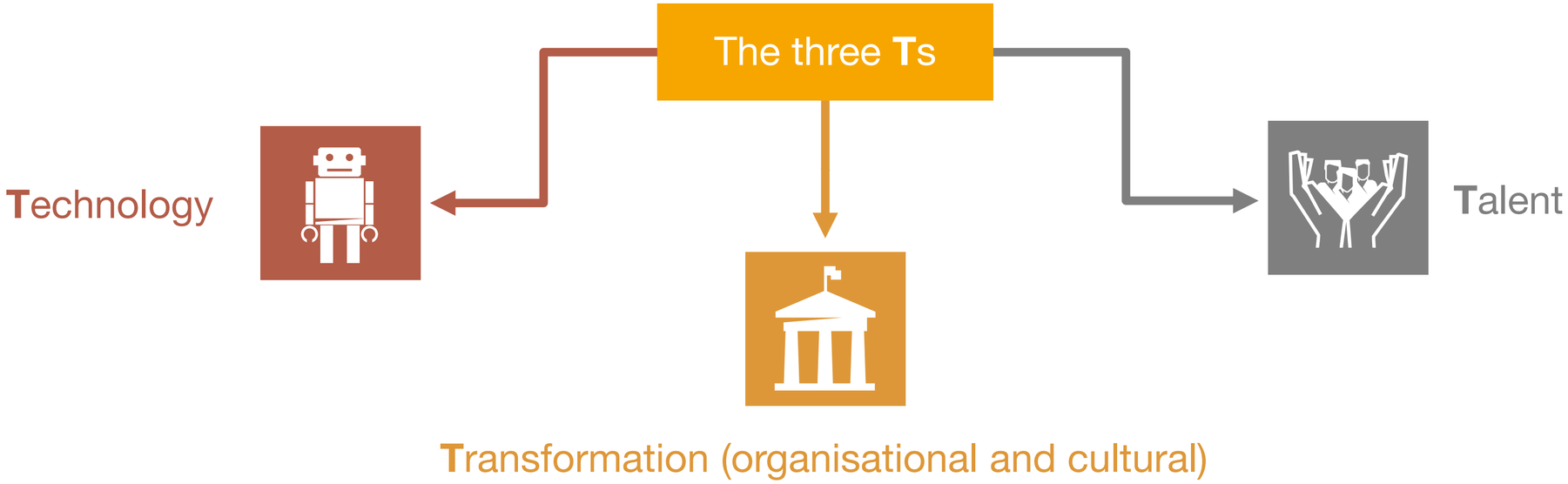
ARTIFICIAL INTELLIGENCE AND INCOME INEQUALITY

Cutting-edge AI technologies have the potential to increase productivity but also to lead to shifts in the labour market, skill requirements and income distribution

CONCLUSIONS

The technological transformation is not only transformational for the economy and society but also for central banks.

Central banks should be able to deal with the opportunities and risks by working on the three Ts:



Collaboration among central banks seems more important than ever in the face of this widespread revolution.

Chapultepec conference

Challenges for central banks in the digital era