



# **Fintech Risk Management**

## **The international view – the IMF**

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# Fintech: a Definition (1/2)



*"Recent technological innovations in the financial services sector"*

*"Leverages big data on individuals and firms, advances in computing power, AI, and cryptography, and the reach of the internet"*

*"Gives rise to new applications in services  
From payments and financing, to insurance,  
asset management, and advice"*

*"May emerge as competitive alternatives to  
traditional financial intermediaries, markets,  
and infrastructures"*

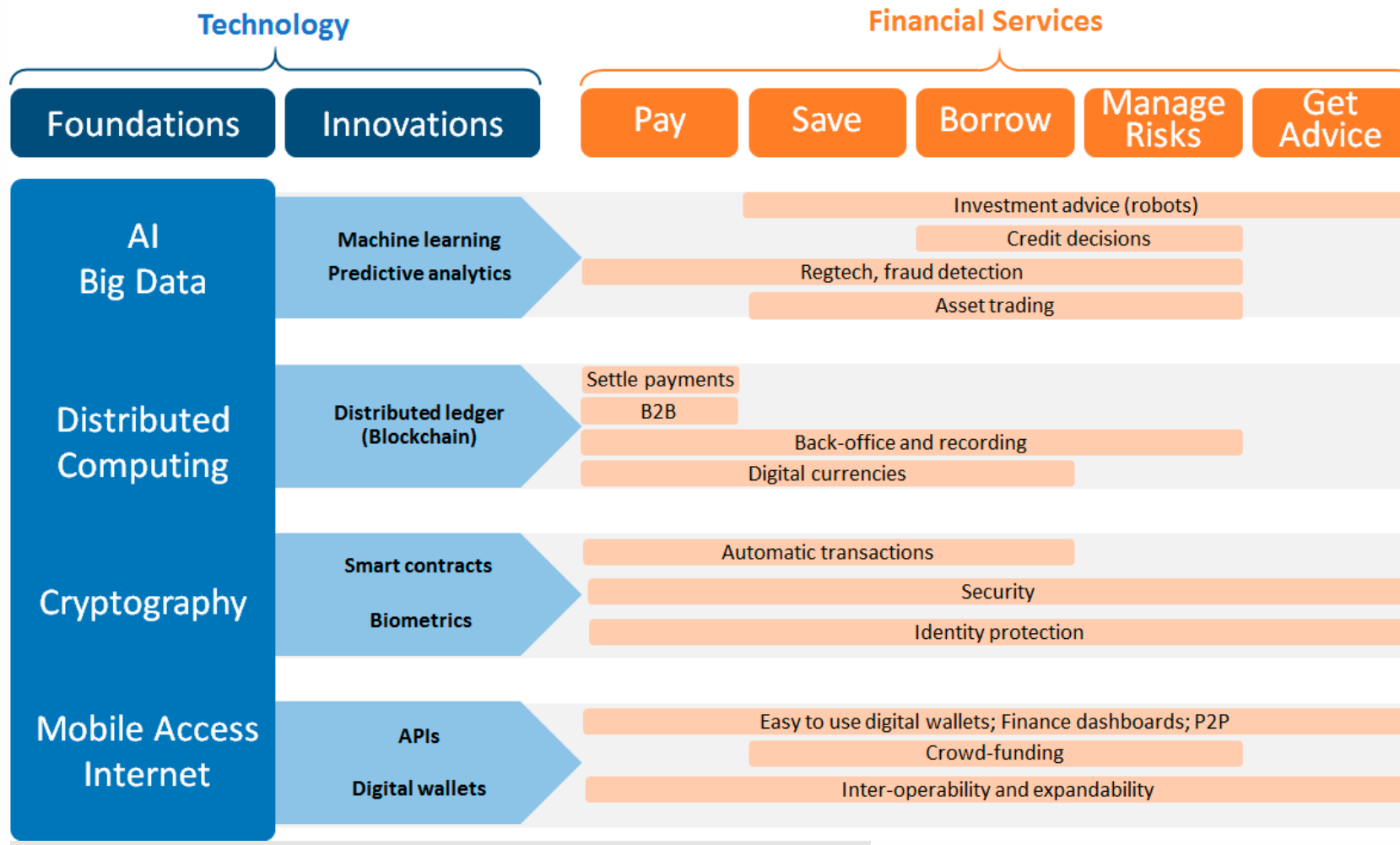
*"This is a world of six-month product development cycles and constant updates, primarily of software, with a huge premium on simple user-interfaces and trusted security. A world where data is king. A world of many new players without imposing branch offices."*

*- Madame Lagarde*

*"Let's look at lending, where they're using big data for the credit side. And it's just credit data enhanced, by the way, which we do, too. It's nothing mystical. But they're very good at reducing the pain points."*

*- Jamie Dimon*

# Fintech: a Definition (2/2)



**Key Examples:** p2p lending, crypto-payments, robo-advice, and AI/ML (big) data-analytics.

# Bali Fintech Agenda (1/2)



## Elements:

1. Embrace the promise of fintech
2. Enable new technologies to enhance financial service provision
3. Reinforce competition and commitment to open, free, and contestable markets
4. Foster fintech to promote financial inclusion and develop financial markets
5. Monitor developments closely to deepen understanding of evolving financial systems
6. Adapt regulatory framework and supervisory practices for orderly development and stability of the financial system
7. Safeguard the integrity of financial systems
8. Modernize legal frameworks to provide an enabling legal landscape
9. Ensure the stability of domestic monetary and financial systems
10. Develop robust financial and data infrastructure to sustain fintech benefits
11. Encourage international cooperation and information-sharing
12. Enhance collective surveillance of the international monetary and financial system



**VI. Adapt Regulatory Framework and Supervisory Practices for Orderly Development and Stability of the Financial System** and facilitate the safe entry of new products, activities, and intermediaries; sustain trust and confidence; and respond to risks. Many fintech risks might be addressed by existing regulatory frameworks.

However, new issues may arise from new firms, products, and activities that lie outside the current regulatory perimeter. This may require the modification and adaptation of regulatory frameworks to contain risks of arbitrage, while recognizing that regulation should remain proportionate to the risks.

Holistic policy responses may be needed at the national level, building on guidance provided by standard-setting bodies.



**IX. Ensure the Stability of Domestic Monetary and Financial Systems** by considering the implications of fintech innovations to central banking services and market structure, while safeguarding financial stability; expanding, if needed, safety nets; and ensuring effective monetary policy transmission.

Fintech could transform the financial markets through which monetary policy actions are transmitted and could challenge the conduct of monetary policy as well as redefine central banks' role as lenders of last resort.

On the other hand, fintech could help central banks improve their services, including potentially issuing digital currency, and expanding access to and improving the resilience of payments services.

# General Risks and Opportunities of Fintech

## Financial and Payment System Stability

- Fintech will likely lead to major changes in the organization of financial services.
- Cross-border payments stand to gain most.
- Changing payments landscape likely to have profound implications for central banking.
- A good understanding of technology, risks and opportunities is needed: requires research, practical expertise, and coordination.

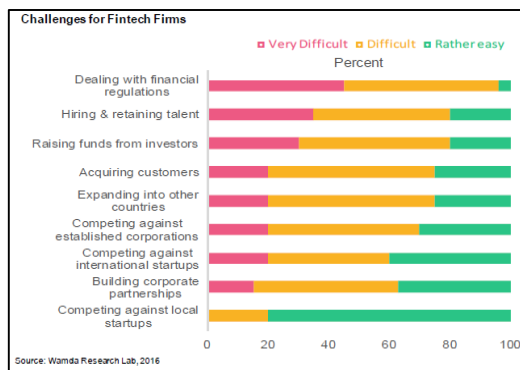
## Monetary Policy

- As a medium of exchange, private crypto-assets have properties that central bank money in its current forms (cash, and commercial bank reserves) does not have – central banks can learn from these properties, e.g., central bank digital currencies.
- But, the benefit of enhanced monetary policy effectiveness may need to be traded off against the potential cost on financial stability.

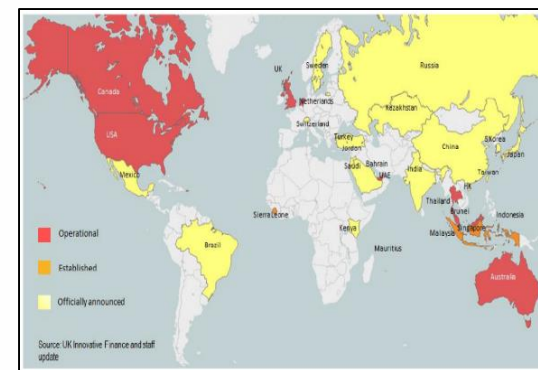
## Innovation

Crypto-assets / cryptography, cloud computing, and AI/ML offer opportunities to improve financial services (“regtech”), financial supervision (“supotech”), financial inclusion (“edtech”), and central banking.

# Fintech in Practice



The **main challenges** for fintechs are gaps in regulation, talent, and private capital.

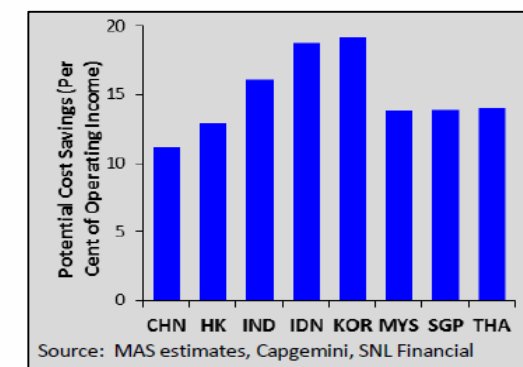


**Regulatory sandboxes** are emerging in most regions, though they are limited in Africa.

For **Distributed Ledger Technology (DLT)** in specific, legal risks and an unclear regulatory environment are key inhibitors.

	1: Strongly agree	2: Somewhat agree	3: Neither agree nor disagree	4: Somewhat disagree	5: Strongly disagree
CHALLENGES TO BROAD DLT ADOPTION	WEIGHTED AVERAGE	INFRASTRUCTURE PROVIDERS	APPLICATION DEVELOPERS	OPERATORS	
Legal risks/regulatory framework	1.97	2.25	1.60	1.64	
Confidentiality issues	2.09	2.05	2.20	2.10	
Reluctance to change established business processes	2.17	2.47	2.00	1.73	
Immature technology	2.28	1.85	3.20	2.64	
Difficulty of building business network	2.44	2.45	2.20	2.55	
Potential issues with data protection laws	2.60	2.85	2.80	2.00	
Scalability/performance concerns	2.81	2.70	2.80	3.00	
Reluctance to give up some control	2.88	3.05	2.60	2.70	
Security concerns	2.91	2.95	2.80	2.89	
Unknown costs/benefits	3.08	3.14	3.60	2.70	
Lack of suitable use/business case	4.00	4.10	4.00	3.82	

Note: The lower the score, the more important the challenge is considered (1: very significant challenge; 5: no challenge at all).



Estimated **cost savings** from fintech for banks in Asia are in the range of 10-20 percent of operating income.

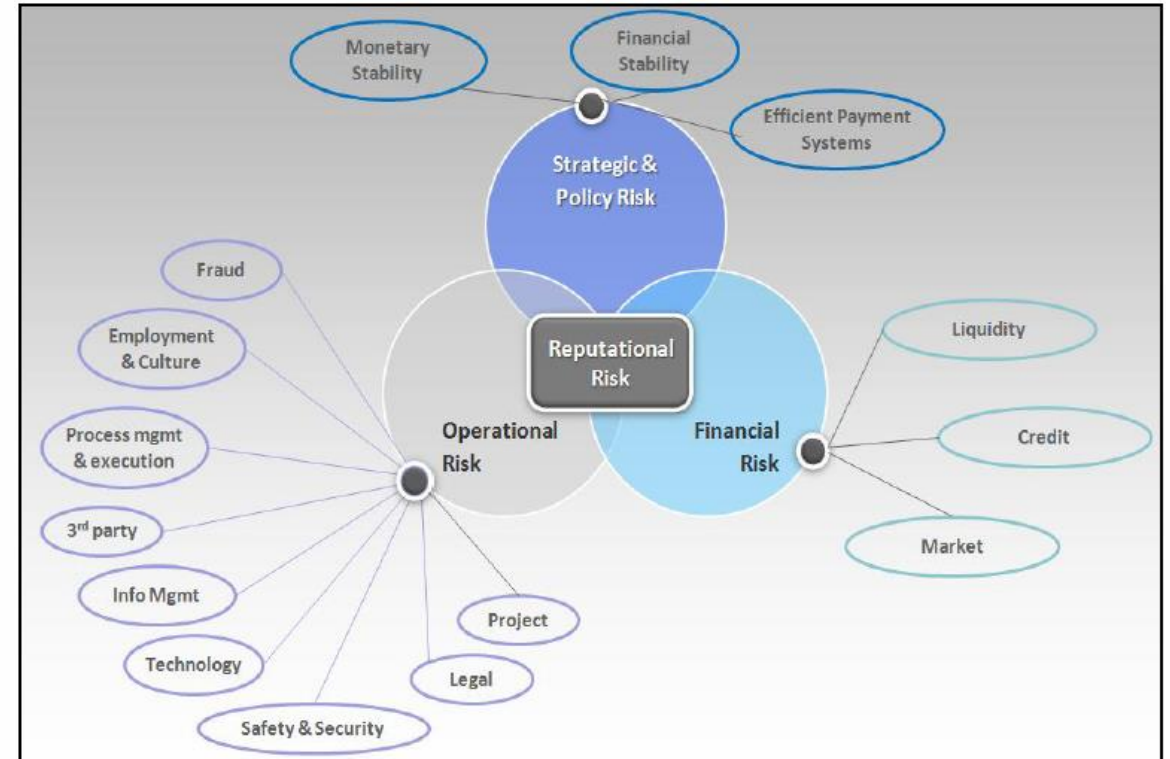


# Central Bank / Supervisory Nonfinancial Risks (1/3)



For **central banks / financial supervisors**:

- Fintech carries significant operational risks (IT in general, data-infrastructure, cyber-security, Business Continuity Management, qualified staff, outsourcing / cloud computing, etc.)
- But: operational risk management not always very well developed.
- IMF: provides technical advice & support.



Source: Bank Negara Malaysia

# Central Bank / Supervisory Nonfinancial Risks (2/3)

## 1) Information Technology (IT)

- Software (developed in house, or externally?)
- Hardware (quality demands and assurance)
- Cyber-security (human error, red teaming)
- Data-management (digitization, databases, backups)



## 2) Outsourcing:

- Software (see above) & cloud computing
- Asset management & pension fund management
- Currency management (cash delivery)

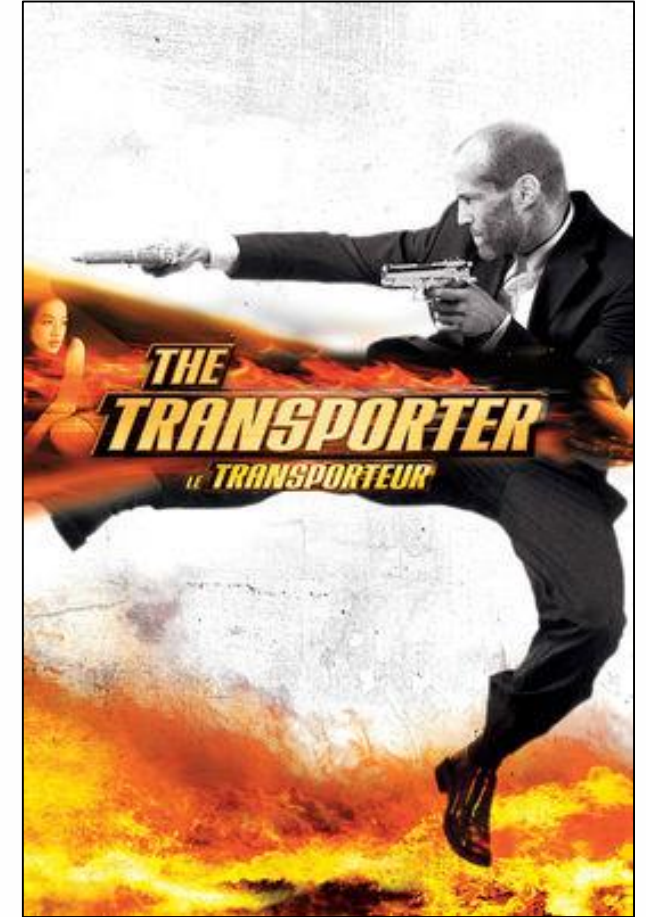
## 3) Cash Currency Management:

- Procurement (and procurement in general!)
- Distribution (CIT vehicles) & logistics (see above)
- Invalidation & destruction
- And: Central Bank Digital Currencies ?



## 4) Human Resources (HR) & Organization

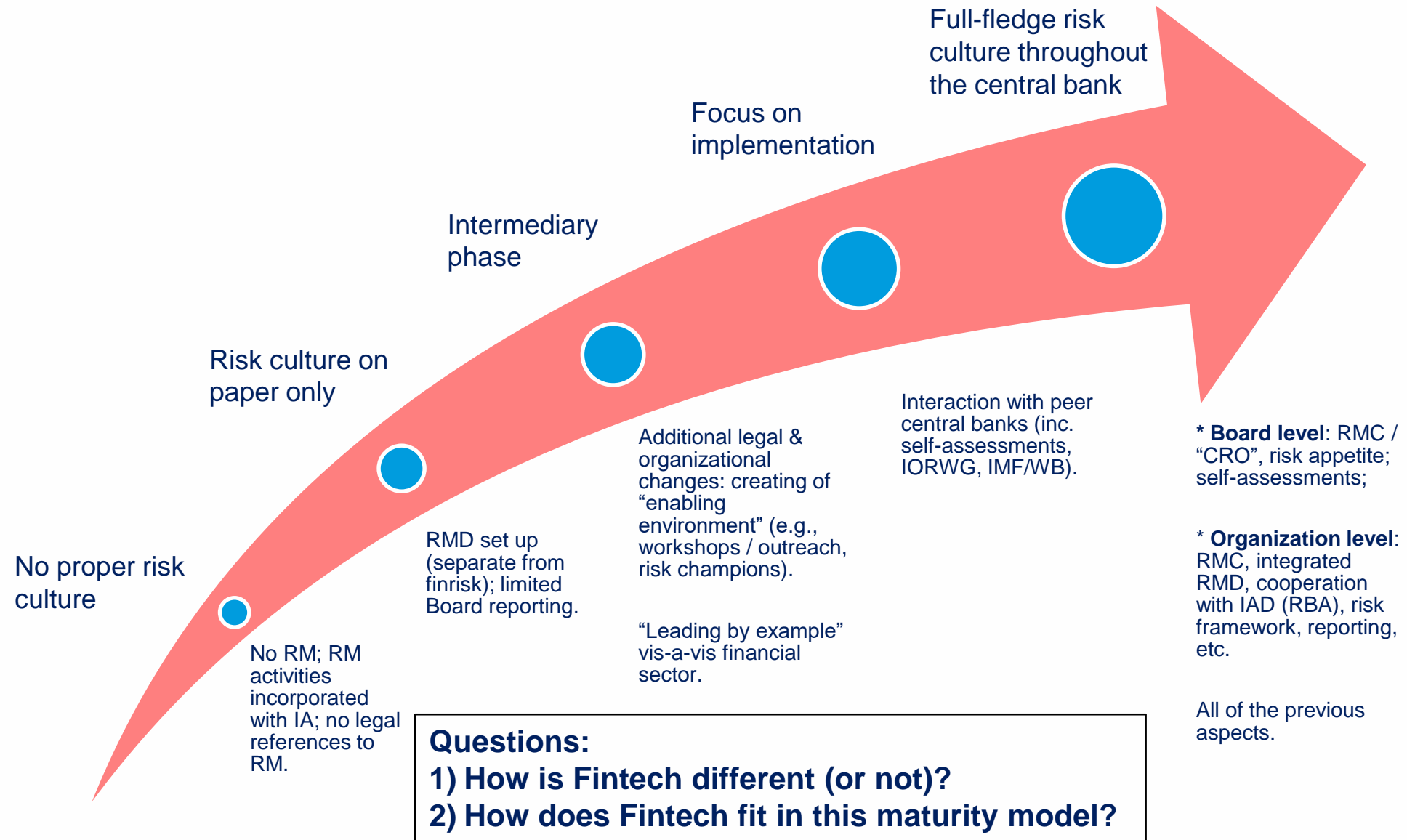
- Expertise & training
- Remuneration policies
- Legal protection of Board members and staff
- Compliance
- Code of ethics
- Ombudsman / Whistleblowing
- Organization chart / roles & responsibilities
- Reporting lines



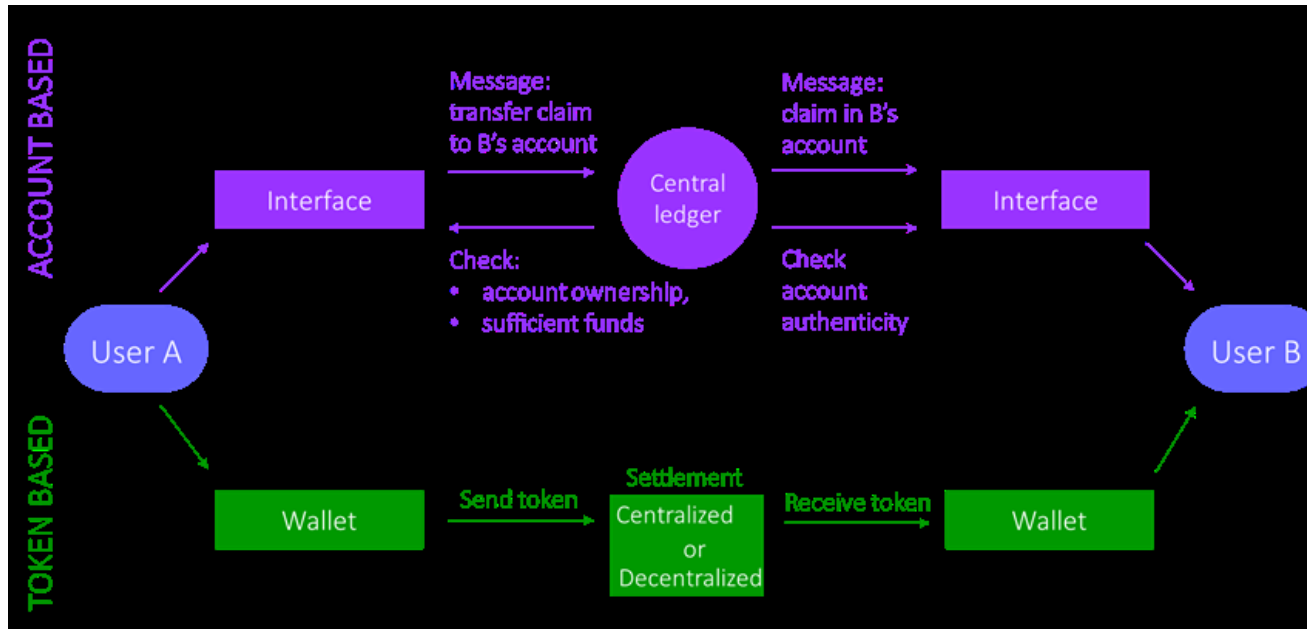
## 5) Operations:

- Building services, maintenance, drivers & cars, (armed) security services, etc.

# Central Bank / Supervisory Nonfinancial Risks (3/3)



# Case: Central Bank Digital Currencies (CBDC)



**CBDC is a new form of money**, issued digitally by the central bank and intended to serve as legal tender (IMF SDN 2018/08).

**Main modalities:** Token-based v account-based, and wholesale v retail.

**Practical work:** IMF SDN (November 2018), CBDC guidance for retail CBDC, discussions during upcoming Bali Fintech Agenda Outreach Meetings & IMF Fintech Roundtable Program (April 2019).

## Jurisdictions Where Retail CBDCs Are Being Actively Explored

[Australia](#) (on hold)  
[Denmark](#) (rejected)  
[Ecuador](#) (pilot complete)  
[Norway](#) (ongoing)  
[United Kingdom](#) (on hold)  
[Canada](#)  
[China](#) (and [here](#))  
[Sweden](#)  
[Bahamas](#)  
[Brazil](#)

[Curaçao en Sint Maarten](#)  
[Eastern Caribbean](#) (via [Bitt](#))  
[India](#)  
[Jamaica](#)  
[Montserrat](#) (via [Bitt](#))  
[Palestine](#)  
[Philippines](#)  
[Ukraine](#)  
[Uruguay](#) (and [here](#)) (pilot)

Sources: Central banks or various news sources per hyperlinks above. For illustrative purposes only. Information has not been verified through official channels.

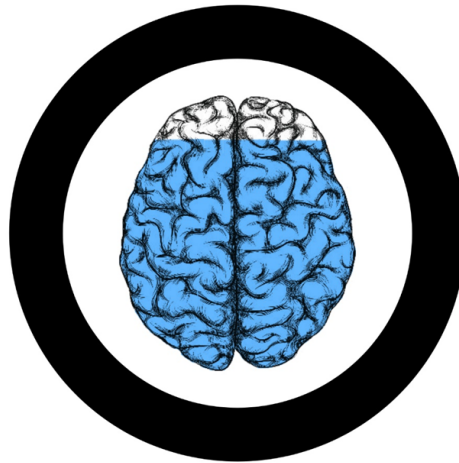
**Interesting case examples:** Canada, China, Sweden, Singapore, Uruguay.

## Case: Cyber Risk – Current Situation (1/2)

Ever-evolving and growing risk; focus on detection, response, and recovery

Cyber risk supervision is a challenge; most jurisdiction struggle with skills shortages

Capacity development and international consistency and cooperation needed



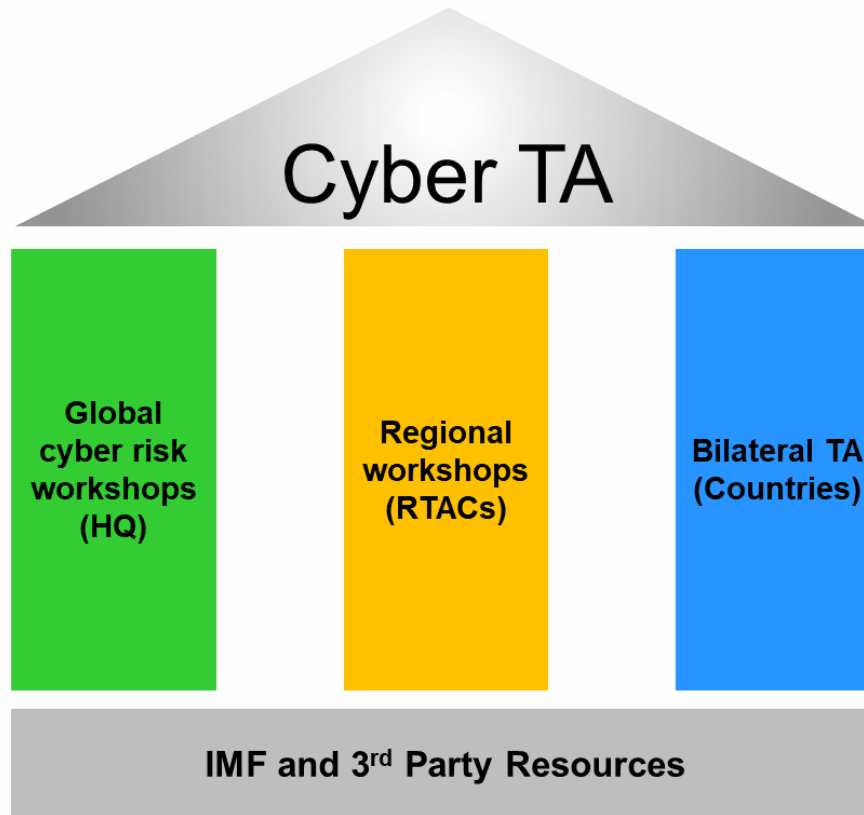
**93%** of jurisdictions

face skills shortages when it comes to cyber security regulation and supervision

Source: IMF cyber risk supervision survey of emerging economies, 2018



## Case: Cyber Risk – Response (2/2)



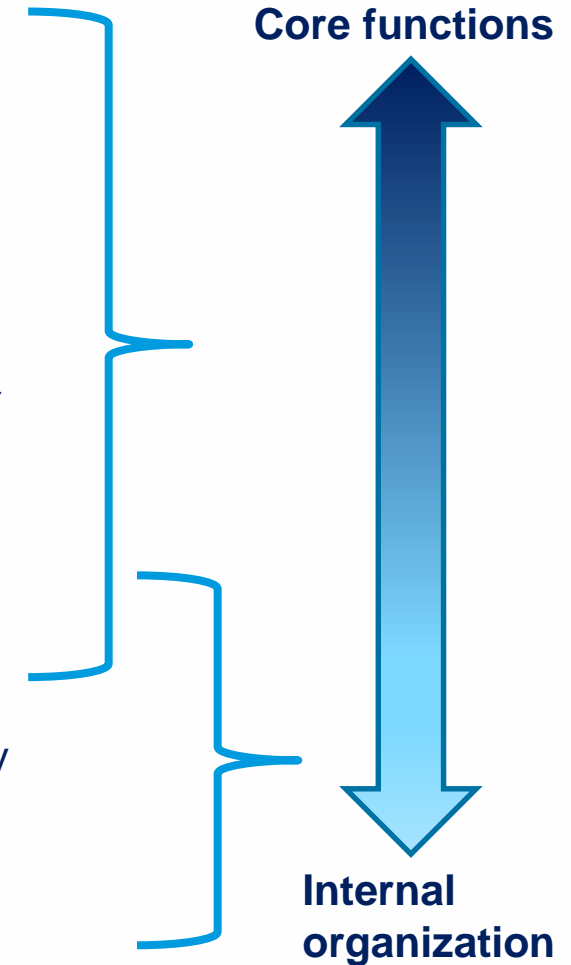
Modality	Jurisdictions*
Global workshops	65
Regional workshops	29
Bilateral TA	5
Ad-hoc support	7

\*Coverage between December 2017 and December 2018

IMF's Cyber TA framework is based on the G7 Fundamental Elements of Cyber Security and international standards

# Way Forward

- ▶ **Regulation:**
  - How to define fintech / crypto-assets / Central Bank Digital Currencies (CBDC);
  - What to regulate, and how (rule-based vs. principle-based); scope for self-regulation; proportionality;
  - How to establish an international level playing field; and
  - How to balance innovation with regulation.
- ▶ **Financial Stability:** risks are currently limited. But: does this also hold for consumer & investor protection, and financial integrity? A two-tier system for CBDC allows maintaining of financial intermediation by commercial banks.
- ▶ **Cooperation:** e.g., [Global Sandbox](#) (UK), [ASEAN financial innovation network](#), [Fintech Accelerator](#) (Singapore); [International Operational Risk Working Group](#).
- ▶ **Nonfinancial Risk Management, incl. cyber security:** risks might be exacerbated by fintech developments.
- ▶ **Algorithmic governance:** requires proper understanding by supervisors.



# References & Selected Further Reading

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# FINTECH & THE IMF

See IMF research on the opportunities and challenges associated with emerging technologies in the financial system

[www.imf.org/Fintech](http://www.imf.org/Fintech)

 #fintech

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