

Fintech

Emerging policy considerations and practical lessons



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* Disclaimer: The findings, interpretations, and conclusions expressed in this presentation do not necessarily represent the views of the International Bank for Reconstruction and Development/World Bank and its affiliated organizations, or those of the Executive Directors of the World Bank or the governments they represent.

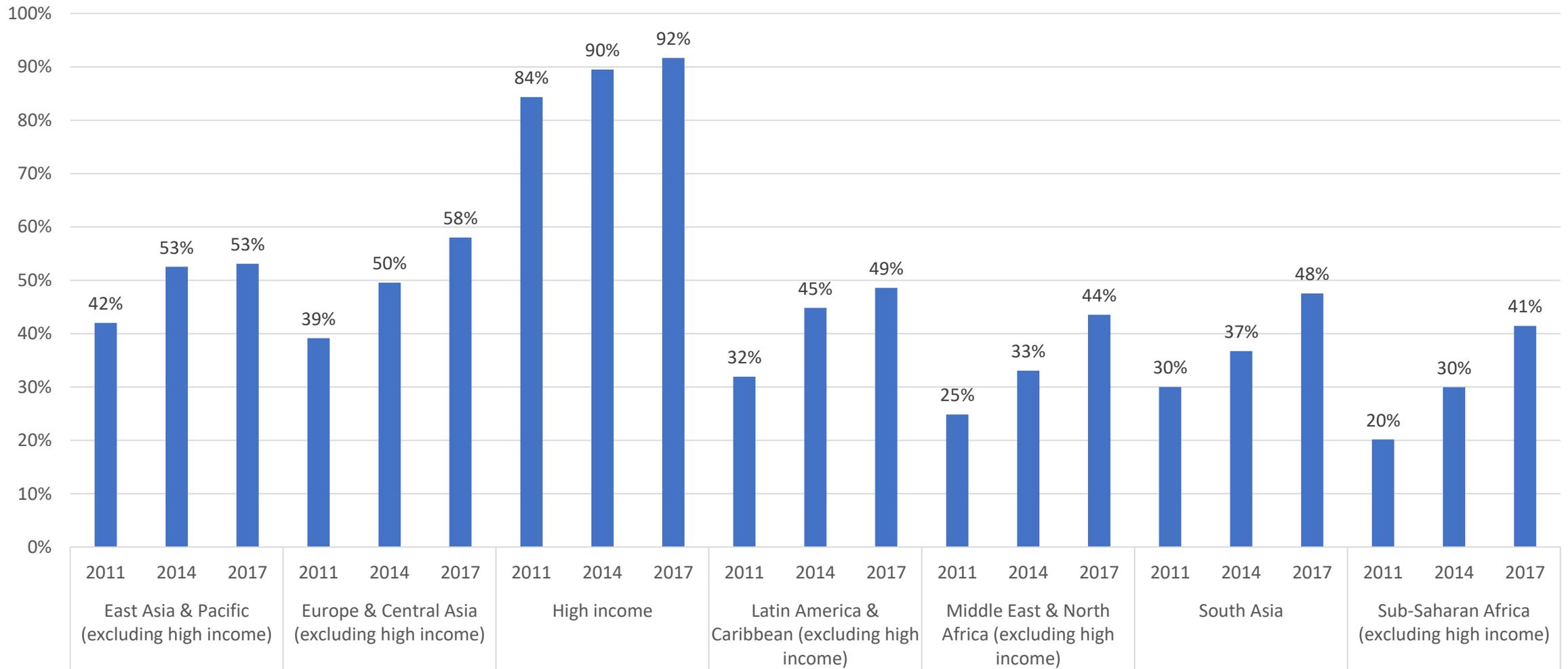
I thank my World Bank colleagues Harish Natarajan and Sharmista Appaya for inputs. The slides on the Bali Fintech Agenda are jointly produced with the IMF (slides 21-25). The four-group clustering of the Bali Fintech Agenda is my own (slide 20).

**Financial
inclusion and
fintech trends**



Financial inclusion has improved globally, but 1.7 billion adults remain unbanked

Adults with an account (%)

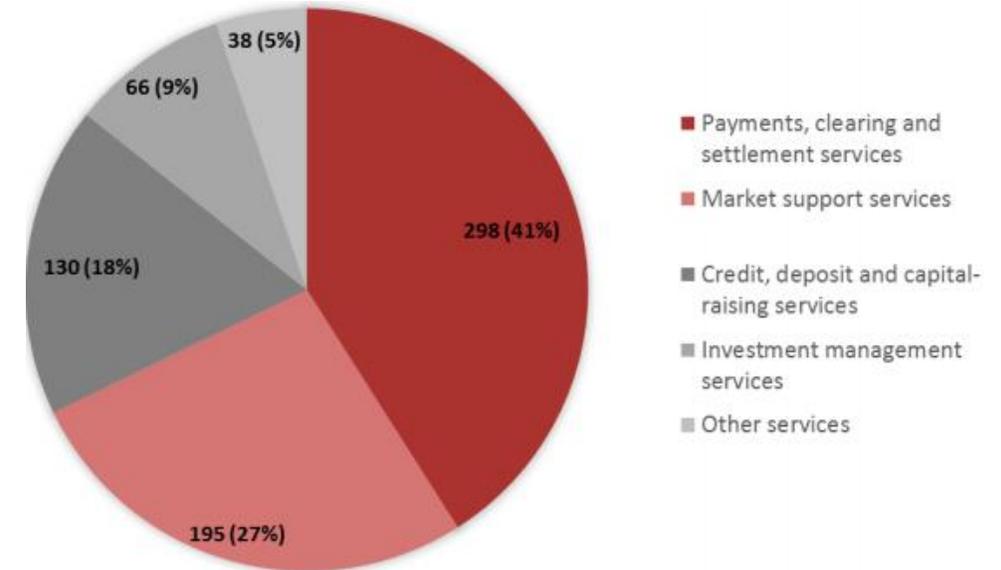


Fintech: New technology impacts a wide range of financial services

Example areas of innovative financial services in core banking functions

Sectoral innovations			
Credit, deposit, and capital-raising services	Payments, clearing and settlement services		Investment management services
Crowdfunding	Retail	Wholesale	High-frequency trading
Lending marketplaces	Mobile wallets	Value transfer networks	Copy trading
Mobile banks	Peer-to-peer transfers	FX wholesale	E-trading
Credit scoring	Digital currencies	Digital exchange platforms	Robo-advice
Market support services	Portal and data aggregators		
	Ecosystems (infrastructure, open source, APIs)		
	Data applications (big data analysis, machine learning, predictive modelling)		
	Distributed ledger technology (blockchain, smart contracts)		
	Security (customer identification and authentication)		
	Cloud computing		
	Internet of things / mobile technology		
Artificial intelligence (bots, automation in finance, algorithms)			

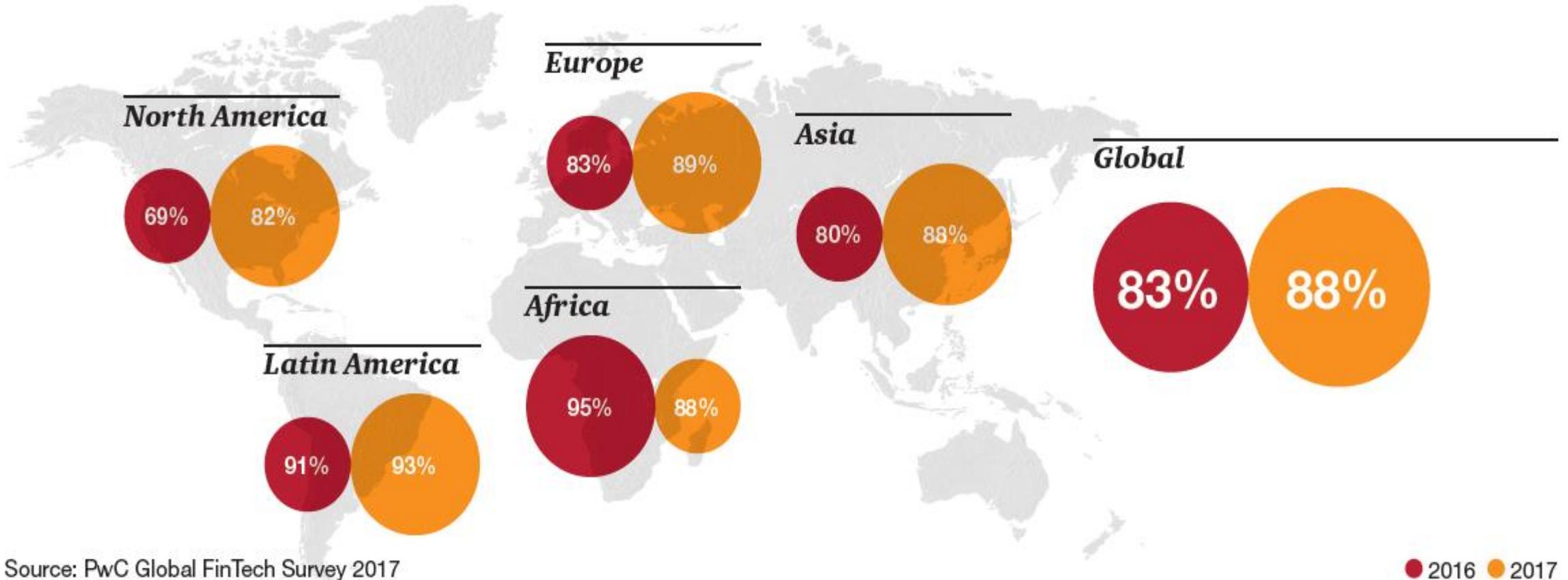
Survey of key provider per fintech activity (2016)



Source: Basel Committee Banking Supervision (February 2018)

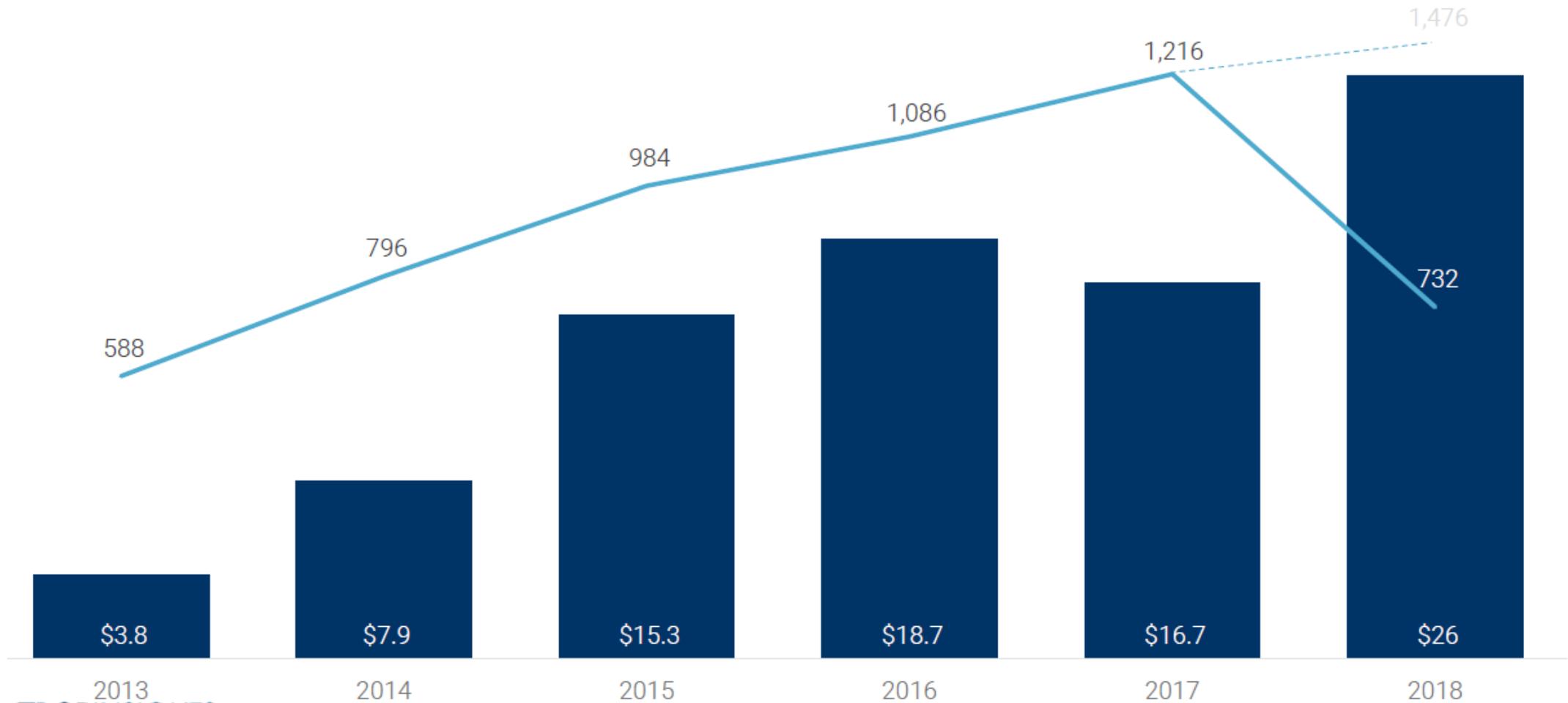
Fintech is expected to transform the financial sector

Do you believe that part of your business is at risk of being lost to standalone FinTech companies within the next five years?



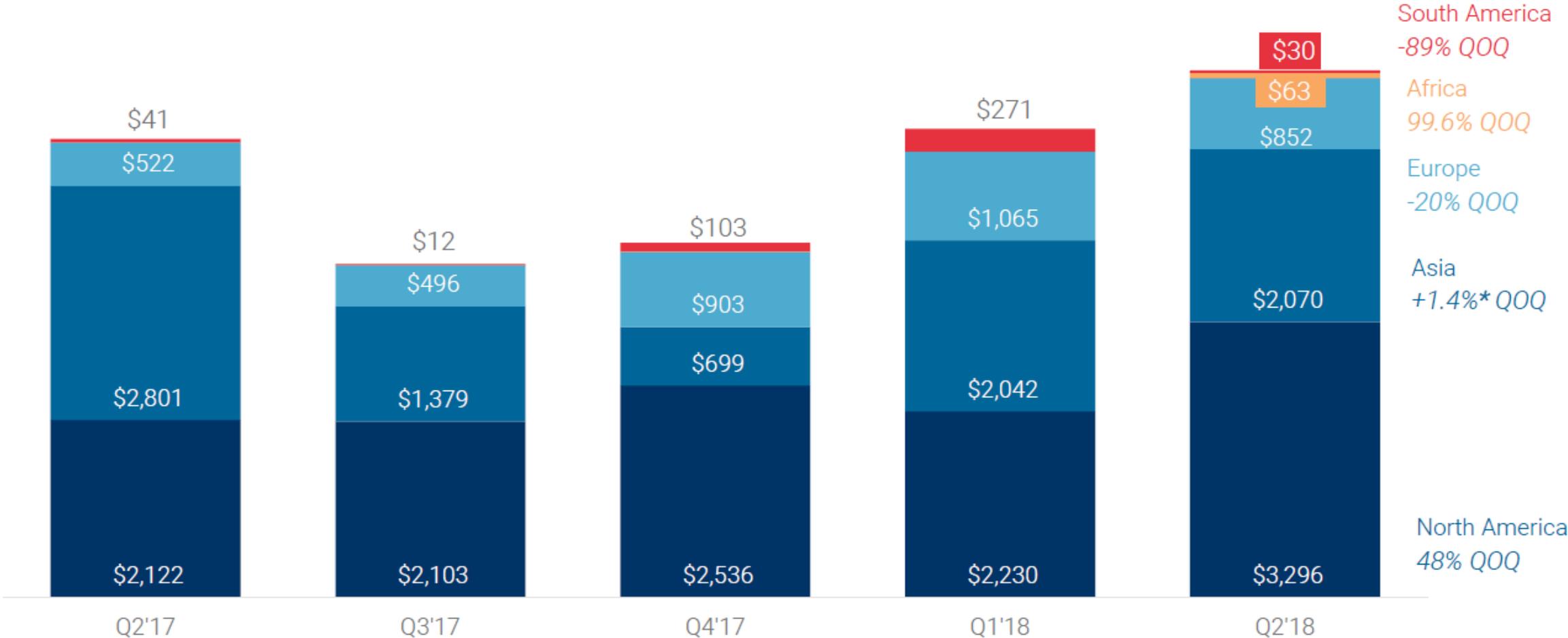
Global fintech deals on pace for a record year (1/2)

Annual VC-backed global fintech deals and financing, 2013 – 2018 YTD (Q2'18), (\$B)



Global fintech funding - regional trends

Global VC-backed fintech funding by continent, Q2'17 – Q2'18, (\$M) (*Ant Financial excluded)



Fintech has enormous potential to expand access

Potential for Fintech to:

- Reimagine financial processes and business models
- Enable new entrants and competition within the financial service value chain (disaggregation, specialization, open APIs)
- Enable services to be more accessible (incl. through mobile networks), often at lower cost
- Leverage electronic data to tailor product design, reach new consumers, accurately price risks (and to enable AI)



Improved coverage of/ access to financial services



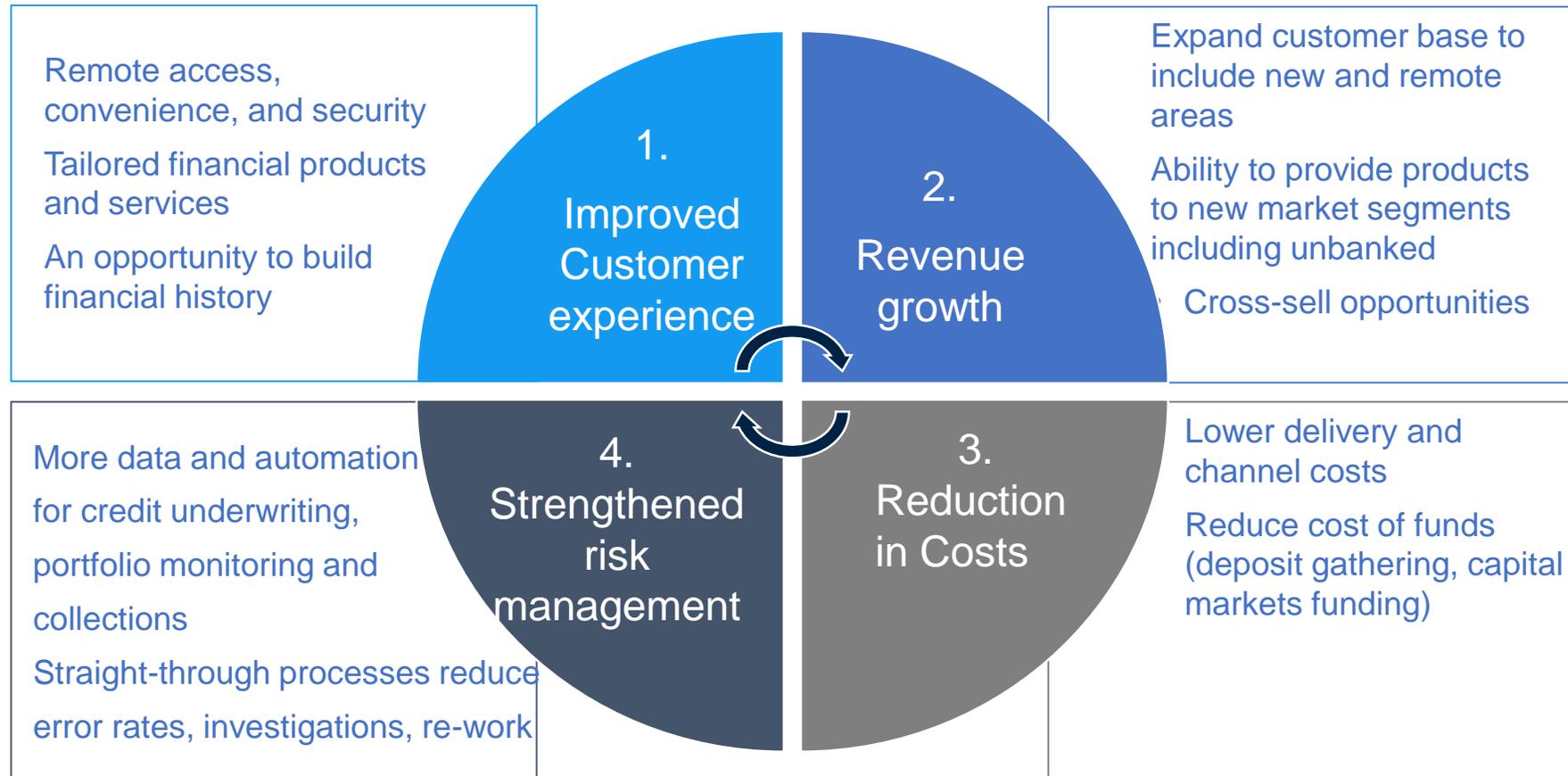
Enhanced efficiencies and reduced costs, and also risk management



New and more tailored types of products, services, and delivery channels

Potential Fintech-enabled Outcomes

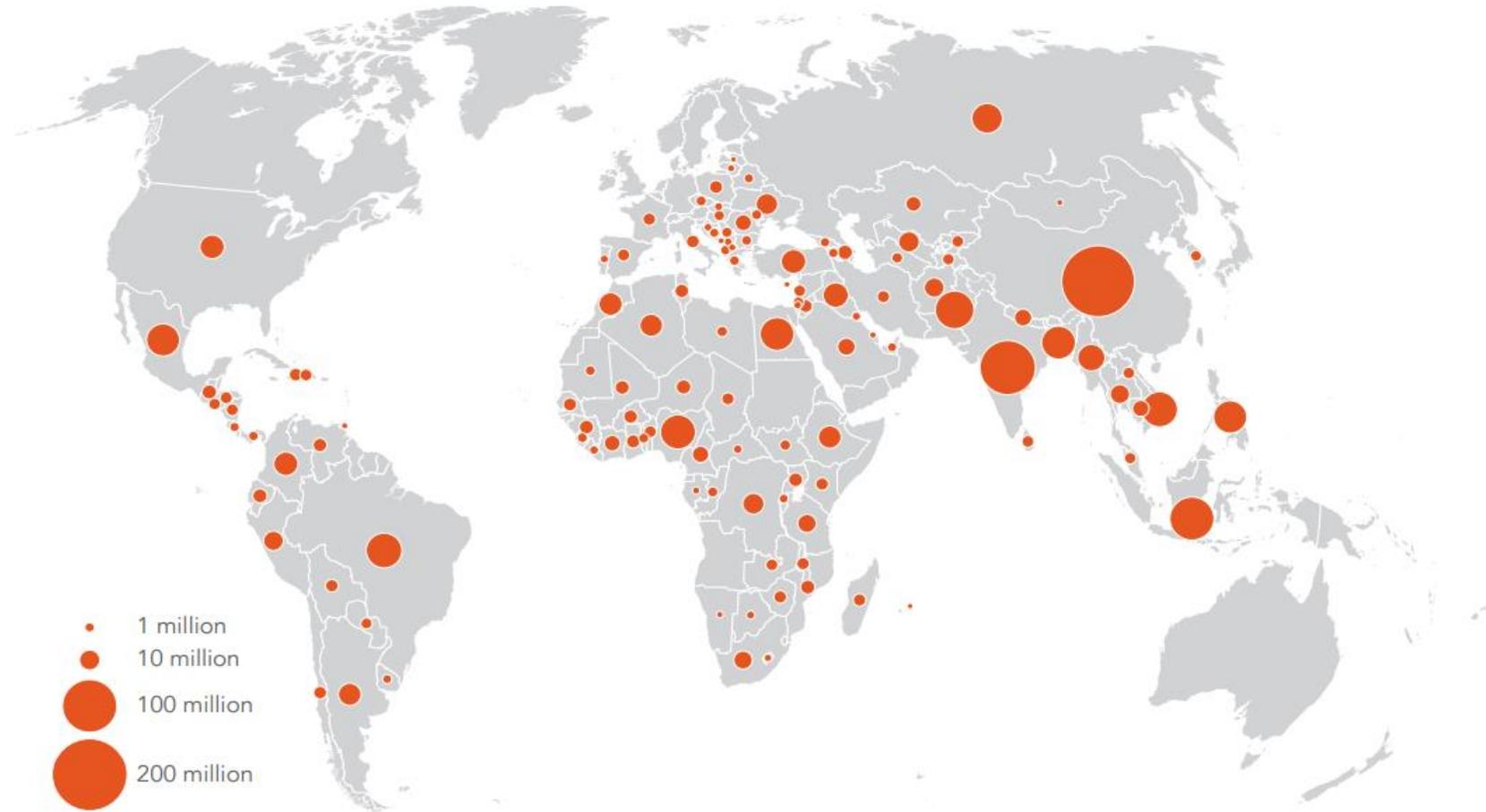
Financial institutions and customers can benefit



Example: The potential of mobile to reach the unbanked

Two-thirds of unbanked adults have a mobile phone

Adults without an account owning a mobile phone, 2017



Sources: Global Findex database; Gallup World Poll 2017.

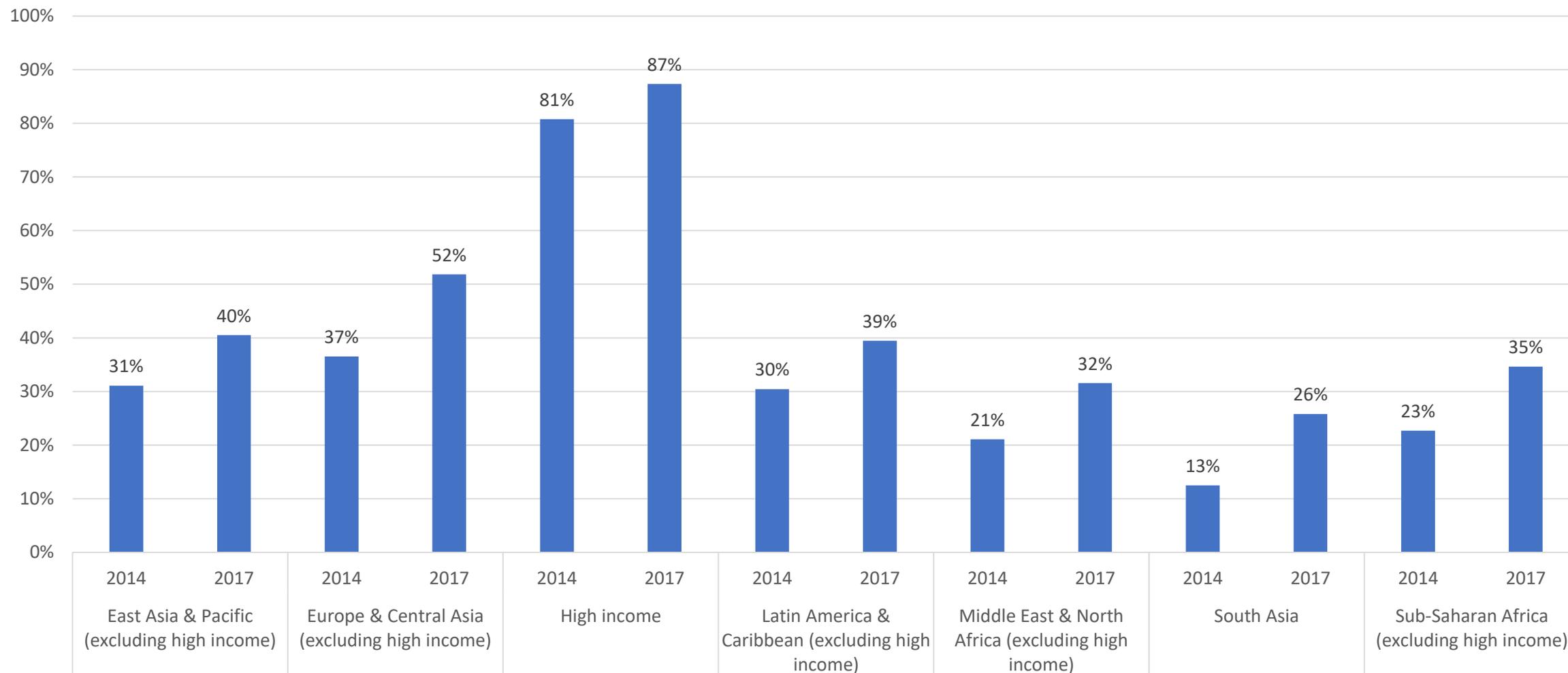
Note: Data are not displayed for economies where the share of adults without an account is 5 percent or less.

Digital is key to reaching universal financial access



Digital payments are already transforming the payment landscape

Adults who made or received a digital payment in the last 12 months (%)



Note: The percentage of respondents who report using mobile money, a debit or credit card, or a mobile phone to make a payment from an account, or report using the internet to pay bills or to buy something online, in the past 12 months. It also includes respondents who report paying bills, sending or receiving remittances, receiving payments for agricultural products, receiving government transfers, receiving wages, or receiving a public sector pension directly from or into a financial institution account or through a mobile money account in the past 12 months. Source: Findex 2017, World Bank

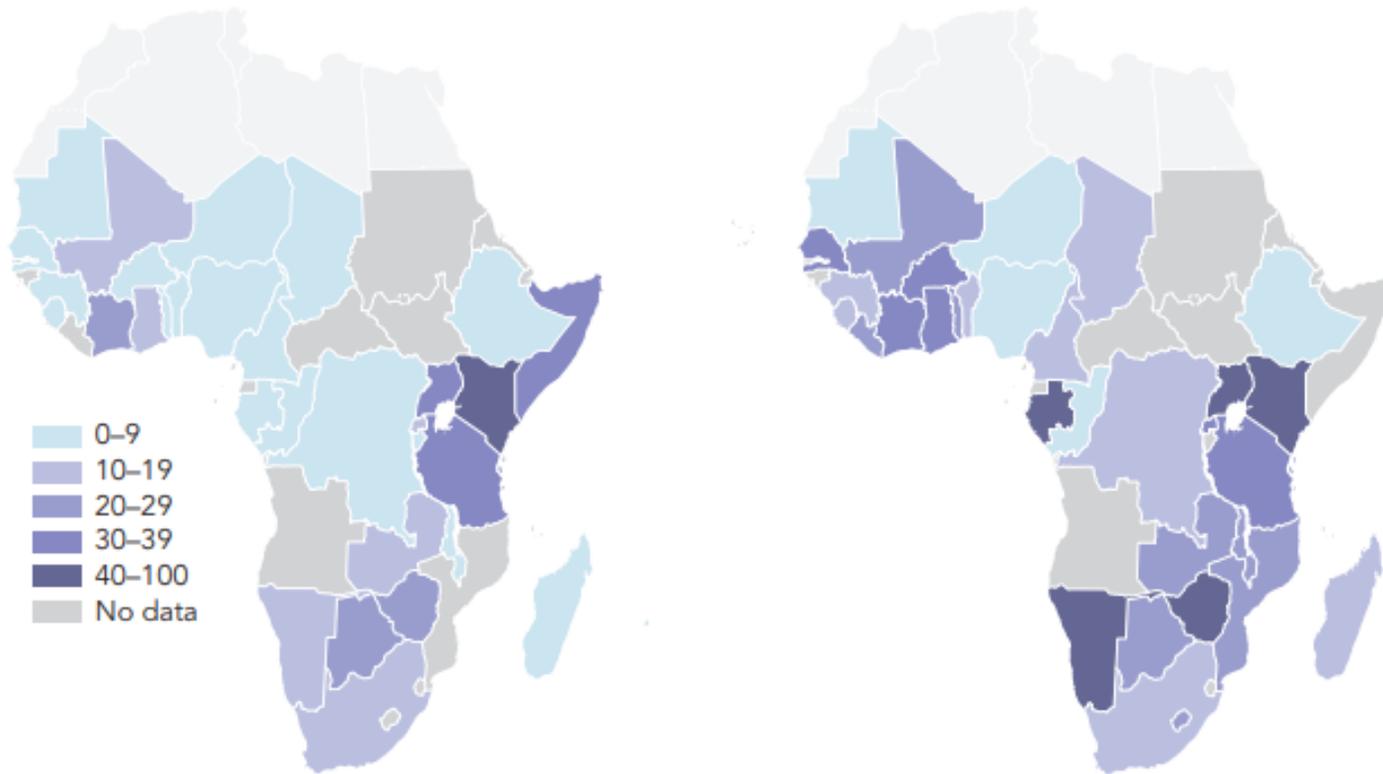
Strong mobile and digital trend in Sub-Saharan Africa

Mobile money accounts have spread more widely in Sub-Saharan Africa since 2014

Adults with a mobile money account (%)

2014

2017

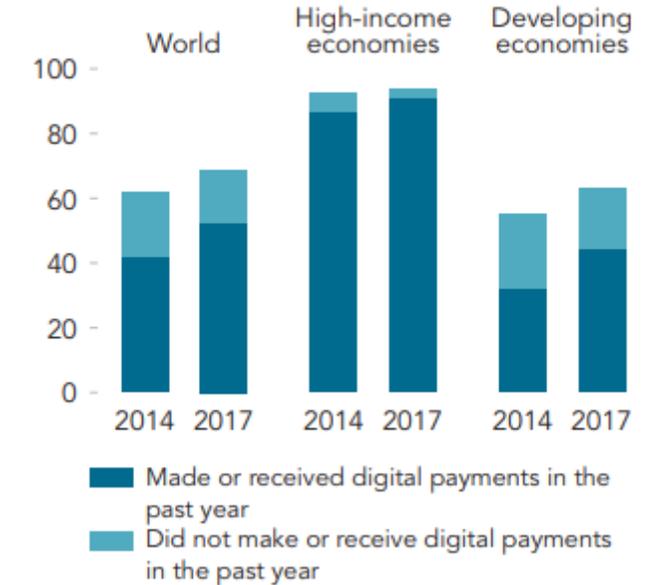


Source: Global Findex database.

Note: Data are displayed only for economies in Sub-Saharan Africa.

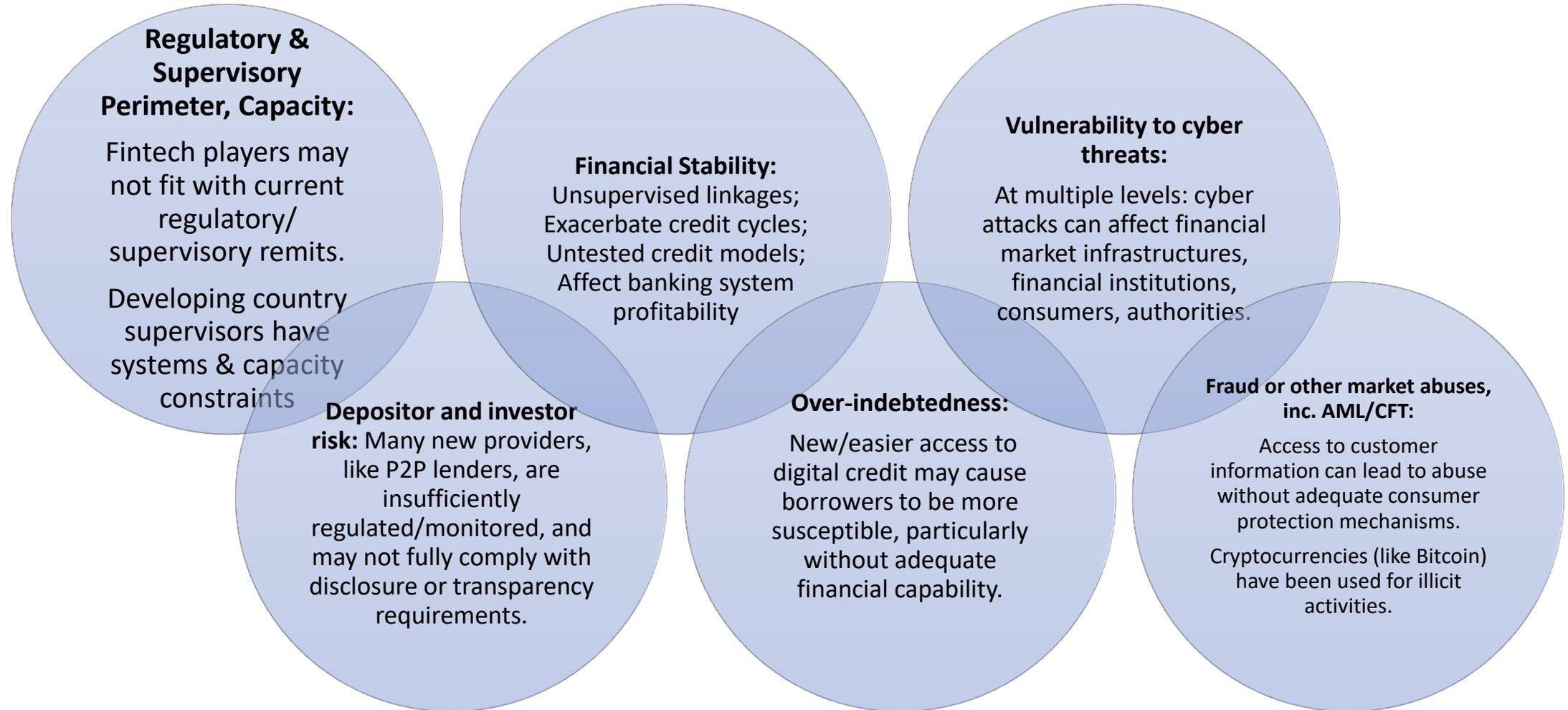
More people who have an account are using it for digital payments

Adults with an account (%)

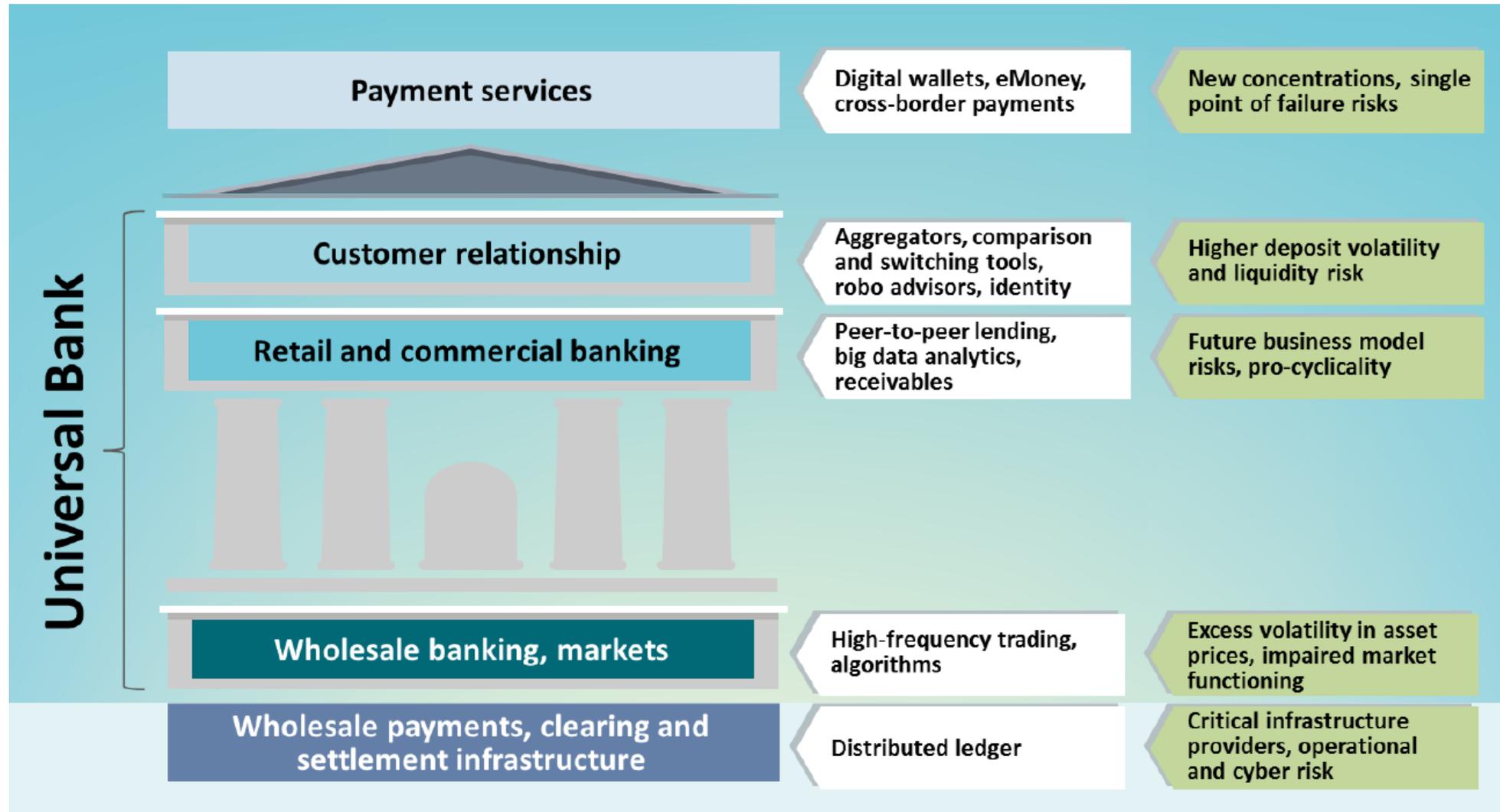


Source: Global Findex database.

Fintech presents various new challenges as well



Financial stability risks across bank functions



Source: Mark Carney (2017). The Promise of FinTech – Something New Under the Sun?

**Policy
implications**



Fintech policy levers and objectives

Selected Fintech adoption drivers and policy levers

Legal, regulatory,
and supervisory
framework

Financial sector
structure and
development

Digital penetration
and literacy

Physical, digital and
financial
infrastructure

Common policy objectives

Stability

Integrity

Consumer
and investor
protection

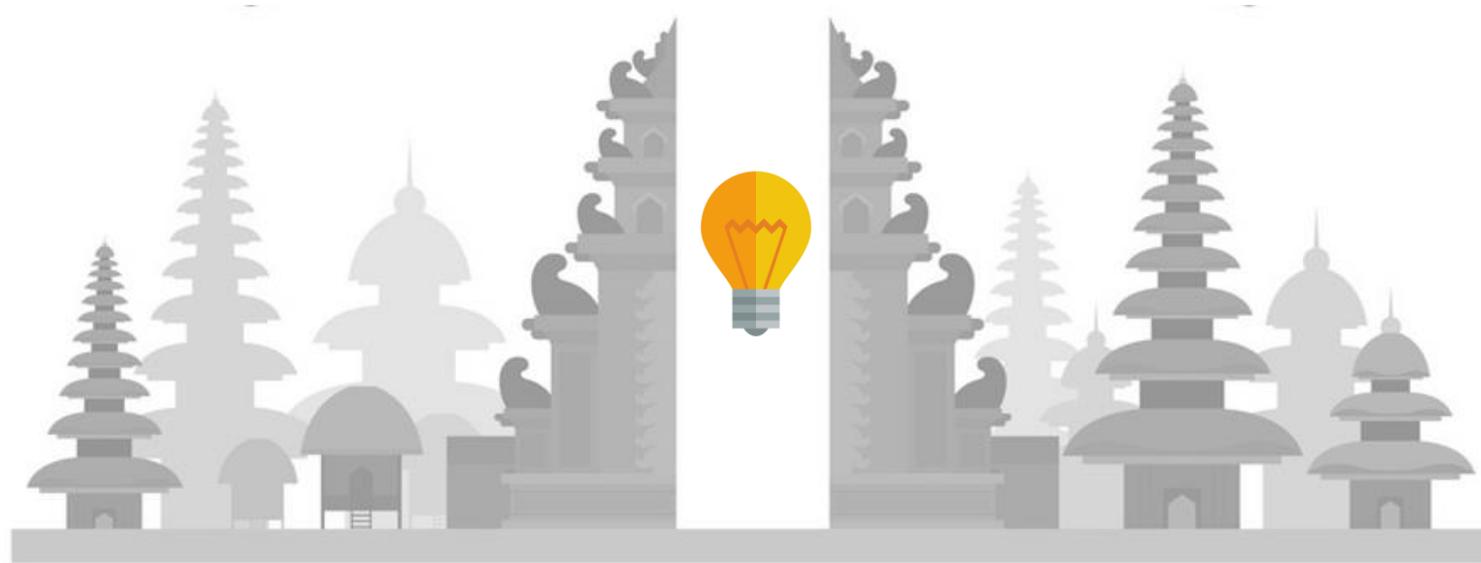
Level playing
field and
innovation

Inclusion

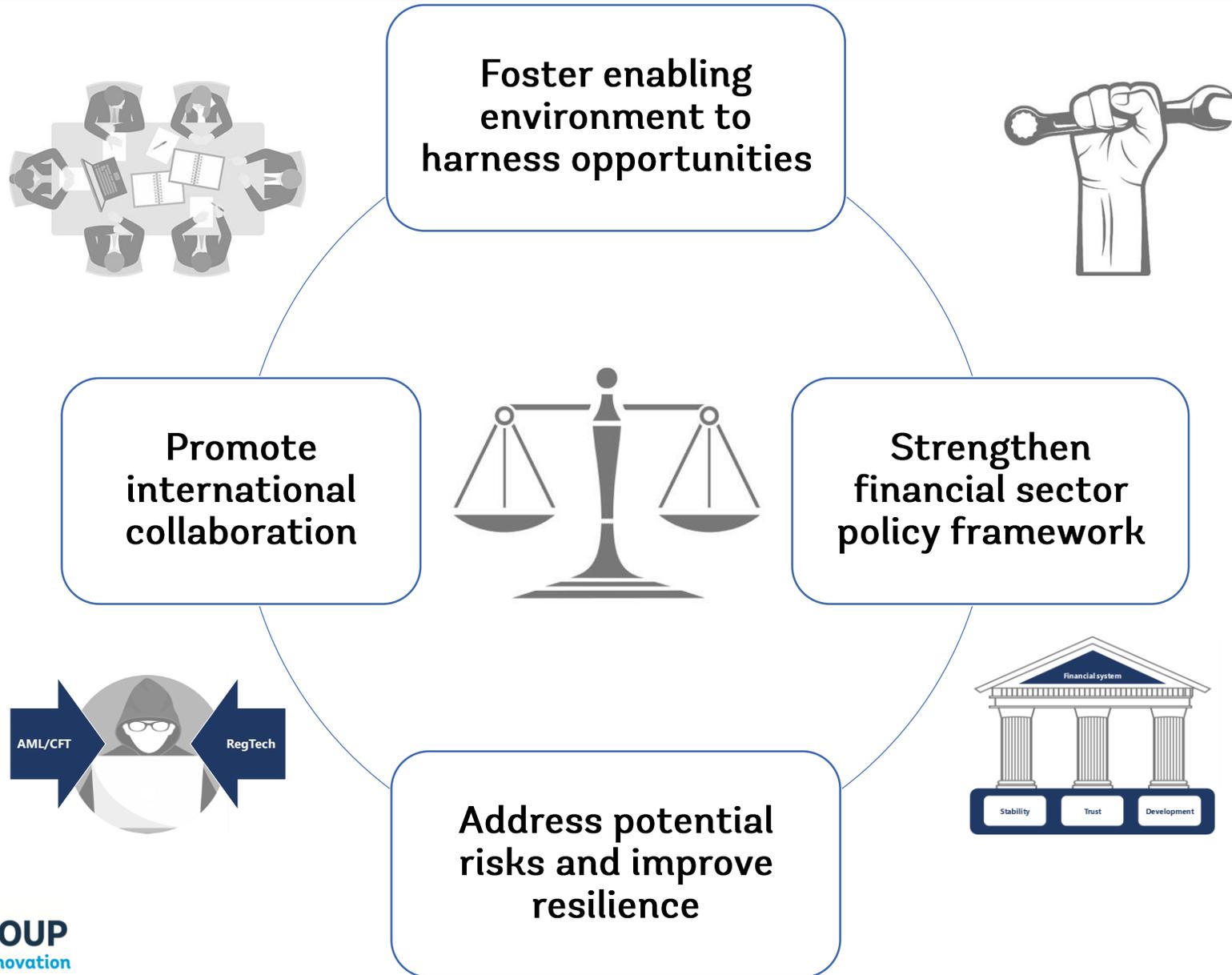
Market
development

The World Bank - IMF Bali Fintech Agenda

High-level considerations for policy makers and the international community

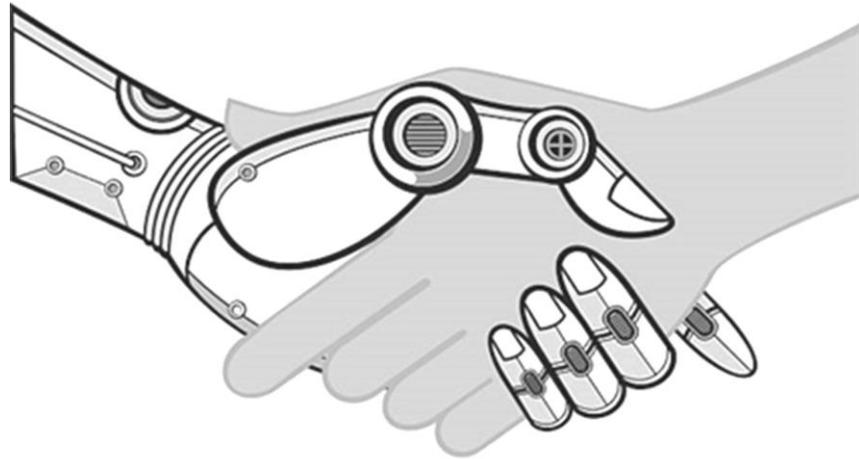


Need for a balanced approach: Four broad policy challenges



Fostering enabling environment to harness opportunities

(I) Embrace the Fintech revolution



Key issues: strengthen institutional capacity; improve communication with stakeholders and across agencies; and expand consumer education

(II) Enable New Technologies to Enhance Financial Service Provision



Key issues: facilitate development of and fair access to telecom and internet infra; financial infrastructure, digital IDs; digitize Government data repositories; and leverage technology to make cross-border payments efficient.

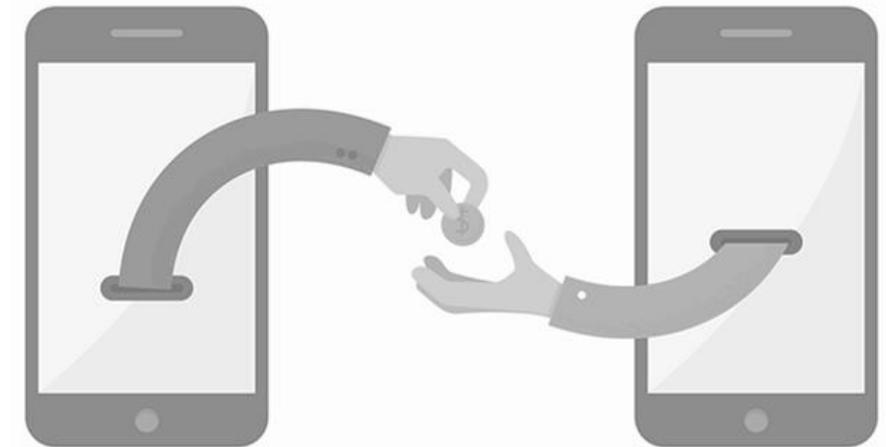
Fostering enabling environment to harness opportunities

(III) Reinforce **Competition** and Commitment to Open, Free, and Contestable Markets



Key issues: treat similar risks equally, apply laws and regulations proportionately; avoid market concentration and abuse; foster standardization and interoperability

(IV) Foster Fintech to Promote **Financial Inclusion** and **Develop Financial Markets**



Key issues: embed fintech in national financial inclusion and literacy strategies; foster knowledge exchange; digitize government payments; leverage fintech to advance financial sector development

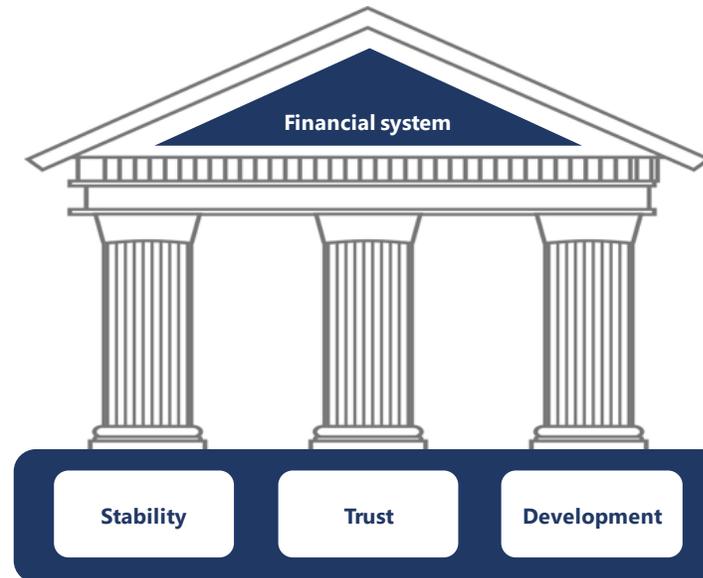
Strengthen financial sector policy framework...

(V) Monitor Developments Closely to Deepen Understanding of Evolving Financial Systems



Key issues: enable flexible data gathering frameworks to identify obstacles to innovation and new risks

(VI) Adapt Regulatory Framework and Supervisory Practices for Orderly Development and Stability of the Financial System



Key issues: ensure regulation remains adaptable and conducive to development, inclusion, and competition; consider new approaches like regulatory sandbox; address new risks and (cross-border) arbitrage

(VIII) Modernize Legal Frameworks to Provide an Enabling Legal Landscape



Data Privacy	Insolvency
Data Security	Resolution
Smart Contracts	Payments

Key issues: legal predictability to spur investment; legal basis for smart contracts and electronic signatures; address legal gaps

Address potential risks and improve resilience...

(VII) Safeguard Financial Integrity



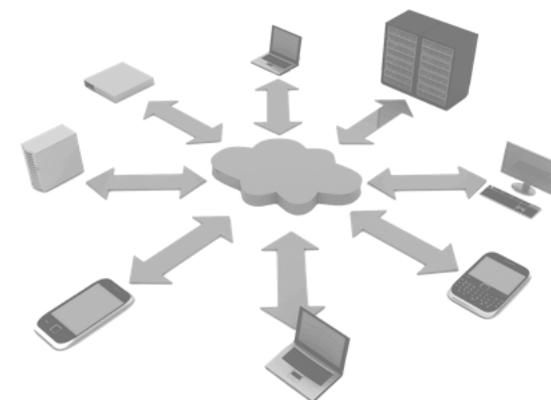
Key issues: mitigate AML/CFT risks that crypto-assets and other Fintech developments may pose, potential of Regtech to strengthen AML/CFT compliance

(IX) Ensure the Stability of Monetary and Financial systems



Key issues: Digital currencies, distributed ledger applications to payments, lender of Last Resort and other safety net arrangements

(X) Develop Robust Financial and Data Infrastructure to Sustain Fintech Benefits



Business continuity	Data ownership
Operational risk management	Consumer protection
Privacy	Data security and integrity
Cyber security	Concentration risk management

Key issues: Cyber security and operational risk management, risk of concentration in third-party service providers, data governance frameworks

Promote international collaboration

(XI) Encourage International Cooperation and Coordination, and Information Sharing



Key issues: to avoid regulatory arbitrage and a “race to the bottom”, to monitor global risks, to facilitate a global enabling regulatory and legal environment for fintech, and to stimulate sharing of opportunities

(XII) Enhance Collective Surveillance and Assessment of Financial Sector Opportunities and Risks



IMF and World Bank can provide capacity development in the areas of financial inclusion, consumer protection, statistics gaps, financial integrity, regulatory and legal frameworks, and cyber security

Regulatory approaches



Regulatory approaches and intensity differ...

WAIT & SEE	TEST & LEARN	REGULATORY SANDBOX	WAIVER/ EXEMPTIONS	LETTERS OF NO-OBJECTION	DIFFERENTIATED REGULATION	REGULATORY REFORM/LAW
						
<p>Allows innovations to develop with no restrictions</p> <ul style="list-style-type: none">• May work well in environments with limited regulatory capacity• Presents significant risk if not controlled later through regulations• Example: China	<p>New innovations tested in a live environment with involvement from the regulators</p> <ul style="list-style-type: none">• Case-by-case basis• Requires active involvement by regulator• Difficult to scale up; hard to ensure equal treatment• Examples: Philippines, Tanzania	<p>Virtual Environment where innovators can test their products/services in a time bound manner.</p> <ul style="list-style-type: none">• Greater transparency and replicability• Relevant for markets with good supervisory capacity and high level of active, potentially non-licensed players	<p>Waiver or exemption from a license or restrictive sections of a license</p> <ul style="list-style-type: none">• usually codified in law, therefore no need for subjective decisions from the regulator• No special resources for maintenance are required	<p>legal certificate issued by the authority to indicate that it does not object the product or services provided by the fintech entity.</p> <p>Relevant for smaller markets, when the risk profile of the innovations are generally well-understood.</p> <p>Example: Kenya</p>	<p>Usually codified in law, therefore no need for subjective decisions from the regulator</p> <p>No special resources for maintenance are required</p> <p>Example: India: Payments Bank & Trade Receivables Platform license.</p>	<p>Enactment of regulations that support FinTech startups and consumer protection, competition, financial stability and financial inclusion</p> <ul style="list-style-type: none">• Modifications to existing regulations• Examples: EU (PSD2, GDPR), Mexico (FinTech Law)

...depending on country circumstances

Legal & Regulatory Framework

- How well established is the regulatory and legal framework?
- What is the level of complexity?

FinTech and Stakeholder Ecosystem

- How many regulators oversee financial supervision?
- How well developed is the FinTech ecosystem?

Capacity & Resources

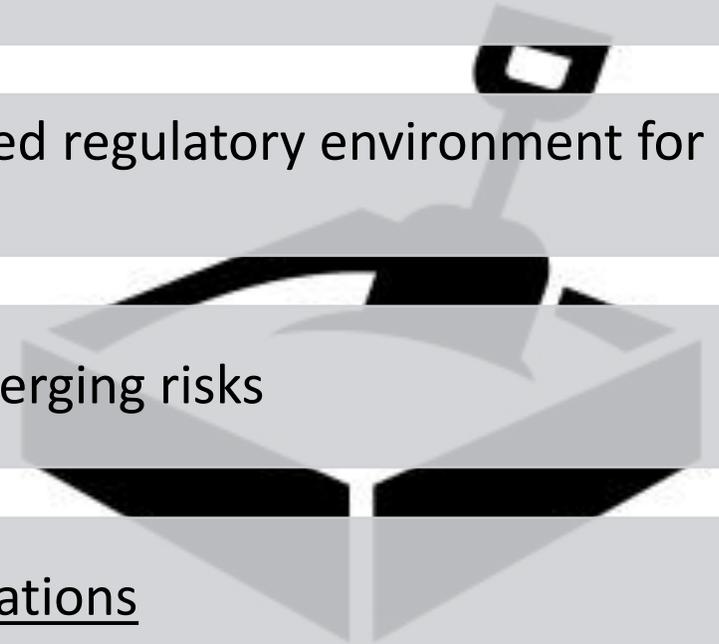
- How much resources does the regulator have available?

Market Conditions

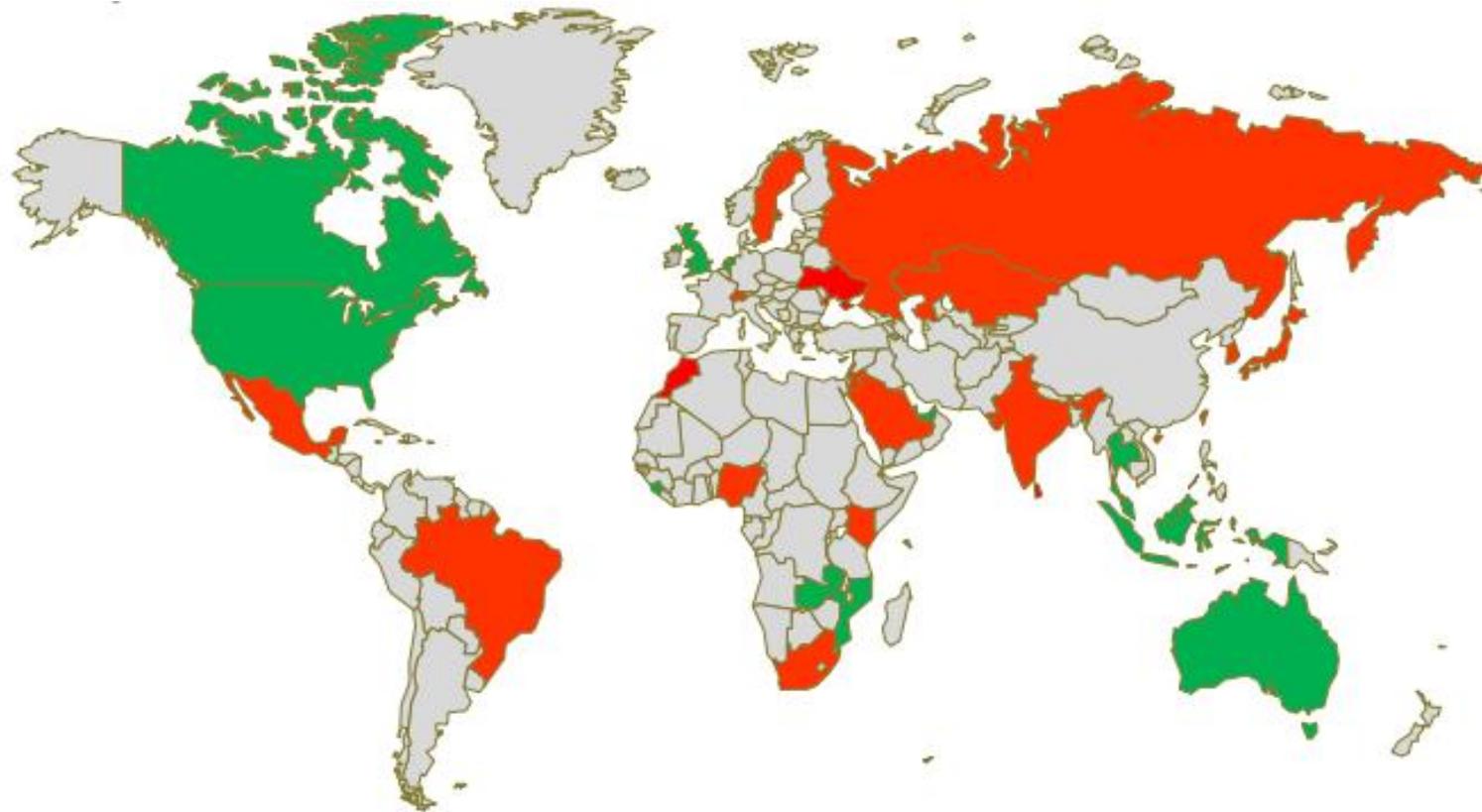
- How competitive is the market?
- Number of excluded / underserved?
- Number and types of financial institutions?

What is a regulatory sandbox?

- Virtual environment for innovators (existing and start-ups) to **test new ideas** with **real customers**
- Can be open to **authorized** and **unauthorized** businesses and technology providers as based on specific '**Eligibility Criteria**'
- Allows the regulator to **oversee trials** using a customized regulatory environment for each pilot
- Provides **intelligence** on developments, trends and emerging risks
- It is NOT about exemptions from extant laws and regulations



Regulatory Sandboxes around the world



- Countries with regulatory sandbox
- Countries considering regulatory sandbox

Requisites

Objectives and
definition of success

Eligibility criteria

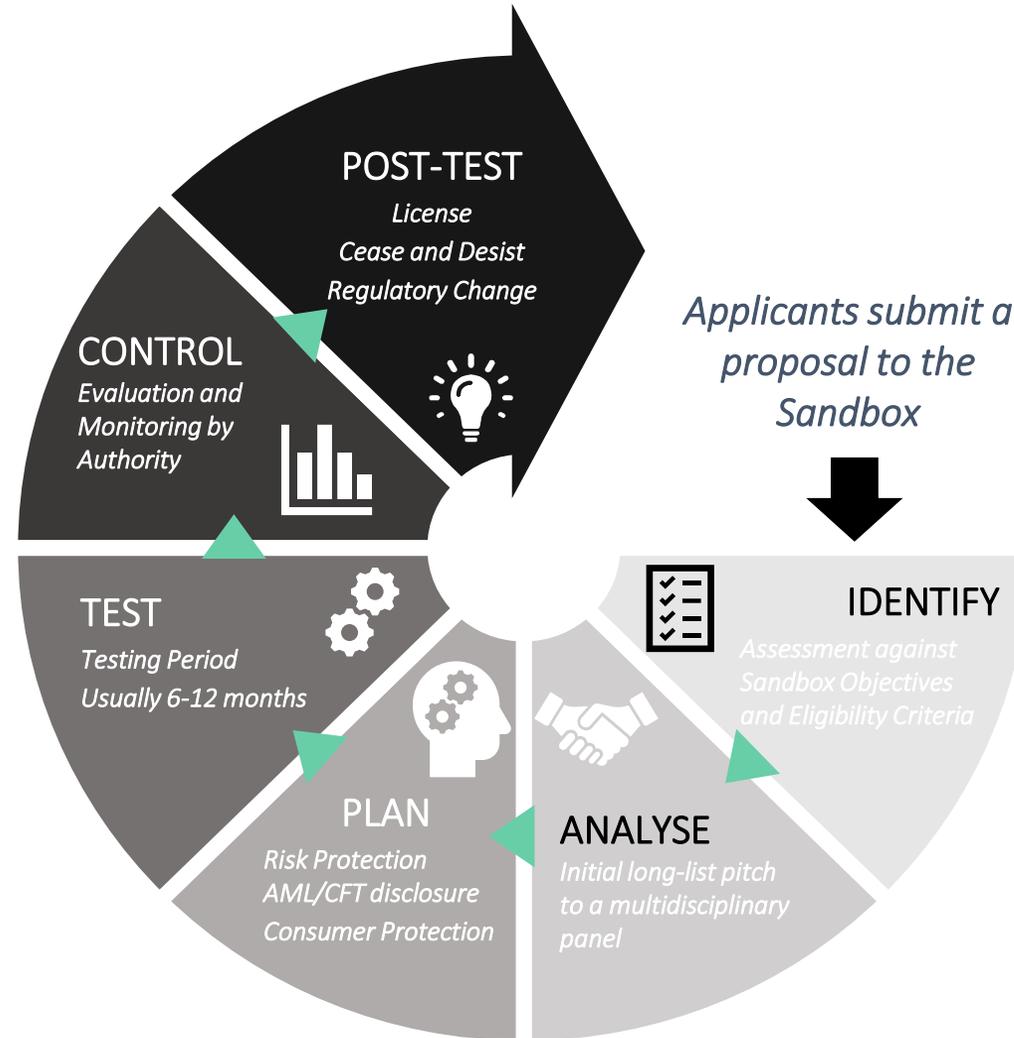
Governance

Safeguards and limits

Proportionality

Exit

Typical Sandbox Lifecycle



Benefits



Reducing the **time and cost** of getting innovative ideas to market



Facilitating **greater access** to finance for innovators



Enabling products to be **tested**



Working to ensure **appropriate consumer protection safeguards** are built in



Introducing **greater competition** to the market

Risks

CAPACITY

- Limited regulatory capacity- resources, staff, expertise

COORDINATION

- Coordination issues where there are different authorities with financial supervisory powers

NEW PRODUCTS

- Risks associated with new products and services
- May be hard to assess before product/service is fully launched

Case studies



Decentralized blockchains and crypto-assets

Blockchains and crypto-assets: Hype and reality

True blockchain innovation: “trust-minimized” decentralized computing and record keeping. Enables “social scalability” (Szabo, 2017).

Decentralized computing: *Operationally* decentralized (“censorship resistant”), but *logically* centralized through new consensus mechanism. Result: A network of computers *behaves* like a single computer without a central authority / intermediary / single point of failure.

Dapps: Blockchains can be more than crypto-currencies (e.g., Dapps, smart contracts). Also, increases in social value of Dapps accrue to all stakeholders which keeps innovation incentives alive, unlike traditional centralized services -- but not a silver bullet!

Innovation potential: Thus, decentralized blockchains have the most innovation potential, but the technology is still in its infancy and faces important technical and policy challenges.

Examples of ongoing innovation: decentralized exchanges, compliant asset-backed tokenization, parachains. Latest trends in centralized blockchains include regulated dollar-backed stablecoins and central bank-issued digital currencies.

A few technical and design challenges

Validator / miner concentration and associated potential of “51% attacks”

Decentralized blockchains don't scale (yet): “Layer 2” and other solutions are promising (e.g., Lightning, Plasma). Active development in this area.

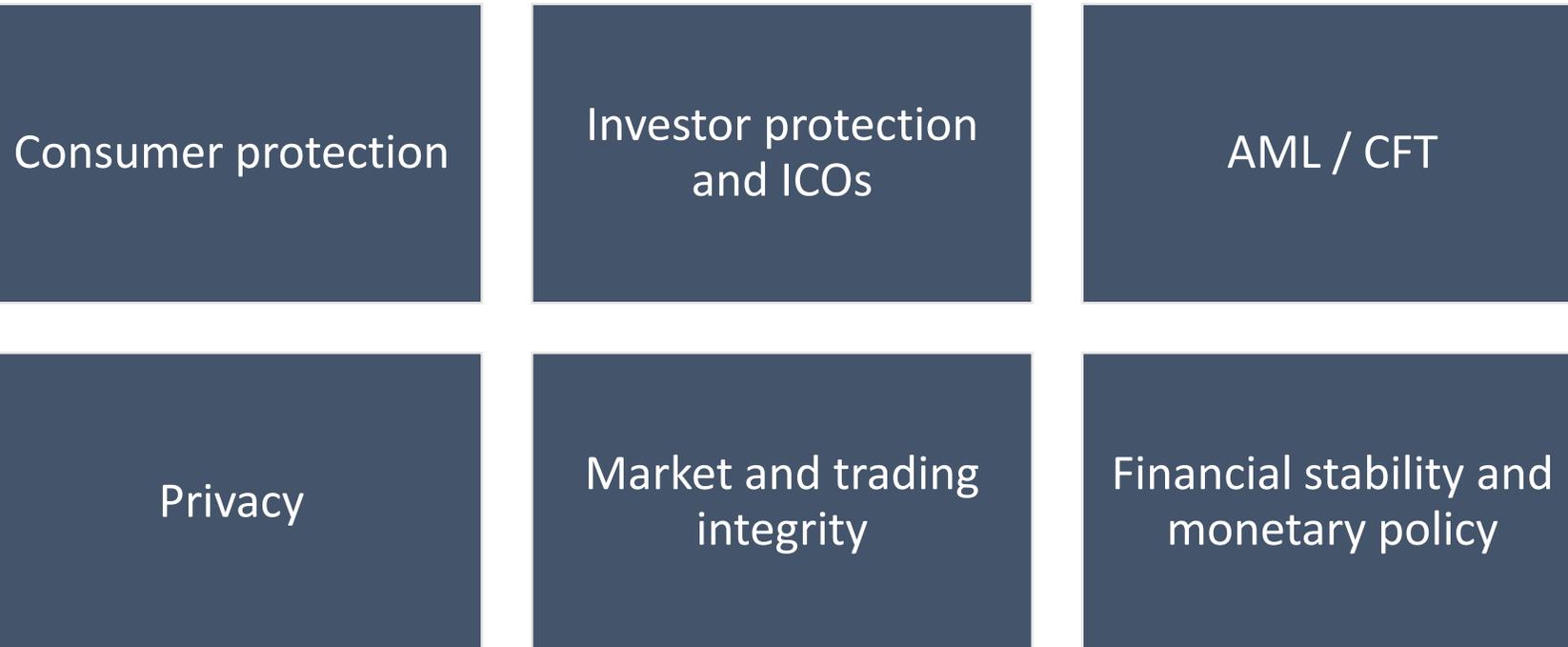
More broadly, these issues reflect inherently difficult trade-offs between Scalability, Security, and Decentralization (Buterin). Finality is also a challenge.

Privacy and fungibility: Most decentralized blockchains are public and transparent. There is a legitimate need for transaction privacy (e.g., zero-knowledge proofs).

Protocol governance: “On chain” or “Off chain”?

Some policy considerations

Promoting responsible innovation requires a balanced regulatory response



Selected international policy response

G20: “...technological innovation, including that underlying crypto-assets, has the potential to improve the efficiency and inclusiveness of the financial system and the economy more broadly.”

G20: “Crypto-assets do, however, raise issues with respect to consumer and investor protection, market integrity, tax evasion, money laundering and terrorist financing.”

FSB: No financial stability risks (yet), but monitoring warranted

IOSCO: Warnings on ICOs

CPMI: Implications for FMIs, monetary policy, seignorage, Central Bank-issued Digital Currencies

FATF Plenary outcomes on regulating virtual assets (October 2018)

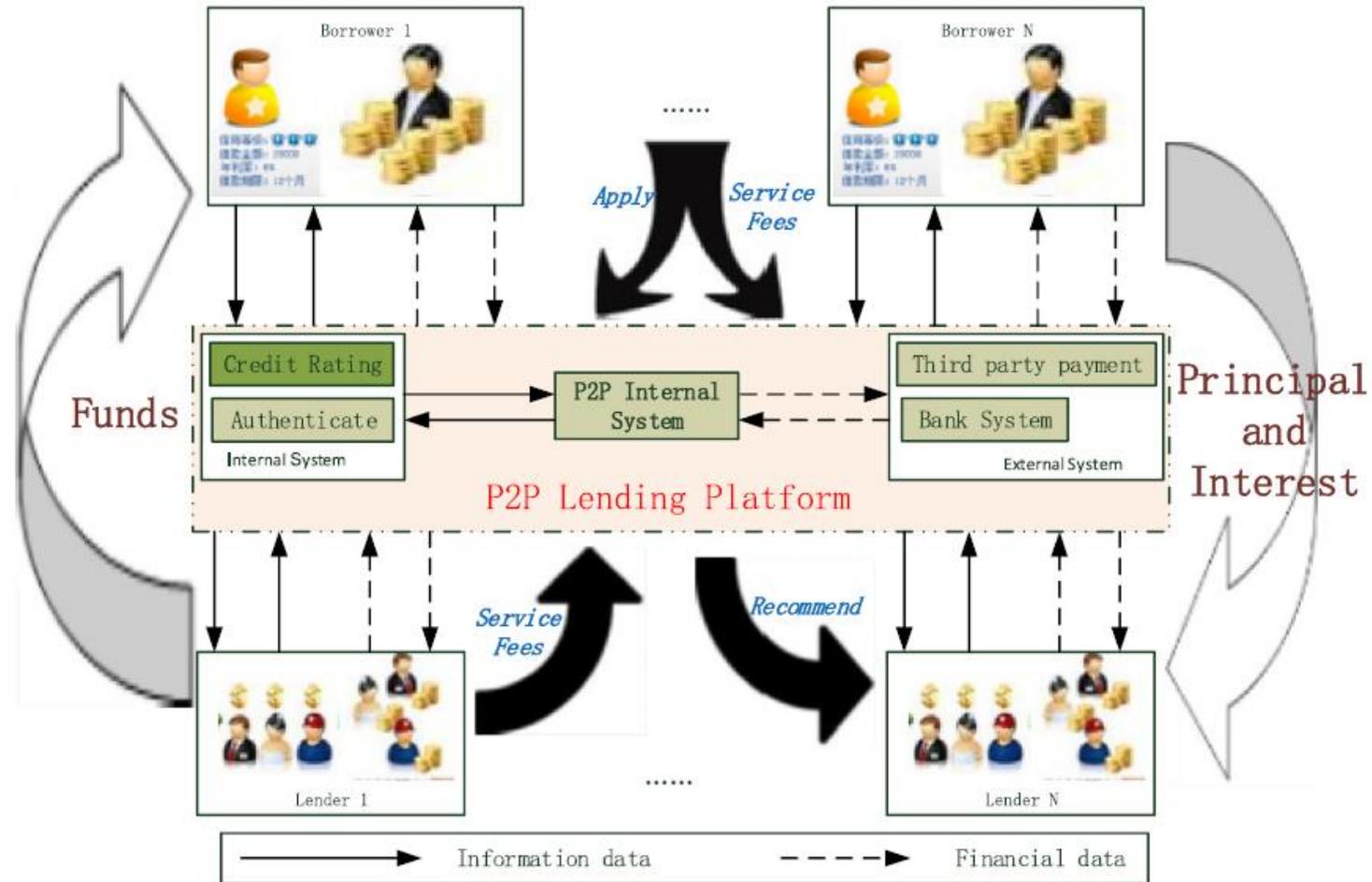
The G20 *“commits to implement the FATF standards as they apply to crypto-assets, looks forward to the FATF review of those standards, and calls on the FATF to advance global implementation”*

Glossary: new definitions of “virtual assets” and “virtual asset service providers” – such as exchanges, certain types of wallet providers, and providers of financial services for Initial Coin Offerings (ICOs).

“As part of a staged approach, the FATF will prepare updated guidance on a risk-based approach to regulating virtual asset service providers, including their supervision and monitoring; and guidance for operational and law enforcement authorities on identifying and investigating illicit activity involving virtual assets.”

Alternative lending

Peer-to-peer lending platforms



Source: Wang, Huaqing – P2P process model, Financial Innovation

Some policy considerations

- Suitability of product for the investors?
- How is the product marketed?
- Information disclosures
- Financial integrity

Investor protection

Consumer protection

- Data protection and privacy
- Non-discrimination
- Information disclosures
- Collection practices

- Quality of projects
- Quality of credit risk assessment models
- Wind-down procedures
- Operational reliability
- Cybersecurity

Governance and operation of platform

Regulatory arbitrage

- Parity in terms of critical compliance requirements
- Access to critical infrastructures
- Capital market legislation

Digital ID

Characteristics of ID

Legal

- Financial exclusion

Unique

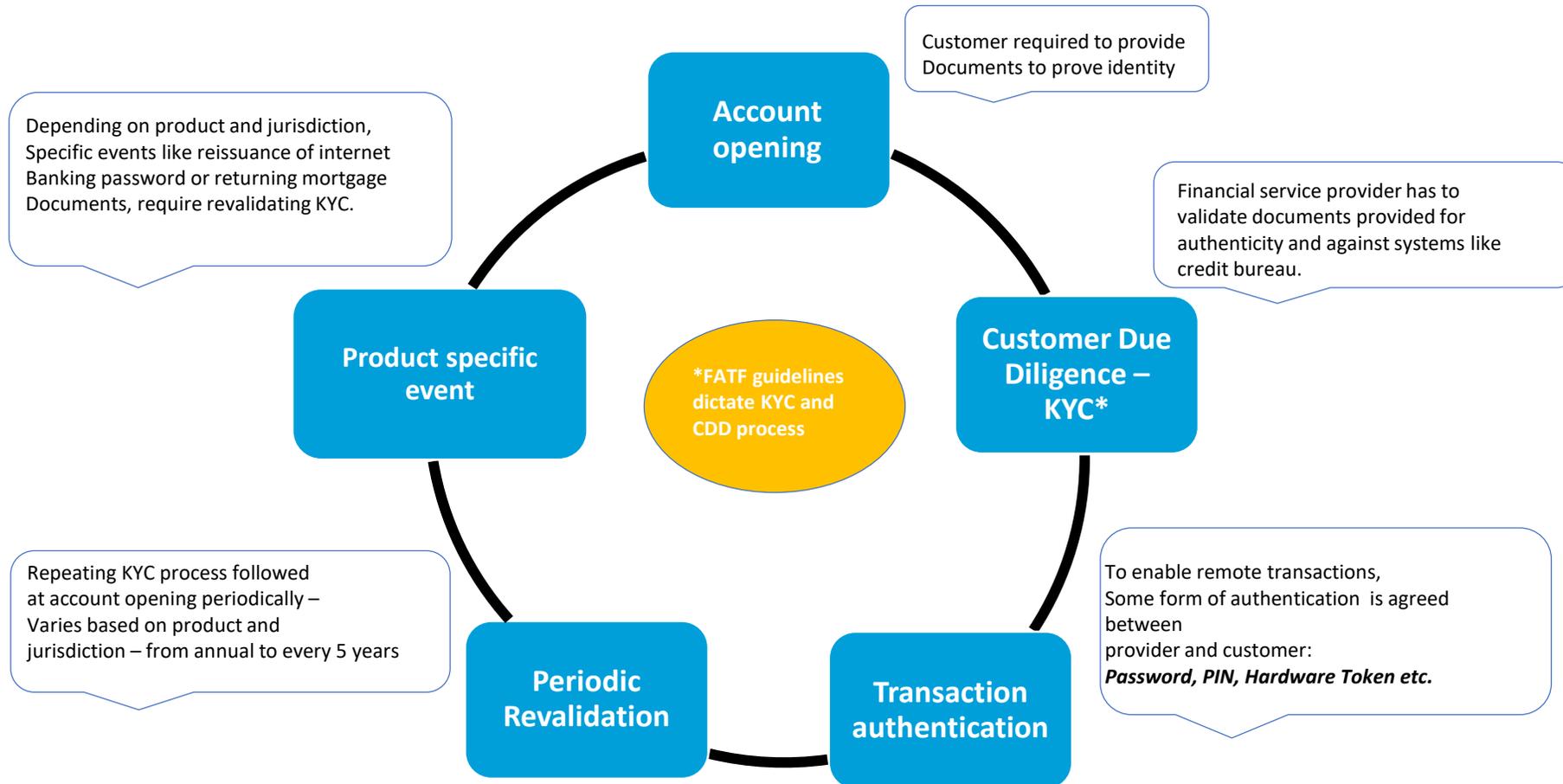
- No clear view of customer
- Inhibits accounts to add-on financial services (i.e. credit/ insurance)
- Issues of fraud

Digital

- High costs for both customers and provider
- Low scale of access to financial services

Critical role of ID in the financial sector

ID is integral to financial services, ensuring safety and integrity of the financial system



Risks and challenges in implementing digital ID

Exclusion Risks

Privacy and Data Protection

Cost and sustainability

Some policy considerations

Ensure an integrated identity framework

Build appropriate authentication and service delivery systems

Consider appropriateness of the regulatory framework

Establish a reliable oversight model

Establish clear and well-publicized procedures for citizen redress

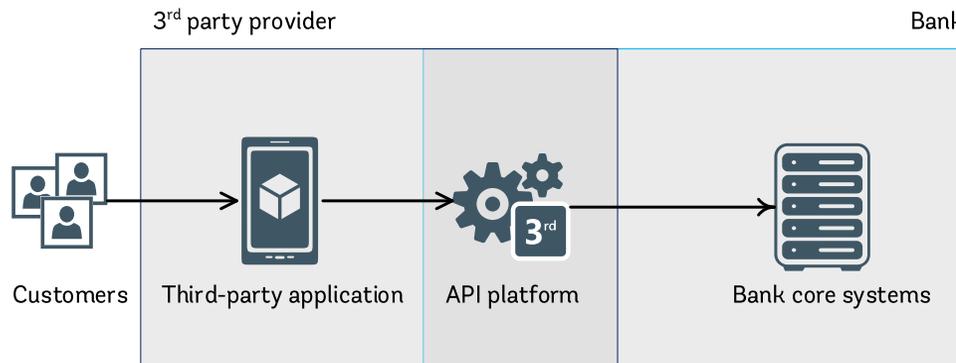
Support development of private sector led services to leverage the legal ID infrastructure

APIs & Open Banking

What are Application Programming Interfaces?

What are APIs?

- APIs provide machine-readable access to consumer data stored by financial institutions. They may also allow third parties to programmatically initiate transactions (e.g. payments)
- Third parties can add value to the customer by using bank account data to provide new services. Example: analyze transaction history to recommend best savings or loan products
- APIs evolved from the practice of 'screen scraping', allowing third parties to access internet banking services on behalf on their customers. Screen scraping has been considered inefficient and unsafe.



Example data/services provided through bank APIs:

"Read access"

- Access to the list of accounts held with a financial institution
- Access to account balances
- Access to transaction histories, including transaction-level data (e.g. merchant name/type)

"Write access"

- Initiation of different types of payments

APIs and open banking around the world



	European Union (PSD2)	United Kingdom (Open Banking UK)	India (Universal Payments Interface)	Other countries
Legal basis	Second Payment Services Directive (PSD2)	Enforcement action by the competition authority (CMA)	Regulatory action	Australia is planning to issue binding Open Banking regulations later in 2018, following the completion of public consultations. Japan, Singapore and Hong Kong are considering similar measures. Elsewhere, banks (e.g. BBVA) provide API access to selected partners.
Institutions affected	All banks	Nine largest banks	All banks	
Scope of API access	Read and write: “account information” and payment initiation	Read and write: accounts, balances, account statements, beneficiaries, standing orders, direct debits, scheduled payments, payment initiation	Read and write: access to balances, payment initiation, payment request initiation. Account address resolution service (routing the API call to an appropriate institution based on an e-mail-like account address)	
Institutional setup	The directive does not prescribe any institutional setup. Banks are free to set up their own consortia if they wish so (e.g. “The Berlin Group”)	“Open Banking Implementation Entity”: a utility (Open Banking UK Ltd.) created by the CMA to steward the standard and oversee its implementation. Funded by the participating banks	API service provided by a payment system operator (National Payments Corporation of India)	
Technical standards	No precise technical standards prescribed, but “strong consumer authentication” (2FA+) required	Prescribed API based on RESTful principles; where practicable, ISO 20022 field names and definitions are used	A custom messaging standard based on XML/Web Services.	

Policy considerations

- Governance
- Authentication
- Contagion effects
- Contingency planning

Cyber risks

Customer protection

- Data protection and privacy
- Authentication
- Terms of conditions and redress

- Standardization
- Interoperability

Efficiency

Competition

- Balanced obligation to provide data and right to access data
- Fee structure

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