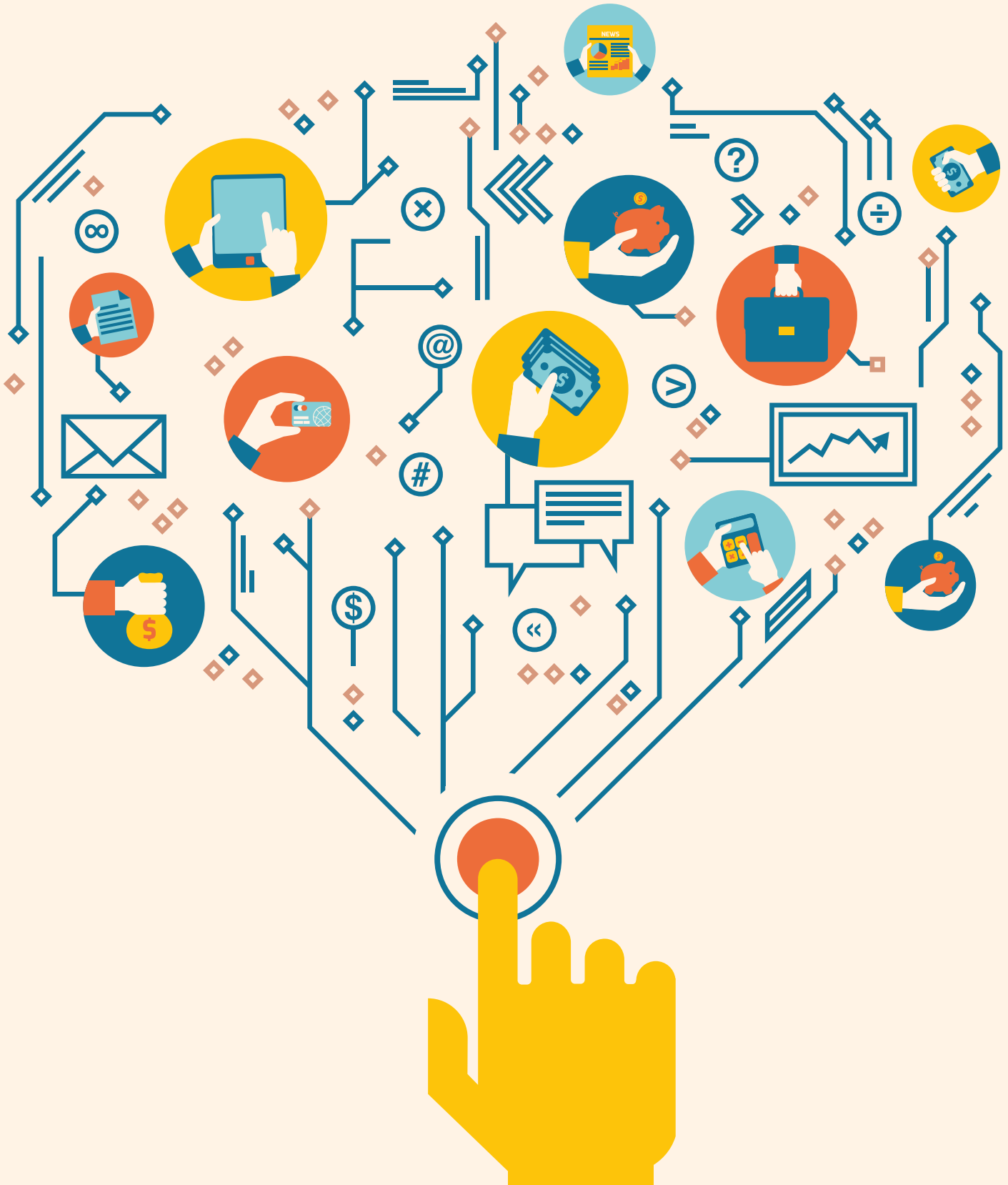
SHAPING THE FUTURE OF FINANCIAL SERVICES IN THE DIGITAL ECONOMY

Proceedings from the Fourth Policy and Knowledge Summit between Latin America and the Caribbean and China



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In 2014, the Inter-American Development Bank and the Chinese Academy of Social Sciences established the Latin America and the Caribbean and China Policy and Knowledge Summit. This initiative has contributed to expand the collaboration between LAC and China and generated fruitful dialogue between policy makers from both regions, fostering strategic alliances and collaborative networks of technical expertise. Between 2014 and 2017, four Summits have been organized to discuss important areas of mutual interests for the regions: urbanization, leadership in the public sector, productivity and innovation, and digital finance. These topics continue to be relevant and increasingly gain more interest within the LAC region. This is a summary of the presentations at the fourth Latin American and the Caribbean Policy and Knowledge Summit relating to the impacts of the digital economy, held in Shangai and Hangzhou, China September 20-22, 2017.

ABSTRACT

The exponential growth in digitization and internet connectivity is the backbone of the Fourth Industrial Revolution, which has impacted all sectors, including financial services. The digital economy has deeply impacted the financial services sector in China by enabling new internet-based banking and investment business models with lower cost of operation that have significantly widened the reach among consumers. Today, China has the largest market of digital payments in the world and it has become a global leader in financial technology or fintech. Moreover, digital payments have opened many new opportunities for both citizens and small- and medium-sized enterprises, especially those that were previously excluded, a development challenge prevalent across Latin America and the Caribbean. This document summarizes the presentations at the Fourth Policy and Knowledge Summit between Latin America and the Caribbean and China on the transformation of financial services in the digital economy, held in Shanghai and Hangzhou, China September 20-22, 2017. The goal of the event, co-organized by the Bureau for International Cooperation of the Chinese Academy of Social Sciences and the Inter-American Development Bank, was to enhance the knowledge exchange between Latin America and the Caribbean and China as well as share lessons learned in policy making and market building to accelerate digital transformation in the public and private sectors.

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INTRODUCTION

Digitalization is transforming business models, social norms, and public policy landscapes. The exponential growth of digitalization and internet connectivity are the backbone of the fourth industrial revolution, which is permeating numerous sectors of the global economy and having an impact on sectors such as trade, energy, transportation, education, media, healthcare, and especially financial services. Digital technologies bring down the costs of information and drastically reduce the costs of economic and social transactions for companies, individuals, and the public sector. Additionally, digital technologies increase efficiency as they make existing activities and services cheaper, faster, and more convenient, while promoting inclusion as they facilitate access to services that used to lie beyond the reach of many citizens and companies.

In China, the digital economy is becoming a new growth driver, impacting all sectors and transforming financial services by enabling new internet-based business models with lower operating costs and greater ease of distribution, leading to a much wider consumer reach. Currently, China has the largest digital payment market in the world and has become a global leader in financial technology, or fintech. Additionally, digital payments have given rise to enormous opportunities for citizens as well as small and medium enterprises (SMEs), especially those who were left out before.

Understanding the way in which the digital economy evolved in China, particularly the critical factors that have facilitated the adoption of digital payments over time, is of great interest and importance for the countries of Latin America and the Caribbean (LAC), a region still facing challenges in growing digital payments. In this context, and as part of the efforts to promote strategic ties between public sector institutions in China and the LAC region, the Institutions for Development Sector (IFD) of the Inter-American Development Bank (IDB), together with the Chinese Academy of Social Sciences (CASS), held the 4th Policy and Knowledge Summit between Latin America and the Caribbean and China, with the theme of "Shaping the Future of Financial Services in the Digital Economy" from September 20 to 22, 2017, in the cities of Shanghai and Hangzhou, China.

The main objective of the summit was to exchange knowledge and best practices on how to develop and improve digital payments and fintech solutions in LAC and China. The specific objectives were to exchange lessons learned in policy design and market creation to speed up digital transfor-

mation in the public and private sectors, as well as to explore opportunities for future collaboration, technology transfers, and joint initiatives between the public and private sectors in LAC countries and China.

In addition to the various specialized panels that examined in detail the development of digital finance and the fintech ecosystem in China and as part of the summit, the participants visited the headquarters of technology giant Alibaba in Hangzhou. They also visited an industrial park for digital finance start-ups to examine the main practices of digital technology application in commerce and finance, as well as the design of industrial zones to boost the digital economy.

Among the participants were 12 senior policymakers from various LAC countries and experts on the digital economy and digital financial services from China. The event provided an opportunity to share best practices in institutional strengthening and measures aimed at fostering and expanding digital finance.

PROGRAM

Wednesday, September 20, 2017

Trip to Hangzhou, the "Silicon Valley" of China:
- Trip to "Dream Village" and a few finance start-ups
- Trip to Alibaba Group
- Meetings with Alibaba/Ant Financial

Thursday, September 21, 2017 (Shanghai)

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Ms. Ana María Rodríguez-Ortiz, *Manager, Institutions for Development Sector, IDB*

Moderator:
Mr. Wen Xueguo, *Executive Vice-President, Shanghai Academy, co-founded by CASS and the Shanghai Municipal People's Government*

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Mr. Roberto Manrique, *Senior Advisor, IDB*

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Moderator:
Ms. Claudia Pereda, *Head Representative, Bancomext*

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Mr. Felipe Alarcón, *Deputy Director of Regulatory Coordination, Financial Superintendency of Colombia*

Ms. Patricia Alejandra Castro, *Assistant Manager, Capital Markets Division, Bank of Investment and Foreign Trade, Argentina*

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Mr. Ricardo Zubieta, *Chief of Staff, Ministry of Economy and Finance, Panama*

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Ms. Li Yiming, *Deputy Director, Research Division, Institute of Internet Research, Center for Information Industry Development, Ministry of Industry and Information Technology, China*

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Ms. Ana María Rodríguez-Ortiz, *Manager, IFD, IDB*

Mr. Wen Xueguo, *Executive Vice-President, Shanghai Academy co-founded by CASS and the Shanghai Municipal People's Government*

Opening Remarks

THURSDAY, SEPTEMBER 21, 2017 (SHANGHAI)

Mr. Huang Qunhui, *Director-General, Institute of Industrial Economics, CASS*

The main topic of the 4th Policy and Knowledge Summit between Latin America and the Caribbean and China is the nexus between financial services and the digital economy. In China, one can observe the penetration of the digital economy in the retail and manufacturing sectors, and the digital sector has become one of the biggest drivers of national economic development.

China sees the digital economy as a new economic paradigm that further diversifies economic activities, protects the national market from potential external shocks, and enables the improvement of living conditions for individuals and companies alike.

Specifically, the new digital paradigm has had the following implications for the Chinese economy:

- Deepening integration with the technology industry, which in turn allows the latter to become an economic driver through its support to various sectors such as e-commerce, billing, energy, and the biology industry, among others.
- Supporting the transition from commodities to high-value-added products in various sectors.
- Improving the performance of productivity, efficiency, and competitiveness indicators in the sectors that receive support.
- Enhancing the collection, storage, and protection mechanisms for descriptive data of different industries.
- Increasing the share of digital economy in gross domestic product (GDP). The digital economy accounted for 33 percent of GDP in 2016, and is estimated to represent 35 percent of GDP by 2020.
- Effective and ongoing government support to digital development.
- Job creation: In 2016, 70 percent of all new jobs were created in the digital economy.
- Source of economic innovation: the digital economy has become the next industrial revolution.
- Designing products that target consumer needs: user-centered products.
- Product distribution in light of the accessibility profile and conditions of each individual user.

In any case, the economy, or the real sector, is the foundation of all digital development. This condition ensures a virtuous cycle in any scenario, as a better-supported real sector can strengthen its foundation in economic development, while the digital economy can provide more and better digital services that promote economic activities.

For the financial sector, the Institute of Industrial Economics has identified certain characteristics that an economy must have to be considered a pioneer in digital development, namely: (i) breaking away from the paradigms of the traditional financial sector; (ii) creating reference models of digital development with strong social impacts; (iii) establishing a digital

development hub; (iv) bringing the real sector—both banked and unbanked—closer to the digital finance sector; and (v) creating inclusive regulatory and oversight frameworks.

In China, a growing number of financial institutions are becoming aware of the competitiveness of technology-based financial services. A reflection of this is the dominance of Chinese fintech brands in the global digital development arena, where competition between companies has led to improvements in digital products and the drastic decline of cash use observed in recent years. As an example of development achieved in China, the average daily number of digital payments was around 42 million in 2016, which ballooned to 600 million in 2017, with most transactions carried out by frequent users.

In conclusion, the digital economy can become a driving force of economic and financial development, with the main role of supporting the real economy, especially SMEs and innovative companies. Additionally, the digital economy has become an important turning point in the development of China's economy, which is expected to strengthen over the next few years and become a key player in the new global order.

Ms. Ana María Rodríguez-Ortiz, *Manager, IFD, Inter-American Development Bank*

The 4th Policy and Knowledge Summit between Latin America and the Caribbean and China, an initiative launched four years ago by the CASS and the IDB, has been a resounding success in promoting dialogue and exchange of knowledge and best practices. As the topic of this year's summit focuses on the future of financial services and the digital economy, it is important to highlight the privilege and importance of holding it in China, a country where the digital economy has become the driving force of growth, is present in every sector, and is accessible to most citizens while transforming financial services.

One interesting case that can serve as a reference is the experience of the city of Hangzhou, birthplace of juggernaut Alibaba and its financial arm, Ant Financial. Hangzhou sits at the intersection of digital development, innovation, and competitiveness, as it brings together the potential of the different individuals and companies involved. Thanks to the development achieved in Hangzhou as well as other key factors, China has become a benchmark and a leader in the digital economy and digital financial services. In fact, China has always been on the frontier of money-related technology. It was the first country to use paper money, and a millennium later, it is on the way to becoming the first fully cashless economy thanks to digital currency.

China's remarkable achievements in digital financial services and fintech are reflected in the following aspects: (i) a rapid shift toward digital payments; (ii) full support of local and national governments for fintech development; and (iii) large investments in innovative companies in the financial sector. For example, in 2016, the volume of mobile payments in China was 50 times larger than that of the United States, while venture capital investment in fintech companies in China exceeded US$6.7 billion. Additionally, China has clearly benefited from the expanding coverage of financial products and financial inclusion of individuals and businesses alike, areas where LAC shows large gaps. For example, in LAC countries, cash remains the most commonly used means of payment; only 2 percent of the population use mobile payments, 18 percent use credit cards, and 28 percent use debit cards. Overall, the digital economy and digital financial services are underdeveloped in LAC, hindering economic development and making it even more important to learn from the Chinese experience.

Nevertheless, LAC has enormous opportunities. For example, IDB studies have identified more than 700 fintech companies operating in the region, with innovative business models that call for a regulatory and oversight framework that aligns with their needs. Additionally, there is a budding but rapidly growing alternative digital finance industry. Finally, it is necessary to highlight the importance of public policy and institutions. Financial regulators, central banks, ministries of economy, and other public institutions are playing a key role in fueling the revolution of digital finance.

The Chinese experience can bring about enormous benefits for LAC countries, which is why we appreciate CASS and other partners for bringing the summit to fruition and allowing us to participate in the discussions at this year's event.

Keynote Speeches:

OPPORTUNITIES AND CHALLENGES IN THE DIGITAL ECONOMY

THE CURRENT STATE OF THE DIGITAL ECONOMY IN CHINA

Mr. Xu Ke, *Deputy Director, FinTech and Cyber Security Research Center, Renmin University, China*

The fintech industry is about innovation that can disrupt traditional financial models and products through technology tools. For example, the past few years have witnessed significant progress in the Chinese economy in terms of its transition from cash to digital payment. Notably, fintech solutions create social and economic changes, such as improving financial inclusion and enhancing the competitiveness of the economy and the sectors involved.

In addition to new digital infrastructure such as the internet and cloud-based services, one of the key factors in this new digital development is big data, defined as datasets and their aggregations that, once appropriately analyzed, can lead to better product designs and digital services. To use big data correctly, any type of information must be treated as data that represent the profile of a consumer with specific needs for financial products. In this vein, the aggregation of all the representative data should inform the design of digital products that meet consumer needs.

The United Kingdom saw a gradual rise of its fintech industry, which has since become highly sophisticated. One of the most commonly used tools has been the regulatory sandbox, through which regulators ensure that new innovations comply with the current regulatory framework and meet the minimum security requirements. Another characteristic of the fintech industry's development in the United Kingdom is active government monitoring. The government analyzes each case and even conducts in-depth reviews of the information reported by every company.

The Australian fintech industry is at a level of development similar to that of the United Kingdom. The regulatory sandbox was introduced with the support of the Australian government, and blockchain technology is the linchpin of development together with one of the sectors that can potentially reap the most benefit from government support that can reduce transaction costs and time: the stock exchange.

China is expecting to see a takeover of traditional finance by the digital economy over the medium term, with the latter expanding its contribution to economic growth. For China, the digital economy represents a new economic paradigm, which seeks to knock down barriers by providing new opportunities to SMEs and individuals and influencing the restructuring of the national economy. Over the long run, the digital economy is expected to represent the diversity of the Chinese economy by leading a productivity revolution to support the traditional economy.

A key factor in digital development in China has been the support of local and municipal governments. In fact, the support provided so far has put in place the market conditions in China that will enable significant future growth in various economic sectors, by leveraging tools such as big data, artificial intelligence, and blockchain. Another key factor in digital development in China has been the type and source of information used for designing innovative services and products. All kinds of available

data were considered—not just data on social media but also data from other sources. By having individual and aggregate information on consumers, it is possible to ensure that truly innovative services and products can be designed in a way that seeks to address unmet needs. Successful examples in this analysis include loan services and insurance products, among others.

Going forward, and to continue to facilitate the development of the digital economy, it is necessary to adjust current regulations and supervision to take into account all the innovative models in the digital economy. This is because companies and businesses that came into being with the emergence of the digital economy and new technologies may be left out of the current regulatory framework. To address this information asymmetry problem, governments can make use of technology tools to transform the regulatory schemes or oversight technologies.

In summary, regulation should be technology-driven. It is also possible to implement a micro-oversight model in the digital economy to characterize and monitor the consumers of financial services in real time. This micro-oversight scheme must integrate with the traditional macro-oversight scheme in a way that combines the two in a new, data-centered oversight model. In any case, it is imperative that the regulatory body explicitly defines and communicates the policy framework of this new scheme prior to implementation. In conclusion, the best way to address information asymmetry is through real-time monitoring. The scheme proposed could transform the regulatory framework from a passive to an active one.

DIGITAL ECONOMY CHANGES MARKETS, MONEY, AND MORE

Mr. David Birch, *Expert on Digital Identity and Electronic Money, Consult Hyperion*

Among the defining characteristics of the digital economy, the use of virtual and digital currencies in everyday life merits attention and discussion. The difference between the two is frequently mentioned: while digital currencies are valid in the virtual and the real world and can be transferred between peers (P2P), this is not the case with virtual currencies. Meanwhile, there are also cryptocurrencies that lie outside of the traditional monetary regime. One example is Bitcoin, a currency that has revolutionized the market and created a new alternative: cryptocurrency. Nevertheless, this situation poses a significant challenge for financial regulators.

There are also cases in which companies have considered issuing their own currencies. For example, IBM and Microsoft have considered creating their own currencies for purchasing their services. While these customized currencies may bring about benefits through their use, they may not have a promising future without the necessary regulation and oversight as they require higher levels of security in the issuance process.

Lastly, central banks have begun to discuss the possibility of issuing their own digital currencies, in other words, replacing paper money with digital currency. For example, a report on the Australian market concluded that digital currencies of central banks will play a significant role in the future.

Overall, mobile phone technologies, social media, biometrics, and big data have been changing and will continue to change. Together, they enable the unlimited production of digital currencies by corporations and communities, as well as by central and commercial banks. Meanwhile, distributed ledger and accounting technology (known as blockchain, innovation that originally enabled Bitcoin) makes it possible to clear transactions involving these currencies in a decentralized manner, which can potentially eliminate the need for a central clearing authority.

Hence, the types of currencies that could exist in the future can be grouped into five categories depending on the issuer:

- ICentral Bank: *Fiat Money*, in other words, risk-free money except in the event of high inflation.
- Commercial Bank: *Bank Money*. Regular money, created by banks when they make loans and subject to regulation.
- Companies: *Private Money*. Money that can be used to purchase specific products or services and would be subject to business regulation.
- Cryptocurrency: A type of money without an issuer and whose issuance is unregulated.
- Community: *Local Money*. This would be a form of politically decentralized mutual credit.

This currency landscape raises a number of regulatory issues that must be addressed, among which are the effects of the increasing volume of transactions in private money, tax issues, the impact on the poor and unbanked in terms of monetary policy, as well as legal issues related to transactions that use distributed ledgers or blockchain, as these transactions are beyond the reach of any single jurisdiction. Therefore, and as mentioned before, regulatory and oversight schemes should eventually recognize and take into account these new currencies. Additionally, it is also necessary to have more efficient currency issuance processes to reduce the risk of errors and enhance security. All these regulations should aim at promoting market development, and fostering an evolutionary process that enables a proper transition from traditional to virtual currencies.

In conclusion, one can observe the impact of technology and the digital economy on the current market in terms of the types of currencies available. Therefore, we must keep abreast of these changes and continue to acquire the necessary knowledge. It is in this area where China-LAC collaboration such as through this summit is vital.

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Panel 1:

THE DIGITAL ECONOMY IS TRANSFORMING THE FINANCIAL SECTOR

THE RISE OF DIGITAL FINANCIAL SERVICES IN CHINA

Mr. Zhou Guolin, *Head of Statistics Department, National Internet Finance Association of China*

The biggest benefit of the rise of digital financial services in China has been enhanced financial inclusion. Generally speaking, digital financial inclusion relies heavily on the development of digital technologies and the benefits they have provided in the past.

Specifically, digital technologies can contribute to financial development in the following key ways:

- Enhance digital financial inclusion and its benefits.
- Reduce information asymmetry, improve service efficiency, and reduce access costs—especially for the most vulnerable customers, including SMEs.
- Improve service quality.
- Provide services in remote areas, for example, by integrating online and offline products.
- Resolve sustainability issues, as digital finance can provide solutions to problems unaddressed by the traditional sector through more precise, consumer-centered risk forecasts.

Without discounting the benefits for financial inclusion, there are still a number of significant challenges ahead, the biggest of which is probably risk management. With digital finance, financial risk becomes unalterable. There is also the risk of contagion, and the potential impact can be huge. At the same time, technology risks can shave serious consequences. Another significant challenge is the digital divide, for which one must consider variables such as age, schooling, and location (for example, if someone lives in an urban or a rural area).

Another obstacle has to do with infrastructure: connectivity and the device used both affect financial inclusion. Regulatory compliance represents another challenge. As digital financial inclusion can drastically expand the number of services offered, central and regional regulators will face a number of daunting challenges. Regulators have ample room for improvement as they need to have everything regulated or monitored to prevent regulatory arbitrage.

Therefore, an important point that must be analyzed within the rise of digital financial services is the different regulatory and monitoring schemes that can be implemented, namely:

I. Penetrative regulation. It recognizes the different sources of information, the types of financial institutions and services, investment modules, types of financing, and the relevant regulatory bodies.

II. Global or general regulation. All financial service providers, traditional or innovative, must comply with certain rules of entry and regulatory mechanisms.

III. Collaborative regulation. Full collaboration between the central and local governments to prevent risk of any type.

IV. Ongoing and consistent regulation. It recognizes the need to expand the sources for data

collection, analysis, and exploration to prevent potentially risky models that can create systemic risks.

V. Innovative regulation. Digital financial inclusion calls for innovative technology; for example, through using RegTech or regulatory sandboxes.

Lastly, it is important to highlight the role played by the National Internet Finance Association in the Chinese experience. The association has formulated a strategy that seeks to create a full-fledged architecture of the fintech industry and enable synergy between the players. This strategy is based on three fundamental pillars, which are: (i) creating a digital platform for alternative internet finance, which makes up 80 percent of the industry. The platform features real-time data and 300 indicators, and records the basic characteristics and practical experiences of internet financial service providers; (ii) creating a national ledger platform and a policy declaration for internet financial services. The central government will monitor the system and will mainly rely on real-time information on P2P lenders to generate various types of reports that can be of use not only to regulators but also to the general public; and (iii) creating a shared platform for internet-based lending.

In conclusion, it is necessary to establish a mechanism to formulate policies in which the government plays a role in risk management, which enables innovation, promotes infrastructure development, and creates a consumer protection mechanism. In this regard, self-discipline is key to facilitating the development of the digital finance industry.

DIGITAL FINANCE IN LATIN AMERICA: TRENDS AND CHALLENGES

Mr. Juan Ketterer, *Chief, Connectivity Markets and Finance Division, IDB*

One of the biggest challenges facing the financial sector in LAC countries is improving access to financing for the productive sector. This is key to increasing productivity and, consequently, economic growth and development. To a large extent, this problem arises from information asymmetry. Digital innovations and data in ever-growing quantities may potentially provide the solutions to asymmetry through, for example, integration with artificial intelligence.

Generally speaking, innovation and new technologies could help overcome information asymmetry and other challenges in the financial sector. Nevertheless, the development of digital finance in LAC countries faces difficulties that must be overcome. In particular, mobile connectivity and coverage need to be improved, especially in rural areas and last-mile connections. The advent of 5G connectivity will speed up the development of telecommunications, and it is estimated that many new models and services will be based on 5G. This will not negatively impact the region, as many countries do not even have 3G connectivity. Overcoming this challenge requires significant effort, especially investment in connectivity infrastructure.

The region also faces challenges in financial regulation. Despite progress in areas such as consumer protection and anti-money laundering, data-related regulation has made little headway. For supervision of the digital realm, digital finance is data-based, and therefore, it is vitally importance to know who has access to data. Proper regulatory mechanisms are necessary for facilitating the development of digital finance in LAC to safeguard the stability of the system and protect consumers and investors, while at the same time strengthening competitiveness and fostering innovation. It is also important to encourage the use of digital payments, which were the driving force behind the development of the Chinese digital finance market. Doing this requires innovative models and improvements in low-value payment systems.

In conclusion, it is necessary to go beyond the limits imposed by the traditional paradigm and find mechanisms—regulatory or not—that allow innovation to make a greater contribution to the emergence of new channels and models. Lastly, it is important to facilitate access to and use of digital financial services by SMEs, as better access to productive financing can facilitate national and regional economic development.

RISE OF A FINTECH HUB IN LATIN AMERICA AND THE CARIBBEAN: THE BRAZILIAN CASE

Mr. José Alexandre Cavalcanti Vasco, *Deputy Director, Securities and Exchange Commission of Brazil*

In light of the benefits of digital finance, including reducing poverty, boosting income levels, and reducing inequality, in 2016, the Securities and Exchange Commission of Brazil decided to establish a fintech hub to achieve synergy between markets and promote innovation while protecting consumers by fostering dialogue and research. The Commission also identified one of the key aspects of the tasks of the hub: considering the opinions of citizens and SMEs. For this reason, the Commission conducted a survey. Each year, the Commission publishes a report that presents the views of users, investors, entrepreneurs, and experts on the regulatory and oversight rules governing new technologies. The report serves as a guideline for the authorities to design new reforms. This process has played a key role in implementing the tasks of the hub, as the observations and comments collected have led to innovations. Throughout its existence, the hub has been able to define the principles of market development as well as specific standards thanks to coordination among all the internal areas. With these principles and standards, the hub seeks to ensure that the guidelines are comprehensive.

The results of the survey conducted in 2016 show that all companies faced significant challenges in credit access. Currently, companies mainly rely on their own resources, and a tiny percentage of firms rely on bank loans, a situation that needs to change in the future. In light of this, it is necessary to examine new mechanisms that help to expand access to financing, such as crowdfunding platforms. In this regard, 90 percent of survey participants expressed interest in investing in start-ups.

Aside from performing the functions described above, the hub has also set up financial boards to support investors and start-ups. For example, a financial innovation laboratory was created with the support of the IDB, the Brazilian Development Bank—a public institution—and the association of public banks, among others. The end goals are to discuss and agree upon strategies in advance and to design programs to develop the industry.

Finally, regulatory and oversight bodies must strengthen their capacities to address challenges brought about by rapid technological change. In fact, it is their obligation to do so, given the importance of consumer and investor protection in this new context.

DIGITAL FINANCIAL INCLUSION

Mr. Hu Bin, *Deputy Director-General, Institute of Finance and Banking, CASS*

As a result of the global financial crisis, there has been a reassessment of traditional financial models and a rise of alternative models that can better serve all economic entities. These new models seek to expand the coverage of financial services and improve access and consumer satisfaction. The initial findings indicate that digital financial inclusion has become a national strategy as well as a pillar of financial reform going forward.

In developed countries, financial inclusion has been considered a bottom-up process in population terms, one that offers an increasing number of benefits in terms of access and convenience for customers. In fact, digital financial inclusion has become a guiding principle for the economic development of G20 countries.

Digital financial inclusion means having access to electronic means for all types of financial service transactions, whether with traditional money or virtual currency. In this vein, the key value of digital financial inclusion is inclusiveness, in other words, access to all types of financial services by everyone. Digital financial inclusion also has positive effects on risk management, because risk management can be done digitally.

Large-scale financial development was made possible thanks to the extensive use of mobile phones, which enabled payment to any party. In addition to payment services, online lending services have come to play a prominent role in the industry, although progress is still needed on their regulation.

In general, regulation always lags behind the financial market, which creates a problem with current risk-taking practices. Development and progress of the industry must be balanced with acceptable levels of risk (innovation vis-à-vis risk). It is therefore necessary to create a legal framework for all supervision, starting with drafting the respective laws and then designing a regulatory framework that is innovative, active, and inclusive. Examples of this new approach to oversight include the regulatory sandbox; regtech, or increased market self-discipline; better protection of consumer interests and rights; enhanced infrastructure of various financial services; better cyber security for data; and greater transparency of the industry. In terms of regulation, the government has also set up committees to analyze ways to prevent systemic risk.

In summary, a comprehensive analysis of all the aforementioned aspects should lead to enhanced digital financial inclusion, which can even support the real economy. In any case, it is necessary to undertake a comprehensive diagnosis of how digital financial inclusion fits within the legal framework to rethink government policies and the corresponding regulatory and oversight framework.

COMMENTS

Mr. Beltrán de Ramón, *Director, Financial Markets Division, Central Bank of Chile*

Financial inclusion in Chile is beset with multiple contradictions. On the one hand, the number of people with current accounts is extremely high because the government opted to give everyone access through an account associated with their national ID. Each account allows four cash withdrawals per month free of charge, while additional withdrawals are charged a fee. On the other hand, from a credit access perspective, financial inclusion levels are very low, as traditional banks charge very high interest rates, limiting the possibility of borrowing for most people and companies. Fintech companies can resolve the bulk of the information asymmetry problem through data analysis, digital fingerprint analysis, and the use of big data.

Currently, the biggest challenge that Chile and most LAC countries face is, therefore, finding ways to access credit at lower rates through financial technology. However, a solid regulatory framework is also needed to avoid an economic crisis like the one in 1980 in Chile, when more than half of the banks declared bankruptcy and GDP fell by 16 percent in two years.

Lastly, financial regulators face the challenge of creating a fintech industry that reduces costs and improves access to credit, while at the same time having a proper regulatory framework that prevents possible related crises.

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Panel 2:

EVOLUTION OF THE DIGITAL FINANCE ECOSYSTEM IN CHINA

E-COMMERCE PLATFORMS, SOCIAL MEDIA, AND THE DEVELOPMENT OF A DYNAMIC LANDSCAPE OF DIGITAL PAYMENTS IN CHINA

Mr. Sun Tao, *Senior Director, Department of Strategy, Ant Financial*

Successful examples of Chinese fintech companies have always focused on using technology to provide better services to consumers and companies. E-commerce platforms and payment systems that currently operate in the Chinese market, as well as the discussions around these systems and platforms, can serve as an example for many countries.

One of the main objectives of Ant Financial Services (AFS) is to provide more opportunities to customers, especially to SMEs. In particular, AFS asks two interrelated questions: How can finance help people? and How can technology facilitate finance? If we pause to ask ourselves which is the best way to help our customers, we will see that technological progress is the option least explored but with the most potential.

This is how Alipay was born to solve the problem of trust in e-commerce. E-commerce did not exist in China 18 years ago, as it was difficult to do business on the basis of trust between buyers and sellers. Alipay made it possible to do business without worries, alleviating the problem and thus promoting e-commerce. This is an example of using technology to meet people's needs and to serve SMEs.

In terms of transaction speed, Alipay completed nearly 15,000 transactions per second in 2013, and close to 86,000 in 2016. This growth indicates an impressive turning point. Alipay has tried to use all available technologies and big data to improve speed, and it expects a record number for the current year. Another example of rapid growth is the case of PTM, a digital wallet in India, in which AFS invested in 2014. At that time, PTM had only 17.6 million users. Now there are 150 million, making it the third largest digital wallet in the world. The Indian market is very different: the country does not have an e-commerce platform as successful as Alibaba in China. The platform, while necessary, is perhaps not as crucial as the need to facilitate payment digitization in sectors involving daily paperwork, such as retail or public transportation. In India, there are several untapped areas in innovation, which represents great investment opportunities for AFS. This case also illustrates the investment strategy of AFS: it is essential to find local partners to understand and take advantage of local opportunities.

Another key factor in the development of AFS was supporting SMEs in China. In the past, over 40 million SMEs had no access to any financing channel, even though they represented 60 percent of GDP. To change this situation and leverage big data, AFS has come up with new options for SMEs. For loan applications, AFS offers more and better financing opportunities than banks due to the lower associated costs, shorter wait times, and easier processing. The AFS model is called "3-1-0": 3 minutes for application, 2 minutes for processing and disbursement, and 0 or no manual labor.

Another priority of ours is sustainable development and environmental protection. Promoting personal

financial management through cell phones has an impact on the carbon footprint of each user, since it eliminates the need for cars. In this way, users can carry out all kinds of transactions using their cell phones and without having to travel, which is key in China because pollution is a sensitive issue that is becoming unmanageable.

Among other things, the use of new technologies is affecting labor markets, and people are concerned about the potential replacement of workers by machines and robots. New technologies have an impact on our everyday lives. We must be cautious so that we use technologies to bring about benefits and not harm. In this vein, it is also necessary to persuade governments, regulators, and supervisors to correctly identify, measure, and control risks, that is, to prevent new or hidden risks. This is important for the future development of the industry.

Currently, the People's Bank of China is the oversight body of fintech companies in China and is in charge of various supervisory entities: for payment, risks, insurance, and securities. These entities follow the same oversight scheme as the one used for banking. Widely used technologies have their own supervisory bodies. There is also an office in charge of industrial information to manage related risks, while the Ministry of State Security and other offices are in charge of security issues. There is a high level of collaboration and feedback between the industry and oversight bodies. In summary, there is extensive interaction between the parties, and hence, communication informs future actions.

At AFS, our goal is to integrate finance into our lives and businesses, and for finance to become an essential part of our everyday life. Even though finance comes with a fair share of risks, they also provide numerous opportunities. We aim to achieve sustainable development of finance to benefit everyone and society at large.

FROM DIGITAL PAYMENTS TO A FULL-FLEDGED DIGITAL FINANCIAL SERVICE ECOSYSTEM IN CHINA (BANKING OPERATIONS, ASSET MANAGEMENT, ETC.)

Mr. Yin Yingkai, *Associate Dean, School of Economics, Shanghai University*

In 1985, a branch of the Bank of China issued the first bank card in China. 1986 saw the issuance of the first credit card, facilitated by the Reform and Opening Up policy. Back then, the financial sector was underdeveloped, but the lessons from the Reform and Opening Up period have been very useful.

Online banking emerged in 1996 through China Merchants Bank. By 2016, 6.2 billion bank cards had been issued, with an annual growth rate of 14.5 percent. The past decade has seen sustained double-digit growth rates, much higher than those of neighboring countries. Every Chinese citizen has 3.6 debit cards on average, but only one-third of the population has credit cards. In this imbalance lies opportunities to implement digital payments on a larger scale.

Digital payment platforms in China have emerged in response to consumer needs and currently have a considerable market share. Digital payments emerged in 1999, when Jack Ma asked seven people to invest 500,000 yuan in Alibaba. Other e-commerce portals that existed at that time, such as 8848, went bankrupt as they became unsustainable due to the lack of capital. TaoBao, the e-commerce platform portal thus came to dominate the market along with Alipay, which facilitates digital payments. Alipay solved the credit and payment problem through third-party arrangements based on the trust that customers had in the platform at the time of transaction. TaoBao and Alipay went their separate ways in 2004, with Alipay spinning off from Alibaba and expanding its service offerings.

Alipay thus became one of the successful payment platforms. In 2014, the total payment volume on Alipay reached 3.872 billion. In 2013, Tencent announced a new payment service, and WeChat added a mobile payment platform, challenging Alipay. In 2014, other companies also put forward mobile payment proposals.

The digital payment ecosystem has been taking shape with the emergence of different products, ranging from mobile payment, third-party payment platforms, lending platforms, financing platforms, to online insurance, among others. The ecosystem now covers the entire value chain in digital financial services, allowing users to make payments or take out loans just by scanning QR codes. Generally speaking, new portals will continue to emerge and grow to the extent that traditional services fail to meet customer needs.

The ecosystem of financial services includes companies such as Alipay, AFS, Tencent, and JD Pay, among others, which have sophisticated payment platforms and significant market shares. Companies with large market shares also have higher profits.

PUBLIC SECTOR MEASURES TO SUPPORT THE DIGITAL FINANCE ECOSYSTEM IN CHINA

Mr. Jin Jian, *Research Fellow, China Academy for Information and Communications Technology (CAICT), Ministry of Industry and Information Technology of China*

Thanks to various studies it has conducted, the CAICT has been able to draw certain conclusions about the digital finance ecosystem in China. The most meaningful conclusions include the extraordinary growth observed in the digital finance industry since 2011 as a result of technological development and the emergence and growth of new technology companies that have taken advantage of the support of government policies to diversify the ecosystem.

Based on the analysis conducted by CAICT, the digital finance ecosystem began to develop about 13 years ago. Third-party payments grew rapidly and represent the most sophisticated segment. They also set the stage for the development of digital finance, such as crowdfunding, P2P lending platforms, and e-banks, among others.

The biggest platforms in the Chinese ecosystem are Alipay of Alibaba, WeChat, and Tenpay of Tencent. 65 percent of payments in China are done through mobile phones, and currently Alipay (with a presence in 28 countries) and Tencent have the largest market shares. The Chinese government currently only allows two companies—Alibaba and Tencent—to operate e-banks, as they have an SME focus and serve users who are less likely to obtain loans from traditional banks. Aside from loans, Alipay and Tencent also provide insurance products and investment advisory services.

While Chinese government policies aim at stimulating the development of the digital finance ecosystem and are tolerant toward innovations, they closely monitor crowdfunding and P2P lending. These could potentially be riskier and are thus allowed up to a point, as the key issue is identifying the investors.

On the other hand, artificial intelligence, biometrics, blockchain, and digital currency could make significant contributions to innovation and financial inclusion in the future, but they also entail regulatory risks. China is making progress on this front, and there are now policies aimed at encouraging innovation. In 2017, the People's Bank of China established the Digital Currency Research Lab to bring greater clarity to the new ecosystem in order to regulate it. The lab is also looking to increase the use of artificial intelligence which, combined with biometrics, can

bring benefits such as establishing people's identity in real time through iris scanning or fingerprints.

Financial market innovation is a driving force of China's economy, and policies have been very tolerant and encouraging of these innovations. Nevertheless, the challenge lies in the capacity for risk management and for using technology to improve oversight.

20 years ago, mobile phones were merely devices for making calls. Today, we can use them for much more, such as locating someone we know. This is how fast technology evolves. Recently, the internet of things has been revolutionizing the way we do everything. For example, we can envisage a smarter life in the future with machine-to-machine business. In this way, the digital and the real economy are growing ever more interdependent.

COMMENTS

Mr. Zhang Kaichang, *Professor, Virginia University of Science & Technology*

One of the challenges in the development of the fintech industry is achieving inclusiveness among the people it serves. fintech has developed rather quickly in the United States; in China and LAC countries, many breakthroughs made in the industry have yet to reach everyone. In other words, some sectors of the population are still not aware of the potential benefits of these new digital services. New product designs should consider how to benefit everyone, that is, how to be truly inclusive. This raises the question of how the poorest citizens can learn about these developments and benefit from them.

Another key question in the development of the fintech industry is this: What does an adequate environment for the technology sector look like? Answering this question requires listening to the voices of all participants so that their opinions can have an impact on society, and so that we can envisage the future, take appropriate measures, and avoid certain risks.

Lastly, a key point in the development of the financial sector is technology integration, which should emphasize the following: (i) the fact that the number of financial products offered is generally still limited; (ii) how the sector should be managed; (iii) how financial regulation measures should be taken; (iv) the management style of financial platforms; and (v) how to conduct data analysis and evaluate policy effectiveness. Since the response to many of these questions depends on technology infrastructure, it is necessary to facilitate the deployment of financial technologies.

Mr. Felipe Alarcón, *Deputy Director of Regulatory Coordination, Financial Superintendency of Colombia*

The development of the digital ecosystem in China is the result of a combination of success factors. Among other elements, China's digital development is an example of the leadership of private companies, capital investment, and their cooperation with start-ups. Private sector participation and leadership have been vital for the development of the industry. One sign of this robust development is the number of companies obtaining financial licenses and thus strengthening the infrastructure of the industry. These companies are also addressing and overcoming the challenges proactively, which further stimulates development.

Capital investment and their involvement with start-ups have also played a fundamental role in the development of the industry. A good example is Dream Village, where many start-ups and angel investors come together. As all these experiences are highly relevant for LAC countries, it is necessary to identify policies that can effectively stimulate and facilitate the development of a better digital ecosystem in the region.

Ms. Patricia Alejandra Castro,
Assistant Manager, Capital Markets Division, Bank of Investment and Foreign Trade, Argentina

Digital finance technologies are changing the world, and Argentina is an ideal place for innovative companies. As Argentina is home to most unicorns in the region, our government is taking measures to transform the country into a financial services hub. To reach this goal, the government has enacted a new regulation to encourage the creation of new, innovative companies, giving equal treatment to public and private companies. The end goal is to drive innovation, just as in the case of the digital industry in China.

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Panel 3:

OPEN DISCUSSION: CHALLENGES AND NEW IDEAS FOR FOSTERING A DYNAMIC DIGITAL FINANCE ECOSYSTEM IN LAC

THE BRAZILIAN CASE

Mr. Felipe Salzer e Silva, *Director of Planning, Brazilian Development Bank*

The Brazilian Development Bank (BNDES) is a public bank. Its objectives include, among others, facilitating the development of the financial market, creating a healthy competitive environment, and expanding credit access. At BNDES, we believe that fintech can help us achieve these objectives. BNDES has an innovation lab, has developed API tools, and has used artificial intelligence technologies to enable innovations in internal systems, among other initiatives. We have also set up venture capital funds, long-term credit funds, and angel investment funds for fintech to provide solutions to potential issues. Additionally, we hope to create a digital platform for fintech companies to provide more global services and to create synergy out of interactions at different levels throughout the Brazilian market to stimulate cooperation between fintech companies and the banking system.

The Brazilian fintech ecosystem consists of companies in different sectors: payment, microfinance, financial management, and others. The fintech industry has experienced rapid development and has seen an exponential increase in investment volumes. The biggest investors are from the United States, while there have been no Asian investors, which could be an opportunity for China. Brazil aims to further develop its financial technologies, which requires finding new innovation models and creating new capacities, technologies, means, procedures, networks, and associations. Along with new tools and proper collaboration, these new supporting factors will make it possible to expand our potential.

Just like in other LAC countries, Brazil faces many challenges and opportunities. For example, the Brazilian credit market is highly concentrated. Five banks account for 84 percent of total loans, while credit penetration is very low among SMEs. Borrowing costs are high relative to international levels, which is a significant challenge for expanding coverage and facilitating the development of digital products. On the other hand, a new generation of highly educated, financially savvy young professionals is playing a key role, as they generate significant and growing demand for fintech solutions. Brazil is home to a third of fintech companies in Latin America, and mobile phone and internet penetration are relatively high and growing. Additionally, Brazil has managed to maintain open dialogue with fintech companies to build a much healthier, sustainable market by exchanging experiences. In the long run, Brazil expects to achieve a balanced situation with robust and constant collaboration between banks and fintech companies.

Innovation and fintech solutions are crucial to the Brazilian economy. To help BNDES achieve its objectives, fintech companies can, for example, contribute to increasing the efficiency of the financial sector and deepening the credit market. This will lead to higher returns for all sectors involved and benefit the country at large.

THE PANAMANIAN CASE

Mr. Ricardo Zubieta, *Chief of Staff, Ministry of Economy and Finance, Panama*

The government of Panama is supporting the development of the fintech industry through measures such as creating a new regulatory framework and establishing dialogue with all financial and business authorities.

As the development of the Panamanian fintech industry is limited, it is necessary to support it and attract foreign investment. In doing so we must address two issues: (i) how to make Panama more attractive to investors, and (ii) how to encourage innovation in Panama. The government of Panama has realized the need to bring in more know-how to attract more investment. It has tried to attract skilled labor by offering immigrants benefits such as tax breaks. The government is also seeking to create a regulatory sandbox with the participation and collaboration of banks in this first step. Additionally, the government believes that an oversight framework is fundamental to development, and that it should be structural and coordinated.

The government has favored approaches that promote innovation combined with technology and oversight. While fintech was an empty signifier in Panama a year ago, it is taking shape as a concrete concept, and all measures undertaken are expected to enable greater progress in the development of the industry.

THE COLOMBIAN CASE

Ms. Ana María Prieto, *Senior Advisor, Financial Regulation Unit, Ministry of Finance, Colombia*

The development of the fintech industry in Colombia is at a level similar to that of other LAC countries. There are currently 124 fintech companies in Colombia, which mainly focus on payment and transfer, followed by online lending. Traditional banks have become active players in digital innovation by creating innovation labs to drive technology and economic development. An association of fintech companies was created in Colombia a year ago.

The government has been playing a growing role. For example, the Ministry of Finance has met with the founders and creators of new companies to hear their proposals, some of which are truly surprising and even illegal, as some start-up founders are uninformed about the regulations. Therefore, the Ministry has advised these entrepreneurs by educating them and providing guidance on the regulatory framework, which has helped reduce potential risks. The Ministry has also created networking opportunities for everyone to get to know each other and exchange ideas. In any case, one of the most important factors in this innovation process is making sure that fintech truly reaches ordinary citizens, that is, that it improves people's everyday lives.

The Ministry of Finance is in charge of drafting the laws and designing the architecture of the financial regulatory framework. The assessment conducted reveals that Colombia lags behind in new technologies. It is therefore necessary to coordinate the two aforementioned processes to build a new supervisory structure that promotes stability and transparency in financial oversight, balancing and managing the risks of innovation.

To facilitate dialogue, the Ministry held a roundtable discussion with the participation of finance experts and members of the association of fintech firms to explain the existing mechanisms and introduce the regulatory authorities. The Ministry has also formulated a private sector agenda that prioritizes government-related issues, the development of crowdfunding, effective technology, and ways to grow the industry as a whole.

- Electronic accounts, through which more citizens can open personal accounts.
- Crowdfunding, which promotes access to credit by SMEs.
- Robo-advice, an acceptable mechanism as long as the provider meets know-your-customer requirements and complies with the suitability rules.
- Electronic payments, especially to facilitate real-time payment, and an efficient settlement system.

In summary, we see the fintech industry as an opportunity for Colombia. The challenge lies in creating an oversight mechanism that takes into consideration innovations in the fintech industry, and offering a correct explanation of the mechanism. It is also necessary to identify the laws needed to promote and support start-ups, as well as to provide sound advice to companies and investors alike on how to do business within their respective regulatory framework. Lastly, it is necessary to analyze the way to optimize oversight capacity through the use of big data and other technologies.

PERSPECTIVES FROM THE CHINESE EXPERIENCE

Ms. Li Yiming, *Deputy Director, Research Division, Institute of Internet Research, Center for Information Industry Development, Ministry of Industry and Information Technology, China*

To analyze China's experience with the digital economy, it is important to take stock of its origin and evolution. The digital economy emerged in China in the 1990s, as disruptive technologies made it possible to provide and expand innovative services in different sectors of the economy.

The United States and Europe have been leaders in the development of the digital economy since the 1990s when they began to focus on the sector. Since 2010, the United States has been publishing an annual report on the state of the digital economy, and the European Union has been implementing a plan with specific measures such as currency digitalization for all its member countries. Germany, France, and Great Britain have published their own reports on the issue, but even more noteworthy are emerging economies such as Russia and India, which have begun to focus on digital technology and the digital economy as the core of their development plans.

In China, digital technologies have become a pillar in innovation and economic development. This digital revolution has taken full advantage of information and communication technologies and the internet (during the first half of 2017, 724 million internet users in China relied on mobile connectivity, accounting for 96 percent of total internet users in the world). Previously, the foundation of the Chinese economy was home appliance manufacturing, which has now given way to products such as integrated circuits, mobile phones, and other services. Smart manufacturing has also recorded strong growth. The past few years have seen extensive application of digital technology in public transportation, tourism, and education, among other sectors.

Currently, digital technologies play a role in the financial sector in three ways. First, digital technology has penetrated key sectors of the financial industry. For example, Chinese banks have a department that focuses on systemization, storing, and analyzing all of the bank's data using tools such as big data, cloud computing, and artificial intelligence (planned), to name a few. This process goes beyond just recording the data, as it is necessary to translate or use the data to inform decision making in loan research and issuance, among other

things. Second, digital technologies play a part in "traditional" transactions—deposits, savings, or investments—and are radically changing the way they are conducted. For example, online payment has become popular in the transition toward a cashless society. Currently, it is possible to conduct any type of transaction through mobile phones without having to use credit or debit cards. Lastly, money itself is changing forms, as reflected in the development of digital currencies such as Bitcoin.

In terms of expectations for the digital economy, it is necessary to mention its impact on, among other things, the manufacturing sector, data processing, business decision-making models, company structure, and the social fabric. In a nutshell, digital technology will transform the entire economy. Even though China's digital economy can already be considered mature given the progress made in digital finance, the digital sector still lags behind other economic sectors, and it is therefore necessary to bridge the gap.

The ultimate goal of fintech should be to serve the community. It is essential to fully understand its impact on the digital economy, the changes it has brought to business models, the digitization of enterprises, as well as social structures and their purposes to improve the ecosystem in the short, medium, and long term.

COMMENTS

Mr. Huang Hao, *Research Fellow, National Academy of Economic Strategy, CASS*

A small trend one can observe in China is that a mobile phone is all one needs to make payments. Currently, cashless digital payments are the rule, not the exception: a perfect example of the exponential growth of the digital economy. Compared with the United States, China is on the frontier of electronic payments. In China, we see unique trends not found in Western countries, and we can inspire other countries with our experience.

A summary of milestone events in China's economic development and digital economic development will inevitably include the following. First, digital finance is not a new concept; in fact, it is an old one that has made its appearance at different times under different names. For example, prior to 2003, computing, technology, and digitalization were the defining trend in the financial and banking sectors. In other words, these technologies were nascent concepts which have come to mean digital finance today. Transactions became digitalized, but the business models stayed the same. In 2003, Alipay emerged, seeking to change consumer habits and business models. Alipay also helped to instill confidence and a sense of security in e-commerce conducted through TaoBao, which was designed as a platform for small vendors and consumers who normally cannot establish a relationship of trust. TaoBao ran a publicity campaign with the slogan, "we will compensate you if you get scammed," leading to growth in the use of the platform. TaoBao began to use Alipay as the payment platform and achieved exponential growth thanks to consumer trust. TaoBao and Alipay gradually changed the traditional model. They complemented each other well, as the former needed a payment platform and the latter provided one. This was a major development in China's digital economy.

Second, a survey of China's digital economic development is not complete without mentioning the creation of other payment instruments, such as Tenpay of WeChat, a subsidiary of Tencent Group. Tenpay emerged in 2013 and has become one of the most widely used payment services in China. Tenpay's big break came with its introduction of digital "red envelopes," the digitalization of the Chinese practice of giving gifts of money to near and dear ones stuffed in a red envelope. The digital envelopes could be sent

through WeChat's instant messaging network, and the initiative became wildly popular among all walks of life, helping to create confidence in the use of digital payments through social media platforms such as WeChat.

These two cases (Alipay/TaoBao and Tenpay) are evidence of the numerous changes that have taken place in China, and they attest to the fact that digital finance can create changes in the traditional paradigm. Hence, the most significant change in China has been the restructuring of payment channels, which used to depend mainly on banks but have come to rely on Wepay or Alipay. Banks were left behind in this transformation, losing market share with changes in consumer behavior, which, logically, make them concerned.

With the emergence of Alipay, the settlement system in China also saw a change so swift that even the regulatory authorities did not anticipate it. UnionPay and Alipay engaged in not-always-successful attempts at collaboration to link up cards between counterparts. In this way, Alipay reached agreements with commercial banks and transformed its platform into a trading platform for doing business. Third-party payments also emerged in this process, providing alternative settlement channels. In the same year, the central bank established a dedicated supervisory unit to oversee all payments, including third-party payment service providers. As a result, these providers can only conduct transactions through platforms recognized as legal by the central bank. Currently, China has two legally recognized platforms. One is UnionPay and the other is jointly run by Alipay and commercial banks.

The rise of blockchain technology is the third milestone in China's digital economy. This development has the potential to restructure the financial market, as it diversifies economic activities and reduces the need for functions performed by the central bank. Regulators want to see all these changes implemented as they benefit the industry. Ultimately, these changes are bringing about a structural transformation that can stimulate development.

The fourth milestone has to do with the communication and dissemination of information. Years ago there was this idea that if banks were not able to communicate and disseminate information efficiently, why did internet entities have to do so? This idea missed the point because, for example, the P2P model has no need for an intermediary between the creditor and the lender. In other words, bank intermediation is not necessary as everything is done over the Internet. The P2P market in China started out with several platforms, which created numerous risks, including moral hazard. Even though many of these platforms went bankrupt, the central bank did not abolish them immediately. Instead, the central bank first observed how these platforms worked, identified and managed the risks, and then applied regulation.

In addition to these milestone events in China's economic development and digital economy, it is important to examine certain points in the development of the digital industry. Generally speaking, digital finance has not changed finance in a fundamental way. Payments, currencies, and credit—among other elements—have stayed the same, with the only change being the instruments with which these elements were used. In terms of oversight, we can learn from the United States, where it was not necessary to change the names of traditional supervisory models but rather, make the necessary adjustments to recognize the new digital industry. This has provided guidance for the regulatory framework in China.

In terms of risk analysis, various authorities have analyzed how to balance the development of digital finance with the emerging risks. In China, the consensus is that the right balance has been achieved. Risks differ depending on the sector. In some sectors, the regulators did not ban the services, but

rather analyzed and regulated the services and allowed them to develop, while in other sectors, such as P2P, the regulators defined the platform as one of information intermediation, thus precluding it from having to provide collateral or equity. The regulators outlawed transactions of certain assets, such as cryptocurrencies or initial coin offerings, deeming them too risky relative to the benefits they provide.

Generally, in the Chinese paradigm, an innovation that is perceived as risky is regulated or restricted. This is an example of how regulation can balance risk with innovation. We have had a positive experience in balancing the interests of the various stakeholders. Internet companies enter the financial sector with certain inherent conflicts of interest. For example, Alipay had low levels of reserve assets when it entered the payment market, but it reached agreements with banks to deposit money over a period of time and paid interest of up to 11 percent until a few years ago. This created a conflict of interest between banks and Alipay, and the regulators banned the practice after evaluating the impact on traditional banks, new platforms, and consumers.

Lastly, digital finance has triggered changes in banks. The banking sector is a data-based economic sector, just like the internet industry. Through this analytical point of view, the question of why Alibaba can provide credit services with better terms is a valid one. The answer is that Alibaba has access to millions of banking transactions, and these detailed data give it an edge in knowing its potential customers. In the future, it is quite possible that consumer behavior data that banks have will be supplemented with transaction data that internet companies have, which would make credit assessment and granting more efficient and less costly.

In summary, digital finance in China is still in its infancy, but is undergoing significant development. While the models developed in China may not be applicable to other countries, they can be a source of inspiration if studied in depth. Academic research is essential to generating new and inspiring ideas for application at home or abroad.

4

Panel 4:

THE NEXT GENERATION: THE IMPACT OF EMERGING AND FUTURE TECHNOLOGIES

BIG DATA AND ARTIFICIAL INTELLIGENCE: WHAT THE FUTURE HAS IN STORE FOR FINANCIAL SERVICES

Mr. Wang Jinqiao, *Research Fellow, Institute of Automation, CASS*

All of the changes in the fintech industry are closely related to technological progress, the role of artificial intelligence, and big data. Hence, the first question to analyze would be, How should we use these tools? The concept of artificial intelligence originated in 1956 as an aggregation of knowledge and ideas. It has undergone different cycles since its inception, gaining momentum in 2013, when a group of experts applied neural networks to computing, taking the development of artificial intelligence to a new level. This event came to be regarded as the birth of the fourth industrial revolution. Artificial intelligence already has many implications in various sectors, although its abilities are limited to just a few use cases: biometrics, facial recognition, and big data technology, among others. Currently, these use cases can complete everyday tasks. In other words, computers are still underdeveloped in terms of their ability to think and reflect. In the future, computers may solve problems by thinking like or even better than humans. In other words, the first stage is weak artificial intelligence; the second, strong artificial intelligence, and the third, artificial super intelligence, which could surpass that of human beings.

We will talk about two elements: the use of big data and computational models. Combining all the accumulated data and these computational models in an established scenario (for example in a game of Go) can enable several developments, such as self-learning artificial intelligence. However, it is important to point out that artificial intelligence cannot solve certain problems on its own.

For financial sector development, digital data collection would be more efficient than manual collection. Today, thanks to fintech, it is possible to do business and offer a wide range of services by simply improving the way we collect and use data. The internet has a very positive impact on the financial sector, allowing, for example, data collection and analysis of personal consumption habits. Artificial intelligence combined with big data, both in the online and offline realm, is a new development driver of the financial sector and of many others. Artificial intelligence can reduce the cost of approximately 95 percent of data calculations or analyses, and we can leverage this technology to improve customer service, among other things. The traditional "one on one" customer service model is changing in response to e-commerce platforms. It is now able to cater to consumer needs based on their habits and using consumer data (accessed through social media and search history) without the need for an operator.

In terms of identity, several banks already use face recognition as a tool, whose success rate is approximately 95 percent and is increasingly used in places like airports and hotels. In 2015, Jack Ma demonstrated in Germany how facial recognition can be used for making payments. This technique is 20 times safer than the standard method and can be used in multiple fields, replacing, for example, bank cards or IDs. In addition, JP Morgan recently published an article on intelligent business analysis, in which it points out that artificial intelligence could, in fact, replace people in activities such as contract analysis. Artificial intelligence can also provide smart advice

for analyzing customers, consumption and investment habits to allow for electronic investments with personalized precision. On the other hand, artificial intelligence can also provide control over customer information, which makes it possible to determine whether a customer's business activities are legal or not based on previous analysis of their habits. For example, one could determine if a client is involved in any illegal business.

The combination of artificial intelligence and finance points to a cardless, cashless, and phoneless future. Our own identity will suffice to complete paperwork. We are still in the beginning, but we will make considerable progress through the use of technologies. We will have customized services, and various sectors will benefit, such as infrastructure, education, among others.

BLOCKCHAIN TECHNOLOGY AND FUTURE TRENDS IN FINANCIAL SECTOR DECENTRALIZATION

Mr. Qu Shenning, *Associate Research Fellow, Institute of Industrial Economics, CASS*

Blockchain Technology: History and Background

What is a centralized transaction system? How do information and cash flow in a centralized transaction system?

Banks are a typical example of a centralized transaction system. The People's Bank of China interacts with commercial banks or UnionPay (a settlement service provider), which in turn interact with companies and customers, forming a centralized system in which consumers set the system in motion through the use of credit or debit instruments.

Another example is e-commerce. Alibaba has platforms such as TaoBao, which rely on Alipay to conduct transactions but also have brick-and-mortar stores, all of which make up a typical centralized system. A centralized transaction system has the following characteristics:

- Intermediary mechanism: There are several companies that act as nodes, with the central node aggregating all the information and cash. Users do not need to exchange information or cash directly.
- Credit mechanism: The security and veracity of information are guaranteed by law, the regulators, or the market.
- Incentive mechanism: All information and cash are concentrated in the central node, which ensures convenient transactions, and it is beneficial for the central node to maintain operations.

The system has the following benefits:

- It ensures high efficiency, carrying out thousands of transactions with the help of large-scale data management processes.
- Centralized data positioning, where the central node can serve as a transaction information provider.

And the following limits:

- Lack of transparency, and the fact that transaction security depends on the capacity and will of the central node. Risks are numerous (hackers) in the absence of transparency, and information can be easily manipulated.
- High costs, as the system creates numerous business models that may be taxable, raising the cost of transactions.

Blockchain technology has the following attributes:

- It is decentralized: It removes monopoly on transaction information from a small number of companies or institutions.
- It builds trust: It ensures the authenticity of digital assets and transaction information rather than relying on credit intermediaries.
- It provides security in transactions.
- It reduces costs.

Blockchain technology is a decentralized transaction system, like a kind of database with different copies stored in different nodes that contain lists of all transactions made, which are recorded in sequence. The system only allows for data recording and retrieval and does not allow changes to or deletion of transaction history. Blockchain technology uses means of encryption or a distributed ledger system to ensure the authenticity and consistency of all data.

Since there is no central node, blockchain technology is less prone to attacks and simplifies the information technology structure, thus making it easier for the authorities to manage and protect security.

A blockchain consists of blocks connected in sequence and transaction records. Each block has its own identification and follows a sequence among the different blocks. In each block, the transactions are transcribed, and each operation is linked to the source of funds. All these transaction records can be stored in different copies, which correspond to different customers. Each customer has their own identification, and the password is almost impermeable to attacks, ensuring a high level of security. The system also relies on confirmation by several participants to approve transactions using algorithms, which confirm and verify each transaction.

However, the system has a few limitations, with the biggest ones being speed and limited capacity. Speed decreases as the number of block copies increases, because it takes time to update the information on each copy. Bitcoin can complete up to seven transactions per second, while the HyperLedger initiative's blockchain technology can perform 200 to 300 operations per second. By contrast, centralized systems such as banks or third-party payment platforms can complete tens of thousands of transactions per second.

Blockchain transactions require a certain number of nodes to remain in the system, and this entails a cost. An incentive system is necessary for data recording and maintenance. At the same time, it is necessary to take into account the cost of a consensus mechanism to solve the problem of data consistency. Blockchain technology consumes a significant amount of energy, which precludes its large-scale application.

Blockchain Technology Applications

Bitcoin is the first system that uses blockchain technology. The quantity of Bitcoins is fixed at 21 million, and current transactions have generated more than 350,000 blocks (of blockchain). More than 14 million Bitcoins have been obtained through "mining," with a total market value of 60 billion. However, it is difficult for Bitcoin to become a common currency due to its limited quantity and speed. Also, the anonymity of Bitcoin transactions could generate financial risks and even encourage money laundering, which is why many central banks do not recognize it as a currency. Hence, Bitcoin so far does not represent a threat to the monetary system of central banks. Nevertheless, it has created the basis for various studies and applications of this technology.

Bitcoins may see limited success due to its own drawbacks. Nevertheless, Bitcoin demonstrates that

blockchain technology has multiple use cases and can solve many problems. The security of asset information, transparency in records and data storage, together with the difficulty in erasing traces of transactions, make it a breakthrough technology.

Potential applications of blockchain technology include payment platforms, digital currencies, health records, testimonials, government services, and even credit history.

Some companies see blockchain technology as a cost-reduction opportunity. For service providers and software companies, blockchain technology can enable better service and avoid interruptions due to disruptive changes in technology. For traditional companies and institutions, blockchain can strengthen the business model and protect them from the disruption of new technologies. For start-ups, blockchain represents an innovative opportunity to break into the market with new technologies.

Blockchain technology is still in its infancy and there is much room for improvement and troubleshooting. Future changes can have vast repercussions on the traditional business model, and if explored in depth, China can significantly increase its competitiveness thanks to this technology.

THE DEVELOPMENT OF BLOCKCHAIN TECHNOLOGY IN CHINA

INDUSTRY	APPLICATIONS	COMPANIES
Finance	Third-party and cross-border payments	Haili Metal
	Invoicing transactions	Ysstech, Hundsun
	Asset transactions	Hundsun
Entertainment and media	Copyright transactions	Anne
Digital products	Encryption and security	Feitian, Westone
	Specific or dedicated chips	Luyitong

ADAPTATION OF TELECOMMUNICATIONS OPERATORS TO THE INTERNET FINANCE ECOSYSTEM

Mr. Zhang Xiaorong, *Research Institute, Telecom Beijing*

To analyze the role of telecom operators in the fintech ecosystem, it is necessary to bear in mind that companies that want to make digital payments have specific business strategies, which must align with operator objectives. Operators, on the other hand, seek to increase the number of customers and their respective value, that is, the revenue they can generate for the operators. Digital finance can help operators attract more consumers, create more revenue, and promote cross-selling of other products such as crowdfunding platforms, mobile phone loans, and digital currencies.

The costs or commissions associated with operator payments are much higher in the United States than in China. This is in line with the trend in the Chinese market, in which there is a growing number of internet services and increasing penetration. However, the traditional banking sector still shows some signs of resistance to increasing the number of internet services.

Efficiency and agility are necessary in this industry. In a society where economic growth is accelerating, the services used must also be agile. The LAC region and Africa are identified as the areas with the most room for growth. A key factor is that the SIM card can be used to register accounts and thus make different types of payments. In some cases the services are still cost-prohibitive, while the opposite is true in countries such as Poland and France, where costs are low.

For example, AT&T, T-Mobile, and Verizon launched a joint venture in 2015 called Softcard to carry out a pilot project, which went bankrupt in 2015. It consisted of a mobile wallet, but since everyone was used to credit cards, the cost of the mobile wallet rendered it unsustainable. Orange in France has been one of the few successful projects in developing a mobile wallet: it grew 60 percent annually. It boosts customer security, which has translated into retention.

Docomo in Japan has served as a reference for Chinese operators, as it has been a model in business network restructuring. The company aims to serve individual customers and not companies, and its individual-centered strategies has given it considerable credibility. The extensive use of artificial intelligence has allowed Docomo to be highly efficient.

Chinese operators have shown encouraging but slow growth, and the increase in clientele has not been entirely solid. Opportunities and challenges are on the horizon, but it is imperative that telecommunication companies contribute to financial digitization.

COMMENTS

Ms. Marylin Choy Chong, *Manager of Monetary Operations and Financial Stability, Central Reserve Bank of Peru*

From the point of view of a central reserve bank, our concerns have to do with the challenges that innovations pose for central banks in different areas:

- Regulation: What should central banks regulate in the field of fintech? We have to identify the risks by assessing the impacts, and determine if macro prudential regulation is required in the event of financial stability risks.

- Central bank operations: Many central banks operate real-time gross settlement systems and have begun to discuss the implementation of blockchain technology in these systems. Nevertheless, numerous questions remain, such as how to manage liquidity in these systems. Moreover, it is not only a question of integrat-

ing new technologies, but also of new paradigms—replacing banknotes and coins, for example—and thus tracking them more easily. Finally, there is the trend of opening accounts in central banks denominated in central bank currency, which creates a range of possibilities that should be analyzed, including, for example, its impact on banks, and whether this will lead to a return to what is known as "narrow banking" (i.e., that payment and deposit functions are separate from financial intermediation activities).

- Monetary policy: All these innovations will inform monetary policy, starting with the definition of monetary aggregates, central bank open market operations, and transmission mechanisms of monetary policies, which will change, for example, with P2P platforms.

In summary, we currently have more questions than answers. However, we must not hinder innovation, but rather support and even facilitate it to the extent that it contributes to economic growth and efficiency.

Mr. Zhao Jianbo, *Associate Researcher, Institute of Industrial Economics, CASS*

Nowadays, banks have a tendency to hire people with experience in artificial intelligence, or even mechanical engineers. This shows the crucial nexus between technology and finance.

As we have seen throughout the summit, the Chinese business paradigm has evolved and undergone many changes. Without diminishing the leadership of Chinese companies in industries such as e-commerce, there are many successful foreign companies, such as Amazon, which means that Chinese companies must also learn from the success stories of their overseas counterparts.

Therefore, we need to work harder and develop our businesses to incorporate new technologies. Chinese companies are at the forefront, but there is still much to learn from foreign companies. Regulation and oversight are another important issue: their goal is not to slow down innovation, but to encourage its orderly growth.

Closing remarks

Ms. Ana María Rodríguez-Ortiz,
Manager, IFD, IDB

I am deeply grateful to our Chinese partners for organizing this fascinating summit through which we can exchange knowledge on key issues for the future. We have been able to learn from many amazing experiences, such as, for example, that of Alibaba, which gives us ideas and hopes for improving digital financial inclusion for the future. I also thank the interpreters, the logistic managers, and all those who have made this event possible.

Mr. Wen Xueguo, *Executive Vice-President, Shanghai Academy co-founded by CASS and the Shanghai Municipal People's Government*

Many thanks to Ana María and to all those who participated in this event with their speeches and comments. We have had with us numerous experts, academics, and entrepreneurs, that is, all the key pieces of the digital economy puzzle who have given us many ideas for future studies. There is still much to discuss, so continuing this type of collaboration between the LAC region and China will be key in the coming years. I thank the IDB, and there is no doubt that we have bright prospects for next year's summit.


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