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The future of data-driven finance

Prof. Ross P. Buckley (UNSW Sydney)



The Future of Data-Driven Finance

Reflections on Europe and Australia and Lessons from China

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This is a presentation of a joint paper with an expanded commentary on the world-leading developments in China

**THE FUTURE OF DATA-DRIVEN FINANCE AND REGTECH:
LESSONS FROM EU BIG BANG II**

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

Evolution of FinTech

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

Evolution of EU finance

- 1986 Single European Act: Big Bang I in the UK
- 1992 Maastricht Treaty
- 1995 White Paper
- 1999 EMU / Financial Services Action Plan
- 2001 Lamfalussy Report
- 2009 de Larosiere Report
- Banking Union
- 2018 Big Bang II?

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

Evolution of Digitisation, Datafication and RegTech

- Post-crisis financial regulation: AIFMD (2011/2013), CRR/CRD IV (2013/2014), MiFID I/II/MiFIR (2014/2018), AMLD 5 (2018 / 2020)
- Reporting requirements: digitisation / datafication / RegTech revolution – industry / regulators
- Merrill Lynch (2017, FCA): gbp34.5 m / 68.5m exchange traded derivatives (Feb 2014-Feb 2016) – ie. Some 6 transactions per second the markets were open in that period -- a good example of how FinTech demands RegTech.

Data regulation

- GDPR
- Principles
- Consent / ownership / portability
- Data management / compliance
- Objectives / results

Open banking

- PSD 1: Single Euro Payments Area
- PSD 2
- Collection / digitisation / repackaging / datafication / management
- Transfer ...

Digital Identity: eIDAS

Digital identity, in my view, is the foundational piece of infrastructure for digital financial transformation and financial inclusion.

See **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>

- 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

China

Identity is generally a sovereign function.

Yet in a profoundly ironical development – the foundational digital identity in China is provided not by the state, but by the two major payments platforms: WeChatPay and AliPay.

The speed and scope of their penetration has been breathtaking – almost impossible to catch a cab today in China using a credit card or cash – one needs WeChatPay on a phone.

The social credit score is a much-criticized by-product of these developments. Much-criticized (in the West) as it seems to be evolving into a means of social control.

China – cont'd

3 years ago every time Ant Financial made a consumer loan it claimed to do so on the basis of over 20,000 data points – on every Chinese person!

Imagine how this can revolutionise two traditionally poorly served sectors of any financial system – consumer & SME lending.

In 2014 – Alipay noticed there were unused balances sitting in people's accounts.

It established Yu'e Bao ("leftover treasure").

In 9 months it was the fourth largest money market fund in the world!

Of a scale with US funds 50 years old!

The PBoC said 'Holy Shit' in Chinese. And put the brakes on.

But within a year of the brakes being released, Yu'e Bao was the world's largest money market fund!

The TechFin Story

Organising idea – The entity that knows the most about you is best placed to price credit or insurance for you. Traditionally that has been your bank. It did that by being embedded in the community.

Increasingly banks have become data-driven businesses. So it has been decades since mortgage decisions were made locally.

But now other companies know more about you – principally the big data and platform companies – Google, Amazon, Facebook, Apple, etc.

Banks need to become far more nimble with data, or face being replaced by these TechFins.

In this sense mandating open banking (over their objections) may save the banks lives.



Big Data
(Tech)

Microsoft
Wallet

M-PESA

Client
Relationship
(Fin)

WeBank

Financial
Services

蚂蚁金服
ANT FINANCIAL

支付宝
ALIPAY

amazon.com

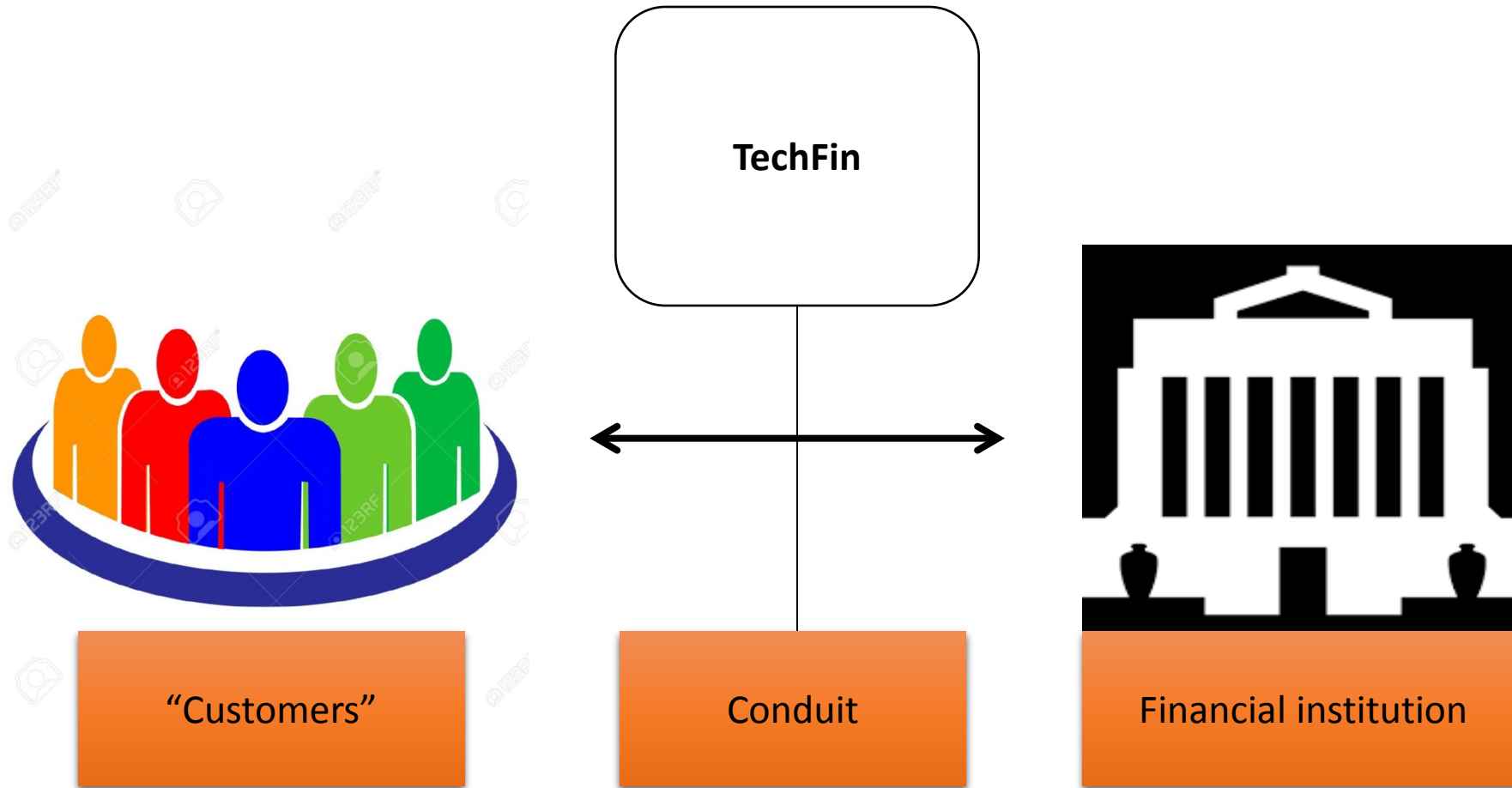
Apple Pay



TechFin – Stage One

- TechFins provide much of the data – either raw or analysed – that banks and insurers use.

TechFin Stage Two



Knowing your preferences from multiple sources...

- Website / data: google (interest preferences), facebook (social media preferences) etc
 - Shopping: amazon, woolworths/coles frequent shopper (shopping preferences)
 - Phone: m-pesa (communication preferences)
 - Payment: alipay, visa/mastercard (shopping, travel preferences)
-
- **Allows Algorithms to know so much about you.**
 - Data analytics rules!
 - Walmart – choker chain for dog, or stopper for a door. Multiply these correlations by tens of thousands!

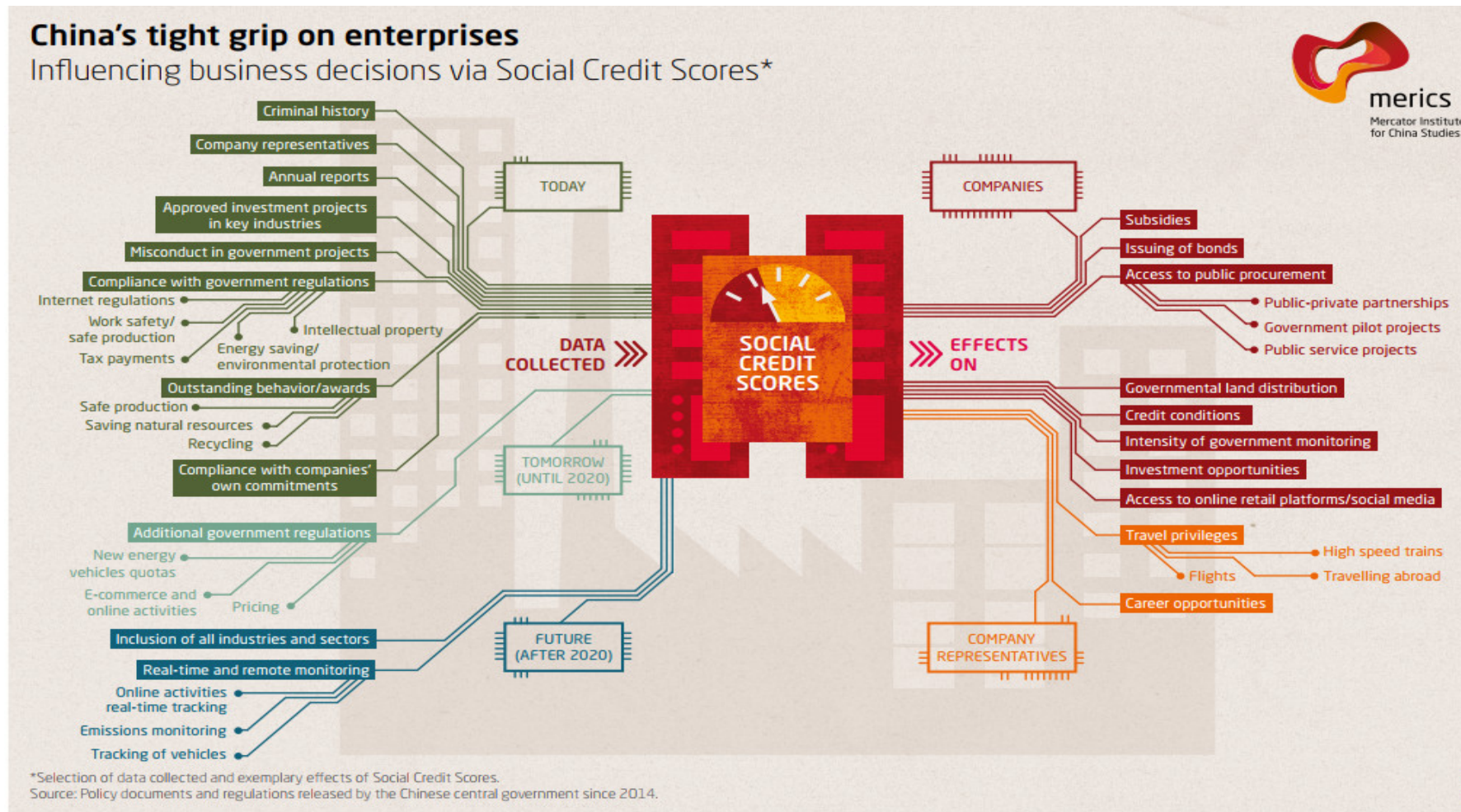
The monetization of Data – The clear global trend, following China's lead.

Money has been Digitized and Now Data is Monetized

FinTech Today

TechFin Tomorrow

China Influencing Business Decisions via Social Credit Scores



[China's Social Credit System: AI-driven panopticon or fragmented foundation for a sincerity culture?](#) – Masha Borak

When does a TechFin become a Financial Institution?

Our thesis is that most TechFins will begin serving as a conduit connecting their customers with financial service providers

- Ant Financial <> Alibaba
- Tencent <> WeBank
- Google pay
- Vodafone <> m-pesa

⇒ Large size, international / cross-border activity

⇒ Network fully developed

⇒ Enormous access to data

? : Conduit / front-end only?
Data delivery & analytics?

(+): money on balance sheet;
discretion over client money;
solicitation, pooling

TechFin – Stage Three

- **Stage Three**, obviously, is TechFins providing financial services themselves, as is happening today on a major scale in China with Ant Financial.

TechFin Benefits

- **Reduction of transaction costs & enhanced market efficiency**
- **Enhanced business decisions, risk management**
- **Business decisions based on more comprehensive data set**

Existing financial systems serve the credit needs of SMEs poorly

So better SME & consumer credit

TechFin Risks

- TechFins have better data than traditional banks: more comprehensive front-end data, more data points, more reliable, cross-checked data
- But: no level playing field with existing institutions, and a risk the triggers for existing regulation won't be activated in time
- Correlation vs Causation: False Predictions -- unknown effects of Artificial Intelligence / Data Analytics
- Protected Factors at Risk? Upholding Civil Society Values (for instance, enforcing anti-racism, anti-gender discrimination etc)
- Monopoly risks
- Data protection risks – as we are seeing globally
- **In countering these risks RegTech has a major role!**

Theses

- 1) TechFins have their origin in BigData (“Tech”) rather than customer relationship (“Fin”).
- 2) For TechFins, formal financial regulation may be triggered too late. Triggers linked to taking deposits, soliciting customers or handling client funds are likely to not be triggered. Regulators may therefore be unable to a) enforce customer protection measures and b) monitor and mitigate systemic risk.
- 3) TechFins may compete unfairly therefore since they a) are unrestricted by risk & compliance considerations in their build-up phase, b) do not bear compliance and capital costs.
- 4) TechFins’ data analytics will require regulation at some stage. Perhaps “follow the data” will have to replace financial law’s “follow the money”.
- 5) Regulation of TechFin for now should focus on: a) information gathering, b) review of algorithms for false predictions and protected factors, and c) systemic risk prevention.

Should Regulators Care if TechFins Only Provide Data & Analytics?

- **If TechFins are essential to stability regulators should care.**
- **If TechFin is essential for one or more important banks (eg main data analytics provider)**
- **If TechFin moves to Stage 2 and is main front-end channel to customers, or if a TechFin serves this role for multiple providers.**
- **Furthermore, if individuals are being harmed by analytics that produce damaging results, regulators should care.**
- **So there is a strong case here for public regulation of TechFins. And RegTech will be essential in that task.**

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



Features of India's Aadhaar System (commenced 2009)

To create a unique 12-digit digital identity for each person the system collects:

- Name, gender, date of birth, postal address (and optionally – email and mobile no.)**
- Ten fingerprint scans, both iris scans.**

Implementation has been rough – but over 1 billion sets of biometrics is no simple task

The scheme has been highly contentious

But the concept is right though in our view

And the stack is now working to greatly advance financial inclusion and reduce 'leakage' in gov't and other payments (of up to 45%).

340 mn Aadhar linked bank accounts & 150 mn E-KYC in past 3 years

Genuinely efficient financial systems are built on digital identity

Features of the current Australian identity “system”

- **About 80 nations have a national ID number, we don't**
- **We use a mix of passport numbers, drivers' licence numbers, medicare numbers, tax file numbers ...**
- **Different ID requirements for different connections to government**
- **And '100 points' of ID for connections to banks**
- **One outcome is that Centrelink has to have a 'death reversal procedure'**
- **Now if government could privatise that ...**
- **Each year over 5% of Aussies suffer identity fraud: at a cost of \$1.6 bn**

History of ID in Australia

- **Australia Card – Hawke Government – 1985**
- **Access Card – Howard Government – 2006**
- **On-line national census – 2016**

Digital Transformation Office – established Jan 2015 – moved relatively quickly, then moved slower and slower.

We've had GovPass – to be built on the TDIF – Trusted Digital Identity Framework

Then my GovID (an adaptation/extension of one's tax file number)

And Australia Post is developing a separate digital ID program

But the DTO is these days very quiet. Does Gov't feel close to 1200 volts DC?

Government-organised Identity is a Third Rail in Australian politics



So in terms of the EU's Big Bang – to return to where all this began

- **One of the EU's four unintentional pillars was eIDAS**
- **The others were GDPR, PSD2 (payments and open banking) and financial reporting requirements post GFC.**
- **Australia has the reporting requirements as they are largely global**
- **On data, Oz regime isn't as sophisticated as GDPR but we have one**
- **On identity so far Oz has very little actual action**
- **On payments, Oz has a NPP – which is moving faster than our TDIF – that is, faster than a glacier**
- **On open banking Oz has a lovingly crafted regime the implementation of which is again in a foot race with that glacier**
- **But with climate change the glacier might be beating both the NPP and the open banking regime in the foot race**

How might Australia's banks run faster?

- My very unathletic, 22 year old daughter now leaves me in her dust.
- But back in the day (well actually about 30 years ago or so), I'd find a good yard or two of pace when the winger I was chasing was seriously quick.
- How fast one runs often depends on who one is chasing or being chased by.
- I wonder if Australia's banks would move faster if they perceived their main threats as not each other or FinTech start-ups, but the big data companies – GAFA and Ant Financial
- For that day will come – and frankly Australian banks (currently among the world's most profitable) don't look all that ready.
- Our thesis is that Europe's banks, because of the unintended mutually reinforcing effects of four major pieces of EU regulation, will be better prepared for that future.

FinTech Evolution

<https://ssrn.com/abstract=2676553>

TechFin

<https://ssrn.com/abstract=2959925>

DFS in China

<http://ssrn.com/abstract=2660050>

RegTech

<https://ssrn.com/abstract=2847806>

Sandboxes

<https://ssrn.com/abstract=3018534>

DLT liability

<https://ssrn.com/abstract=3018214>

ICOs

https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3072298

Digital ID

https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3224115

Introduction to FinTech: The world's most popular FinTech online course, with edX

<https://www.edx.org/course/introduction-to-fintech>





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7. Jahrestagung des UFSP

Thema: FIDLEG/FINIG: Der Finanzplatz vor neuen Herausforderungen

Referenten: Verschiedene Referenten aus Lehre und Praxis

Datum: Mittwoch, 5. Juni 2019, 9:30 – 16:15 Uhr (inkl. Verpflegung)

Ort: Universität Zürich, Rämistr. 74, 8001 Zürich



www.finreg.uzh.ch/events