Fintech
Emerging policy considerations and practical lessons

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1. Financial inclusion and fintech trends

2. Policy implications

3. Regulatory approaches

4. Case studies
   • Decentralized blockchains and crypto-assets
   • Alternative lending platforms
   • Digital ID
   • Open Banking and APIs

* 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.

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Financial inclusion and fintech trends
Financial inclusion has improved globally, but 1.7 billion adults remain unbanked.

Note: The percentage of respondents who report having an account (by themselves or together with someone else) at a bank or another type of financial institution or report personally using a mobile money service in the past 12 months.

Source: Findex 2017, World Bank
Fintech: New technology impacts a wide range of financial services

Example areas of innovative financial services in core banking functions

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?

Source: PwC Global FinTech Survey 2017
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)

- 2013: $3.8
- 2014: $7.9
- 2015: $15.3
- 2016: $18.7
- 2017: $16.7
- 2018: $26

The chart shows the increasing trend of annual VC-backed global fintech deals and financing from 2013 to 2018, with a significant rise in 2018.
Global fintech funding - regional trends

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

- South America: $522 (89% QOQ)
- Africa: $12 (99.6% QOQ)
- Europe: $1,065 (20% QOQ)
- Asia: $2,536 (+1.4% QOQ)
- North America: $2,070 (48% QOQ)
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)

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**Potential Fintech-enabled Outcomes**

- 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
Financial institutions and customers can benefit

1. Improved Customer experience
   - Remote access, convenience, and security
   - Tailored financial products and services
   - An opportunity to build financial history

2. Revenue growth
   - Expand customer base to include new and remote areas
   - Ability to provide products to new market segments including unbanked
   - Cross-sell opportunities

3. Reduction in Costs
   - Lower delivery and channel costs
   - Reduce cost of funds (deposit gathering, capital markets funding)

4. Strengthened risk management
   - More data and automation for credit underwriting, portfolio monitoring and collections
   - Straight-through processes reduce error rates, investigations, re-work
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

How to get there?

**UNSERVED**
- Have no basic bank account
- Have no (or restricted) access to financial services
- Rely on a cash economy

**SERVED**
- Have a transaction account
- Use broad range of financial services

**Transaction account**
- Banks
- Microfinance Institutions
- Mobile Network Operators
- Card Companies
- Postal Networks
- Financial Cooperatives

**What's needed to get there?**
- Broader inclusion
- Customer-centered product innovation
- Financial capability
- Strong consumer protection
- Better financial infrastructure
- More & interoperable access points
- Enabling legal & regulatory frameworks
- Public & private sector commitment
- Open & balanced playing field
Digital payments are already transforming the payment landscape

<table>
<thead>
<tr>
<th>Region</th>
<th>2014</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>East Asia &amp; Pacific (excluding high income)</td>
<td>31%</td>
<td>40%</td>
</tr>
<tr>
<td>Europe &amp; Central Asia (excluding high income)</td>
<td>37%</td>
<td>52%</td>
</tr>
<tr>
<td>High income</td>
<td>81%</td>
<td>87%</td>
</tr>
<tr>
<td>Latin America &amp; Caribbean (excluding high income)</td>
<td>30%</td>
<td>39%</td>
</tr>
<tr>
<td>Middle East &amp; North Africa (excluding high income)</td>
<td>21%</td>
<td>32%</td>
</tr>
<tr>
<td>South Asia</td>
<td>13%</td>
<td>26%</td>
</tr>
<tr>
<td>Sub-Saharan Africa (excluding high income)</td>
<td>23%</td>
<td>35%</td>
</tr>
</tbody>
</table>

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 (%)

Source: Global Findex database.
Note: Data are displayed only for economies in Sub-Saharan Africa.
Fintech presents various new challenges as well

**Regulatory & Supervisory Perimeter, Capacity:**
Fintech players may not fit with current regulatory/supervisory remits.
Developing country supervisors have systems & capacity constraints.

**Depositor and investor risk:**
Many new providers, like P2P lenders, are insufficiently regulated/monitored, and may not fully comply with disclosure or transparency requirements.

**Financial Stability:**
Unsupervised linkages; Exacerbate credit cycles; Untested credit models; Affect banking system profitability.

**Over-indebtedness:**
New/easier access to digital credit may cause borrowers to be more susceptible, particularly without adequate financial capability.

**Vulnerability to cyber threats:**
At multiple levels: cyber attacks can affect financial market infrastructures, financial institutions, consumers, authorities.

**Fraud or other market abuses, inc. AML/CFT:**
Access to customer information can lead to abuse without adequate consumer protection mechanisms. Cryptocurrencies (like Bitcoin) have been used for illicit activities.
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

<table>
<thead>
<tr>
<th>Selected Fintech adoption drivers and policy levers</th>
<th>Common policy objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Legal, regulatory, and supervisory framework</td>
<td>Stability</td>
</tr>
<tr>
<td>Financial sector structure and development</td>
<td>Integrity</td>
</tr>
<tr>
<td>Digital penetration and literacy</td>
<td>Consumer and investor protection</td>
</tr>
<tr>
<td>Physical, digital and financial infrastructure</td>
<td>Level playing field and innovation</td>
</tr>
<tr>
<td></td>
<td>Inclusion</td>
</tr>
<tr>
<td></td>
<td>Market development</td>
</tr>
</tbody>
</table>
High-level considerations for policy makers and the international community
Need for a balanced approach: Four broad policy challenges

- Foster enabling environment to harness opportunities
- Promote international collaboration
- Strengthen financial sector policy framework
- Address potential risks and improve resilience
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.

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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

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

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...

<table>
<thead>
<tr>
<th>WAIT &amp; SEE</th>
<th>TEST &amp; LEARN</th>
<th>REGULATORY SANDBOX</th>
<th>WAIVER/EXEMPTIONS</th>
<th>LETTERS OF NO-OBJECTION</th>
<th>DIFFERENTIATED REGULATION</th>
<th>REGULATORY REFORM/LAW</th>
</tr>
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</table>
|Allows innovations to develop with **no restrictions**  
• May work well in environments with limited regulatory capacity  
• Presents significant risk if not controlled later through regulations  
• Example: China | New innovations tested in a live environment with involvement from the regulators  
• Case-by-case basis  
• Requires active involvement by regulator  
• Difficult to scale up; hard to ensure equal treatment  
• Examples: Philippines, Tanzania | Virtual Environment where innovators can **test** their products/services in a time bound manner.  
• Greater transparency and replicability  
• Relevant for markets with good supervisory capacity and high level of active, potentially non-licensed players | Waiver or exemption from a license or restrictive sections of a license  
• Usually codified in law, therefore no need for subjective decisions from the regulator  
• Greater transparency and replicability  
• Relevant for markets with good supervisory capacity and high level of active, potentially non-licensed players | Legal **certificate** issued by the authority to indicate that it does not object the product or services provided by the fintech entity.  
• Relevant for smaller markets, when the risk profile of the innovations are generally well understood.  
• Example: India: Payments Bank & Trade Receivables Platform license. | Usually codified in law, therefore no need for subjective decisions from the regulator  
• No special resources for maintenance are required  
• Example: India: Payments Bank & Trade Receivables Platform license. | Enactment of regulations that support FinTech startups and consumer protection, competition, financial stability and financial inclusion  
• Modifications to existing regulations  
• Examples: EU (PSD2, GDPR), Mexico (FinTech Law) |

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**REGULATORY REFORM/LAW**
- Enactment of regulations that support FinTech startups and consumer protection, competition, financial stability and financial inclusion
- 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

Source: CGAP, Accurate as on 7th July
Requisites

Objectives and definition of success

Eligibility criteria

Governance

Safeguards and limits

Proportionality

Exit
Typical Sandbox Lifecycle

Inward focused
looking to develop
tools and applications
specifically relevant
for the public
authority including
improvement of
supervisory capability
using innovative
technologies.

IDENTIFY
Assessment against
Sandbox Objectives
and Eligibility
Criteria

TEST
Testing Period
Usually 6-12 months

PLAN
Risk Protection
AML/CFT disclosure
Consumer Protection

ANALYSE
Initial long-list pitch
to a multidisciplinary
panel

CONTROL
Evaluation and
Monitoring by
Authority

POST-TEST
License
Cease and Desist
Regulatory Change

Applicants submit a proposal to the Sandbox

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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

<table>
<thead>
<tr>
<th>CAPACITY</th>
<th>COORDINATION</th>
<th>NEW PRODUCTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Limited regulatory capacity - resources, staff, expertise</td>
<td>- Coordination issues where there are different authorities with financial supervisory powers</td>
<td>- Risks associated with new products and services</td>
</tr>
<tr>
<td></td>
<td>- May be hard to assess before product/service is fully launched</td>
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</table>
Case studies
Decentralized blockchains and crypto-assets
Blockchains and crypto-assets: Hype and reality


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

<table>
<thead>
<tr>
<th>Challenge</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Validator / miner concentration</strong></td>
<td>and associated potential of “51% attacks”</td>
</tr>
<tr>
<td><strong>Decentralized blockchains don’t scale (yet):</strong></td>
<td>“Layer 2” and other solutions are promising (e.g., Lightning, Plasma). Active development in this area.</td>
</tr>
<tr>
<td><strong>More broadly, these issues reflect inherently difficult trade-offs</strong></td>
<td>between Scalability, Security, and Decentralization (Buterin). Finality is also a challenge.</td>
</tr>
<tr>
<td><strong>Privacy and fungibility:</strong></td>
<td>Most decentralized blockchains are public and transparent. There is a legitimate need for transaction privacy (e.g., zero-knowledge proofs).</td>
</tr>
<tr>
<td><strong>Protocol governance:</strong></td>
<td>“On chain” or “Off chain”?</td>
</tr>
</tbody>
</table>
Some policy considerations

Promoting responsible innovation requires a balanced regulatory response

- Consumer protection
- Investor protection and ICOs
- AML / CFT
- Privacy
- Market and trading integrity
- Financial stability and monetary policy
<table>
<thead>
<tr>
<th><strong>G20:</strong> “...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.”</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>G20:</strong> “Crypto-assets do, however, raise issues with respect to consumer and investor protection, market integrity, tax evasion, money laundering and terrorist financing.”</td>
</tr>
<tr>
<td><strong>FSB:</strong> No financial stability risks (yet), but monitoring warranted</td>
</tr>
<tr>
<td><strong>IOSCO:</strong> Warnings on ICOs</td>
</tr>
<tr>
<td><strong>CPMI:</strong> Implications for FMIs, monetary policy, seignorage, Central Bank-issued Digital Currencies</td>
</tr>
</tbody>
</table>
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

Some policy considerations

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

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

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

- 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
Account opening

Customer required to provide Documents to prove identity

Financial service provider has to validate documents provided for authenticity and against systems like credit bureau.

*FATF guidelines dictate KYC and CDD process

Critical role of ID in the financial sector

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

Depending on product and jurisdiction, Specific events like reissuance of internet Banking password or returning mortgage Documents, require revalidating KYC.

Repeating KYC process followed at account opening periodically – Varies based on product and jurisdiction – from annual to every 5 years

To enable remote transactions, Some form of authentication is agreed between provider and customer: Password, PIN, Hardware Token etc.

Periodic Revalidation

Product specific event

Customer Due Diligence – KYC*

Transaction authentication
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

<table>
<thead>
<tr>
<th>Legal basis</th>
<th>European Union (PSD2)</th>
<th>United Kingdom (Open Banking UK)</th>
<th>India (Universal Payments Interface)</th>
<th>Other countries</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Second Payment Services Directive (PSD2)</td>
<td>Enforcement action by the competition authority (CMA)</td>
<td>Regulatory action</td>
<td>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.</td>
</tr>
<tr>
<td>Institutions affected</td>
<td>All banks</td>
<td>Nine largest banks</td>
<td>All banks</td>
<td></td>
</tr>
<tr>
<td>Scope of API access</td>
<td>Read and write: “account information” and payment initiation</td>
<td>Read and write: accounts, balances, account statements, beneficiaries, standing orders, direct debits, scheduled payments, payment initiation</td>
<td>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)</td>
<td></td>
</tr>
<tr>
<td>Institutional setup</td>
<td>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”)</td>
<td>“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</td>
<td>API service provided by a payment system operator (National Payments Corporation of India)</td>
<td></td>
</tr>
<tr>
<td>Technical standards</td>
<td>No precise technical standards prescribed, but “strong consumer authentication” (2FA+) required</td>
<td>Prescribed API based on RESTful principles; where practicable, ISO 20022 field names and definitions are used</td>
<td>A custom messaging standard based on XML/Web Services.</td>
<td></td>
</tr>
</tbody>
</table>
Policy considerations

- Inward focused looking to develop tools and applications specifically relevant for the public authority including improvement of supervisory capability using innovative technologies.

- Cyber risks
- Customer protection
- Efficiency
- Competition

- Governance
- Authentication
- Contagion effects
- Contingency planning

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

- Standardization
- Interoperability

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