

FinTech: Evolution and Regulation

Professor Douglas W. Arner
Asian Institute of International Financial Law
University of Hong Kong
douglas.arnier@hku.hk

Overview

Background

- Definition
- Implications

Evolution

- FinTech evolution
- Typology
- FinTech 3.5?

Regulation

- Risks
- Innovation and development
- Balancing

Implications

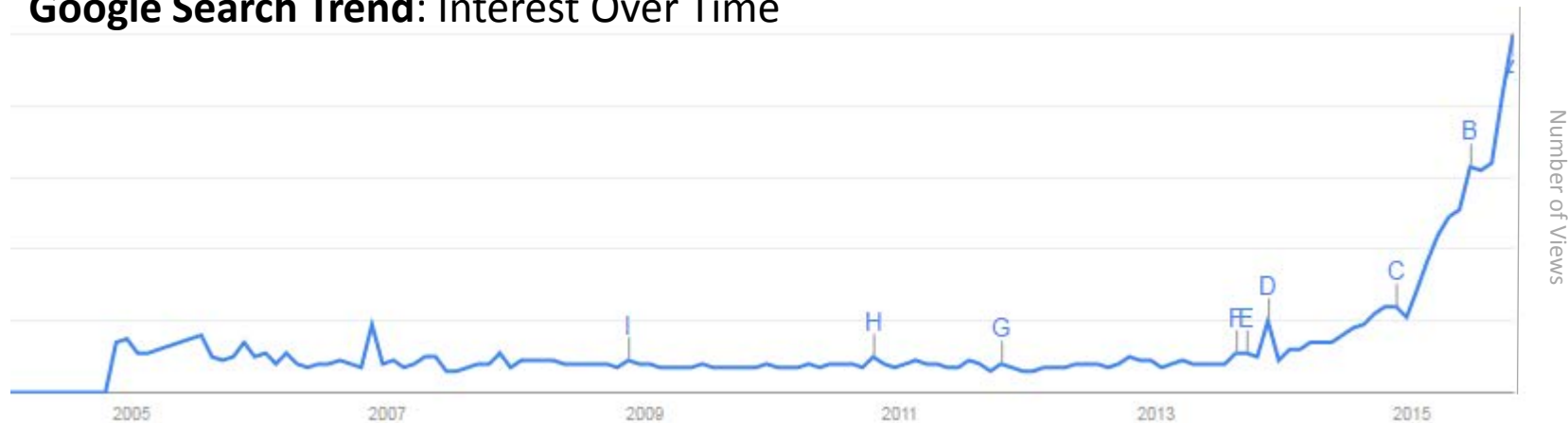
- RegTech
- Asia-Pacific

Background

Definition

The term's origin can be traced to the early 1990s with the “Financial Services Technology Consortium”, a project initiated by Citigroup to facilitate technological cooperation. However, only since 2014 has the sector attracted the focused attention of regulators, consumers and investors.

Google Search Trend: Interest Over Time



Implications

Main current concerns of policymakers and industry arise not from the technology itself but from the question of *who* is applying technology to finance along with the *speed* of development.

An evolutionary approach to create a framework of understanding is necessary to understand the implications for established financial institutions, IT companies, start-ups and regulators alike.

FinTech Evolution and Typology

Evolution

FinTech is often seen today as the new marriage of financial services and information technology. However, this interlinkage has a long history and has evolved over three distinct time periods.

Date	1866 - 1967	1967 - 2008	2008 - Current	
Era	FinTech 1.0	FinTech 2.0	FinTech 3.0	FinTech 3.5
Geography	Global / Developed	Global / Developed	Developed	Emerging / Developing
Key elements	Infrastructure / computerisation	Traditional / internet	Mobile / Start-ups / New entrants	
Shift Origin	Linkages	Digitalization	2008 financial crisis / smartphone	Last mover advantage

FinTech 1.0 (1866 – 1967)

In the late 19th century finance and technology combined to produce the first period of financial globalization.

“The inhabitant of London could order by telephone, sipping his morning tea in bed, the various products of the whole earth, in such quantity as he might see fit, and reasonably expect their early delivery upon his door-step; he could at the same moment and by the same means adventure his wealth in the natural resources and new enterprises of any quarter of the world, and share, without exertion or even trouble.”

John Maynard Keynes (1920)

Timeline:

- **1866-1933:** First age of financial globalization – first transatlantic cable (1866), Fedwire (1918)
- **1945-1967:** Early post-war period – Diner’s Club (1950), telex (1966)

FinTech 2.0 (1967 – 2008)

Analogue to digital, led by traditional financial institutions:

“The most important financial innovation that I have seen the past 20 years is the automatic teller machine, that really helps people and prevents visits to the bank and it is a real convenience.”

Paul Volcker (2009)

- **1967:** First ATM (Barclays), handheld calculator (Texas Instruments)
- **1968, 1970:** BACS, CHIPS
- **1971:** NASDAQ
- **1973:** SWIFT
- **1981:** Bloomberg
- **1983:** Mobile phone
- **1987:** Program trading
- **1983/1985:** Online banking (NBS, WF). By 2001, 8 banks in the US have 1m+ online banking customers
- **1986:** Big Bang, Single European Act
- **1990s:** Quantitative risk management / VaR
- **1999:** Internet / Dot.Com Bubble
- **2008:** Global Financial Crisis

FinTech 3.0 (2008 – Present)

Emergence of new players (*eg start-ups*) alongside existing large companies already in the space (*eg core banking vendors*).

“Silicon Valley is coming: There are hundreds of startups with a lot of brains and money working on various alternatives to traditional banking [...] They are very good at reducing the “pain points” in that they can make loans in minutes, which might take banks weeks.

**Jamie Dimon
CEO, JP Morgan**

Examples:

- **2007:** iPhone launched
- **2008:** Wealthfront is founded and provides automated investment services
- **2009:** BitCoin launch. Square is created, providing mobile payments solutions
- **2009:** Kickstarter introduced a reward-based crowdfunding platform
- **2011:** P2P money transfer service Transferwise is created

2008: A Game Changer?

The 2008 GFC had a catalysing effect on the growth of the FinTech sector due to:

- **Post-crisis regulatory reforms**
- **Financing gap:** Contraction of the interbank market (*eg trust issues*) and increase in regulatory capital to be held against loan portfolio (*eg additional +US\$150bn set aside*)
- **Operational cost reduction:** Downsizing teams (*eg IT & back/middle office*) plus using technology to reduce costs (*e.g. straight-trough processing*)
- **Public perception:** Growing distrust of formal financial institutions from the public allowed new entrants to emerge (*eg UK challenger banks, P2P or FX platforms*)
- **Technology:** Smartphone penetration, directly providing Point of Sales (POS) and stored value systems to individuals, solving infrastructure mismatch

Comparison

Because FinTech is a contraction of the words “Financial” and “Technology” it encompasses a range of actors which can all be classified as FinTech companies.

Rank	FinTech 2.0		FinTech 3.0 & 3.5
	<u>Banks</u> by market cap (2014)	<u>IT Companies</u> by revenue (2014)	<u>Start-ups</u> by valuation (2015)
1 st	Wells Fargo & Co (US)	FIS (US)	LuFax (CN)
2 nd	ICBC (CN)	Tata (IN)	Square (US)
3 rd	JP Morgan (US)	Fiserv (US)	Markit (US)
4 th	CCB (CN)	Cognizant (US)	Stripe (US)
5 th	Bank of America (US)	NCR Corp (US)	Lending Club (US)

Typology (1)

Financing



Payments & Infrastructure



Operations & Risk Management



Data Security & Monetisation



Customer Interface



Typology (2)

Finance and investment

- Alternative financing: crowdfunding, p2p etc
- Digitalization of financing

Operations and risk management

- Pre-crisis
- Post-crisis

Payments and infrastructure

- Traditional
- New

Data security and monetization

- Analytics and monetization
- Security

Customer interface

Plus: **RegTech**

FinTech 3.5 (2008 – Present)

Africa and emerging Asia: Recent FinTech developments primarily prompted by pursuit of financial inclusion and economic development:

“There are two big opportunities in future financial industry. One is online banking, all financial institutions go online; the other one is internet finance, which is purely led by outsiders”

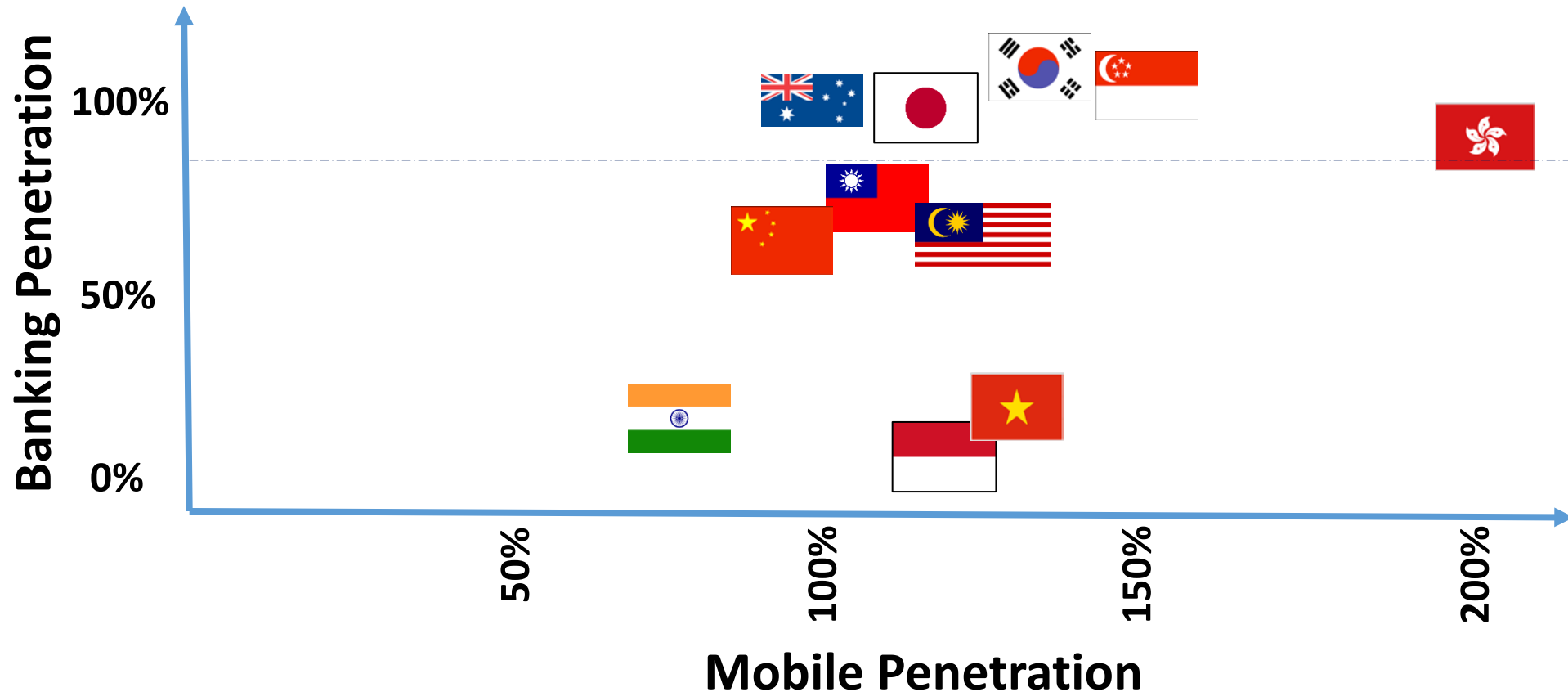
**Jack Ma
CEO, Alibaba**

Examples:

- **2007:** M-Pesa introduced in Kenya, by Vodafone for Safaricom
- **2010:** Alibaba introduces loans to SMEs on its e-commerce platform
- **2011:** LuFax, an online Internet finance market place, is created
- **2015:** India announces the creation 11 new payment banks (eg Fino PayTech)
- **2015:** MyBank and WeBank, two new Chinese private banks

Mobile vs banking penetration (1)

Within much of Asia mobile phone ownership substantially exceeds formally banked population (often low):



Mobile vs banking penetration (2)

China

Population: 1.35bn
Formally Banked: 63%
Mobile Phone: 89%

India

Population: 1.25bn
Formally Banked: 35%
Mobile Phone: 71%

Malaysia

Population: 29.7m
Formally Banked: 66%
Mobile Phone: 131%

Australia

Population: 23.1m
Formally Banked: 99%
Mobile Phone: 107%



South Korea

Population: 50.2m
Formally Banked: 93%
Mobile Phone: 111%

Japan

Population: 127.3m
Formally Banked: 96%
Mobile Phone: 115%

Vietnam

Population: 89.7m
Formally Banked: 21%
Mobile Phone: 131%

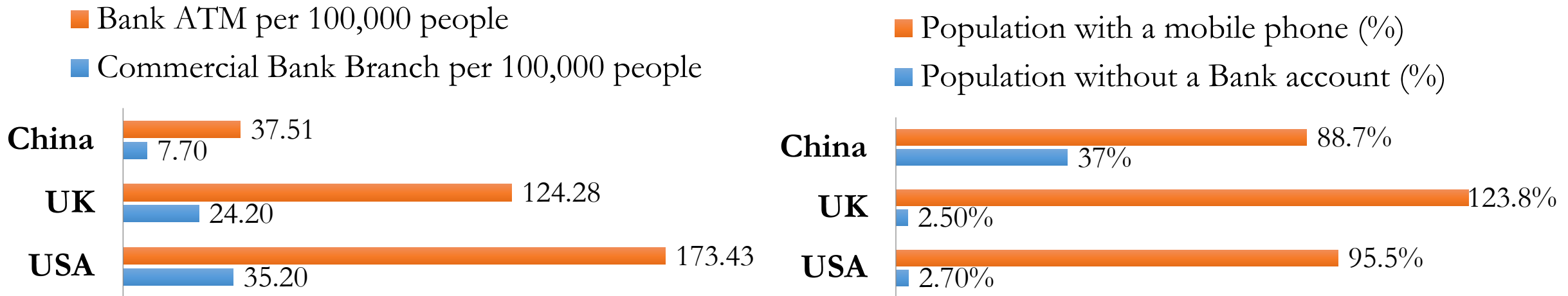
New Zealand

Population: 4.47m
Formally Banked: 99%
Mobile Phone: 106%

Infrastructure mismatch

As perhaps the leading example, China possesses specificities that make it arguably more suitable than developed markets to deploy mobile-based financial services and products.

Infrastructure mismatch: **Banking vs Telco:**



FinTech Regulation

Financial regulation

Due to the breadth of the FinTech sector, it is hard to talk about “FinTech Regulation” *per se*. Better to break down high-level approaches (*e.g. risk- or product-based*) and complement them with a sub-set of specific regulations (*eg payments, AML*).

Broadly speaking, financial regulators have 4 main mandates:

Financial
Stability

Prudential
Regulation

Conduct & Fairness

Competition &
Development

Regulatory implications

Many start-ups use technology to disintermediate banks and directly propose their services or products to consumers (*eg Telco providing payment services*).

This creates a set of questions:

- Increasingly a blurred line:
 - ➔ Who can/should provide financial services or products? (*eg Telcos or Banks*)
- How to balance start-up low cost models and agility benefits with compliance costs?
 - ➔ Banking licence restrictions limits business model freedom (*eg mobile money balance acting as a current account*)

Regulatory threshold

New emerging FinTech 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.



Risk blind-spots

Using size (*eg small, large, systemic*) as a way to evaluate risk is not adequate, given inter-connectedness of financial markets and rapid up-take of certain financial products. Today, some small companies' path to become systemic is not linear but exponential:

- **Kenya (2008):** In three years M-pesa was being used by over 18 million customers and 43% of Kenya's GDP was flowing thru this service
- **China (2014):** Third party mobile payment market reached 1,433 trillion yuan, a +400% increase compared to 278 trillion exchanged in 2013
- **China (2014):** Yu'e Bao, a money market fund part of Ant Financial Group (Alibaba) held over US\$ 90billion (*e.g. 4th largest in the world*) just 10 months after its creation

New risks

New business models and delivery mechanisms create new sets of risks:

- P2P platform capital buffers during credit cycle change or interest rate liberalisation
 - ❑ 2.5% deposits vs 15% P2P lenders (*eg warning over 1,250 platforms in China*)
- Money Market Fund (MMF) maturity mismatch enhanced by technology
 - ❑ Technology facilitation of on-demand redemptions (*eg “mobile app bank run”*)
- Liquidity problems for mobile money agents to meet large withdrawal requests
 - ❑ Can undermine public confidence, but also slows scalability of the solution
- Scalability of process, policies and risk management frameworks
 - ❑ Particularly for companies with exponential growth (*eg loan origination quality*)

Regulatory innovation

Since 2008 national and international regulators have been focused on drafting and implementing re-active regulations covering the causes of the GFC to avoid its repetition. However, the increased layering of regulations and compliance cost facilitated the emergence of new FinTech start-ups.

There is nonetheless a set of pro-active regulations emerging to allow for innovative businesses propositions to emerge, eg:

- **US: Jump-start Our Business Start-up Act 2012 (JOBS Act) → Alternative financing**
- **EU: Payment System Directive 2008 → Real-time payments**
- **UK: Small Business, Enterprise and Employment Bill → Loan referral to P2P**
- **HK: Electronic Bill Presentment and Payment (EBPP) → Automated bill payments**

Institutional change

Regulatory supervision by specialist bodies focused on products appears inadequate when looking at the rate of technological progress. This can create grey areas as to which body should be regulating a specific business (*eg insurance companies performing banking activities in the US pre-2007*).

Thus, financial innovation driven by technology is preferably overseen in the context of a twin peaks / functional model such as in the UK or Australia. This is particularly relevant in jurisdictions that have more a sectoral approach.

Product Based Approach

(eg United States, China, Hong Kong)

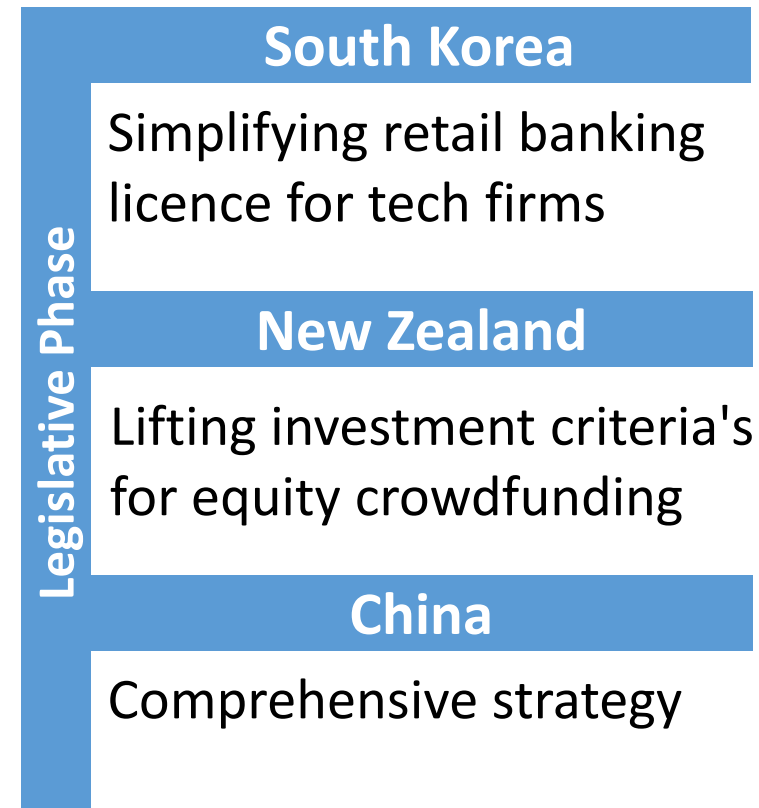
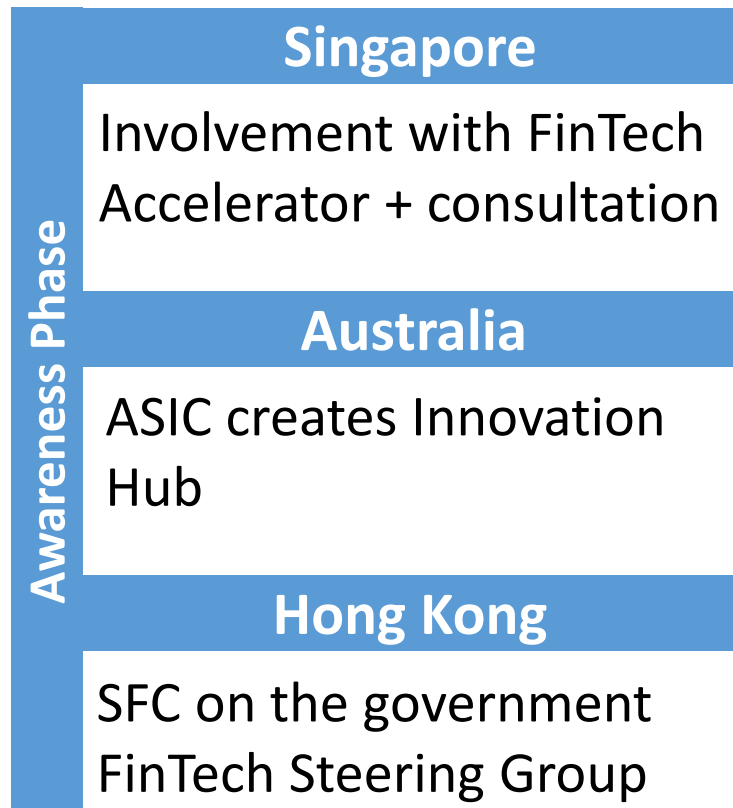
Vs

Functional Based Approach

(eg United Kingdom, Australia)

Recent approaches in Asia

Unlike US and EU where FinTech sector emergence was driven by the private sector first, in Asia governments and regulators are often seeking to lead:



RegTech

Blackett Report (UK) government recognizes the new challenges but also opportunities brought by the FinTech sector.

“Big data’ regulatory online reporting and analytics, among other technologies, could create a new generation of UK regulatory technology (RegTech)”

Some other benefits:

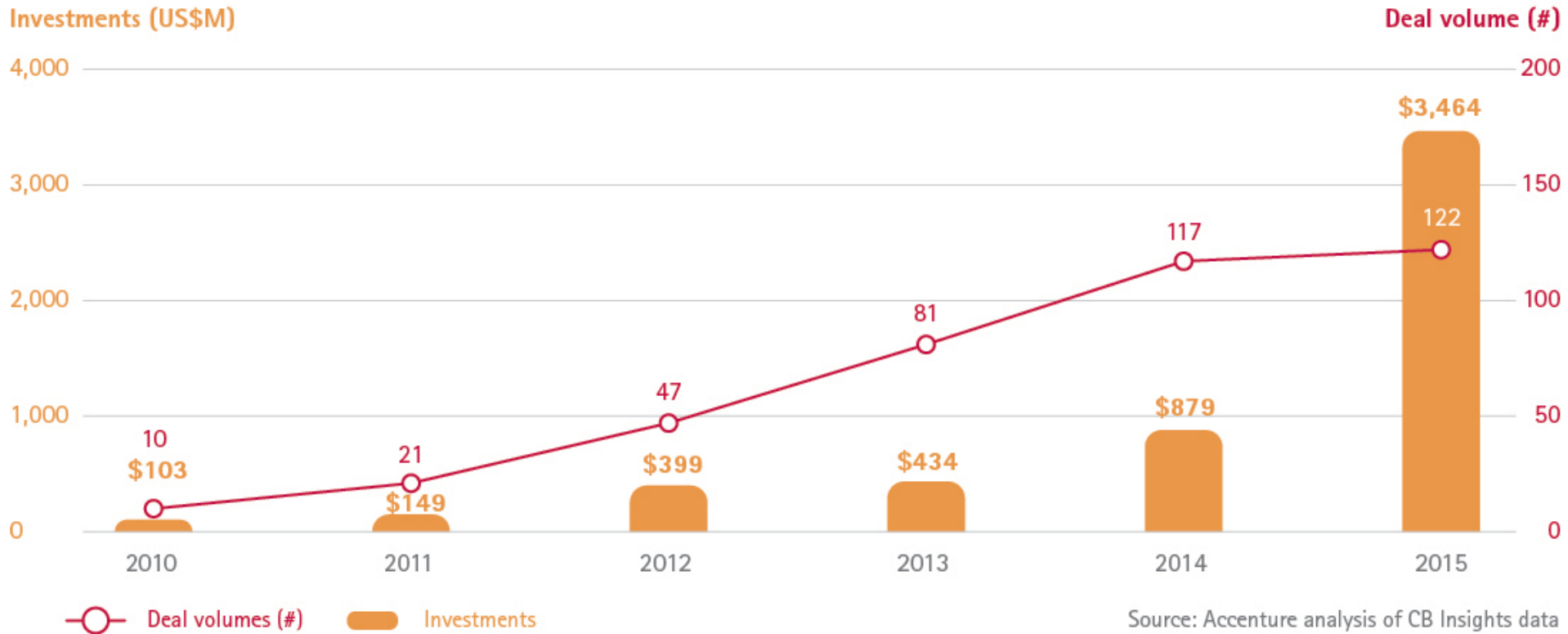
- Data driven compliance and regulation
- Harmonization of data standards to be shared nationally, regionally and globally
- Real time transaction analysis, online registration, open source compliance systems
- Regulatory policy modelling to simulate impact of new policies before legislating

Looking Forward

APAC investment trends

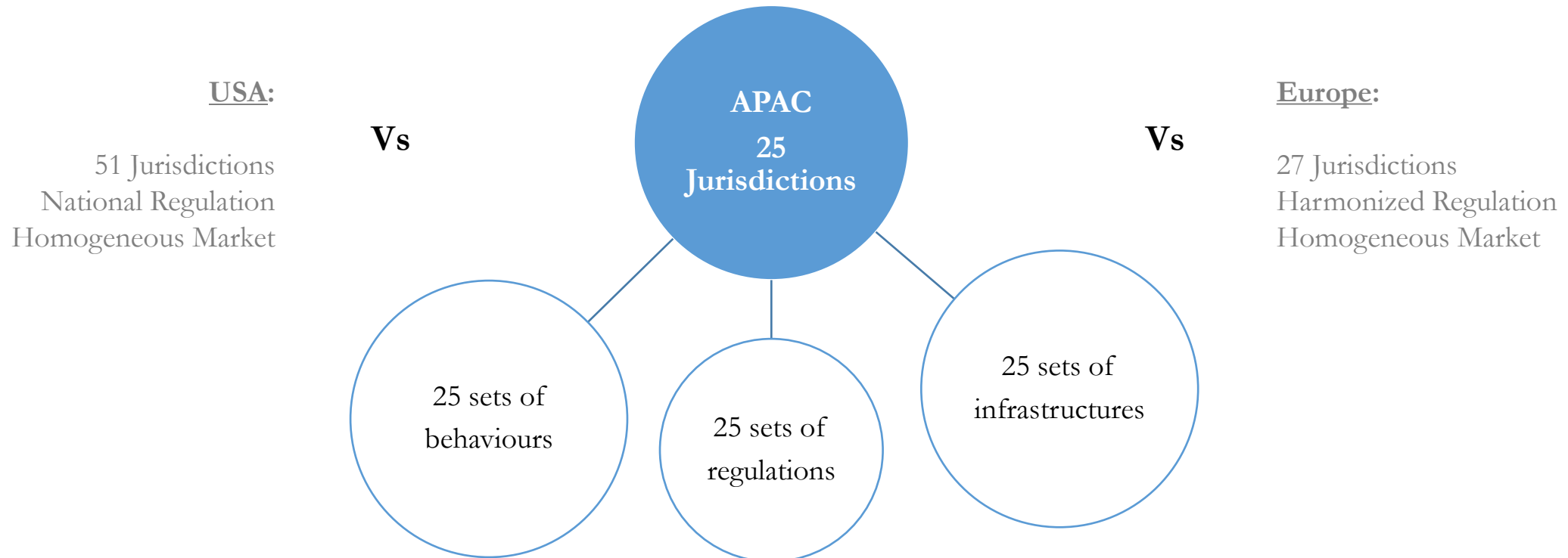
FinTech startup investment: quadrupled within the last 12 month reaching USD\$3.5bn.

Investment in APAC fintech on the rise



Asian fragmentation

Unlike the US and EU markets that are more homogeneous in their composition, the Asian market remains fragmented, limiting the rapid scalability of certain FinTech businesses (*eg cross-border payments*).



Collaboration or disruption?

FinTech covers banks and start-ups. Going forward, there is a necessity and rationale for a level of partnership

NET Services Logon

- NET Banking
- NET Securities
- Corporate NET Banking

> NET Banking Logon Issue

Wing Lung WeChat Banking Services
Simplify your needs from anywhere

- Account Binding • Transaction Alert • Account Opening Appointment
- Balance Enquiry • Apps Download • Customer Suggestions Form
- Rates Enquiry • Market Commentary • Bank's information
- Bank's Promotion Offer • E-voucher

More ▶

Add Now !

winglungbank

Wing Lung Bank WeChat Official Account

Enquiry Hotline: 230 95555 Terms and Conditions apply.

Q&A

Douglas W. Arner
douglas.arnier@hku.hk

Janos Barberis
janos.@fintech.hk

Ross P. Buckley
ross.buckley@unsw.edu.au

**The Evolution of FinTech:
*A New Post-Crisis Paradigm?***

SSRN: <http://ssrn.com/abstract=2676553>

The authors gratefully acknowledge the financial support of:

- The Hong Kong Research Grants Council Theme-based Research Scheme (Enhancing Hong Kong's Future as a Leading International Financial Centre)
- The Australian Research Council Linkage Grant Scheme (Regulating a Revolution: A New Regulatory Model for Digital Finance).