FINTECH TO ENABLE DEVELOPMENT, INVESTMENT, FINANCIAL INCLUSION, AND SUSTAINABILITY

CONFERENCE HIGHLIGHTS

MAY 2021

ASIAN DEVELOPMENT BANK

ADB

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ADB

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Contents

Abbreviations

ABFER	-	Asian Bureau of Finance and Economic Research
ADB	-	Asian Development Bank
ADBI	-	Asian Development Bank Institute
EMDE	-	emerging market and developing economy
ERCD	-	Economic Research and Regional Cooperation Department
ERCI	-	Regional Cooperation and Integration Division
GDP	-	gross domestic product
IGF	-	Institute of Global Finance
IMF	-	International Monetary Fund
NUS	-	National University of Singapore
P2P	-	peer-to-peer
PRC	-	People's Republic of China
SMEs	-	small and medium-sized enterprises
US	-	United States

Background

The ongoing coronavirus disease (COVID-19) pandemic has prompted a reversal of hard-won development gains for the region and across the globe. At the same time, as governments take measures to keep the spread of the virus in check, the strain on the world's economies is considerable. The pandemic moreover threatens to further entrench existing financial vulnerabilities in Asia, including credit constraints, a lack of financial inclusion, and substantial investment financing gaps, among others. While hope for the pandemic's end has been buoyed by promising advances in vaccine development and roll-out, the rapid pace of adoption of digital financial technologies (Fintech) offers an avenue for not only mitigating the negative economic effects of the crisis, but for securing greater financial resilience.

Against this backdrop, the Asian Development Bank (ADB), along with its partner institutions, organized two conferences in late 2020, bringing together policy makers and researchers, to shed light on the potential of Fintech to advance financial inclusion and sustainability aims.

In partnership with the Institute of Global Finance–University of New South Wales (IGF-UNSW), the Asian Bureau of Finance and Economic Research (ABFER), the National University of Singapore Business School (NUS Business School), and the Asian Development Bank Institute (ADBI), ADB organized a specialty conference with the theme of *Fintech to Enable Development, Investment, Financial Inclusion, and Sustainability* in September 2020. The event explored the potential of Fintech and digital financial services to address challenges to the region's financial systems, such as credit constraints, a lack of access to finance, and long-term investment gaps. The risks to financial stability and cybersecurity were highlighted as a caveat to Fintech's development potential. The conference featured sessions that provided an overview on Fintech and financial development, examined how Fintech can be leveraged to promote financial inclusion and sustainable development, and reviewed Fintech case studies in order to unpack the challenges and opportunities that accompany Fintech. Policy considerations were raised with the aim of narrowing existing financing gaps in Asia.

As part of the 33rd Australasian Finance and Banking Conference organized by the IGF and the School of Banking and Finance, UNSW Business School, ADB, together with the IGF, hosted two sessions examining the potential of Fintech to foster innovation and financial inclusion in December 2020. The first session featured discussions on how Fintech can spur innovation and efficiency in the finance sector, including examination of trends in financial intermediation, of potential applications of tokenization, and of the use of machine learning to improve investment decisions. The second session centered on the use of Fintech to advance inclusion and sustainable investment aims. The discussion included the potential of blockchain-based project bonds to close infrastructure financing gaps, the macroeconomic factors influencing credit risk in peer-to-peer (P2P) lending, and the role of individual attention triggers on financial risk-taking behavior.

Specialty Conference:
Fintech to Enable Development, Investment, Financial Inclusion, and Sustainability

22–24 September 2020
Virtual

Opening Session


Andrew Rose


Yasuyuki Sawada


Tetsushi Sonobe

DAY 1
22 September

Welcome Remarks

Andrew Rose
Dean and Distinguished Professor
NUS Business School, National University of Singapore

Opening Remarks

Yasuyuki Sawada
Chief Economist and Director General
Economic Research and Regional Cooperation Department, Asian Development Bank

Opening Remarks

Tetsushi Sonobe
Dean
Asian Development Bank Institute

The welcome and opening remarks outlined financial challenges facing Asia and the Pacific—including the lack of financial access among vulnerable populations and substantial long-term investment gaps. The region has taken great strides in advancing economic growth and development in the last few decades. And while economic progress has been considerable, significant development challenges persist. At present, over 1 billion adults across developing Asia remain unbanked and do not have access to formal financial institutions. The region's vast savings have not been channeled to meet its infrastructure investment needs—which amount to trillions of United States (US) dollars annually. The unfolding coronavirus disease (COVID-19) pandemic further threatens to exacerbate these challenges while unraveling hard-won development gains.

Over 1 billion adults across developing Asia remain unbanked and do not have access to formal financial institutions.

Financial technologies (Fintech) and the accelerated digitalization of economies present a promising avenue to tackle these challenges, mobilizing finance for inclusive and effective intermediation while securing a sustained path to economic recovery. Fintech, blockchain-

While Fintech and digital platforms offer innovative ways to deal with development issues and secure inclusive and sustainable growth, important risks remain.

based technologies, advances in artificial intelligence, and other rapidly advancing innovations can help enhance financial efficiencies while promoting financial inclusion.

Speakers highlighted, however, that while Fintech and digital platforms offer innovative ways to deal with development issues and secure inclusive and sustainable growth, important risks remain. Innovations in Fintech also give rise to potential financial vulnerabilities. As policy makers try to navigate this evolving environment and unlock the gains of technological advances, they need to balance financial stability, cybersecurity, and data protection concerns.

Keynote Session

Sopnendu Mohanty

Cyn-Young Park

Keynote Presentation

Sopnendu Mohanty
Chief Fintech Officer
Monetary Authority of Singapore

Moderated Dialogue

Cyn-Young Park
Director
Regional Cooperation and Integration Division, Asian Development Bank

In his keynote address, Mr. Sopnendu Mohanty, Chief Fintech Officer of the Monetary Authority of Singapore spoke about how financial technology (Fintech) is transforming the finance sector, how digital infrastructure and data systems are advancing, and how these developments can help promote financial inclusion and sustainable development.

Fintech and advances in digital financial platforms have disrupted the role and structure of financial institutions and transformed the competitive environment in which these institutions operate. The ongoing COVID-19 pandemic has further accelerated the pace of technological change.

In his keynote address, Mr. Mohanty highlighted 10 developments now shaping the finance sector in Asia, with broader implications beyond the region:

1. Peer-to-peer (P2P) lending or crowdfunding have paved the way for broader availability of bite-sized investments.
2. Advances in application programming interfaces (APIs) have allowed financial services to become embedded in financial platforms that now see strong consumer engagement.
3. Blockchain-based Fintech have opened up multiple points of entry for both consumers and providers.

Financial technologies and advances in digital financial platforms have disrupted the role of financial institutions.

4. The advent of data analytics and the increasing investment in data tools have allowed banks and other financial institutions to generate better models to aid in their day-to-day operations.
5. Advances in robotics and artificial intelligence have enhanced endpoint processing.
6. Cloud services and total computing processes have advanced efficiency and productivity while elevating customer service.
7. More sophisticated financial tools have improved the resilience of Fintech to cyberattacks.
8. The emergence of full-stack technologies (prioritizing the customer experience) that are low-touch (leveraging automated or self-service options and a low level of personal contact with customers) with high-tech design have generated efficiencies and grown in relevance during the pandemic.
9. The rise of Fintech clusters has allowed for the agglomeration of talent and innovation, further enabling digital financial infrastructure.
10. The regulatory environment in Asia has been largely accommodating and progressive, encouraging innovation while balancing financial stability risks and consequently regulating Fintech in a much more balanced way.

The evolving digital landscape and data availability require comprehensive digital infrastructure.

The evolving digital landscape and data availability require comprehensive digital infrastructure and well-crafted data policies to reap the benefits technology has to offer. Strong systems need to be put in place to better serve low-income clientele who might lack access to financial resources. Such an environment might also allow countries to leapfrog traditional development milestones. Governments need to ensure an ecosystem that enables digital advances built on trust. They must also take steps to create conditions for fair competition and prevent large monopolistic industries from taking hold. Well-developed shared infrastructure can lower the participation and entry costs for consumers and providers.

A digital infrastructure and ecosystem conducive to technological advances needs to be grounded in several elements. Trust and digital identity are foundational. A trusted identity system and confidence in tokens constitute a fundamental building block to digital financial infrastructure. Furthermore, well-functioning systems of authorization and

Cyn-Young Park (Moderator)
Director, Regional Cooperation and Integration Division, Asian Development Bank

consent embedded in digital platforms need to be put in place. These should require users to consent to sharing data and to authorize third-party providers or platforms to complete transactions on their behalf. Such electronic methods of authorization and consent utilizing digital identities need to be transparent and platforms need to be held accountable in the event of abuse. In addition, payment systems' interoperability is key. It is crucial to connect payment systems both domestically and across borders. Lastly, action needs to be taken to facilitate robust data exchanges—encouraging transparency and removing constraints to cross-border transactions that can help facilitate sustained development of financial market infrastructure and unlock gains toward financial inclusion.

Advances in digital Fintech can be leveraged to drive desired social outcomes, including financial inclusion and sustainability. In the area of financial inclusion, technology helps expand access to financial services. The proliferation of mobile devices has allowed banking platforms to become more readily available to low-income segments. For middle-income groups, QR payment processes, artificial intelligence, machine learning, and big data have laid the groundwork for innovations in wealth management. Fintech has encouraged the creation of alternative collaterals for individuals who lack access to formal financial institutions. Fintech companies have helped tokenize livestock, for instance, to extend credit to smaller marginal farmers who do not have traditional forms of collateral. Blockchain and tokenization are boosting efforts toward enhanced financial inclusion. These technologies are also helping to foster micro pension systems—an area with a large unmet need because middle and low-income segments tend to lack pensions coverage. Fintech companies innovating in this space include Finbox, a company working to provide pensions for the poorest of the poor.

Advances in digital financial technologies can be leveraged to drive desired social outcomes, including financial inclusion and sustainability.

Technologies that are helping to bridge financial inclusion gaps can simultaneously enhance efforts to secure sustainable growth. For instance, Fintech can pave the way for the measurement and monitoring of key performance indicators for projects financed through green funding. Policies to support increased adoption of new technologies or business models, or to promote strong infrastructure, can help boost the potential of Fintech to support the sustainability agenda.

As COVID-19 may further widen economic inequality, policy makers need to support better adoption of Fintech to advance the sustainability agenda and close remaining financial inclusion gaps.

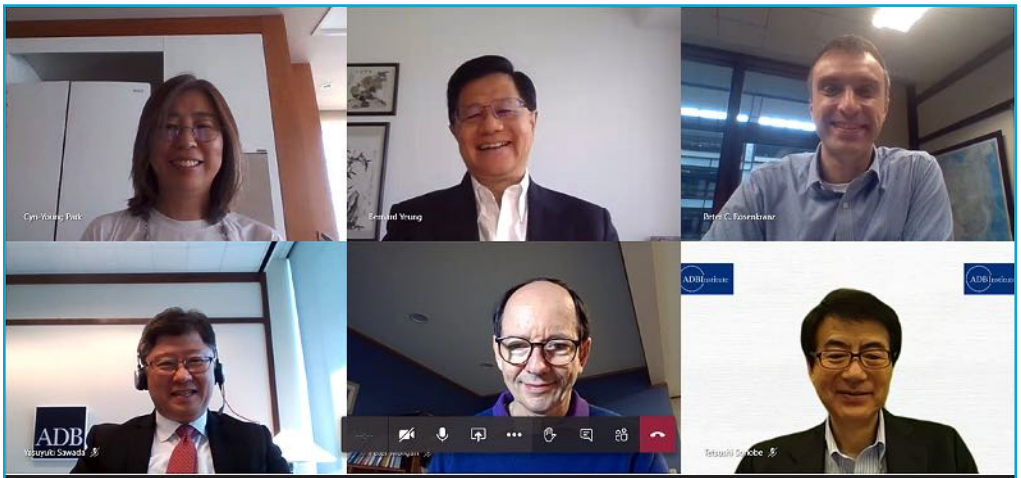
[Financial] technologies need to be regulated in a balanced and risk-appropriate way.

The moderated dialogue that followed Mr. Mohanty's presentation raised questions about the fragmented nature of Fintech across different areas of financing, its impact on the transmission of monetary policy, and how it affects financial stability more broadly. It was pointed out that 80% of Fintech are deployed to help formal financial institutions digitize more quickly. Only 20% of Fintech applications are outside the sphere of traditional banking and regulation. It was argued that Fintech firms prefer to be regulated, as regulation helps to attract funding sources. It was furthermore highlighted that Fintech has considerable potential to help foster economic development and to improve financial inclusion while mobilizing the long-term sustainable finance the region needs. Fintech can create alternative data models which can, in turn, expand the credit landscape and help to deploy credit and cash more widely. Fintech are agile and help to improve the platform for the endpoint consumer. These technologies need to be regulated in a balanced and risk-appropriate way.

Policy Implications

- **Fintech has great potential to help advance sustained development, financial inclusion, and a swift economic recovery from the COVID-19 pandemic.** Policies to support the adoption of new technologies and business models, and to promote financial market infrastructure development, can help boost the potential of Fintech to narrow financial inclusion gaps and therefore support inclusive development. The pandemic and its adverse economic impacts necessitate solutions for sustainable and inclusive financial development, which can be promoted through Fintech.
- **A well-functioning regulatory and policy environment and well-developed digital (financial) infrastructure are critical elements to unlocking the potential gains from Fintech.** In order to fully leverage Fintech to reach financial inclusion and sustainability aims, comprehensive digital infrastructure and well-designed data policies need to be put in place. Policy makers need to ensure an enabling environment for digital financial innovation to continue, grounded on transparency and trust. Such an environment should also remove constraints for data exchange and allow payment systems—both domestic and cross-border—to be interoperable.
- **Governments need to take steps to ensure fair competition and ease entry and participation for firms and consumers.** Well-developed financial infrastructure and standardized and uniform regulations can make platforms and technologies more accessible for firms and consumers, helping to lower the barriers to entry and participation in financial platforms.
- **Policy makers must find a way to balance fostering innovation and safeguarding financial stability, while mitigating cybersecurity risks and data privacy concerns.** Balanced and risk-appropriate regulations are needed to help curb any possible negative effects Fintech can have on financial stability and to help create a safe and enabling climate for investors.

Policy makers need to ensure an enabling environment for digital financial innovation to continue, grounded on transparency and trust.



From top left to bottom right: ERCI Director Cyn-Young Park, ABFER President Bernard Yeung, ERCI Economist Peter Rosenkranz, ADB Chief Economist and ERCD Director General Yasuyuki Sawada, ADBI Research Department Vice-Chair Peter Morgan, and ADBI Dean and CEO Tetsushi Sonobe.

Paper Session 1: Fintech and Financial Development—An Overview


Bernard Yeung


Peter Hoffmann


Thorsten Beck


Yifeng Tian


Peter Adriaens


Si Cheng

Moderator

Bernard Yeung
President, Asian Bureau of Finance and Economic Research
Stephen Riady Distinguished Professor, NUS Business School
National University of Singapore

Financial Intermediation and Technology: What's Old, What's New?

Presenter

Peter Hoffmann
Senior Economist
European Central Bank

Discussant

Thorsten Beck
Professor of Banking and Finance, The Business School (formerly Cass)
University of London

Asset Tokenization: A Blockchain Solution to Financing Infrastructure in Emerging Markets and Developing Economies

Presenters

Yifeng Tian
Research Fellow
University of Florida

Peter Adriaens
Professor of Environmental Engineering and Finance
University of Michigan

Discussant

Si Cheng
Assistant Professor of Finance
CUHK Business School, Chinese University of Hong Kong

The first session gave an overview of emerging trends in Fintech and financial innovations with potential to advance financial development. The first paper traced the evolution of financial intermediation and technology, placing particular emphasis on developments in information and communication in financial intermediation. The second paper emphasized the potential of asset tokenization to bridge considerable infrastructure financing gaps in the developing world.

Financial Intermediation and Technology: What's Old, What's New?

Peter Hoffmann

Technological change in the financial services industry is accelerating, driven further by data abundance and the advent of digital distribution channels.

The first paper provided a framework for understanding long-established and more recent advances in financial intermediation and proposed policy implications in light of recent trends.

Technological change in the financial services industry is accelerating, driven further by data abundance and the advent of digital distribution channels. Incumbents in the finance sector are facing increasing competition from financial start-ups and large technology firms, or BigTech. The pandemic serves to amplify technological transformation, prompted by elevated demand for digital services.

Financial intermediation can help to overcome frictions in resource allocation and contribute to effective channeling of available resources. It is grounded on two key elements—information and communication. First, information involves the collection and processing of data for screening and monitoring purposes. Such collection, processing, and use of data gives rise to economies of scale. Second, communication describes the capacity of intermediaries to create and maintain customer relationships and distribution networks. Banks are the traditional first point of contact for financial services, while brokers and exchanges act as matchmakers. These two key elements of financial intermediation—information and communication—generate market power or capture, creating barriers to entry and limits to competition.

A distinction is drawn between long-established and more recent developments in information and communication. A longer running transformation of information comprises the codification from soft to hard information, spurred by the abundance of both financial and nonfinancial data. The 1980s and 1990s saw a proliferation of hard information in finance, encompassing developments in the securitization of debt and in credit scoring, market-based finance, and consolidation. An upside is that this development has prompted gains in efficiency and risk management which have increased credit volumes, encouraged

competition at lower financial cost, and reduced the influence of lenders in determining loan supply. On the other hand, increased reliance on hard information can aggravate biases and incentive problems. Credit terms deteriorate when hard information is unavailable, as is the case for small and medium-sized enterprises (SMEs) and innovative firms. High-powered incentive contracts encourage short-sighted and risk-seeking behavior. Economies of scale intensify consolidation and generate increased systemic risk.

More recent developments in information comprise the collection of new types of (nonfinancial) data and growing data access and competition in financial intermediation. These new trends offer benefits while also entailing risks. The advent of new types of data (including simple nonfinancial data), increasing data abundance, and access to more detailed data by BigTech firms has translated into enhanced credit availability. Simple nonfinancial data offer a promising complement to traditional credit scoring. The greater granularity of data available to BigTech firms allows them to outperform banks in consumer lending, strengthening financial inclusion. Rising data abundance allows for the use of machine learning to improve default predictions. More broadly, growing data access and competition in financial intermediation spurred by advances in data collection techniques (such as web-scraping, satellite imaging, and so on) enhance competitiveness, reduce informational capture, and offer benefits to consumers. On the other hand, new forms of data and their growing abundance can contribute to a Hirshleifer effect, where too much information can destroy opportunities, e.g., via statistical discrimination (as in the market for insurance products). A monopoly over data can also limit competition.

Like always, the recent technological innovation has shaped communication in financial intermediation and has thus created opportunities and risks. The role of communication in characterizing the distribution channels for financial services has received less study. As network effects come into play and new digital distribution channels emerge, communication has become a key competitive advantage in finance. Banks have been the traditional first point of contact for financial services. The earlier consolidation into large universal banks and optimization of branch networks leveraged upon this position. Internet banks and digital originators played only a marginal role earlier on. Since the late 1990s, however, individuals have moved from in-person to distant financial transactions (mediated by phone or internet access), online banking has grown, and bank branches have since become less pervasive.

Recent technological innovation has shaped communication in financial intermediation and has thus created opportunities and risks.

More recently, the low-cost search, matching, and distribution capacity of digital platforms and mobile devices has threatened traditional banking systems even more. Digital distribution channels allow the entry of specialized financial service providers—such as online payments systems and wealth management—to offer services without an established network and access to large balance sheets.

The universal bank business model is increasingly at risk. The first threat is one of vertical disintegration as platforms reduce search costs and amplify convenience for customers, acting as an additional layer between banks and consumers, and capturing rents and data in the process. A second threat of horizontal disintegration looms as platforms and newer distribution channels embolden new entrants, offering services that sidestep balance sheet requirements. An extreme potential outcome is the full disintegration of universal banks, with bank services delegated to upstream (not client-facing) offerings, including maturity transformation services.

While the emergence of fully integrated alternative financial service providers threatens the viability of the traditional banking system, some factors could delay the transition. First, specialized start-ups face financial constraints and their specialization limits their potential growth. Second, digital platforms' focus on retail customers constrains their reach to corporate clients and services; this could change with the growing adoption of cloud computing. Banks can counter this transition by investing more heavily in their own information technologies and by developing their own platforms—for example, integrating P2P lending or real estate businesses.

These developments consequently pose major policy challenges, with implications for prudential, monetary, competition, and data policy. Prudential policy must adapt to the evolving digital business landscape and the attendant risks. Monetary policy must account for a more procyclical, less bank-centric financial system. Competition policy needs to ensure that conditions for equal treatment are encouraged and account for the role of digital platforms as communication gateways. Data policy needs to ensure the optimal implementation of data collection, exchange, and privacy.

The future of banking raises questions about the changing functions of formal banking institutions.

The discussant situated the paper in the broader dialogue among regulators to disentangle the effects of financial innovation for financial stability. Building on the focus on changing trends in information and communication in finance, the discussant pointed to their highly interconnected nature. Repeated interactions between financial service providers and their clientele are shaped by the collection of soft information. Digital footprints and the widening array of available data make it easier to predict the likelihood of defaults on consumer debt and to provide more targeted services.

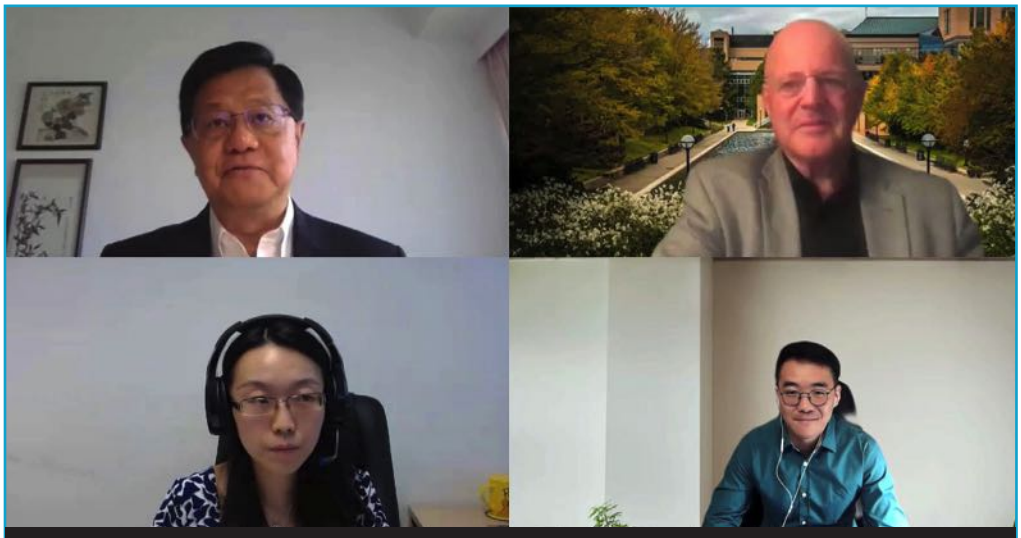
Views diverge on the role of big data in the provision of financial services. The rational view argues that the growing volume of data allows for greater financial inclusion, as lower costs widen the reach of finance. On the other hand, a behavioral view argues that the expansion of data availability can give rise to price discrimination and highlights how some consumers may lose even as financial services generally improve. Other issues in financial intermediation encompass the divide between relationship and transactions-based

The Business School (formerly Cass), University of London's Thorsten Beck; ABFER's Bernard Yeung, and European Central Bank's Peter Hoffmann.

lending, differentiation in financial products and services across standardized and more personalized lines. The future of banking raises questions about the changing functions of formal banking institutions in line with the increased range and availability of financial platforms; the rise of systemically important financial institutions driven by greater network externalities; and questions about whether the issuance of cryptocurrencies by central banks may undermine their traditional functions. Finally, questions remain surrounding the trade-offs between efficiency and privacy, efficiency and integrity; the scope of the regulatory perimeter; new sources of cyber-risks; and the cross-border dimension of platforms.

The open floor after the discussion highlighted the risks that accompany nontraditional financial intermediation. Points were raised about whether the banking sector has become more resilient or more vulnerable because of technological advances and the increasing volume of available data. Traditional financial institutions face legacy issues in the transition to digital platforms, which may be heightened by the ongoing pandemic. It was also stressed that the pandemic can accelerate sources of instability, compounding upon low returns on equity and return on assets while allowing BigTech firms to accumulate further profit. Expectations were raised of a prolonged low interest rate environment, and a continuation of depressed profits and high economic and financial volatility. The volatility is endogenous, however, and can vary depending on the response of regulators. It was noted that the monetary policy and regulatory response to COVID-19 has been swift relative to the 2008 global financial crisis. In the previous crisis, regulators responded more slowly than monetary authorities. The present crisis has seen immediate response on both the monetary and regulatory authority fronts, bolstered by the greater volume of available data, increased cooperation between monetary and regulatory authorities, and the enhanced capacity of regulators. It was noted that the effect of technological advances on risk is twofold. On the one hand, big data and technological innovation allow for enhanced risk assessment relative to traditional sources of data. On the other hand, such technologies simultaneously pose cyber-risks, the risk of greater cyclicality, and changes to risk-taking behavior, while also allowing for greater discrimination and exclusion of customers. A strong and adaptive regulatory response is needed.

The infrastructure gap in emerging market and developing economies is substantial.



From top left to bottom right: ABFER's Bernard Yeung, University of Michigan's Peter Adriaens, Chinese University of Hong Kong Business School's Si Cheng, and University of Florida's Yifeng Tian.

Asset Tokenization: A Blockchain Solution to Financing Infrastructure in Emerging Markets and Developing Economies

Yifeng Tian and Peter Adriaens

The second paper examined a viable opportunity for leveraging technological advances to meet the significant infrastructure financing needs of developing economies through asset tokenization.

The infrastructure gap in emerging market and developing economies (EMDEs) is substantial. World Bank forecasts point to the need to triple current annual infrastructure spending across EMDEs over the next decade. Similarly, ADB estimates point to an infrastructure finance gap as large as 5% of selected countries' gross domestic product (GDP). The bulk of infrastructure investment need (approximately 63%) is concentrated in EMDEs. The need to close these gaps is underlined by the important role infrastructure plays in poverty alleviation and long-term growth across the developing world. Compounding this challenge is the fact that existing infrastructure financing models—including direct government spending; government, municipal, sub-sovereign bonds; commercial loans; and unlisted direct equity investment and co-investment platforms, among others—lack transparency, efficiency, and sufficient liquidity. Conventional infrastructure financing instruments are moreover hindered by high costs of financing, difficulties mitigating cross-border risks, and challenges in managing social and environmental impacts.

Although asset tokenization presents a very viable and innovative solution to meeting infrastructure gaps, the technology is still in its early stages.

Asset tokenization represents a promising opportunity for bridging sizable infrastructure investment gaps. Through tokenization, the services, economic value, and ownership rights accruing to assets existing in the real world are translated to digital tokens (or digital access rights to value) by way of blockchain technology, and self-executing, self-enforcing smart contracts. This process has applications for advancing infrastructure financing. It can help unlock gains in administrative and financial efficiencies for emerging market governments—including automated auditing, enhanced project monitoring, and lowered financing costs—while expanding the potential investor pool and reducing counterparty risks. And while it does pose challenges relating to regulation uncertainty and technical difficulty, the boost to liquidity, transaction efficiency, transparency, and private sector participation is promising. Four case studies highlighting the benefits of technology in improving EMDE infrastructure financing further underscore the potential of asset tokenization.

Although asset tokenization presents a very viable and innovative solution to meeting infrastructure gaps, the technology is still in its early stages. In particular, regulatory, technical, and social barriers stand in the way of more widespread adoption. The regulation of tokenization remains inadequate in EMDEs and their governments have been slow to respond. Existing regulatory frameworks have yet to adequately account for novel asset classes and new business models. Smart contacts still lack legal recognition in many parts of the developing world. Overly stringent and uneven regulations also persist. On the side of technological challenges, the risk of cyberattacks and insufficient digital infrastructure and investment in information and communication technology persist.

Coordinated action by emerging market governments, multilateral development banks, and the private sector is needed for gains from this new technology to be fully leveraged. Policy makers need to ensure that the legal and regulatory environment is conducive to the emerging technologies. Collaborative efforts to further education can encourage more

widespread adoption of these technologies across emerging economies. A working group can be established by multilateral development banks and EMDE policy makers to test the most promising applications. Standardization in cross-border legal and regulatory practices can also play an important role. Finally, academics and industry practitioners can work together to create an open access toolbox underlining case studies and lessons learned to further the adoption of these technologies.

The discussant reiterated the potential for asset tokenization to bridge infrastructure gaps in emerging economies. Tokenization can improve transparency and help reduce information asymmetries prevalent across the developing world. These technologies can leverage certain characteristics of developing economies. First, the relatively young populations in EMDEs tend to be technologically proficient. Second, infrastructure asset tokenization and smart contracts facilitate a late-mover advantage, allowing older infrastructure such as landlines and dial-up internet to be bypassed. However, the discussant qualified the potential of these innovations by noting that technology is not a panacea for infrastructure financing problems. Blockchain, for instance, cannot fully reconcile problems in data quality and authenticity. Smart contracts cannot fully overcome inefficiencies or shortcomings in traditional contracts. Technologies simultaneously present benefits and implementation costs. Country-specific or context-dependent factors may also come into play as existing ecosystems impact technological adoption. Questions remain around the optimal decentralization, scalability, and trade-offs in security.

The open floor saw questions raised about the challenges and potential of blockchain technology and tokenization in mobilizing infrastructure finance. The discussion also highlighted progress and developments in this area. A point was raised about the ability of tokenization to effectively overcome obstacles to infrastructure finance. While blockchain and tokenization may improve operational efficiencies, they may be unable to address legal, social, and structural challenges. It was also highlighted that further standardization of blockchain is needed. In a discussion about cross-border efforts to mobilize infrastructure finance, it was pointed out that corruption and challenges in finding the right investors persist. A primary issue is the need to ensure that money is properly channeled for its intended purpose. Further challenges include difficulties in tracking information and the uneven digitization in low-income countries. It was mentioned that efforts to secure low-cost solutions in developing economies should leverage existing networks and infrastructure, such as mobile networks.

Key Messages and Policy Implications from Paper Session 1

Technological advances are reshaping the traditional banking landscape.

- **As technological advances prompt transformative changes in the nature of financial intermediation, prudential, monetary, competition, and data policy need to adapt to keep pace with the evolving digital financial landscape.** Technological advances are reshaping the traditional banking landscape as the volume of available data is increasing and as low-cost search, matching, and distribution are paving the way for nontraditional financial service providers. Rapidly evolving trends in financial intermediation have implications for prudential, monetary, competition, and data policy. Prudential policy will need to account for changing digital business processes and the attendant risks. Monetary policy needs to adapt to the shift to a less bank-centric, more procyclical financial system. Competition policy needs to respond to the rise in digital platforms and ensure participants are treated equally. Finally, data policy must strike a balance between enhanced data collection and exchange and privacy concerns.
- **Coordinated action from policy makers, industry practitioners, and multilateral development banks, among others, can help to realize the potential of asset tokenization and blockchain technologies to meet infrastructure financing needs.** The infrastructure gap in emerging economies is substantial. Blockchain-based solutions and asset tokenization represent promising opportunities to close these substantial gaps and secure sustainable infrastructure financing in the developing world. These technologies can help unlock administrative and operational efficiencies in project monitoring, financing, and auditing, among others. To ensure these gains occur while limiting the attendant risks, coordinated action is needed among policy makers in the developing world, multilateral development banks, and the private sector. Policy makers need to ensure that regulatory and legal frameworks are updated and streamlined, as well as standardized across borders. Industry practitioners and the academe can also play a role in consolidating lessons learned to promote more widespread adoption of these technologies.

Paper Session 2: Leveraging Fintech to Promote Financial Inclusion and Sustainable Development


Peter Rosenkranz


Yoke Wang Tok


Thitipat Chansriniyom


Bihong Huang


Mariya Yesseleva-Pionka


Ke Tang


Ulrich Volz


Yushi Chen


Shu Tian

DAY 2
23 September

Moderator

Peter Rosenkranz
Economist
Regional Cooperation and Integration Division, Asian Development Bank

Does Innovation in Lending Help SMEs?

Presenters

Yoke Wang Tok
Senior Economist
International Monetary Fund-Singapore Regional Training Institute

Thitipat Chansriniyom
Research Assistant
International Monetary Fund-Singapore Regional Training Institute

Discussant

Bihong Huang
Economist
Economic Research and Regional Cooperation Department, Asian Development Bank

Blockchain Network System for Assessing SMEs' Creditworthiness

Presenter

Mariya Yesseleva-Pionka
Senior Lecturer
Australian National Institute of Management and Commerce

Discussant

Ke Tang
Professor, Institute of Economics, School of Social Science
Tsinghua University

Scaling Up Sustainable Investment through Blockchain-based Project Bonds

Presenters

Ulrich Volz
Director
SOAS University of London

Yushi Chen
Doctoral Researcher
University of Sussex

Discussant

Shu Tian
Economist
Economic Research and Regional Cooperation Department, Asian Development Bank

The second session featured research on how to make finance more inclusive and how to leverage technology for resource mobilization. In particular, the papers assessed the potential of innovations such as blockchain network systems and crowdfunding to facilitate small and medium-sized enterprise financing as well as the potential of blockchain-based project bonds to deliver more sustainable investment.

Does Innovation in Lending Help SMEs?

Yoke Wang Tok and Thitipat Chansriniyom

The first paper examined the use of crowdfunding in shoring up financing for small and medium-sized enterprises (SMEs) in Singapore. Crowdfunders utilize artificial intelligence to predict the creditworthiness of firms and make it easier to invest. They leverage

technology to deliver faster and better credit and fraud detection and efficient matching of borrowers and investors. From its beginning in 2015, the crowdfunding industry in Singapore has grown exponentially, placing 16th globally in total volume of funds raised and second to Indonesia in Southeast Asia in 2018. The case of crowdfunding in Singapore illustrates the role of a developed finance sector in attracting investment and venture capital, the potential of Fintech to serve the unbanked in places where financial access is low, and the role of increased competition in improving customer choices.

Crowdfunding has a strong positive relationship with per capita GDP.

Crowdfunding can be valuable for improving SME cash flows. In Singapore, SMEs account for 99% of all companies, employ 71% of the workforce, and contribute to nearly half of GDP. Despite their important economic function, however, SMEs in Singapore face large credit constraints. They account for only 13% of bank loans (versus nearly half for large corporates) and over a third have gaps in financing. Crowdfunding has helped fill some of the gap. The rise in crowdfunding in Singapore coincided with a reduction in debt repayment timelines. Whereas bank lending to SMEs has fallen, crowdfunding to SMEs has surged by 300%. Anecdotal evidence suggests that crowdfunding loans encourage bank lending, leading to a more efficient allocation of credit.

Empirical analysis of the drivers of crowdfunding across the world highlights important patterns. Crowdfunding has a strong positive relationship with per capita GDP. Panel analysis further points to the positive role of the greater availability of venture capital and the depth of financial institutions. Lower financial access (for instance, fewer bank accounts), by contrast, has a negative effect on alternative finance. Institutional factors such as performance on the World Bank Doing Business Index were shown to have a positive but insignificant effect. Finally, policy was said to play an important role in the development of crowdfunding. Policy makers need to foster a conducive environment to increase the breadth and depth of the finance sector and facilitate the availability of venture capital.

In tracing the future trajectory of crowdfunding, the paper pointed to role of Fintech in forcing banks to innovate. Although the banking sector in Singapore has taken steps to digitize, expand overseas, and build partnerships with Fintech, the COVID-19 crisis has changed some of these dynamics. The crowdfunding industry is still in its infancy, and

Banks and traditional financial institutions have historically been the primary source of financing for SMEs.

ADB's Peter Rosenkranz, IMF–Singapore Regional Training Institute's Yoke Wang Tok and Thitipat Chansriniyom.

it had not yet experienced a full credit cycle before the onset of the present pandemic. COVID-19 poses an existential threat to crowdfunders. Liquidity has dried up from both the investor and borrower ends (with investment funding falling and default rates rising). Many crowdfunders are start-ups themselves, and dependent on venture capital. A strong balance sheet will become necessary for survival.

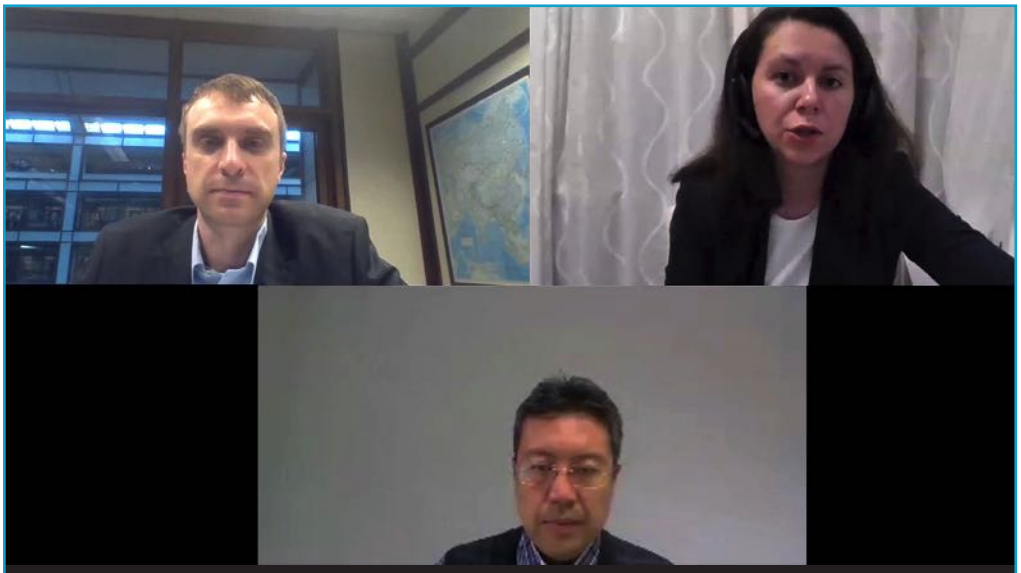
The discussant highlighted once more the important role of SMEs in economic growth and job creation and the significance of crowdfunding in SME financing. In addition to suggestions and considerations for further study, the discussant noted cross-country variations in the role of crowdfunding platforms. Other comments expounded upon financial stability risks related to crowdfunding in Singapore and the implications of Fintech for the country's banking sector, and upon the status of crowdfunding in the People's Republic of China (PRC).

The open forum that followed raised questions about more recent developments in crowdfunding in Singapore and how it has been impacted by the pandemic. The presenter explained that while data on the progress of crowdfunding projects since the pandemic began is relatively sparse, crowdfunders are facing difficulties in general. Their challenges are expected to intensify as the pandemic continues. Investor caution has grown alongside expectations of rising defaults. Finally, it was highlighted that trust is crucial in crowdfunding and that best practices need to be highlighted and promoted.

Blockchain Network System for Assessing SMEs' Creditworthiness

Mariya Yesseleva-Pionka

The emergence of Fintech and alternative finance can disrupt the financing options for SMEs. Advances in technology such as the world of open banking, the application



ADB's Peter Rosenkranz, Australian National Institute of Management and Commerce's Mariya Yesseleva-Pionka, and Tsinghua University Institute of Economics' Ke Tang.

programming interface (API), and shared data can expose both providers and users of funds to a wide range of fully digital financing instruments and products.

Banks and traditional financial institutions have historically been the primary source of financing for SMEs. And yet, SMEs have struggled to access financing from traditional banks. Likewise, traditional banks have consistently reported data problems with SMEs as no single source of information for credit risk assessment exists. SMEs have been viewed as being less transparent and costlier to service and have therefore received less capital and faced higher borrowing costs than larger enterprises. They have also had difficulty resolving information asymmetries with lenders. The implications of this challenge are compounded by the importance of SMEs to the economy.

Technological advances offer a solution. Decentralized permissioned blockchain network systems feature advanced information processing capabilities and a unique business digital footprint that can help resolve information asymmetries, while opening up new financing opportunities for SMEs. The introduction of a single digital record for SMEs allows firms to manage their own proprietary data that is supplied by verified sources and can be shared with external lenders to further encourage funding.

The future success of blockchain network systems in improving SME financing hinges on public–private collaboration and an adaptable, transparent, and efficient policy environment. Governments need to ensure strong policies regarding data access and usage, privacy, accountability, and the auditing of stakeholder data. Multistakeholder engagement is needed to maintain the decentralized nature of the permissioned blockchain network. The valuable role of reliable digital solutions in maintaining business operations and making financing easier has grown in line with the unfolding of the pandemic.

The discussion that followed delineated the differences between SME and traditional bank perspectives on financing and the way Industry 4.0 has shaped financing. Industry 4.0 has expanded access to SME finance. Although formal financial institutions continue to provide

Governments need to ensure strong policies regarding data access and usage, privacy, accountability, and the auditing of stakeholder data.

the main source of SME financing, such financing is highly manual—giving rise to data duplication, inefficiencies, and added expenses for lenders—and has become increasingly conservative following the global financial crisis and ensuing Basel III regulations.

Blockchain data management systems can give rise to a single digital record for SMEs, allowing firms to take charge of their proprietary data, while ensuring that such data originates from verified sources and can be supplied to external lenders. Such systems can also reduce information asymmetries plaguing smaller firms. The discussant pointed out, however, that technology and information asymmetries might only be part of the story and that additional measures might be needed to convince traditional banks of SME operational profitability. Concerns from the bank perspective include preserving the value of the principal; SME-side concerns include a lack of fixed assets. Additional questions were raised on the differences in the indicators used by traditional banks and those used by blockchain technologies, on the role of SME privacy, and on the need to expound on the difficulties that SMEs experience in accessing traditional bank financing.

Questions about the benefits and challenges posed by BigTech were raised during the question and answer portion. In particular, one focused on the need to balance the benefits of BigTech with concerns such as data privacy and instability. A point was also made about obstacles in data sharing as lenders can be reluctant to disclose information. That privacy considerations can impede collaboration was also highlighted. A final point was made that blockchain technologies allow SMEs to signal their value in ways that are precluded by traditional credit risk assessments.

Fintech and blockchain-based solutions are well-placed to encourage domestic resource mobilization for sustainable investments.

Scaling Up Sustainable Investment through Blockchain-based Project Bonds

Ulrich Volz and Yushi Chen

Large-scale investments are needed to finance sustainable infrastructure and to meet the conditions for renewable energy and low-carbon emissions laid out in the Paris Agreement and 2030 Agenda. In 2020, the International Monetary Fund (IMF) estimated these investment gaps at more than $20 trillion over the next 2 decades. Financing bottlenecks have emerged in developing and emerging economies, in particular. Inflows of private capital from advanced economies to fund infrastructure needs in the developing world have met with limited success and financial risks are associated with foreign funding.

To that end, measures to strengthen domestic resource mobilization to close investment gaps are crucial. At present, significant amounts of developing and emerging economies' savings are channeled to low-yielding assets in the financial centers of advanced economies, prompted by underdeveloped domestic capital markets and the scarcity of safe assets in local currencies. This dynamic of a surplus in savings combined with a paucity in safe domestic assets is particularly evident in developing Asia. A further challenge surrounding infrastructure investment worldwide is corruption. According to IMF estimates, a third of funding for public infrastructure worldwide is lost to inefficiencies. Action to reduce or eliminate such inefficiency is vital.

Amid such conditions, Fintech and blockchain-based solutions are well-placed to encourage domestic resource mobilization for sustainable investments, to improve the

implementation and transparency of infrastructure projects throughout their life cycle, and to curb the misuse of funds. Fintech can complement conventional capital markets in meeting sustainable infrastructure investment gaps. Blockchain-based project bonds have the potential to facilitate financing through digital crowdfunding platforms while enhancing transparency in the recording and certification of the use of proceeds, the sustainability impact, and the revenue streams of infrastructure projects. Such solutions combine timestamps, public and private key mechanisms, and smart contract technologies to tackle challenges in the key phases of an infrastructure project's life cycle: inception and fundraising, realization, and operation.

Blockchain-based bonds for sustainable investments offer gains for multiple stakeholders. From a government perspective, such technologies can support local development efforts, foster favorable financing conditions, speed up finance sector development and the reduction of financial stability risks, and strengthen accountability and efforts for good governance. Investors stand to gain from the availability of safe assets, the provision of user-friendly investment processes, easy access, the aggregation of small-scale projects, and the sustainability of infrastructure projects that may be of interest to impact investors seeking to solve social or environmental problems. Local residents can benefit from sustainable infrastructure financing to spur development, heightened access to quality infrastructure services at lower cost, and from the boon to local employment. Such technologies may also help further the aims of development agencies.

Digital finance and blockchain-based financial solutions can improve information flows and finance sector efficiency by leveraging better systems and data, fostering inclusion and innovation in the real economy, broadening sustainability choices, and by offering new sources of funding. These solutions can also help support nascent business models through improvements to financial decision-making and access to funding. Such advances can enable community ownership structures and decentralized governance models grounded in blockchain technologies. Although these technologies have not yet been implemented

The blockchain-based bonds for sustainable investment represent a promising solution for Asia.

From top left to bottom right: ADB's Peter Rosenkranz, ADB's Shu Tian, SOAS University of London's Ulrich Volz, and University of Sussex's Yushi Chen.

in practice, the United Nations has supported preliminary efforts to use digital technology to mobilize sustainable infrastructure investment in Bangladesh. Blockchain-based bond solutions have the potential to transform micro savers into micro investors and reduce reliance on foreign borrowing—and should therefore be explored.

The discussion reiterated the ability of blockchain-based solutions to complement conventional capital markets and support domestic resource mobilization for more sustainable investment financing. These technologies underpin greater transparency, diversification of the investor base, and improved implementation of infrastructure projects. The blockchain-based bonds for sustainable investment proposed in the paper represent a promising solution for Asia. Given that financial stability risks can accompany foreign investment in the region, domestic financing holds many potential upsides. Developing Asia continues to see strong domestic savings rates (averaging 41% from 2010 to 2018, with a saving-investment gap of 2.1% of GDP). Blockchain-based financing solutions can help to channel these resources effectively while offering greater transparency and flexibility in investment options through the tokenization of conventional financial instruments and crowdfunding. The discussant concluded by highlighting the need for regulations to adapt to technological advances, and for investor education, particularly in frontier markets, in order to mitigate security and platform risks.

During the open floor that followed, it was reiterated that effective solutions to securing sustainable investment are premised on the need to ensure that projects are commercially viable. Several other important factors were raised. First was the need to consider the potential for fraudulent activity. Second, supervisors need to monitor for issues that may arise from blockchain-based financing solutions. Third, investor education is crucial. The final point was that consumer protection is paramount and multilateral institutions such as ADB have a role to play in this.

Key Messages and Policy Implications from Paper Session 2

- **Policy makers need to ensure an enabling environment for alternative finance, given the important economic role that SMEs play in developing Asia and the substantial financing constraints imposed by traditional financial institutions.** As the case of Singapore underlines, crowdfunding can help to improve SME cash flows and channel investment into SMEs. This is significant because SMEs have a substantial economic role in developing Asia. Crowdfunding can help to bridge the financing gaps SMEs continue to experience from traditional sources, utilizing artificial intelligence to facilitate the matching of borrowers and investors. Policy makers can encourage crowdfunding, potentially generating significant development impact given the important role SMEs play in the economy. To this end, policy makers need to ensure a conducive environment for alternative finance, taking action to increase the breadth and depth of the finance sector and to help enterprises gain access to venture capital.
- **In order to realize the potential of blockchain network systems to unlock financing opportunities for SMEs, multistakeholder collaboration and an adaptable, transparent, and well-functioning policy environment are needed.** Banks and traditional financial institutions have long served as the primary financing source for SMEs. And yet, they continue to impose constraints that limit SME funding. Decentralized permissioned blockchain network systems can help to overcome information asymmetry problems and ease financing constraints. For these systems to work, a conducive policy environment and multistakeholder engagement are vital. Governments need to ensure strong policies surrounding data access and use and the privacy, accountability, and auditing of stakeholders. The need for reliable digital solutions that improve business operations and facilitate funding has grown in line with the unfolding pandemic.
- **Although blockchain-based project bonds have not been implemented extensively, they offer a promising avenue for meeting large-scale investment needs to finance sustainable infrastructure.** Measures are needed to strengthen domestic resource mobilization and channel excess savings in the region to close considerable infrastructure financing gaps across developing Asia and to meet internationally agreed upon development goals. To this end, blockchain-based bonds for sustainable infrastructure have the potential to enhance transparency and streamline the implementation of infrastructure projects, offering gains to multiple prospective stakeholders. And although these technologies have not yet been implemented extensively in practice, they offer a promising way forward in furthering development goals and should therefore garner support from the public and private sectors.

Policy makers need to ensure an enabling environment for alternative finance.

Paper Session 3: Fintech Case Studies in Asia


Peter Morgan


Claire Yurong Hong


Ben Charoenwong


Nor Anisa


Nika Pranata


Johan Sulaeman

DAY
3
24 September

Moderator

Peter Morgan
Senior Consulting Economist, Vice-Chair
Research Department, Asian Development Bank Institute

FinTech Platform and Mutual Fund Distribution

Presenter

Claire Yurong Hong
Assistant Professor of Finance
Shanghai Jiao Tong University

Discussant

Ben Charoenwong
Assistant Professor of Finance, NUS Business School
National University of Singapore

Fintech Peer-to-Peer Lending as Approach to Encourage Economic Inclusion for Rural Communities in Indonesia

Presenter

Nor Anisa
Research Enumerator
Mulawarman University

Crowdfunding for Infrastructure Project Financing: Lesson Learned for Asian Countries

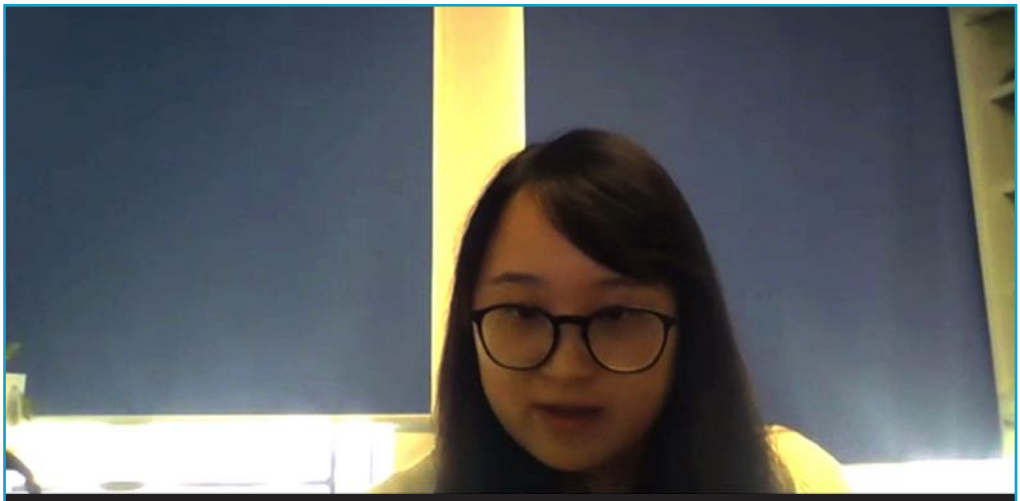
Presenter

Nika Pranata
Indonesia Financial Services Authority and Researcher at Economic Research Center
Indonesian Institute of Sciences

Joint Discussant

Johan Sulaeman
Dean's Chair and Associate Professor, Department of Finance, NUS Business School
National University of Singapore

The third session explored the effects and potential of Fintech and crowdfunding to drive differences in investment behavior, encourage economic inclusion, and fund infrastructure projects across Asia. The papers examined patterns in the People's Republic of China (PRC) and Indonesia and suggested options for Asia, at large, to offer insights on the potential of Fintech to advance varied financial aims.



Shanghai Jiao Tong University's Claire Yurong Hong.

FinTech Platform and Mutual Fund Distribution

Claire Yurong Hong

The emergence of Fintech platforms has shaped investment patterns and mutual fund distribution in the People's Republic of China.

The first paper explored how the emergence of Fintech platforms has shaped investment patterns and mutual fund distribution in the PRC, in particular. Since their inception in 2012, platform distributions of mutual funds in the PRC have expanded rapidly. By offering mobile access to investment options, these platforms have dramatically lowered the barriers for individuals to invest in an array of financial products.

In 2010, before the introduction of Fintech channels for investment, fund families in the PRC comprised nearly a third of traditional investment channels, banks comprised an estimated 60%, and brokers accounted for the remaining 9%. Traditional channels were plagued by a limited number of funds, segmented markets, and conflict of interest issues. Fintech channels created by tech-driven firms changed the investment landscape, offering large-scale and broader coverage. By leveraging technological efficiencies, ease in access, search, and trade, and a mobile and simple-to-use interface, these platforms grew considerably.

By 2018, the top four platforms—Tiantian, Ant Financial, Howbuy, and Tong Huashun—offered coverage of over 90% of all mutual funds. By contrast, coverage by banks and brokers fell below 30% of fund market share. The entrance of Fintech platforms led to a marked increase in sensitivities to performance. In a winner-takes-all pattern, net flows to the top 10% of performing funds more than tripled their pre-platform levels. Utilizing proprietary data from Howbuy, one of the best-performing platforms in the PRC, analysis points to the increase in performance-chasing on platforms. From 2015 through 2018, the top decile of equity funds accounted for nearly half of the quarterly purchases on Howbuy—significantly larger than the estimated 37.6% accruing to the entire market. Pre-platform, quarterly purchases to the top decile equity funds figured at less than a quarter.

These developments have influenced the behavior of fund managers and fund families. In the presence of enhanced performance chasing, fund managers engaged in greater risk-taking behavior to increase the probability of their becoming top performers. In particular,

before their elevation, the top decile of funds exhibited a pattern of greater volatility for at least 2 quarters. Fund families meanwhile saw a lessening of organizational cohesiveness and fewer incentives to groom star managers.

Platform companies armed with more granular customer data and advanced analytical technology enjoy a comparative advantage in the provision of financial services relative to traditional distribution channels. However, the amplification of performance-chasing investment prompted by the emergence of these platforms is an important example of an unintended consequence. Considering the lack of evidence of performance persistence in mutual funds in the US and the PRC, performance-chasing by investors on these platforms is likely to do little to increase the efficiency of investment portfolios. The analysis suggests that platform economies need to move beyond enhancing technological efficiencies and connectivity and draw upon insights from finance and economics to improve outcomes in financial efficiency and productivity. Policy makers need to consider how to design regulations to alleviate some of these unintended consequences while helping to unlock the efficiency gains these platforms offer.

The discussant further underscored the significance of the entry of Fintech platform companies by examining developments in financial services and in asset prices. While banks continue to dominate mutual fund assets under management by distribution channel, transactions on mobile devices are growing. The discussant noted that the emergence of Fintech platforms creates two potential cost reductions in (i) trading costs consisting of subscription fee waivers, and (ii) search costs stemming from the centralized information structures embedded in platforms. The two effects have different implications. A decline in trading costs can amplify existing behavioral biases and heighten within-person participation because investors can access more funds. Meanwhile, lower search costs can translate into easier access to information and consequently improved asset allocation. A strict delineation between the two mechanisms, however, is difficult as they interact and can be confounded by policy shocks. The discussant noted that whereas the reduction in search costs brought about by Fintech platforms was expected to lower barriers to financial market participation, this pattern has not been borne out in the empirical evidence.

Shanghai Jiao Tong University's Claire Yurong Hong, ADBI's Peter Morgan, and NUS Business School's Ben Charoenwong.

The open floor that followed discussed changes in mutual fund investment following the introduction of the top four platforms, clarifications on the scope of Fintech platforms, and the role of regulation in shaping investment behavior. One contributor noted that investor composition across the entire mutual fund industry has not changed significantly. The entrance of Fintech platforms, however, has skewed investor composition to younger generations and led to a slight increase in the amount invested per person. In response to a question about how regulations have impacted risk-taking behavior, it was highlighted that Fintech, as with any innovation, has its benefits and disadvantages.

Fintech Peer-to-Peer Lending as Approach to Encourage Economic Inclusion for Rural Communities in Indonesia

Nor Anisa

The lack of development in the finance sector continues to constrain economic growth across parts of Southeast Asia. Underdevelopment of the sector moreover impedes financial inclusion efforts in the region. Estimates point to as many as 470 million individuals across Southeast Asia that lack access to bank accounts. Barriers to financial access across the region include the high cash-based wage payments (less than a third of workers report receiving their wages through accounts with financial institutions) and low debit and credit card penetration (with less than a third of adults report having a debit card and less than 10% having a credit card). Indonesia provides an illustrative case study of the loss to financial inclusion following from underdeveloped financial systems with its large composition of rural populations.

Over half of the adult population of Indonesia does not have access to formal financial services.

Over half of the adult population of Indonesia (as many as 92 million individuals) does not have access to formal financial services. Moreover, nearly three-quarters of its SMEs are similarly unable to access traditional financial channels. The pervasive lack of financial inclusion is compounded by low financial and digital literacy. This exacerbates low productivity, poverty, and unemployment across rural Indonesian communities.

The paper points to the promise of Fintech and peer-to-peer (P2P) lending to expand financial inclusion and help reduce economic inequality across rural populations through the use of digital transactions and by encouraging investment and capital lending. These technologies can reduce bureaucratic red tape while spurring financial access. Indonesia can furthermore benefit from the high smartphone use across the country. In order to capitalize on these advantages and effectively address the lack of financial inclusion, policy makers need to encourage digital financial education and literacy programs and foster the involvement of national and local government, while drawing in the private, banking, and academic sectors.

Crowdfunding for Infrastructure Project Financing: Lesson Learned for Asian Countries

Nika Pranata

Infrastructure plays a pivotal role in economic growth and development, spurring job creation, competitiveness, and increased productivity. Significant gaps in infrastructure investment exist, with estimates in the trillions of US dollars. These gaps in infrastructure investment are compounded by the unbankable nature of many projects. Infrastructure projects feature a high macroeconomic and political risk, long payback periods, and mismatches between available investment instruments and the needs of investors. Alternative sources of funding, diversification of the investor base, and variety in investment instruments are therefore needed to bridge these gaps.

The emergence of Fintech utilizing digital and borderless technology and efforts to minimize information asymmetries can help address many of these challenges. And whereas Asia has seen remarkable growth in P2P lending—increasing 150-fold in Indonesia from 2016 to 2019, for instance—the uptake of crowdfunding for infrastructure purposes remains low. By contrast, crowdfunding has gained in popularity across Europe and the US as an alternative source of financing for infrastructure projects. The paper examined four successful crowdfunding platforms for infrastructure across these two regions.

The emergence of Fintech utilizing digital and borderless technology and efforts to minimize information asymmetries can help address many challenges.

The first, Oneplanetcrowd, is among the largest European crowdfunding platforms focused on projects catering to impact investing and sustainability. The Netherlands-based platform offers investment products that seek to provide attractive financial returns while generating positive impact on people and the environment.

The second, Convergence Finance, is a global network platform for blended finance. The fund aims to bridge the funding gap to meet the United Nations Sustainable Development Goals; its primary beneficiaries are developing countries.

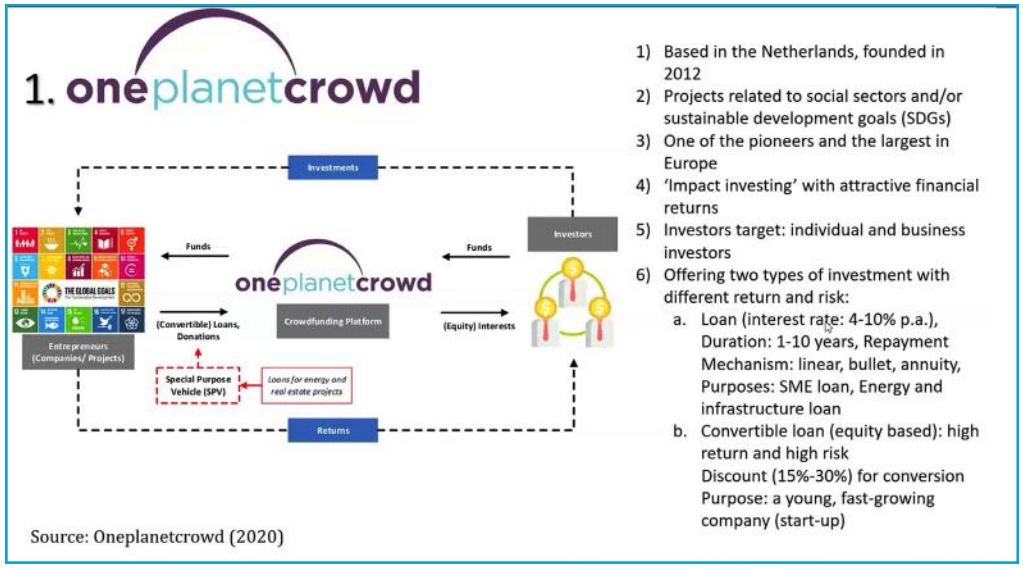
The third, Citizenenergy, is the first crowdfunding platform for European citizens to invest in renewable energy projects. The platform seeks to advance cross-border investment in sustainable energy and energy cooperatives. The initiative is part of a broader coalition of 33 companies in 20 countries. It offers varied investment instruments, including donations, reward-based instruments, loans, debt, and equity.

Finally, Infrashares, is a US-based crowdfunding platform that allows individual investors to participate in the financing of infrastructure projects through public–private partnerships.

Infrastructure projects promoted by the fund span smart cities technologies, infrastructure assets, and renewable energy. The value proposition of products on offer comprises an entire new asset class for potential investors and low-cost capital for infrastructure owners. In contrast to the three European-based platforms that focus on impact financing, Infrashares promotes commercial investment in the form of private debt and equity.

Drawing from successful cases of crowdfunding platforms in Europe and the US, the paper proposes four crowdfunding business models that can be adapted to the Asian context. These are within-country crowdfunding, commercial infrastructure financing, cross-border citizen funding, and blended finance models. The paper lays out a road map for the promotion of crowdfunding as an alternative method to financing infrastructure projects in Asia. The road map envisages a landscape of support for domestic crowdfunding platforms with social and environmental purposes, the promotion of projects with commercial aims, the move toward a network of blended finance across Asia, the establishment of an Asian crowdfunding network, establishment of cross-border crowdfunding regulations, and the promotion of such a cross-border platform for infrastructure project financing in the region.

The discussion that followed the presentation of the last two papers gave an overview of the potential challenges particular to digital financial intermediaries compared with traditional financial intermediaries—both from a broad perspective and more specifically relating to infrastructure financing in Asia. The discussant noted that nontraditional financial intermediaries have an advantage in credit allocation for individuals and small enterprises and in regulation and compliance. In terms of extending financing to individuals and SMEs, digital financial intermediaries have wider access and increasing market penetration (through microfinancing, for instance), enjoy an informational advantage (utilizing digital as opposed to manual credit scoring), and are seeing increased consumer trust of their delivery platforms. On the flip side, such intermediaries see more risk in lending (owing to microfinancing) and more expensive pricing (due to use of digital credit scoring), and they are at greater risk of small borrowers defaulting on loans. From a broader perspective, the discussant noted that, by utilizing digital technologies, traditional financial intermediaries may be better placed to provide financing for all.



Taking the perspective of infrastructure financing for Asian countries, the discussant noted that nontraditional financial intermediaries can provide efficient, transparent, and automated financial services. Infrastructure development often falls under the category of public goods and is often consequently hampered by difficulties in project evaluation, monetization, and avoiding vested interests. In this way, digital financial intermediaries can improve transparency and efficiency in project evaluation by allowing potential investors to sidestep capture by vested interests, concentrating on financial returns instead. Digital platforms can also contribute to transparency and automation, helping to overcome challenges in monetization. Tokenization, for instance, can aid internalization of financing, with potential beneficiaries committing to finance projects.

Digital platforms can also contribute to transparency and automation, helping to overcome challenges in monetization.

NUS Business School's Johan Sulaeman.

On the flip side, successful digital financial intermediation necessitates a response to the challenges in infrastructure financing. The need for investors with capital is particularly acute in developing Asia as investment avenues are relatively limited. To facilitate cross-border investment in infrastructure financing, trust needs to be established, external vetting should be undertaken, and projects have to be commercially viable. In this regard, it is unclear that digital platforms have any advantage over traditional financial intermediaries. The discussant concluded by noting that public–private partnerships may be appropriate for infrastructure projects with clear commercial potential. Moreover, governments and multilateral institutions might be better placed to undertake targeted infrastructure projects as many of these initiatives would not pass commercial vetting because they lack a clear commercial rationale. It is consequently unclear how digital financial technology can solve these issues.

The final open floor reiterated the importance of commercial viability in financing projects, cited the success rate of funding in the US and Europe, and discussed financing for financial assets and altruistic reasons. It was underscored that trust is the most important factor in ensuring Fintech is successful. And it was again underlined that the effectiveness of securing financing for infrastructure projects relies on their commercial potential. The success of the US and Europe in financing mobilization illustrates this point. Finally, on the subject of financing, it was stressed that the effectiveness of mobilizing donations is dependent on investor motives, whether for financial gain or altruistic reasons.

Key Messages and Policy Implications from Paper Session 3

- **As Fintech platforms have emerged and altered the financial and investment products available to consumers, policy makers need to ensure an environment conducive to financial innovation while mitigating the risks to financial stability.** Fintech platforms offer a promising means to leverage technological efficiencies and connectivity gains to broaden access to a wide array of investment products. As the case of the PRC illustrates, such platforms enhance the accessibility of financial services while expanding the financial products on offer. And while these platforms make a range of efficiencies in data management and analytics possible, they carry unintended consequences in the form of greater risk-taking as fund managers try to secure top-performer status. These behaviors result in neither increased financial efficiency nor productivity. Policies need to be considered that strike a balance between encouraging these technological and financial productivities while minimizing their unintended consequences.
- **Governments have important roles to play in providing an enabling policy and regulatory environment to allow Fintech and alternative financing to close financial inclusion gaps and secure sustainable infrastructure financing.** Access to formal financial institutions is limited in many parts of Southeast Asia. Moreover, lack of financial inclusion and financial literacy is exacerbated across large agricultural populations. Indonesia provides a useful illustration of how underdevelopment of the financial system can stymie poverty reduction and economic growth. Emerging Fintech, including P2P lending, and increased use of smartphones have the potential to reverse many of these financial barriers. In order to fully realize gains from the uptake of these technologies across Asia, governments need to pursue digital financial literacy and education programs and foster the engagement of the private, banking, and academic sectors. In the area of infrastructure financing, Fintech and crowdfunding can help narrow the sizable infrastructure investment gaps that persist, and so further contribute to inclusive growth.

Policies need to be considered that strike a balance between encouraging these technological and financial productivities while minimizing their unintended consequences.

ADB's Cyn-Young Park, ADBI's Peter Morgan, and ABFER's Bernard Yeung.

33rd Australasian Finance and Banking Conference

15-16 December 2020

Virtual

Keynote Address: Leveraging Fintech for a Strong Post-COVID-19 Recovery in Asia

15 December 2020

Bambang Susantono

Bambang Susantono
Vice-President for Knowledge Management and Sustainable Development
Asian Development Bank

In his keynote address, Vice-President Bambang Susantono outlined how the adoption of Fintech and digital platforms has accelerated in line with the COVID-19 pandemic. He highlighted how the ongoing digital transformation can help advance inclusion and development goals, while also introducing financial stability and cybersecurity risks.

The keynote address highlighted how the ongoing COVID-19 pandemic is accelerating the adoption and use of digital financial solutions. While the pandemic has rapidly undermined development gains from recent decades and reversed economic growth across many Asian economies, it also presents opportunities to strengthen resilience moving forward. The presentation underlined how the rapid advances in digital technology offer a way forward for economic revival and the potential for a strong post-pandemic recovery in Asia.

Digital financial transformation has ramped up in line with the ongoing pandemic. The pervasive restrictions on mobility and lockdown measures have driven more companies to shift their businesses and services online. The use of digital technology and e-commerce has become the business norm, given containment measures and consumer preferences for contactless transactions.

The presentation highlighted how the digital economy is a driving force for growth, creating enormous economic value. This was emphasized for Asia, with the region at the center of these trends. In 2019, digital platform revenues reached $3.8 trillion globally, equivalent to 4.4% of global GDP. Asia accounted for just under half of that, while the US had 22% and the euro area, 11%. Asia also accounted for over half of global e-commerce volume and nearly half of global e-services in the same year.

The ongoing COVID-19 pandemic is accelerating the adoption and use of digital financial solutions.

ADB Vice-President for Knowledge Management and Sustainable Development Bambang Susantono.

These trends show that the digital economy holds great potential to reboot post-pandemic growth in the region. The presentation highlighted, however, how digital readiness across Asian economies varies considerably, with significant disparities in digital financial infrastructure and digital capability. Access to financial services in the region also remains a challenge, with 1 billion adults lacking access to formal financial services.

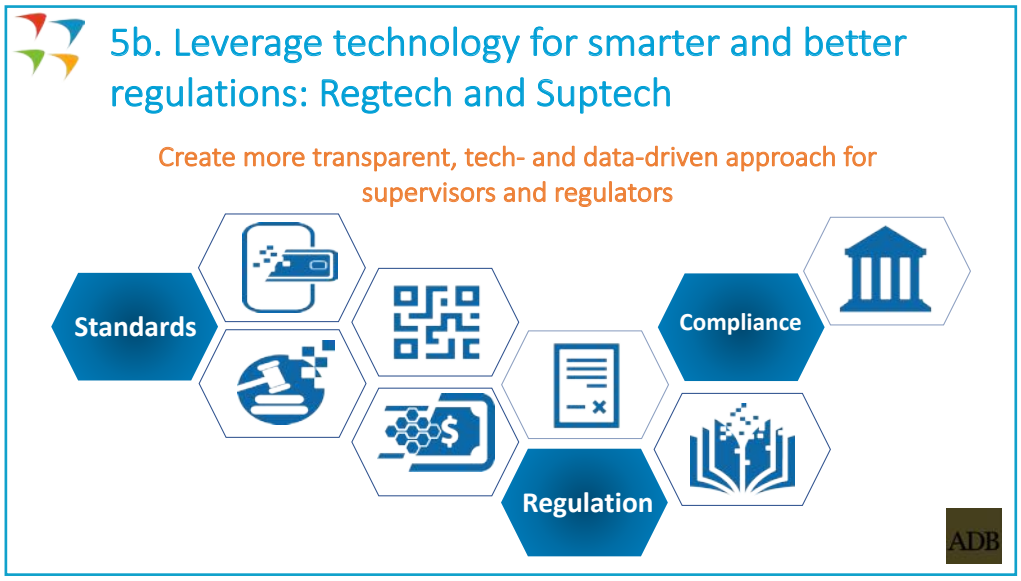
The keynote highlighted five steps needed to ensure that Fintech helps secure a swift and sustained regional recovery post-COVID-19:

First, the presentation emphasized the need to ensure equitable access to digital and financial infrastructure. Asia continues to see uneven development of basic digital infrastructure and varying degrees of digital readiness. The keynote stressed the need to take steps to close the digital divide and expand investment in digital infrastructure. Providing digital education and training was also highlighted as key to unlocking the region's potential.

A complementary, consistent, and multifaceted policy framework is needed to nurture a digital ecosystem.

Second, the presentation underlined the need for governments to develop an effective digital ecosystem to support the creation, diffusion, and scaling up of technology and innovation. The private sector will take on the major role of driving innovation. However, in most countries, public policy continues to be important for forging critical links between financial and technology firms. The presentation stressed how a complementary, consistent, and multifaceted policy framework is needed to nurture a digital ecosystem. This encompasses measures and safeguards to ensure fair competition, lower barriers to entry, consumer protection, and data privacy, among others.

Third, the potential of the widespread adoption of digital financial services to encourage inclusive growth and financial inclusion was stressed. Fintech applications—through smartphone-enabled saving, crowdfunding, and security tokens—can greatly enhance the efficiency of resource allocation and reduce transaction costs. Digital financial services can help overcome obstacles to financial access, expanding the reach of financial services to rural and largely underserved regions. They can moreover encourage delivery of social goods and services and improve the efficiency of such service delivery.



Fourth, the presentation emphasized that Fintech offers new ways to mobilize financial resources for sustainable development, including encouraging increased savings and investment. Blockchain-based solutions and asset tokenization offer promising ways to close substantial financing gaps and secure sustainable funding for infrastructure. This is significant because the region faces considerable financing needs, including renewable energy investment to meet low-carbon development goals. In 2017, ADB calculated that developing Asia requires as much as $1.7 trillion a year from 2016 through 2030 to meet its infrastructure investment needs.

While advances in Fintech and digital financial platforms have revolutionized the delivery of financial services, the presentation raised a final point that such innovations carry inherent risks.

Blockchain-based solutions and asset tokenization offer promising ways to close substantial financing gaps and secure sustainable funding for infrastructure.

Regtech and Suptech can be leveraged to enable smarter and better regulations.

As financial systems become increasingly reliant on digital solutions, the disruption of a financial institution's digital operations has become more costly. The risks of fraudulence and other criminal activities that threaten data integrity and privacy have increased. Financial institutions need a holistic approach to fortify their cyber-defenses and security in response to these risks, taking steps toward risk reduction and a speedy recovery in case of an attack.

In light of the growing financial risks, technological advances—such as regulatory and supervisory technologies (Regtech and Suptech, respectively)—can be leveraged to enable smarter and better regulations. Regtech allows for the application of big data, blockchain, and other innovations to meet growing compliance and reporting obligations. Suptech can offer efficiency gains by enabling data standardization, streamlining of operations, and automation of supervisors' reporting and data collection.

The keynote underlined how, moving forward, digital technology can be the linchpin in Asia's economic recovery. Fintech has great potential to advance sustained economic development, financial inclusion, and stability. To realize its full benefits, policy makers must work together to leverage gains from technology, while strong regional financial cooperation can help safeguard cybersecurity and financial stability moving forward.

ADB–Institute of Global Finance Session: Financial Technology and Innovation for Financial Efficiency

16 December 2020


Peter Rosenkranz


Lev Ratnovski


Si Cheng


Blair Vorsatz

Financial Intermediation and Technology: What's Old, What's New?

Presenter

Lev Ratnovski
Lead Economist
European Central Bank

Discussant

Si Cheng
Assistant Professor of Finance
Chinese University of Hong Kong

Collectibles Tokenization and Optimal Security Design

Presenter

Blair Vorsatz
Finance PhD and MBA Student
University of Chicago

Discussant

Lev Ratnovski
Lead Economist
European Central Bank

What Should Investors Care About? Mutual Fund Ratings by Analyst vs. Machine Learning Techniques

Presenter

Si Cheng
Assistant Professor of Finance
Chinese University of Hong Kong

Discussant

Blair Vorsatz
Finance PhD and MBA Student
University of Chicago

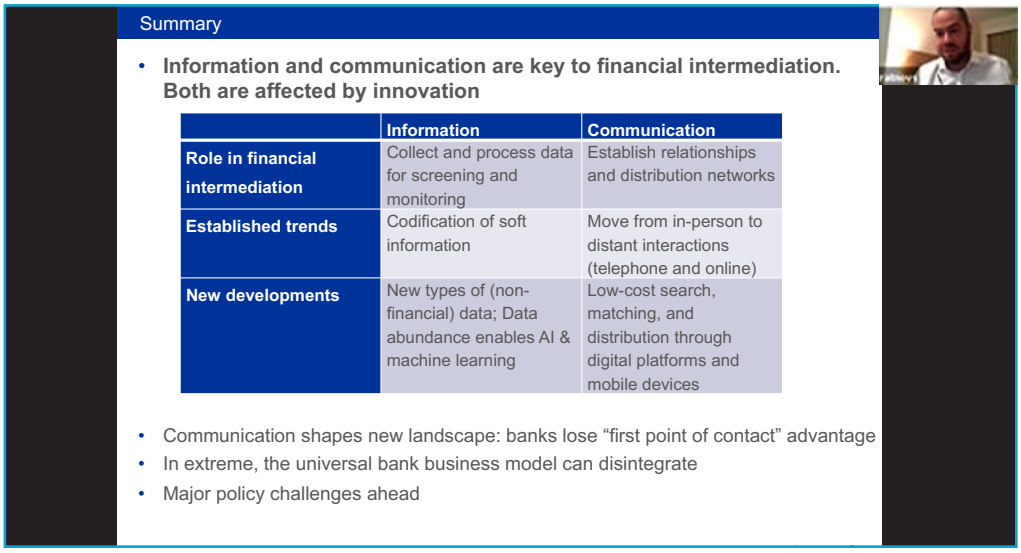
This session contributed to discussions on the potential of Fintech to spur innovation and efficiency in the finance sector. In particular, the featured papers explored the trends in financial intermediation following advances in Fintech, the promise of tokenization, and the potential of machine learning to form investment decisions.

New types of data have reshaped the financial landscape.

Financial Intermediation and Technology: What's Old, What's New?

Lev Ratnovski

The first paper examined the elements underlying innovation in the finance sector, distinguishing between longer-term, established trends and more recent innovations. The speaker highlighted that much of the development in finance and financial intermediation has been motivated by the desire to overcome frictions in two key areas—information (utilizing data for screening and monitoring) and communication (establishing customer relationships and distributional channels).



The codification from soft to hard information, growing data abundance, and transition from in-person to distant financial transactions constitute longer-term trends in financial intermediation. More recently, new types of data as well as new technologies including artificial intelligence and machine learning, low-cost, search, matching, and distribution through digital platforms have reshaped the financial landscape. This has upended traditional banking models and prompted a reconsideration of the relevance of the universal bank business model as banks have lost the "first point of contact" advantage. Such issues pose considerations for prudential, monetary, data, and competition policy.

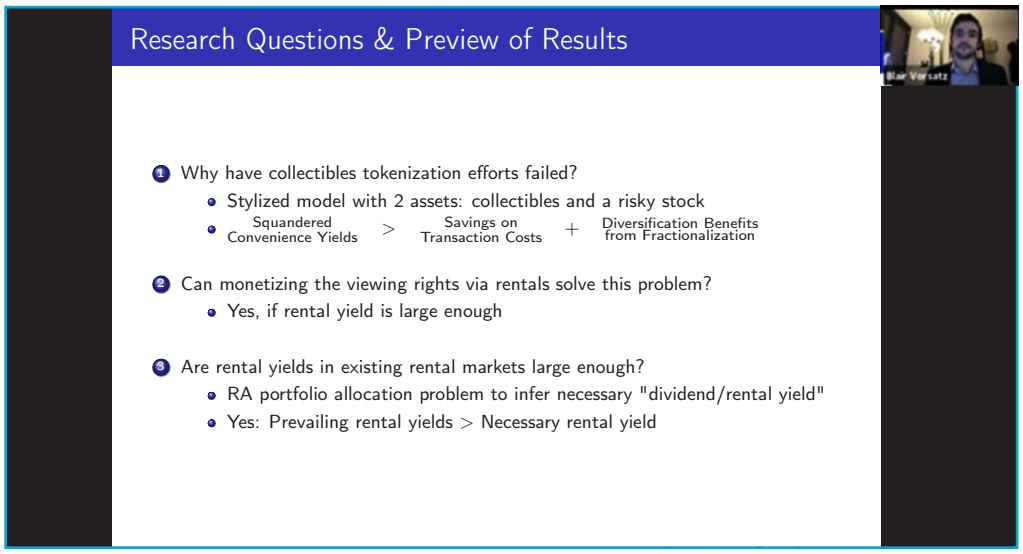
For a more detailed description of the paper, refer to pages 12–15, as presented in the 22–24 September 2020 Specialty Conference on Fintech to Enable Development, Investment, Financial Inclusion, and Sustainability.

The discussant noted that the boundaries between traditional banks and Fintech firms are becoming increasingly blurred. Coordination is growing as big banks seek to draw on the expertise of Fintech firms, while Fintech firms seek to benefit from the consumer base of traditional banks. It was moreover noted that it is difficult to distinguish between information and communication as the two interact—for instance, communication determines the nature of information collected. The emergence of big data has ushered in the growing volume, velocity, and variety of data.

The discussant further noted that traditional financing and Fintech have their respective comparative advantages. Traditional financing can call upon a long-established customer base and hard and soft information, among other advantages. Fintech's comparative advantage includes real-time and varied data. A final comment raised the importance of considering episodes in financial intermediation; in particular, the need for a distinction between normal times and crises. Machine learning algorithms, for instance, are not well suited to respond to crises, as their algorithms rely on past, precrisis data.

A question from the floor focused on how BigTech firms can deal with privacy concerns. The presenter responded that fears about the long-term implications of BigTech on privacy are hampered by a lack of societal consensus on the optimal level of privacy. Agreement on the optimal outcome should be reached before discussions on process can take place and further dialogue is needed.

Fears about the long-term implications of BigTech on privacy are hampered by a lack of societal consensus on the optimal level of privacy.



Collectibles Tokenization and Optimal Security Design

Blair Vorsatz

The second paper examined the design of collectibles tokenization efforts and proposed potential solutions to encourage their uptake. The collectibles market is significant and growing, with paintings, coins, classic cars, investible wines, and other valuables accounting for about 4% of the portfolios of the wealthiest individuals. However, features of this market (such as the indivisibility of artworks) limit its accessibility to many investors. At the same time, the frictions in this market are substantial. Round-trip transaction costs from sale prices are estimated at 20%–30%.

Tokenization represents a possible solution to such frictions, allowing ownership rights of physical assets to be distributed through digital tokens that are traded on exchanges. Asset tokenization utilizes advancing blockchain technology and gives rise to efficiencies—including convenience yields, savings on transaction costs, and diversification benefits from fractionalization. However, while tokenization in collectibles sounds promising, the presenter noted that first movers in this space have been met with limited interest. The presenter argued that these innovators in collectibles tokenization have squandered the emotional dividends accruing to ownership of these goods by storing collectibles in a vault.

Asset tokenization utilizes advancing blockchain technology and gives rise to efficiencies.

Given this context, the paper examined the potential of collectibles tokenization to facilitate investment in collectibles, both from a liquidity and inclusion standpoint and proposed improvements in security design that could help encourage uptake of collectibles tokenization—in particular, by allowing for rental of the collectible and monetization of viewing rights. The paper modeled the market for collectibles, highlighting that the value from collectibles arises from capital appreciation and emotional dividends or the nonfinancial enjoyment accruing from ownership and viewing of such goods. Tokenization efforts reduce the transaction costs that weigh on the value of collectibles by facilitating digital exchanges. As ownership of collectibles is diffused across many individuals, the physical goods are stored in a vault, consequently limiting the emotional dividends. Such a dynamic can explain why initial tokenization efforts has met with limited uptake. The paper argued that renting the collectible and monetizing viewing rights, can facilitate financial dividends for these goods. A large enough rental yield can offset the foregone emotional dividends, helping to overcome the limited demand for collectible tokenization. In this way, collectibles tokenization with the rental of viewing rights can encourage greater financial inclusivity and accessibility in investment, improve liquidity, and be value-creating. This argument was strengthened by empirical evidence.

The discussant raised a question about the fundamental relationship between collectibles ownership and viewing utility. Corporations investing in collectibles, for instance, would derive limited utility from viewership. Individual investors meanwhile could derive more value from conspicuous consumption relating to ownership than from viewing. A further question concerned whether tokenization was really necessary and whether exchange-traded funds might be similarly well-placed to reduce transaction costs in this market. Finally, attention turned to whether the collectibles market is experiencing a bubble. In response, the presenter noted that rising art prices accompany growing income inequality as an estimated 1% increase in wealth prompts a 10% rise in art prices. The presenter echoed that exchange-traded funds might have a similar effect in reducing transaction costs in this space.

What Should Investors Care About? Mutual Fund Ratings by Analyst versus Machine Learning Techniques

Si Cheng

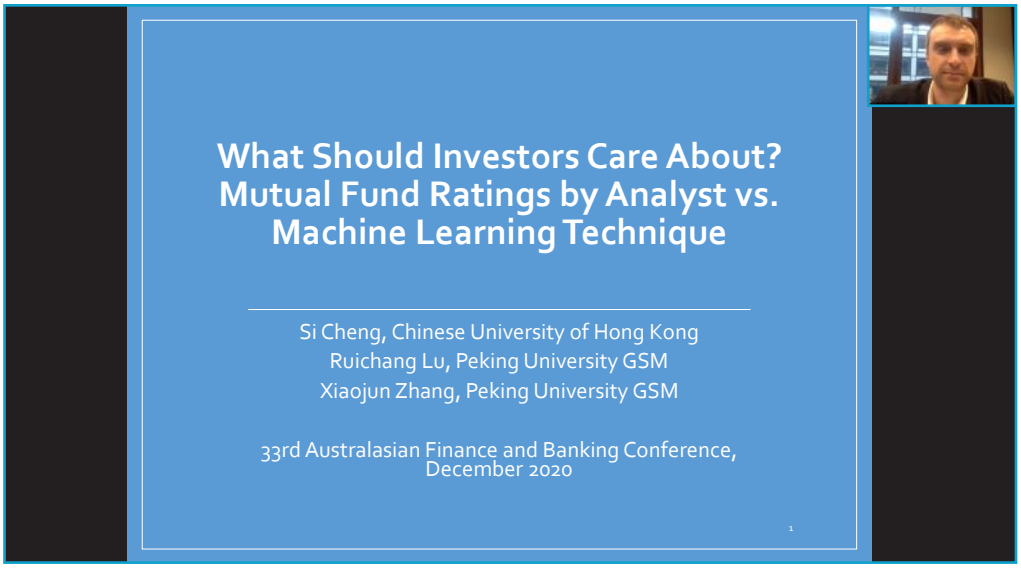
The third paper offered a comparison of the performance of analyst ratings and ratings generated using machine learning techniques in aiding the investment decisions of individual investors. A sizable proportion (approximately 89%) of mutual fund assets in the US are held by retail investors. The variety of available products is moreover substantial. On the flip side, only a small subset of skilled managers can run these funds. Individual investors are moreover unsophisticated in their investment decisions and prone to common errors, including poor market timing and susceptibility to advertising and media coverage, among other biases. Consequently, many investors rely heavily on metrics such as Morningstar's star ratings. The usefulness of such ratings for predicting returns, however, is limited by their backward-looking nature.

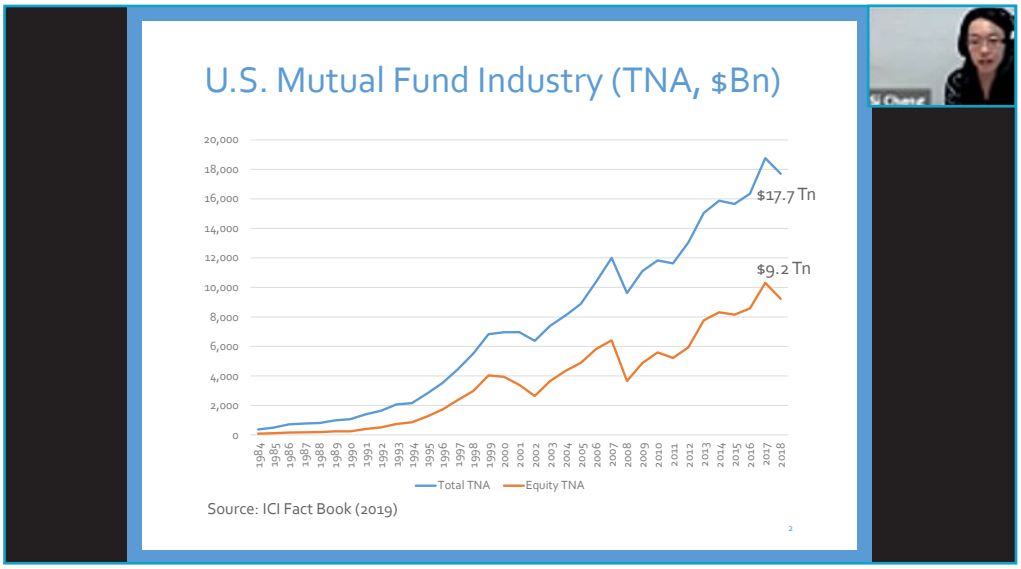
In this context, the paper examined whether forward-looking analyst-generated ratings are better able to predict fund performance than backward-looking star ratings and ratings generated by machine learning techniques. In addition, the paper analyzed how mutual fund investors respond to the different ratings. Analysis of US actively managed equity mutual funds from 2011 to 2018 found that funds recommended by analysts outperformed the benchmark by 1.46% per year. The funds covered by analyst ratings tended to be larger and older, with lower fees and lower turnover, and higher star ratings. The Morningstar backward-looking star rating had a low correlation (41%) with analyst ratings.

Overall, analyst ratings served as a useful indicator of future fund performance. Moreover, these ratings summarized information, such as firm characteristics, in a user-friendly way. Their stronger performance relative to quantitative ratings could be due to their incorporation of additional soft information and a prioritization of coverage of easy to rate funds. The machine learning-based quantitative ratings diverged from analyst ratings owing to differences in selection coverage. The tone of analyst reports has predictive power beyond analyst ratings and other fund characteristics. Overall, the study found that the Morningstar analyst rating improves investment outcomes. In spite of their usefulness, however, individual investors relied more heavily on star ratings, quantitative ratings, and recent fund performance.

Overall, analyst ratings served as a useful indicator of future fund performance.

The discussant highlighted that the paper offered timely examination of whether human and machine-mediated interventions can help reduce investor search costs and mitigate the commonly held biases of the median investor. The importance of such work was underscored for its potential to reduce inequality. It was also noted that this research reinforces the importance of forward-looking ratings. Questions included a request for elaboration on the dynamics underlying analyst coverage, investor reactions to the tone of the reports, and the possible role of frictions in contributing to delays in the response of investment flows to analyst ratings. In response, the presenter highlighted that the fund coverage by analysts centered on high-quality funds, which make up a smaller subset of funds. The presenter also pointed out that analyst ratings are persistent, with little upgrading or downgrading over time.





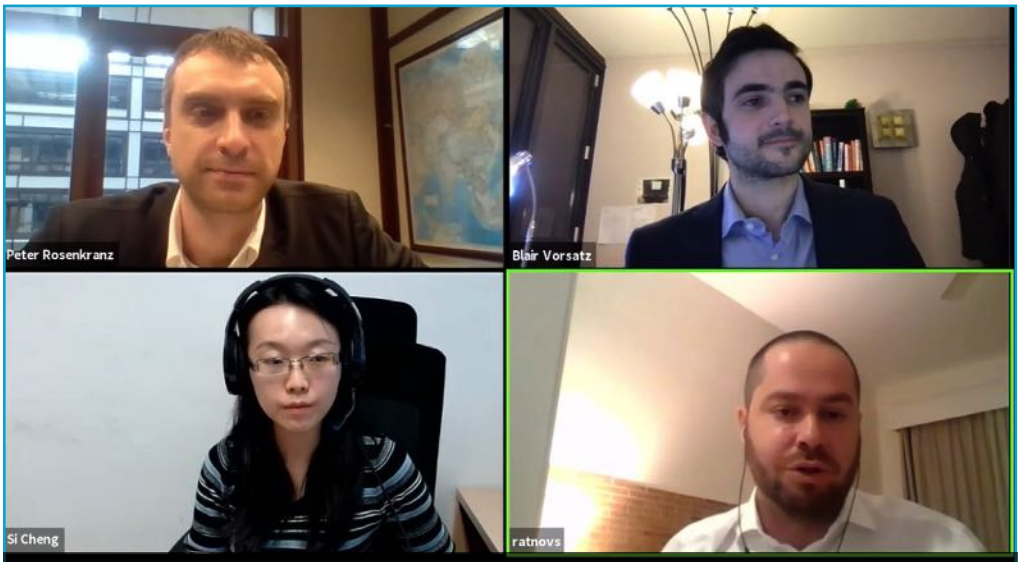
A question from the floor asked for elaboration on why search costs for fund performance are still high, given increasing data abundance, and whether data abundance itself has driven up search costs by making it more difficult to filter relevant information. The presenter explained that information on funds is hard to find and individual investors face difficulties in identifying useful information. Challenges associated with acquiring financial knowledge and learning constantly changing tools further impede the accessibility of relevant information. These constraints underpin the rating services offered by Morningstar.

During the question and answer portion of the session, discussion centered on how data abundance can be used for financial stability and on the trade-offs that accompany the emergence of BigTech. It was noted that increasing volumes of data simultaneously facilitate financial regulation and supervision while posing privacy and security risks. The presenter said there is no clear answer about how society should balance the trade-offs of efficiency gains, on the one hand, with the privacy concerns, on the other, that are posed by the rise of fewer BigTech companies. Global consensus on these issues is important.

Key Messages and Policy Implications

- **Technological advances have led to changes in financial intermediation, prompting reconsideration of traditional banking models and posing policy concerns.** Recent innovations in financial technology, including growing data abundance, new techniques in data collection and management, as well as low-cost search, matching, and distribution facilitated by digital platforms have reshaped financial intermediation. This has prompted reconsideration of the relevance of the universal bank business model as traditional banks have lost their "first point of contact" advantage. This poses challenges to prudential, monetary, competition, and data policy. Policy makers need to adapt to the continuously evolving financial landscape.
- **Collectibles tokenization can help lower transaction costs and increase accessibility and inclusivity in investment in collectibles—a large and growing asset class.** The market for collectibles, including art, classic cars, and wine, is sizable and growing. However, for many investors, access to this asset class is largely restricted and the transaction costs are significant. Tokenization of collectibles and accompanying rental of viewing rights can create value by (i) improving liquidity, (ii) enhancing the efficiency in allocation of viewing rights, and (iii) expanding financial inclusivity and accessibility in investment, expanding access to investment in collectibles from the wealthy to the general public. In this way, collectibles tokenization with rental of viewing rights can be welfare-enhancing.
- **Individual investors lack access to skilled managers to help inform investment decisions and are moreover prone to common investment biases, such as poor market timing. Forward-looking analyst ratings can help improve investment outcomes.** Retail investors hold nearly 90% of mutual fund assets in

Policy makers need to adapt to the continuously evolving financial landscape.



From top left to bottom right: ADB's Peter Rosenkranz, University of Chicago's Blair Vorsatz, Chinese University of Hong Kong's Si Cheng, and European Central Bank's Lev Ratnovski.

the US. Moreover, these funds are wide-ranging. Skilled managers for these funds are scarce and investors are prone to common biases, impeding investor ability to make good investment decisions. Forward-looking analyst ratings can help to remedy this, highlighting useful information that can successfully predict fund performance. Analyst ratings also serve as a more useful indicator of future fund performance than quantitative ratings generated using machine-learning techniques.

ADB–Institute of Global Finance Session: Financial Technology for Inclusive and Sustainable Investment

16 December 2020


Cyn-Young Park


Ulrich Volz


Yushi Chen


Matthias Pelster


Asror Nigmonov

Scaling Up Sustainable Investment through Blockchain-based Project Bonds

Presenter

Ulrich Volz
Director
SOAS University of London

Yushi Chen
Doctoral Researcher
University of Sussex

Discussant

Matthias Pelster
Professor for Finance
Paderborn University

Attention Triggers and Investors' Risk-Taking

Presenter

Matthias Pelster
Professor for Finance
Paderborn University

Discussant

Asror Nigmonov
PhD Economics Student
University of Southern Queensland

Macroeconomic Determinants of Loan Delinquencies: Evidence from the Peer-to-Peer Lending Market

Presenter

Asror Nigmonov
PhD Economics Student
University of Southern Queensland

Discussant

Yushi Chen
Doctoral Researcher
University of Sussex

ADB's Cyn-Young Park.

The continuously evolving financial landscape can help guide more efficient investment decisions and presents a promising avenue for securing sustainable investment. This session examined the potential of blockchain-based project bonds to close infrastructure financing gaps, the role of individual attention triggers on financial risk-taking behavior, and the macroeconomic factors influencing credit risk in peer-to-peer (P2P) lending.

Scaling Up Sustainable Investment through Blockchain-based Project Bonds

Ulrich Volz and Yushi Chen

The first paper discussed an innovative response to help the region meet its substantial infrastructure financing needs: blockchain-based project bonds. The investments needed to finance sustainable infrastructure and to comply with the renewable energy and low-carbon emissions conditions laid out in the Paris Agreement and 2030 Agenda are considerable. IMF estimates figure that investment gaps will total more than $20 trillion over the next 2 decades. Developing economies in particular face considerable

challenges in meeting these substantial needs, including financial bottlenecks, financial risks accompanying foreign funding, and corruption, among others. At present, emerging economies' surplus savings are primarily invested in the low-yielding assets in advanced economies, also due to the absence of safe assets in local currencies.

In response to these challenges, blockchain-based project bonds can help facilitate domestic resource mobilization and channel financing for sustainable infrastructure investment. These technologies can enhance implementation of infrastructure projects through their life cycle, from inception to implementation. They can moreover enhance the transparency in the use of funds, helping to curb significant corruption problems. Furthermore, blockchain-based project bonds can help improve information flows and finance sector efficiency, strengthening inclusion and innovation in the economy.

For a more detailed description of the paper, you may refer to pages 24–26, as presented in the 22–24 September 2020 Specialty Conference on Fintech to Enable Development, Investment, Financial Inclusion, and Sustainability.

The discussant raised questions about the generalizability of proposals to use blockchain-based project bonds for other sectors and other economies. In particular, one question was if such innovations may be relevant for other aspects of sustainable investment—such as social sustainability, whether they could be applied for sectors beyond energy, and whether they could be implemented in an advanced economy setting or in different regions. In response, the presenters noted that blockchain-based project bonds could have applications beyond renewable energy and could be applied to water treatment and health services, for instance. These technologies moreover can help support social sustainability. The presenter underlined that the central strength of these bonds lies in their ability to attract small-scale, local investors and to attract domestic and foreign institutional investors as well.

These technologies can enhance implementation of infrastructure projects through their life cycle.

During the question and answer portion, further elaboration was asked about the security risks that accompany many innovations in digital finance, including those using blockchain technology. In response, the presenters noted that while blockchain-based bonds can help mitigate illegal behavior, they cannot eliminate fraud completely.

Attention Triggers and Investors' Risk-Taking

Matthias Pelster

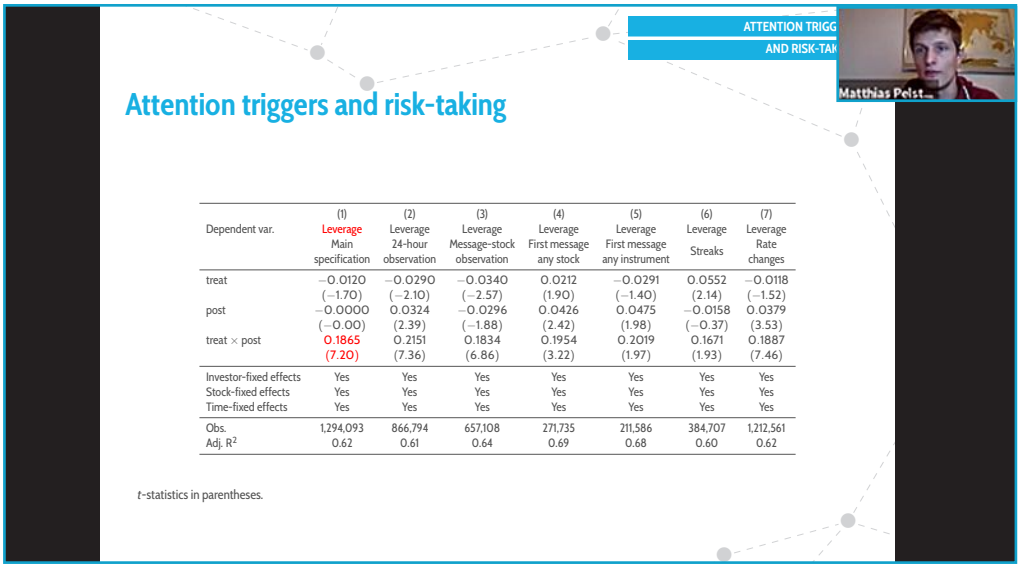
The second paper examined investor responses to specific stimuli—in particular, push messages relaying stock return information. Financial literature highlights the role of attention triggers in influencing investor behavior. Building on this, the study analyzed trading records of a brokerage service that sends standardized push messages to retail investors containing publicly observable information on past stock returns. The authors studied the leverage of investors' position as a measure of investors' risk-taking that is not determined by the selection of the stock itself.

The authors find that attention triggers heighten risk-taking and encourage investors to trade with higher leverage. Affective processes are found to have important roles in inducing individual risk-taking behavior. Reaction times are moreover quick, with a median reaction of time of approximately 90 minutes following receipt of push messages. Trading activity spikes substantially in response to these messages. The increased risk-taking behavior is found to be especially elevated among male, younger, and less experienced investors. The effect is stronger for stocks that are less familiar to investors. Moreover, the effect of attention triggers is more pronounced for stocks with more endogenous features, such as greater news or analyst coverage.

Attention triggers heighten risk-taking and encourage investors to trade with higher leverage.

In aggregate, attention triggers are found to induce risky trading. Push messages prompt investors to research and to trade featured stocks. They induce higher risk exposure. This effect is also evident for foreign exchange trading. However, the attention triggers do not, on average, influence trade performance.

The discussion that followed raised possible empirical adjustments that the authors might consider exploring. A question was raised about whether the study contains additional information on investor characteristics and other features such as the level of capital. In response, the presenter noted that more detailed data was missing and the dataset featured broader demographic data.



Dependent var.	(1) Leverage Main specification	(2) Leverage 24-hour observation	(3) Leverage Message-stock observation	(4) Leverage First message any stock	(5) Leverage First message any instrument	(6) Leverage Streaks	(7) Leverage Rate changes
treat	−0.0120	−0.0290	−0.0340	0.0212	−0.0291	0.0552	−0.0118
	(−1.70)	(−2.10)	(−2.57)	(1.90)	(−1.40)	(2.14)	(−1.52)
post	−0.0000	0.0324	−0.0296	0.0426	0.0475	−0.0158	0.0379
	(−0.00)	(2.39)	(−1.88)	(2.42)	(1.98)	(−0.37)	(3.53)
treat × post	0.1865	0.2151	0.1834	0.1954	0.2019	0.1671	0.1887
	(7.20)	(7.36)	(6.86)	(3.22)	(1.97)	(1.93)	(7.46)
Investor-fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Stock-fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time-fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	1,294,093	866,794	657,108	271,735	211,586	384,707	1,212,561
Adj. R^2	0.62	0.61	0.64	0.69	0.68	0.60	0.62

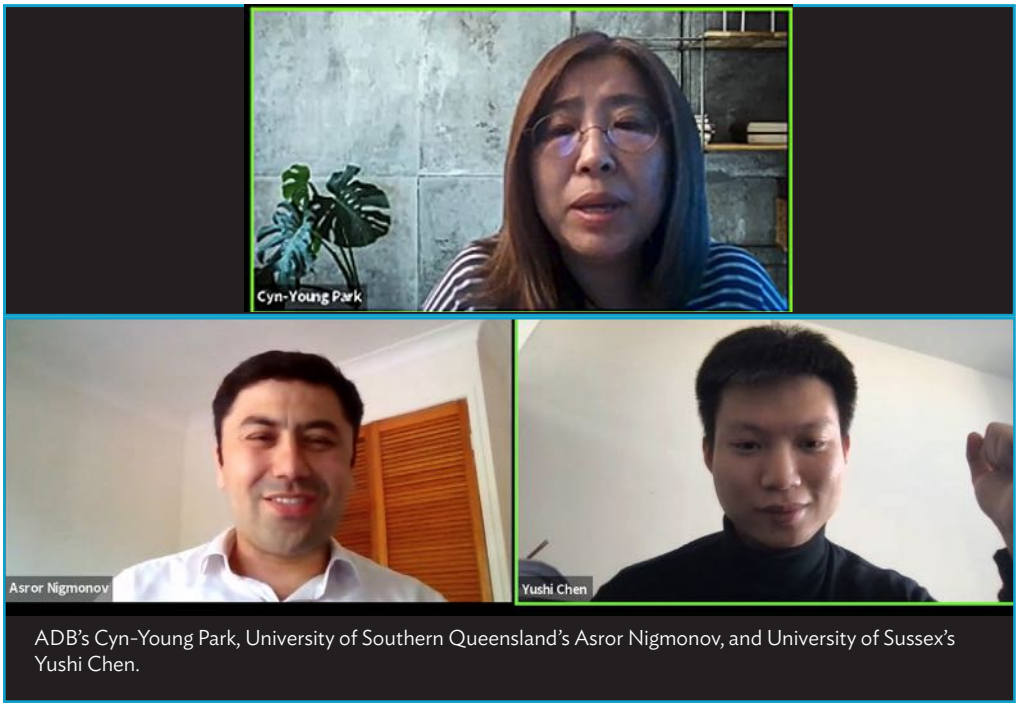
t-statistics in parentheses.

Macroeconomic Determinants of Loan Delinquencies: Evidence from the Peer-to-Peer Lending Market

Asror Nigmonov

The final paper examined the macroeconomic determinants underlying loan delinquencies in the P2P lending market. The P2P lending market has its origins in an environment characterized by low interest rates, investors seeking higher returns, evolving new technology, and a sharing economy. Its growth has been curbed, however, by several challenges. Among these is that such markets thrive under favorable business conditions and are especially vulnerable to loan losses and default risks during downturns in the business cycle.

[P2P] markets thrive under favorable business conditions and are especially vulnerable to loan losses and default risks during downturns.



ADB's Cyn-Young Park, University of Southern Queensland's Asror Nigmonov, and University of Sussex's Yushi Chen.

Using aggregated US state-level data from the loan book of the LendingClub from 2008 to 2018, the study examined the determinants of default risks of online P2P platforms and the effect of interest rates and inflation on loan delinquencies. The results show that higher interest rates and inflation induce an elevated probability of default. The effect of interest rates in driving up the probability of default is most pronounced when borrower rates are low. The link between inflation and probability of default moreover differs according to state religiosity levels.

The findings extend the literature on P2P lending markets, a rapidly expanding industry, and carry important implications for practitioners. The results can facilitate better risk management models, pointing to the significant factors that induce loan delinquencies and defaults in the P2P market.

The discussant queried the criteria for the inclusion of states in the LendingClub data. The presenter clarified that state inclusion in the study was influenced by data availability. During the question and answer portion, it was highlighted that further distinction can be made between the macroeconomic determinants of defaults in P2P markets and those in traditional bank-lending. Self-selection bias might be evident in those accessing P2P markets as opposed to traditional banks. For instance, such borrowers might have inadequate collateral impeding their ability to access traditional sources of finance.

Key Messages and Policy Implications

- **Blockchain-based project bonds can help close extensive financing gaps in sustainable infrastructure and have the potential to bolster transparency and efficiency in implementation of infrastructure projects.** The amounts needed to close investment gaps in sustainable infrastructure and meet conditions laid out in the Paris Agreement on climate change and the 2030 Agenda on Sustainable Development are substantial. The ability of emerging economies to meet these gaps is constrained by financing bottlenecks, financial risks accompanying foreign funding, and importantly, corruption. Blockchain-based project bonds can help mobilize local financing, enhance transparency in the use of funds, and improve efficiency at all stages of the life cycle of infrastructure projects.
- **Attention triggers play a significant role in inducing the risk-taking behavior of investors.** In an analysis of investor responses to standardized push messages sent by a large brokerage firm, the salience of attention triggers in encouraging elevated risk-taking is evident. Attention triggers are shown to induce increased investment by individual investors and higher leverage in trades. The effects are most pronounced for younger, less experienced, and male investors. These results provide further insight into investment behavior and suggest more effective ways to guide individual investors.
- **Analysis of the macroeconomic determinants of loan delinquencies and default in the P2P lending market point to the importance of inflation and interest rates.** Empirical investigation shows that higher interest rates and elevated inflation induces a higher probability of default and increased loan delinquencies in online P2P platforms. This research can help guide better risk management modeling.

Blockchain-based project bonds can help mobilize local financing.

From top left to bottom right: University of Sussex's Yushi Chen, Paderborn University's Matthias Pelster, ADB's Cyn-Young Park, and SOAS University of London's Ulrich Volz.

Fintech to Enable Development, Investment, Financial Inclusion, and Sustainability

Conference Highlights

Asia and the Pacific continues to face challenges in financial development, including credit constraints, a lack of financial inclusion, and long-term investment gaps. These challenges have grown amid the coronavirus disease (COVID-19) pandemic. Against this backdrop, the Asian Development Bank, along with partner institutions, organized a conference in 2020 to explore the potential of emerging digital financial technologies (Fintech) to address these challenges and mitigate the impacts of the pandemic. This was followed by special sessions as part of the 33rd Australasian Finance and Banking Conference. This publication summarizes the discussions on Fintech at these events, including its financial stability risks and potential to advance inclusive and sustainable development.

About the Asian Development Bank

ADB is committed to achieving a prosperous, inclusive, resilient, and sustainable Asia and the Pacific, while sustaining its efforts to eradicate extreme poverty. Established in 1966, it is owned by 68 members —49 from the region. Its main instruments for helping its developing member countries are policy dialogue, loans, equity investments, guarantees, grants, and technical assistance.

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