

Finance, Technology and Regulation: Looking Forward Digital Public Infrastructure & RegTech

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Overview

- Finance, technology and regulation: Co-development
- FinTech and new technologies: Blockchain / DeFi, Data, AI – graduated proportional risk-based approach
- Financial and digital infrastructure: Strategies
- Risks

- 16 April:
- Role of technology in financial inclusion, focusing on digital public and financial infrastructure.
- Reading materials:
- [Sustainability, FinTech and Financial Inclusion by Douglas W. Arner, Ross P. Buckley, Dirk A. Zetsche, Robin Veidt :: SSRN](#)
- 23 April:
- Use of technology for regulatory and supervisory purposes: RegTech and SupTech.
- Reading materials:
- [Building Regulatory and Supervisory Technology Ecosystems: For Asia's Financial Stability and Sustainable Development by Douglas W. Arner, Syed Musheer Ahmed, Sangita Gazi :: SSRN](#)

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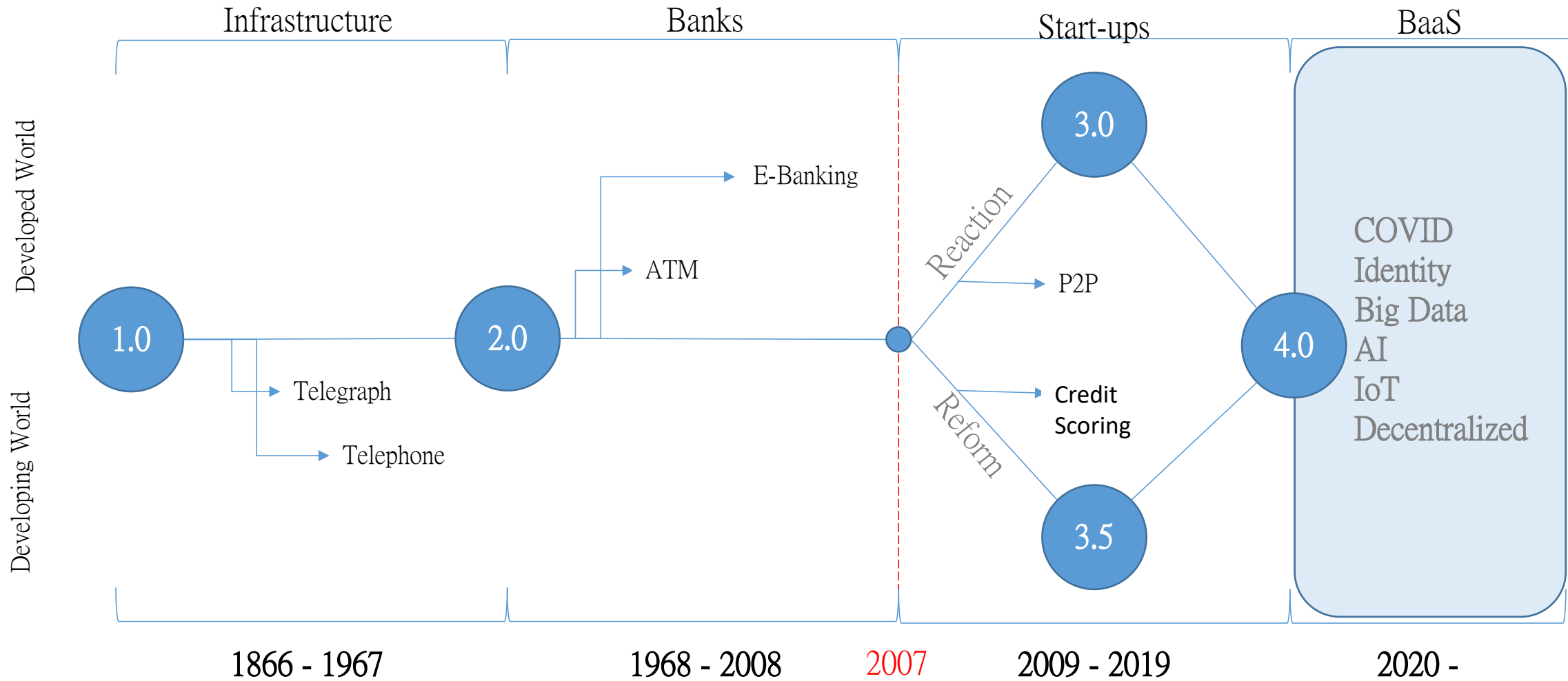
Finance, technology and regulation: Co-development

- Evolution
- Major trends: 2025-2030
- Innovation: Infrastructure, Regulatory approaches and Ecosystem development
- Digital public infrastructure
- Regulatory objectives
- RegTech

Looking back, looking forward

- Finance in the 2010s
 - Global Financial Crisis
 - Regulation
 - Technology
- Finance in the 2020s
 - Sustainability
 - Technology
 - Globalization vs fragmentation

The Evolution of FinTech



COVID-19 and digital financial transformation

Impact

- Digitization
- Payments / CBDCs
- Digitization of regulation, compliance and supervision
- AML / market integrity
- BigTech / data

Lessons

- Building the infrastructure of finance
- Designing appropriate regulatory approaches
- Supporting the wider ecosystem

Key emerging issues: 2025-2030

Cross-border Payments:

- retail, wholesale
- FPS / CBDCs/ Stablecoins etc

Data

- AI
- Strategies
- Open finance

Digital assets: Future as a Regulated industry

Regtech / supotech: digital transformation

Sustainability: emerging technologies, risks, opportunities

Digital Assets Evolution / Regulation

- 2008-2013: Bitcoin, blockchain
 - Enthusiasts, criminals
- 2013-2016: Ethereum, Tether, Mount Gox
 - Broadening, central banks, regulators, law enforcement: market integrity
- 2016-2018: ICO Bubble
 - Broadening, regulatory arbitrage, customer / investor protection
- 2019-2021:
 - Regulation, Libra, CBDCs, Covid19, DeFi
 - Normalisation – FATF/G20/IOSCO (2019), EU (2020), OCC, SEC, UK
 - Broadening: systemic concerns?
- 2022-2023: Crypto Winter
- 2024-2025: Regulated environment

Digital Assets: Future as a Regulated industry

- FATF / G20 / FSB / IMF / IOSCO
- AML
- Licensing
- Disclosure
- Segregation / custody
- Enforcement
- Stablecoins
- DeFi: embedded regulation / supervision

- [Monetary Hegemony, Technological Evolution and the International Monetary System by Douglas W. Arner, Ross P. Buckley, Dirk A. Zetsche, Anton N. Didenko :: SSRN](#)
- Money
- Functional approach:
 - Medium of exchange
 - Unit of account
 - Store of value
- Payment
- Geopolitics, geoeconomics, geofinance
- Technology
- Law

Digital Money & Payment

- Technological revolution in money and payment: decentralised / centralised
- Money, payments, finance and the technological horizon
- RTGS / mobile money
- Bitcoin
- Blockchain
- FPS / DPI
- Stablecoins
- Libra: “Global stablecoin”
- Covid19
- CBDCs: Digital Yuan / DCEP
- DPI: Digital public infrastructure / digital financial infrastructure
- Ukraine, Trump etc

Retail: Domestic and crossborder

- FPS / Nexus
- Regulated stablecoins
- Cryptocurrencies
- rCBDCs?
 - Financial stability
 - Innovation
 - Financial inclusion / reducing cash

Wholesale: Domestic and crossborder

- wCBDCs: interaction with digital assets
- Forex
- mBridge
- BRICS?
- Tokenised deposits: Agora
- Tokenised money market mutual funds etc

Finance, Data and Analytics: Digitisation / datafication / AI

- Securities trading
 - Fraud control
 - Risk management
 - Asset management
 - Compliance / AML
 - Regulation: RegTech / SupTech
 - Lending / credit risk
 - Cybersecurity
-
- Debt capital markets
 - Foreign exchange
 - Insurance

Finance and Data

- Financial regulation: finance as data
 - Standardisation
 - Storage / use
 - Sharing / regulatory reporting / supervision
-
- Personal financial data vs non personal financial data
 - Client records
 - Credit information
 - Consumer financial protection
 - AML
 - Cybersecurity
 - Open Banking
-
- [Financial Data Governance: The Datafication of Finance, the Rise of Open Banking and the End of the Data Centralization Paradigm by Douglas W. Arner, Giuliano G. Castellano, Eriks Selga :: SSRN](#)

AI and Finance

- Digitisation, storage, power, communications, analytics
- Digitisation
- Data: standardisation
- Incentives / resources
- Theory / experts
- [Artificial Intelligence in Finance: Putting the Human in the Loop by Dirk A. Zetsche, Douglas W. Arner, Ross P. Buckley, Brian Tang :: SSRN](#)

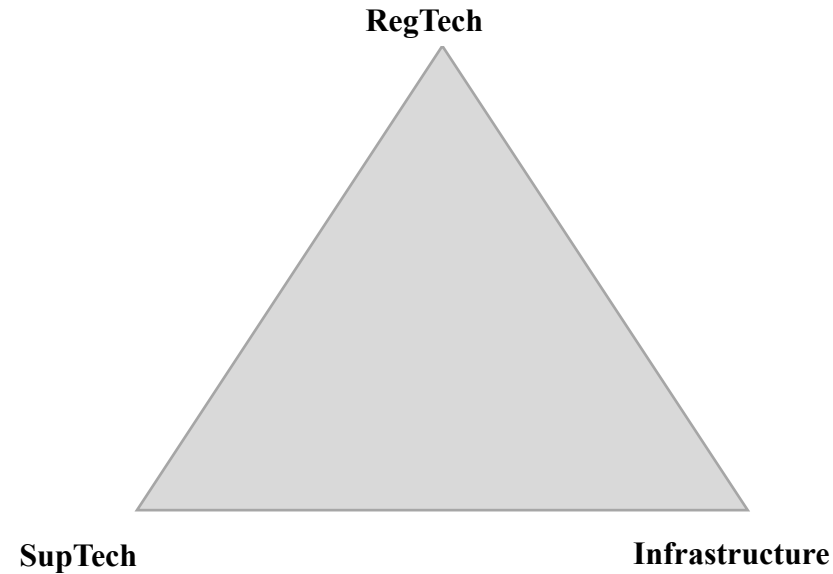
Open Finance?

- Intersection between financial regulation and personal financial data
- Different forms: mandatory, market-led, regulator-led

The RegTech Opportunity

- USD 380b+: fines 2008-2021
- USD 600b+: approximate financial sector tech spending (2021)
- USD 300-700b+: approximate financial sector compliance spending (2021), approximately 40-50% on tech

The RegTech-SupTech-Digital Financial Infrastructure Ecosystem



Financial and digital infrastructure: Strategies

- Infrastructure
- Regulatory approaches
- Wider ecosystem

Infrastructure of finance

- Alliance for Financial Inclusion:
https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3245287
- Mobile
- Digital identification / Simplified account opening
- Electronic payments: open access, interoperable
- Digitisation of government payments / services
- Financial markets infrastructure: securities settlement, secured transactions, pensions, credit registries etc
- SDGs

Case Study: India Stack

VISION

Presence-Less

Unique digital biometric identity

Paper-Less

Electronic documentation protected by digital signature and storage

Cash-Less

Single interface to all interconnected payments platform

Consent

Consent-enabled data sharing framework

IMPACT

1,000% Efficiency Gain for end-to-end account creation :

	Bank	Prepaid Card Issuer
Days	14- 30 days	1 – 2 days
Time	70 – 91 min	6 – 20 min
Costs (USD)	US\$ 5.2 – 8.7	US\$ 0.34 – 1.6

Re-aligns economic viability of financial inclusion delivery

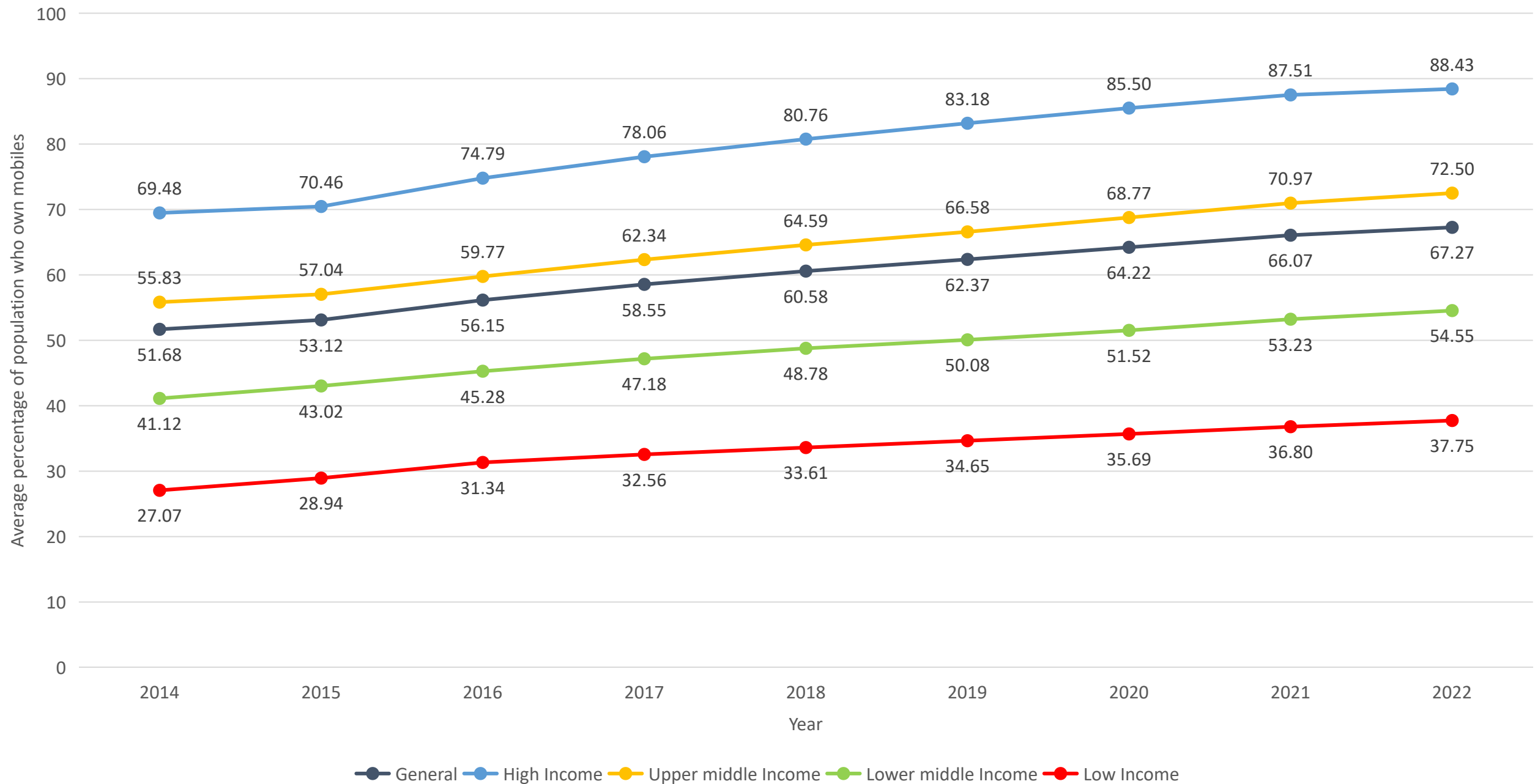


FinTech for Financial Inclusion: A Framework for Digital Financial Transformation

<https://www.afi-global.org/publications/2844/FinTech-for-Financial-Inclusion-A-Framework-for-Digital-Financial-Transformation>

The full potential of FinTech for financial inclusion may be realized with a strategic framework of underlying infrastructure and an enabling policy and regulatory environment to support digital financial transformation.

Mobile Ownership trends by Income Group

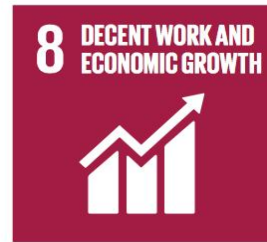


Designing a framework for digital financial transformation: Digital Public Infrastructure

- Objectives: financial inclusion, economic growth, financial stability, market integrity
- Pillar I: Empowering Access Digital ID / eKYC / simplified account opening
- Pillar II: Enabling use: Digital payments infrastructure and open electronic payments systems
- Pillar III: Scaling use – digitisation of government payments and provision of services
- Pillar IV: Expanding the quality and range of services: Designing financial systems and structures

Sustainability

- https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3387359
- Existing framework: financial stability / consumer protection / market integrity / development
- Risks: new / old
- Finance: new / old
- System design: SDGs
- Mobile, digital ID / simplified account opening, interoperable electronic payment systems, digital government services, infrastructure



Building Better Systems: RegTech for FI and Digital Financial Transformation

- Better allocating existing resources
- Increasing resources available: financial inclusion / financial development
- Direct change

FinTech and new technologies: Approaches and lessons

- AI
 - DLT / Blockchain
 - DeFi
 - Data
-
- Lessons
 - Innovation hubs, sandboxes, pilots, test and learn
 - Regulatory design
 - Graduated proportional risk-based approach
 - Legal support

Regulation

- Monetary stability
- Financial stability
- Market efficiency
- Consumer / investor / depositor protection
- Market integrity
- Growth / Innovation / Inclusion / Sustainable development

Options

Traditional framework: permissive / restrictive, rules / principles, risk-based

Pre and Post-Crisis environment: innovation and Volcker

Doing nothing: permissive / restrictive, intentional / unintentional

Cautious exploration: forbearance / leniency

Structured experimentation: sandboxes

Regulatory design: payments, crowdfunding, digital financial institutions, digital assets, data

Regulatory challenges

Emerging tech companies often have limited track records regarding their business (*eg risk management, liquidity and profitability*) and difficulty identifying their obligations (*eg applicable regulations or licences*).

For regulators, these early-stage companies represent a limited prudential & consumer risk. However, exponential company growth can create “risk blind spots”. Additionally, frequent failures or fraud can impact market or investor confidence.



FinTech 4.0

- Network effects
- Platforms
- Datafication of finance
- Data aggregation
- [Governing FinTech 4.0: BigTech, Platform Finance and Sustainable Development by Douglas W. Arner, Ross P. Buckley, Kuzi Charamba, Artem Sergeev, Dirk A. Zetsche :: SSRN](#)

BigTech / TechFin

- Network effects
- Regulation: new SIFIs
- Competition / antitrust
- Non-traditional infrastructure

Non-traditional infrastructure

- Data
- “financial operating systems”: Aladdin
- Cloud: FinTechs, incumbents, SIFIs, BigTech / TechFin
- New infrastructure: blockchain
- Libra, stablecoins, CBDCs, public-private: Utility Settlement Coin (USC)

TechRisk

- Cybersecurity
- Data: protection / security / privacy
- Infrastructure: data / cloud
- TechFin

Regulatory approaches

- Review regulation
- Risk-based graduated / tiered proportional regulation
- Regtech
- Testing and piloting
- Restricted and specialised licences

RegTech+ : Smart Regulation

Information and monitoring – FSB (2017)

Systems design

Digitisation

Datification



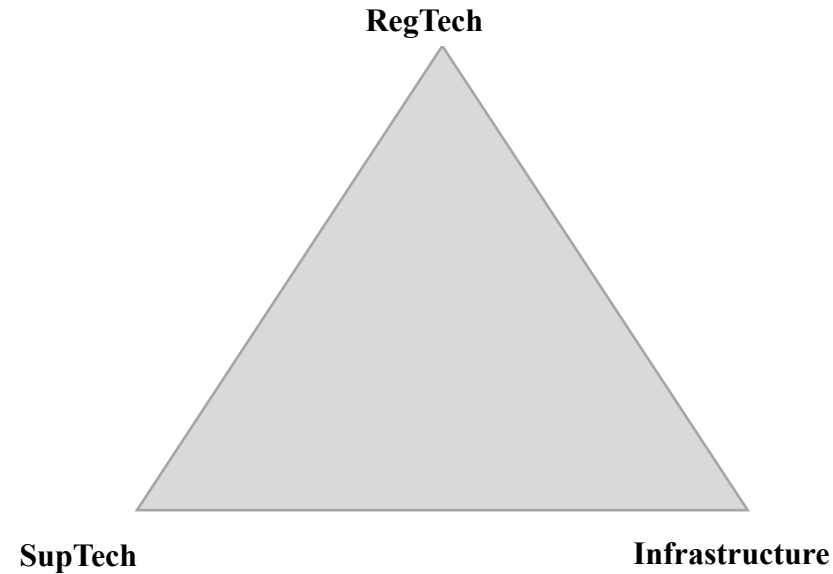
Regulatory Sandboxes



RegTech / SupTech?

- Use of technology – particularly IT – for regulatory implementation, compliance and monitoring, by regulators, supervisors, market participants, infrastructure providers and others
- A subset of Fintech? Uses across all regulated industries
- Vs Suptech? Two sides of the same coin, focusing on supervisory uses
- Regtechs? Startups not the major industry players eg IBM Promontory, LSE Refinitiv, NASDAQ, Amazon ...

The RegTech-SupTech-Digital Financial Infrastructure Ecosystem



The RegTech Opportunity

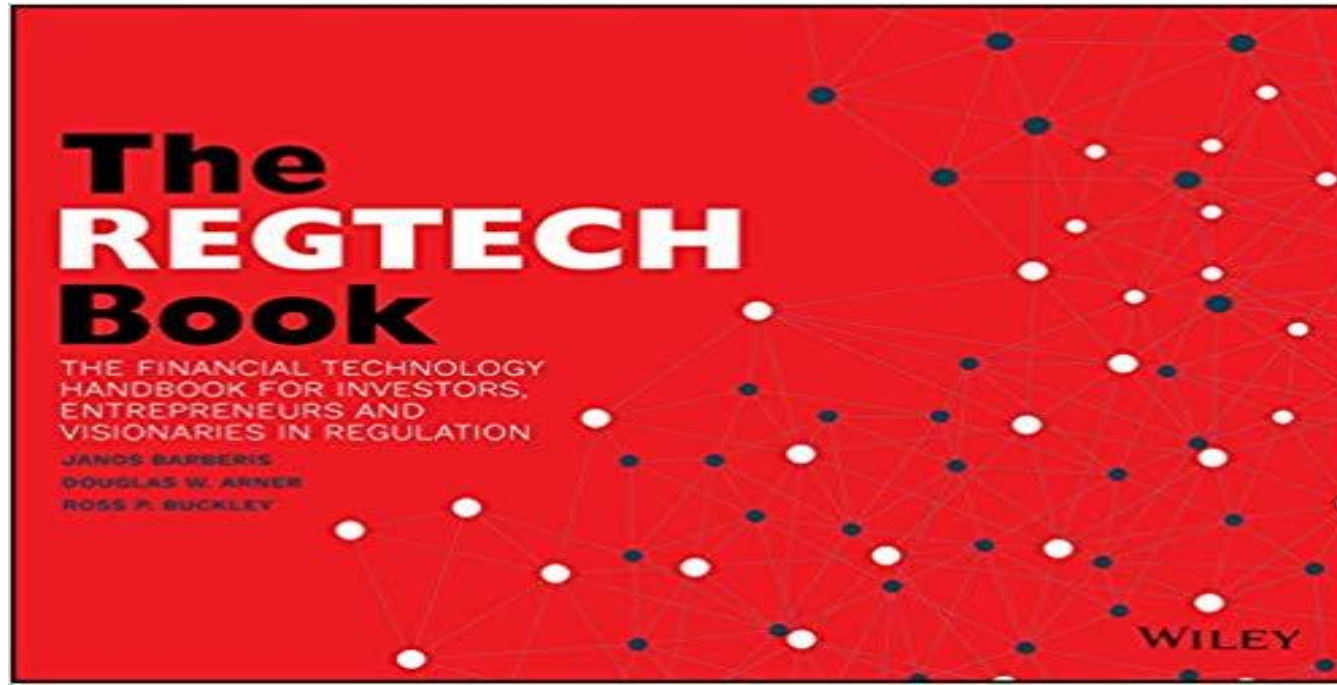
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Taxonomy

- Start ups / incumbents / BigTechs / supervisors / infrastructure providers / individuals
- Efficiency / conduct: digital regulatory reporting, monitoring, enforcement etc
- Financial stability: macro/micro pru — reporting, risk management
- Market integrity / conduct: AML/CFT, reporting, monitoring, enforcement etc
- Sustainable development and inclusion: infrastructure, digital regulatory reporting
- TechRisk: data / cyber / infrastructure

Origins

- 1980s: Finra, Edgar, etc
- 1990s: VaR



- <https://www.wiley.com/en-us/The+REGTECH+Book%3A+The+Financial+Technology+Handbook+for+Investors%2C+Entrepreneurs+and+Visionaries+in+Regulation-p-9781119362142>

RegTech and the Reconceptualisation of Regulation

RegTech digital disruption is not just about greater efficiency in existing processes
but new processes altogether.

RegTech and the Reconceptualization of Regulation
SSRN: <http://ssrn.com/abstract=2847806>



RegTech Reconceptualization



Drivers 2008-2020: Regulation

- Post crisis regulatory changes
- AML
- BCBS 239
- Mifid, Mifid 2 etc
- GDPR

Regtech and compliance

- Compliance evolution / topology: Legal, hr, FCPA / bribery / corruption, AML, financial regulation pre / post 2008, tax, data
- Biggest growth area of finance

EU Big Bang II?

- MiFID 2: Markets in Financial Instruments Directive 2 – transparency across markets
- GDPR: General Data Protection Regulation
- PSD 2: Payment Services Directive 2 – open API banking
- eIDAS Regulation

The Future of Data Drive Finance and RegTech: Lessons from EU Big Bang II

https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3359399

RegTech encompasses industry and regulators

Financial institutions and industry

- Major drivers of RegTech development
- Demand efficient tools to deal with regulatory and compliance demands
- Global firms developing centralized risk management

Regulators

- Lag in regulator adoption relative to private sector
- Yet need to develop systems to deal with rivers of new data and cybersecurity

Start-ups

- Incentives to trade off-data for faster market entry
- Automation of reporting and compliance more aligned with lean business model

Providers

- Drivers: regulators, regulated institutions, startups, techs
- Providers: systems, tech, data, analytics, outsourcing

RegTech and regulators

- Enforcement: GS / UBS, Citi
- Areas: AML / KYC, Digital regulatory reporting, risk management / data aggregation / analytics
- MAS
- US: SEC, Finra, CFTC, Fed
- UK: FCA, BoE
- EU: ECB, ESMA
- BIS
- HK: SFC, HKMA, HKEx
- China: Ant

Wider ecosystem

- Legal foundations: esignature
- Data framework
- Education / human capital development
- Research and development support / funding
- Innovation hub / Regulatory sandbox