

Technological Revolution in Financial Services

– Winter 2022/23 – Lecture series “Economy and Society”

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Technology is changing our everyday life



Roadmap

- Overview
- Lending
- Payment
- Future and Concerns

FinTech and Digitization of Financial Services

What is FinTech? ■

- FinTech was born out of the 2008 crisis (e.g., [Revolut](#))

FinTech (Financial Technology)

"**Technologically enabled financial innovation** that could result in new business models, applications, processes, or products with an associated material effect on financial markets and institutions, and the provision of financial services."—Financial Stability Board



FinTech and Digitization of Financial Services

What is FinTech?



- Trade Republic: German online broker in Berlin. Shares, derivatives and cryptocurrencies can be traded on a mobile app
- N26: German Neobank

FinTechs

Advantages

- Lower search costs of matching transacting parties
- Achieve economies of scale in gathering and using large data
- Achieve cheaper and more secure (?) information transmission
- Reduce verification costs

FinTech and Digitization of Financial Services

Digitization of Financial Services

The landscape of financial services is changing ...

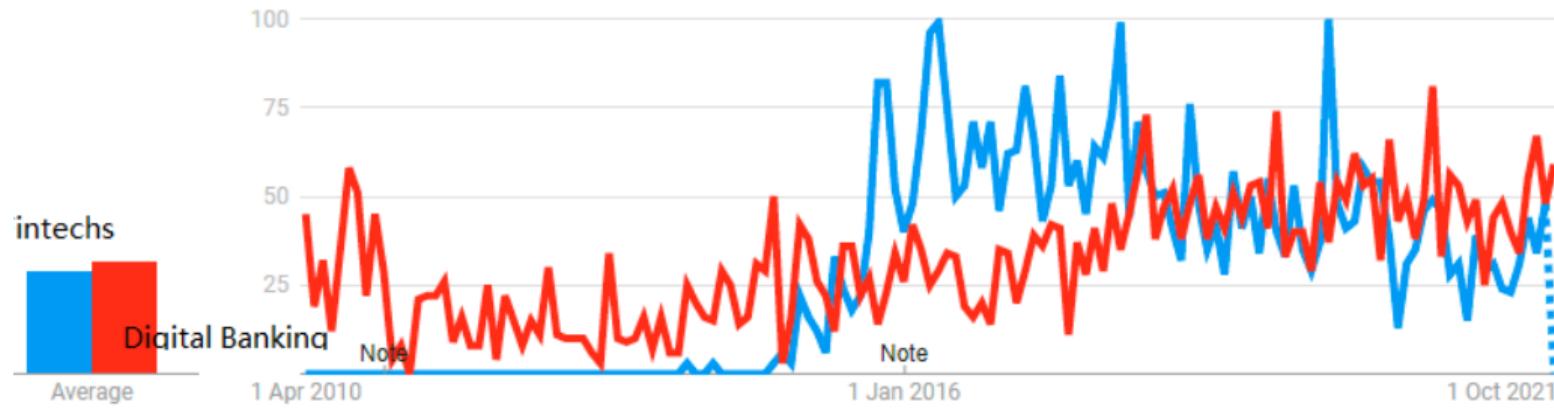


Figure: Google Trends "FinTech" and "Digital Banking"

Digital transformation is a must for banks

- Traditionally, banks tended to enjoy market power
 - Uniquely privileged access to customers' financial data
 - Locally based loan officers with soft information of customers
- Banks' "incumbent's advantage" is shrinking, even in their core territory of customer understanding
- Who have better data? banks or fintechs?
 - Digital footprints
 - On the Rise of FinTechs: Credit Scoring Using Digital Footprints
- Customer demand for convenience increases (e.g., 24*7 availability of access)

Digital banking

Trend around the world

- India: digital banking started taking shape in the late 1990s with ICICI Bank being the first one to bring the service to their retail clients
- China: first digital bank Webank, December 2014 (Tencent, also has WeChat); Alibaba's Alipay is based on the rise of the e-commerce platform-Taobao; traditional banks looking for change, e.g., the mobile banking app of China Construction Bank (CCB)
- Brazil: central bank launched Pix, an instant-payments system in November 2020. Before that for years Brazilians had little incentive to abandon cash



Digital banking

The pandemic has accelerated this existing trend

- European banking sector has seen the number of digital users increase by 23% since the start of the pandemic
- European customers have for some time been on an inevitable path away from traditional physical branch-based banking and towards online and mobile alternatives

Digital banking

The technological response of European banks

- European banks are – on the whole – aware of how crucial ongoing digital transformation will be to their future survival
- However, some were thinking too defensively in their investment responses to the changing environment
 - 20% of the banks directly supervised by the ECB were planning to accelerate their IT innovation and digitalisation work
 - 30% intended to postpone things – presumably to “wait and see”

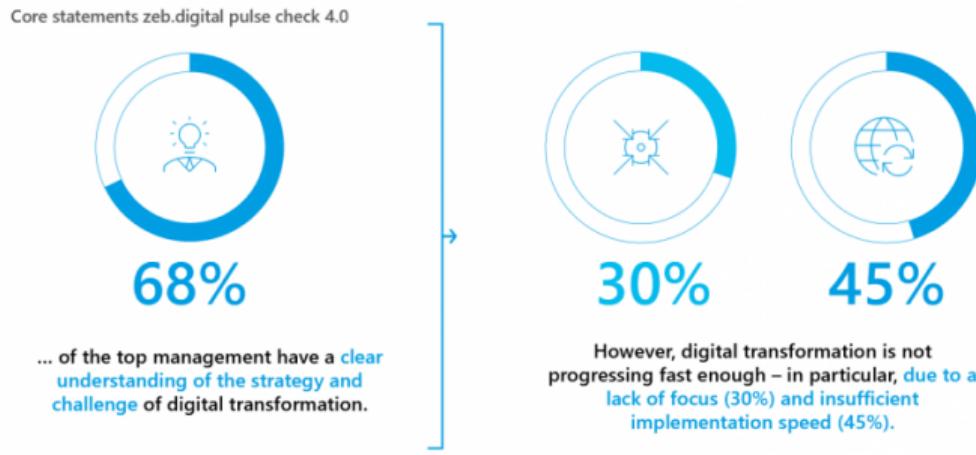


Figure 1: Digital transformation of European banks: Core statements

Lending

Banking vs FinTechs

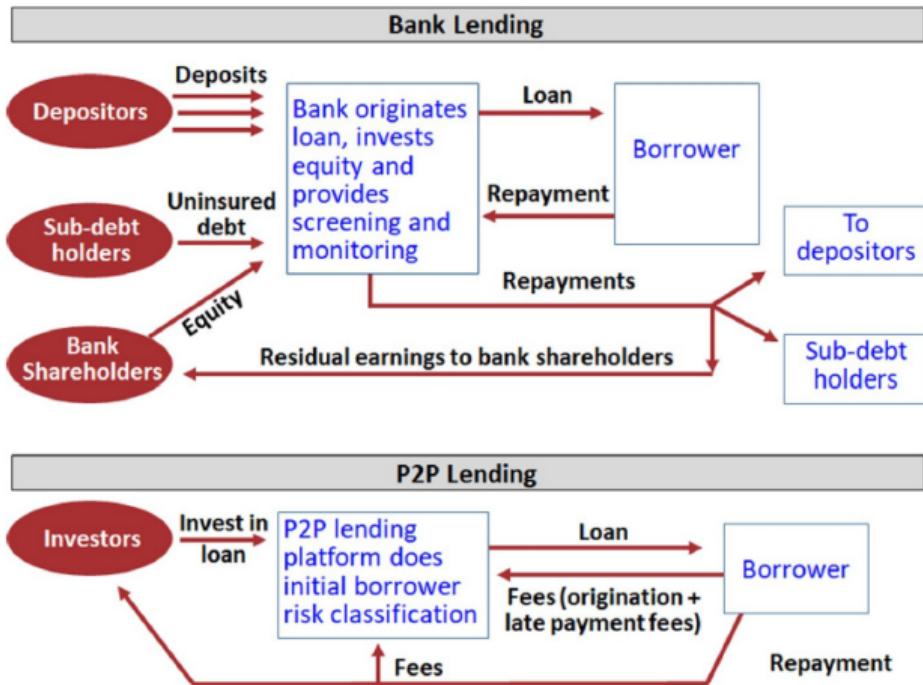


Fig. 2. P2P versus bank lending. Source: Thakor (2020)

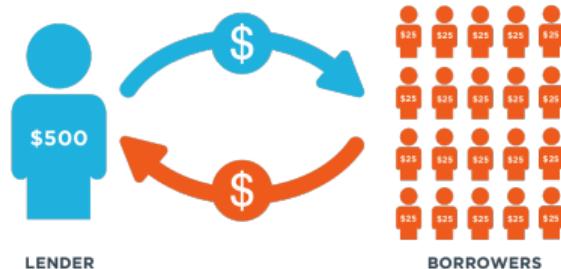


Muhammad Yunus spoke to reporters Thursday with his wife Afrozi in Dhaka, Bangladesh.

Lending

P2P lending (marketplace lending)

- First P2P (person-to-person) platform: ZOPA (UK, 2005)
- P2P lending process
 - ① The borrower submits an application for a loan
 - ② The P2P platform does a preliminary credit analysis and assigns a “loan grade” and the listing is posted online
 - ③ Then investors (potential lenders) bid on the listing with loan amounts and interest rates.
- Benefit/Profit of platform?
 - service fees such as loan origination fees (1–6%) and late payment fees paid by borrowers
- P2P lending has occurred in the aftermath of 2008 crisis



Lending

Fintech Credit

- US: LendingClub, Prosper, Upstart, CircleBack, Funding Circle, etc
 - second largest FinTech credit market
- Europe: Minto, Grupeer, IUVO, Housers, Bitbond, Zopa, Bondora and Auxmoney, etc
- China: Renrendai, Paipaidai, Yirendai, Lufax, etc
 - used to be the largest FinTech credit market
 - volumes in China are declining due to regulatory changes
- Benefits: (1) Lower transaction costs; (2) Convenience; (3) Fast; (4) Financial inclusion.

Lending

Vulnerabilities of FinTech Credit (FinTech credit, BIS 2017 report)

- Leverage and liquidity risk
 - To exit a position early, an investor must find another investor to take over the investment
- Operational risks
 - Cyber-risk, fraud-related risks, platform runs (China, Ezubao \$7.6 billion)
- Credit risk
 - Quality of credit risk assessment; investors limited financial knowledge
- Legal risk and Regulation risk

Lending

Lighthouse in the Dark: Search in Marketplace Lending (Li, 2022)

- Search friction in the FinTech credit market
- Data: Chinese P2P Lending platform Renrendai
- Private Lending Service Centers (Pcenters) introduced in many Chinese cities from 2012
 - Publish average ongoing rates of private lending; disseminate financial knowledge; put all private lending related agencies in one place
- Informational public goods (the Pcenters) reduces search frictions of borrowers, boost trading and reduce interest rate dispersion

ref Data Manipulation in Marketplace Lending (Hu and Li, 2022)

Lending

Research

- FinTech Lending (Berg, Fuster, and Puri, 2021)
 - currently constitutes a small share of overall lending in the U.S., but grows fast
 - has gained double-digit market share in the mortgage market. Growth rates are particularly high in the buy-now-pay-later (BNPL) market, while marketplace consumer lending was important early on, but has not displayed much growth in recent years
- FinTech market share tends to be higher in countries with higher GDP per capital, in countries with lower banking competition, and in countries with less stringent banking regulation (Claessens et al. 2018; Cornelli et al. 2020)
 - However, cross-country drivers of FinTech penetration (future research)

Lending

Research

- Firms seeking relationship loans go to banks and those seeking transaction loans go to the capital market (Boot and Thakor, 1997, 2000 and Song and Thakor, 2010)
 - FinTech loans closer to the capital market end of the spectrum
 - FinTech lenders will be less competitive vs banks in relationship lending (Balyuk et al., 2019)
- Attracting and retaining retail investors more difficult than borrowers in the case of major UK and US platforms (Milne and Parboteeah, 2016). But China evidence?
 - Hence, these platforms have had to attract institutional investment in order to maintain platform growth

Lending

Research

- FinTech lending on mortgage market: Buchak et al. (2018), Fuster et al. (2019), etc
 - FinTechs can reduce frictions, such as lengthy loan processing, capacity constraints, inefficient refinancing, and limited access to finance
 - FinTech lenders reduce mortgage processing time by 20%. However, the default rates for FinTech-originated loans are 25% lower than those for traditional lenders
- Digital footprint: information that users leave online simply by accessing or registering on a Web site
 - complements for credit bureau information and affects access to credit and reduces default rates (Berg et al., 2019)
- Screening by investors (lenders)
 - Sophisticated investors systematically outperform, and this out performance shrinks when the platform reduces information provision to investors (Vallee and Zeng, 2019)

Payment

- Early players in digital payment: the debit and credit card
- Mobile payment or the e-wallet: faster and lower transaction fees

Provider	Accepted	Currencies	Online	In-store
 Apple Pay →	Worldwide	All currencies	✓	✓
 Google Pay →	Worldwide	All currencies	✓	✓
 PayPal →	Worldwide	All currencies	✓	
 AliPay →	Worldwide Popular among shoppers from China	All currencies	✓	✓
 WeChat Pay →	Worldwide Popular among shoppers from China	All currencies	✓	

Payment

Blockchain

The biggest disruptive potential of FinTech in payments services is with cryptocurrencies.

- Bitcoin, launched in 2009
 - decentralized finance (DeFi), allows person-to-person transactions independently of the banking system (Blockchain).
 - a virtual currency, i.e., it is a digital computer code that is stored in an electronic wallet in cyberspace. Some also view it as a financial investment
- Alternative coins: Ethereum, Litecoin, Bitcoin Cash, Dogecoin, Monero, Dash, etc

Payment

Research

- Demographic characteristics on consumer's payment choice
 - Credit card users are more likely to be married, wealthier, better educated, and to own houses (Stavins, 2002)
- Consumers' single-homing hinders adoption of new payment technology
 - Cohen and Rysman (2013) draw scanner data from the Nielsen Home-Scan database, from which grocery purchases with payment type can be identified. They find households rarely use three payment options and the majority of payments use their favorite type
- Small frictions to physical banking access can affect digital banking adoption
 - Choi and Loh (2019) find that customers predominantly use ATMs within the first kilometer (km) of their address and the closure of ATM machines nearby leads to an increased usage of digital banking

Payment

Research

- Large but temporary policy interventions can resolve coordination failures in technology adoption (Crouzet et al., 2020; evidence from 2016 Indian Demonetization)
 - On November 8th, 2016, the Indian government announced that it would void the two largest denominations of currency in circulation and replace them with new bills.
- Payment technologies affect consumption (Jack and Suri, 2014)
- Mobile payment technology stimulates business creation and growth
 - Agarwal et al. (2020): evidence from Singapore, driven by small firms and industries with higher cost of cash handling
 - Beck et al. (2018) argued that M-Pesa in Kenya, a digital payment service launched by mobile network operators, has helped entrepreneurship by reducing the risk of theft
- Cheaper and faster payment affect firm-level employment (Barrot and Nanda, 2020)

Payment

Research

Barrot and Nanda (2020)



ARTICLE

The Employment Effects of Faster Payment: Evidence from the Federal Quickpay Reform

JEAN-NOËL BARROT ✉ RAMANA NANDA

First published: 02 June 2020 | <https://doi.org/10.1111/jofi.12955> | Citations: 11

[Read the full text >](#)

PDF TOOLS SHARE

ABSTRACT

We study the impact of *Quickpay*, a reform that permanently accelerated payments to small business contractors of the U.S. government. We find a strong direct effect of the reform on employment growth at the firm level. However, we document substantial crowding out of nontreated firms' employment within local labor markets. While the overall net employment effect is positive, it is close to zero in tight labor markets. Our results highlight an important channel for alleviating financing constraints in small firms, but emphasize the general-equilibrium effects of large-scale interventions, which can lead to lower aggregate outcomes depending on labor market conditions.

Payment

Research

- In November 2020, Brazilian Central Bank (BCB) launched Pix
- unprecedented public digital payment system, and BCB mandates participation
- however, noticed a surge in "lightning kidnapping" cases after Pix



Brasília – O Banco Central vai lançar um mecanismo para facilitar a devolução de valores transferidos por meio do Pix – o sistema brasileiro de pagamentos instantâneos – em caso de fraudes ou falha operacional. Chamado de Mecanismo Especial de Devolução, a ferramenta estará disponível a partir de 16 de novembro, quando o Pix completa um ano.



- Compartilhe no Whatsapp
- Compartilhe no Telegram



Pix BC anuncia ferramenta para facilitar devolução de valores em caso de fraude ou falha. (Foto: Pixabay)

Brazil Limits Pix Payments Amid Kidnapping Spree

By PYMNTS

Posted on September 8, 2021

Listen to Article



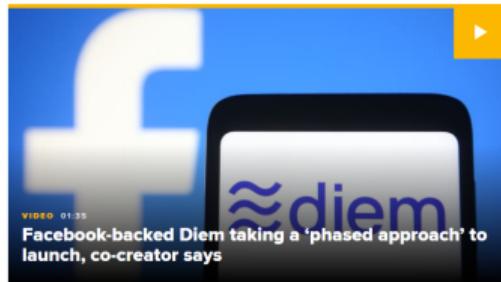
Future and Concerns

The rising of BigTech

BigTech firms

Technology companies with established presence in the market for digital services.

They are firms that have successful digital platforms and vast and expanding amounts of customer data. For example, Amazon, Facebook, Google, Alibaba and Tencent.

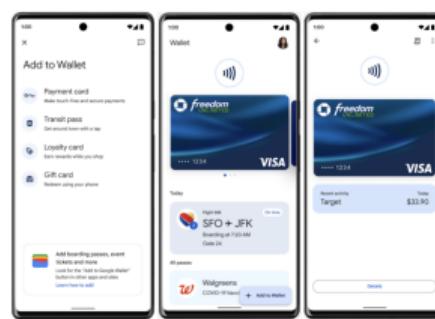


[Facebook](#) wanted to revolutionize finance with a global digital currency — then came the regulators.

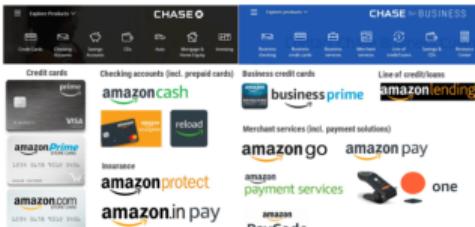
Google Wallet is now available globally

Google Pay will still be available in the U.S. and Singapore, though.

By [Evan Schneidman](#) on July 21, 2022



All the ways Amazon is unbundling the bank



Note: Merchant services includes payment solutions; checking accounts include prepaid cards function

[CB INSIGHTS](#)

Future and Concerns

The rising of BigTech

BigTech credit, new trend (Cornelli et al., 2020)

- Lending by large companies whose primary business is technology.
- has outpaced FinTech credit and – as of 2019 – makes up three quarters of the combined BigTech plus FinTech credit volume worldwide.

Future and Concerns

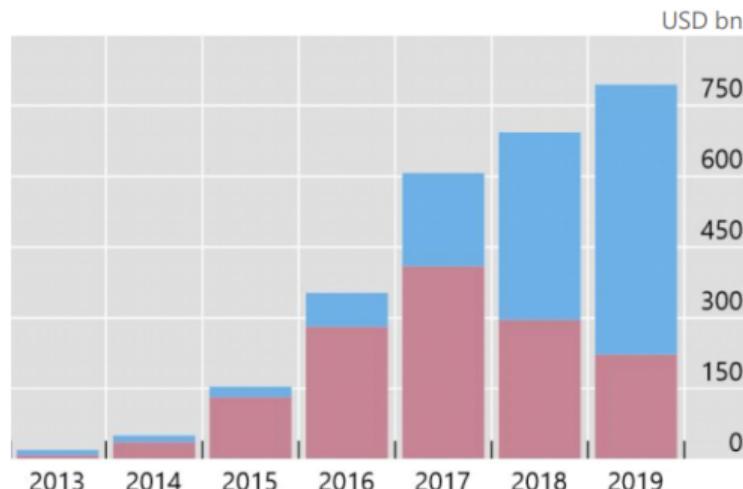
The rising of BigTech

FinTech and big tech credit: a new database (BIS, 2020)

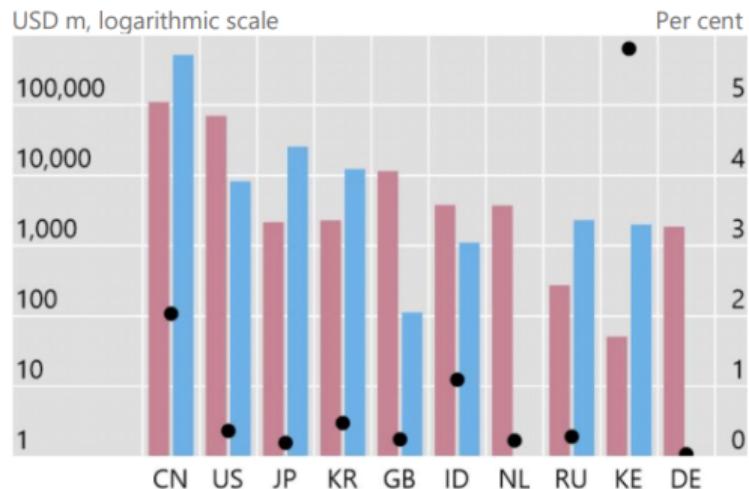
Global big tech credit is booming, overtaking fintech credit

Graph 1

Big tech credit is overtaking fintech credit¹



These alternative forms of lending are becoming a significant portion of total credit in a few economies



Future and Concerns

Risk and Regulation, REGTECH

- Germany, Wirecard scandal
- In March 2018, Mexico published the Fintech Law, which requires banks and fintechs to develop APIs with common standards to enable registered third parties' access to data; Brazil open banking model launched in 2019



Future and Concerns

Monetary policy transmission

- Little is known about how the emergence of Fintech can affect the transmission of monetary policy, as well as the information content of key monetary indicators
- FinTech adoption generally mitigates (mutes) monetary policy transmission to real GDP, consumer prices, bank loans, and housing prices (Hasan, Kwak and Li, 2021)

Future and Concerns

Privacy

- The value of privacy: Evidence from online borrowers (Tang, 2022)
- Money, privacy, anonymity: What do experiments tell us? (Borgonovo et al., 2021)
 - anonymity matters and increases the overall appeal of a medium of payment

Resources

- Cambridge Centre for Alternative Finance (CCAF)
- AltFi Data provide data analytics for the UK, European, US, and Australian and New Zealand FinTech credit and equity crowdfunding industries
- The Peer-to-peer Finance Association (P2PFA) represents over 80% of the P2P lending market in the United Kingdom. Its quarterly data cover new lending volumes, numbers of loans and borrowers, and selected financials for its member companies
- PeerIQ provides data on US FinTech securitisation issuance
- Wangdaizhijia, Zero One Tech (Chinese FinTech market)

Reading

- FinTech and banking: What do we know? (Thakor 2020)
- Financial technology: a review of extant literature (Sangwan et al. 2019)
- A brief introduction to blockchain economics (Chen, Cong and Xiao, 2019)
- FinTech, Lending and Payment Innovation: A Review (Agarwal and Zhang, 2020)

Thank you!