

**“FinTech and the Future of Central Banking: A Latin American Perspective”**

Annual Cambridge Centre for Alternative Finance Conference

Keynote speech by Mr Mario Marcel  
Governor of the Central Bank of Chile  
June 2017

Ladies and gentlemen,

Let me first thank the organizers for inviting me to participate in this Conference. This gives me the opportunity to link my present job as Governor of the Central Bank of Chile, with my past, as a student of Economics at Cambridge, nearly 30 years ago.

At that time, the Judge Business School was still in the making, but I am glad to see how it has grown to become a world leader in business education. The Cambridge Centre for Alternative Finance, housed at JBS, is a good example of how a centuries-old university can undertake vibrant, emerging subjects and use good intellectual discipline to tackle them.

I attend this meeting not as somebody that is “navigating the contours”, but as a head of a quintessential mainstream economic institution—a Central Bank. In the past few days I attended the BIS Annual General Meeting of Governors and the ECB Forum on Central Banking, so it is good to switch to a more distended environment. Yet I am not the only one coming from that different world, since FSB representatives are also here alongside Juan Ketterer of the Inter-American Development Bank, with whom I was lucky to work a few years ago.

Several central bankers have spoken about FinTech in the last couple of years, but I bring a little difference; my Central Bank is in an emerging country, where the usual challenges of controlling inflation and securing financial stability are intertwined with the distinct features of a developing financial sector. This makes the achievement of central bank goals a little more difficult and underscores their relationship to longer-term development objectives.

So in this keynote I would like to discuss the difference that FinTech can make to the delivery of the responsibilities of a Central Bank of an emerging country. Note in this respect that since banking regulation in my country is in charge of a separate entity, I will focus mostly on the macro stability dimensions of financial markets. Just in case I issue some nonconventional opinions, let me also state that they do not necessarily represent the official view of the Central Bank of Chile or its Board.

[SLIDE 1] In what follows, I will first provide a quick overview of the main features of central banking and its relationship with the financial sector as well as the way the latter works in a developing country, including its role in the transmission of monetary policy. Then I will identify which features of FinTech development can have a greater influence on central banking, financial stability and financial deepening. From here I will highlight some dilemmas that central banks and regulators face

in dealing with FinTech in developing countries. Finally, I will summarize some features of the Chilean economy that, I believe, may help resolve them.

Slide 1

## Agenda

1. How a central bank faces the world
2. What difference can FinTech make?
3. Common dilemmas for central bankers and regulators
4. FinTech and features of the Chilean economy

### **A Central Bank view of the world**

A few years ago, when I was Budget Director in Chile and talked to my colleagues from different countries I thought that budget officials were more or less the same everywhere. That was because I didn't know central bankers yet. Central Banks face similar objectives and use similar tools all over the world. Moreover, economic thinking and policy development since the aftermath of the Asian Crisis have made them look even more alike.

[SLIDE 2] First, almost all Central Banks have inflation control and financial stability as their core goals. Some may add employment, growth or even welfare objectives, but as long as the latter are correlated with the former most of the time, they don't make much of a difference. To meet the twin core objectives, central banks apply monetary policy and macro financial regulations, like liquidity, reserve and capital requirements.

Monetary policy and macro stability regulations operate through the financial system, particularly banks. Most of money in the economy is currently made of deposits that result from the maturity transformation—from short-term deposits into medium term loans—that banks perform. Banks meet their liquidity needs for disbursement and reserve requirements by borrowing from the central bank. Monetary policy is then operationalized by setting the rate at which commercial banks can store or withdraw money from the central bank.

Slide 2

## Central bank functions and tools

- Monetary policy and macro regulations operate through the financial system, particularly banks
- Most of money in the economy is currently made of bank deposits
- Banks resolve their liquidity needs—emerging from disbursement and reserve requirements—by borrowing from the central bank
- Monetary policy is then operationalized by setting the rate at which commercial banks can store or withdraw money from the central bank

[SLIDE 3] Today money and financial operations are overwhelmingly composed of balance sheet records. For this reason, banks need to be strictly regulated and the central bank must manage monetary policy to ensure stability in the purchasing power of money. The transmission of monetary policy to the economy and, in the end, to inflation, depends on the smooth operation of commercial banks. At the same time, banks operate as a network and provide liquidity to all sorts of activities. Any disruption in the operation of a bank or in the transmission or provision of funds can have serious economic consequences.

Slide 3

## Commercial bank balance sheet

**Banking sector balance sheet**  
(percent of GDP)

| ASSETS                |           | LIABILITIES                |           |
|-----------------------|-----------|----------------------------|-----------|
| <b>Loan Portfolio</b> | <b>88</b> | <b>Demand deposits</b>     | <b>22</b> |
| Commercial            | 48        | Time deposits              | 46        |
| Consumer              | 10        | External credit            | 5         |
| Mortgage              | 24        | Debt instruments           | 23        |
| Comex                 | 5         | Derivatives                | 5         |
| <b>Cash</b>           | <b>7</b>  | <b>Other</b>               | <b>11</b> |
| <b>Other liquid</b>   | <b>12</b> |                            |           |
| <b>Derivatives</b>    | <b>5</b>  | <b>EQUITY AND RESERVES</b> | <b>10</b> |
| <b>Other</b>          | <b>9</b>  |                            |           |

All figures as of December 2016, based on individual balance sheet. Source: Central Bank of Chile based on SBIF data.

[SLIDE 4] Hence, a key concern of a central bank is risk. Risk from external shocks that may threaten price stability; risk of misjudging the macroeconomic scenario and make wrong policy decisions; risk of changes in the behaviour of banks that may compromise the transmission of monetary policy to market rates; risk of liquidity excess or shortage in the banking sector; risk of bank insolvency; risk

of disruptions in the flow of funds at the interbank or retail level; risk of risk misjudgement, and, ultimately, risk of compromising trust.

Slide 4

## What do central banks worry about?

### Risks

- Risk from external shocks that may threaten price stability
- Risk of misjudging macroeconomic projections
- Risk of changes in the behaviour of banks that may compromise the transmission of monetary policy to market rates
- Risk of liquidity excess or shortage in the banking sector
- Risk of bank insolvency
- Risk of disruptions in the flow of funds at the interbank or retail level
- Risk of risk misjudgement
- Risk of compromising trust

Slide 5

## The financial sector, central banking, and economic development

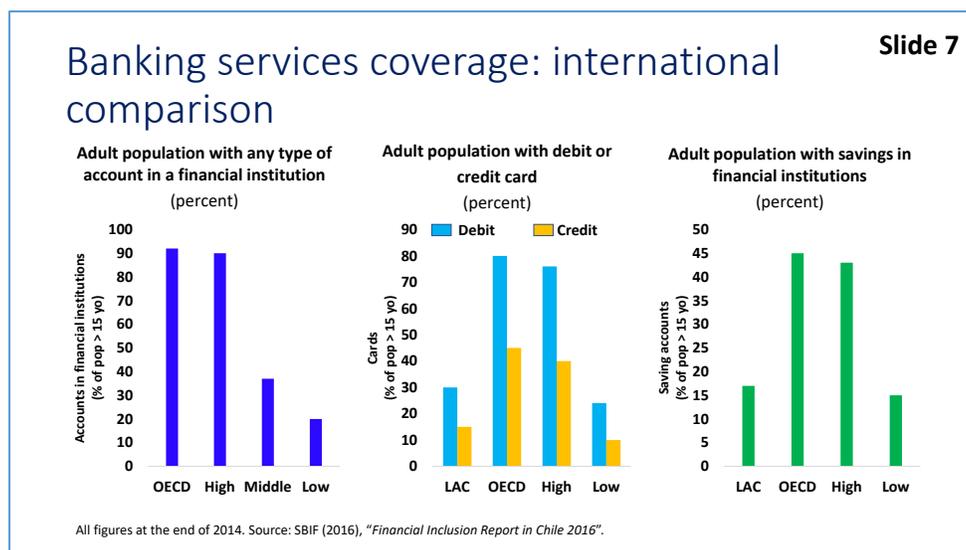
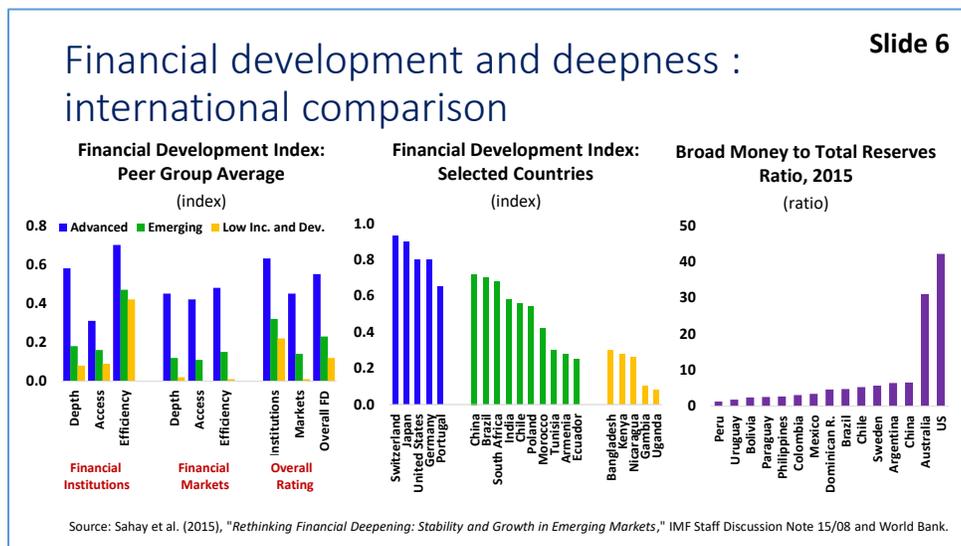
- Development is closely associated to financial development, both historically and comparatively across countries
- Efficient financial services are essential for an economy to grow and to make growth self-sustaining and inclusive
- While advanced economies are characterized by broad and deep financial markets, finance in developing countries is usually fragmented, unstable and costly

Thus, while technologically-supported financial products can potentially improve the quality and speed of financial services to the public or lower their cost, a central bank would focus on how they can influence the risks they face—either to lower or raise them.

### **The financial sector, central banking, and economic development**

[SLIDE 5] Development is closely associated to financial development, both historically and comparatively across countries. Financial services are essential to channel domestic and external savings to investment, support personal and business projects, cushion risks, and reduce the transaction costs of economic exchanges. Efficient financial services are essential for an economy

to grow and to make growth self-sustaining and inclusive. [SLIDE 6] While advanced economies are characterized by broad and deep financial markets, finance in developing countries is usually fragmented, unstable and costly.



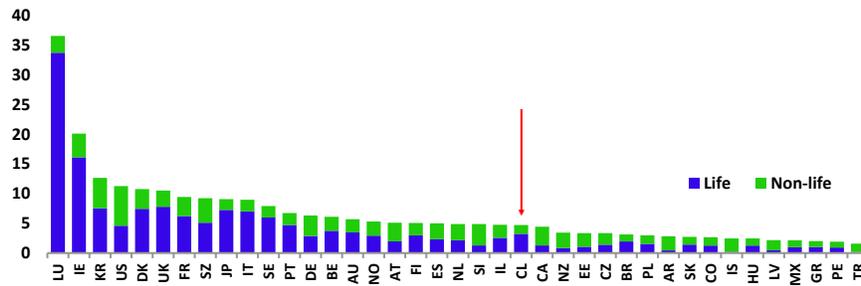
[SLIDE 7] In middle and low-income countries, the proportion of population holding any type of account in a supervised financial institution under supervision amount to 37% and 20%, respectively. These figures are far below the 92% and 90% of OECD countries and high-income countries. The use of bank-intermediated debit and credit cards and savings in financial institutions follows a similar pattern.

[SLIDE 8] Insurance services contribute to deepen the financial system due to their long-run investment perspective. Both life and non-life insurance is far less extended in emerging markets compared to high-income OECD countries.

Slide 8

## Insurance companies coverage: international comparison

**Penetration of the insurance industry, 2015**  
(direct gross premiums as a percent of GDP)



Source: OECD.

[SLIDE 9] The development of finance in developed countries of course didn't prevent them from getting into a big crisis a decade ago. But if you think that was big you should consider crises in developing countries, like the debt crisis of the early 1980s, the Tequila crisis of 1994 or the economic and political crisis in Argentina in 2001. [SLIDES 11 and 12] They devastated the entire financial system of those countries, evaporated or froze deposits, brought countries into deep recessions and massive unemployment and were only resolved after massive bailouts and debt write offs.

Slide 9

## Financial crises in emerging countries

**25 Worst Financial Crises in History**

| Ranking | Year      | Country   | % change       |                | Number of years  |      | Severity index |
|---------|-----------|-----------|----------------|----------------|------------------|------|----------------|
|         |           |           | Peak to trough | Peak to trough | Peak to recovery |      |                |
| 1       | 1926      | Chile     | -46.6          | 3              | 16               | 62.6 |                |
| 3       | 1983      | Peru      | -32.0          | 11             | 25               | 57.0 |                |
| 4       | 1931      | Uruguay   | -36.1          | 3              | 17               | 53.1 |                |
| 6       | 1929      | Mexico    | -31.1          | 6              | 16               | 47.1 |                |
| 8       | 1890      | Brazil    | -21.7          | 4              | 21               | 42.7 |                |
| 10      | 1890      | Uruguay   | -21.0          | 2              | 19               | 40.0 |                |
| 14      | 1929/1933 | US        | -28.6          | 4              | 10               | 38.6 |                |
| 12      | 1980/1985 | Argentina | -21.8          | 11             | 18               | 39.8 |                |
| 15      | 1994      | Venezuela | 5.3            | 11             | 14               | 8.7  |                |
| 17      | 2008      | Greece    | -24.0          | 6              | 12               | 36.0 |                |
| 18      | 1931/1934 | Argentina | -19.4          | 3              | 15               | 34.4 |                |
| 21      | 1981      | Mexico    | -14.1          | 7              | 17               | 31.1 |                |
| 23      | 2001      | Argentina | -20.9          | 4              | 8                | 28.9 |                |
| 24      | 1980      | Chile     | -18.9          | 2              | 8                | 26.9 |                |
| 25      | 2002      | Uruguay   | -18.9          | 4              | 8                | 26.9 |                |

Sources: Reinhart, C. and K. Rogoff (2014), "Recovery from Financial Crises: Evidence from 100 Episodes," Working Paper 19823, NBER.

## Financial distortions that influence macro stabilization

Slide 10

- Liquidity constraints prevent relative prices from helping macro adjustment
- Inefficient intermediation of savings reduces the return on real investment and balance incentives in favor of speculation and rent-seeking
- Underdeveloped financial systems are also prone to concentration and vertical integration, at the cost of clients and systemic risk

[SLIDE 10] The latter are rather dramatic examples of the challenges posed by protracted financial development for price and financial stability, the twin goals of central banks. But such challenges can take many more shapes. A low coverage of banking and credit means that a substantial fraction of the population and companies may not have access to liquidity when they need it, nor credit to live through a contingency. Liquidity and credit constraints prevent relative prices from resolving disequilibria, amplifying the impact of shocks on employment, production and consumption. Inefficient intermediation of savings reduces the return on real investment and tilt incentives in favor of speculation and rent-seeking. Shallow capital markets may be unable to hedge market risks, particularly exchange rate and term exposures, and foster concentration and vertical integration.

Underdeveloped financial services can also contribute to economic informality. What is the point in registering a business, complying with regulations and paying taxes if you cannot get funding for working capital or investment projects? The financial dimension of informality is shadow, unregulated banking, which is prone to insolvency, abuse and fraud. There is ample evidence that economic and financial informality—albeit a rational alternative for people with little choice—is a major obstacle for emerging economies to grow in a more inclusive way.

Thus, while central bankers would normally emphasize that their focus is on short-term macroeconomics and price stability, there is little doubt that a more efficient, deeper and inclusive financial system would make things substantially easier for them and would provide a lasting push for development.

### **What difference can FinTech make?**

[SLIDE 11] The central bank and commercial banks have been traditionally close because maturity transformation and fractional banking is in the DNA of universal banking, that is, the ability of commercial banks to provide a large set of interrelated services to the public.

In contrast, FinTech refers to those technologically enabled innovations in financial services that could result in new business models, applications, processes or products with an associated material effect on the provision of financial services.<sup>1</sup> Thus defined, the scope of products or activities that can be catalogued as FinTech is quite broad. Moreover, products or services that are nowadays commonly or massively used could have been considered FinTech, e.g. banknotes, cheques, credit cards, ATMs, and electronic transfers.

What makes a difference today is partly the speed at which change is happening and how different developments—programming, encryption, mobile devices—can combine to produce new financial services. But more important is that these innovations have the potential to “unbundle” key banking functions, like payments, risk transformation, risk sharing, and capital allocation. This can shatter the architecture upon which central banks rely.<sup>2</sup>

Slide 11

### The irruption of FinTech

- FinTech involves a number of developments that allow the unbundling of financial services
- **Financial Stability Board** | *Technologically enabled innovation in financial services that could result in new business models, applications, processes or products with an associated material effect on the provision of financial services*
- The scope of products or activities is quite broad. Moreover, products or services that are nowadays commonly or massively used could have been considered FinTech, e.g. banknotes, cheques, credit cards, ATMs, an electronic transfers

[SLIDE 12] To understand the potential impact of FinTech on central banking and on economic development it is useful to identify specific dimensions of FinTech innovation, whose impact monetary policy, financial stability and economic development can be assessed one by one. These include the following:

---

<sup>1</sup> FSB (2017), “[Financial Stability Implications from Fin Tech, Supervisory and Regulatory Issues that Merit Authorities’ Attention.](#)” June 2017.

<sup>2</sup> Carney, M. (2016), “[Enabling the FinTech transformation: Revolution, Restoration or Reformation?](#)” Speech delivered Lord Mayor’s Banquet for Bankers and Merchants of the City of London at the Mansion House, on June 2016.

## FinTech categories

- Five categories:
  1. **Payments, transfers, clearing, and settlement:** closely linked with financial inclusion
  2. **Lending and borrowing:** closely related to financial intermediation
  3. **Risk management:** closely related to the insurance sector (“InsurTech”)
  4. **Market support:** the “tech” part of FinTech can make simpler or more efficient processes
  5. **Investment management:** E-trading, smart contracts; robo advice

*Payments, transfers, clearing, and settlement.* Mobile payments (either by banks or non-bank institutions), digital wallets, digital currencies and the use of distributed ledgers for payments infrastructures. These can contribute to the management of massive numbers of transactions as well as to the transfer and settlement of large sums among financial institutions.

*Lending and borrowing.* The most common FinTech innovations in this area are crowdfunding and online P2P lending platforms. These applications are closely related to financial intermediation, a core and heavily regulated element of financial institutions. FinTech applications in this field are still a small fraction of overall credit but in some jurisdictions are growing very rapidly.

*Risk management.* FinTech companies participating in the insurance sector (“InsurTech”) are getting traction in many jurisdictions. They have the potential to affect not only marketing and distribution of insurance, but also underwriting, pricing of risks and settlement claims<sup>3</sup>. Risk management also concerns the commitment and registration of guarantees and collateral in credit operations.

*Market support.* The “tech” part of FinTech can provide simpler or more efficient processes such as ID verification, data storage and processing (cloud computing), or the execution of orders through smart contracts. The access and contestability of information is an important issue here.

*Investment management.* This dimension includes both e-trading platforms that allow consumers to invest directly through its computer on all sort of assets, and FinTech innovations that offer automated advice on financial services (robo-advisors), including investment and portfolio management.

---

<sup>3</sup> IAIS (2016), “[FinTech Developments in the Insurance Industry](#)”, February 2017.

**Slide 13**

## Opportunities

- Blockchain/Distributed Ledger Technology (DLT): efficiency of financial payments
- Real time order-settlement-payment—operational and counterparty risk
- The benefits for financial stability may include:
  - i. Increased market efficiency
  - ii. Enhanced risk measurement
  - iii. Lower trade costs, robustness against cyber-attacks, and less need for collateral
  - iv. Stronger wealth-channel for monetary policy
- Crowdfunding and P2P may reduce systemic risk—an affordable alternative
- FinTech market support tools can also contribute to financial stability

### ***Opportunities***

[SLIDE 13] Blockchain/Distributed Ledger Technology (DLT) can enhance the efficiency of financial payments systems as all operations are jointly kept by all members of the network and all the processes of order-settlement-payment are implemented in real time. This compares with a current situation where most settlement processes take 2 or 3 days to execute, creating operational and counterparty risk. The benefits of FinTech applications in this field for financial stability may include: (i) increased market efficiency, in particular for Real Time Gross Settlement (RTGS) among large financial institutions, (ii) enhanced risk measurement of each bank and a more transparent financial system, (iii) lower trade costs, robustness against cyber-attacks, and less need for collateral, (iv) a stronger wealth-channel for monetary policy if more agents access financial assets and loans.

Similarly, crowdfunding and P2P reduce systemic risk since they do not involve money creation through the conventional multiplier/maturity transformation mechanism of banks. While this may significantly limit the scale at which operations can develop, they can be an affordable alternative for businesses that are not covered by conventional financial institutions.

FinTech market support tools can also contribute to financial stability to the extent that they can mobilize a larger volume of information to better assess credit risk and to mitigate it through smart contracts, guarantees and collateral.

Slide 14

## Risks

- New systems may have unknown weaknesses that are not apparent in the trials—“flash crashes”
- Pressures for users of automated payments and transfers systems—“smart contracts”
- **Cryptocurrencies** poses a number of challenges to financial systems and central banks alike
- Perhaps the greatest risk of FinTech is that of **cybersecurity**

### **Risks**

[SLIDE 14] FinTech developments also pose a number of risks for financial stability and monetary policy. In the case of financial infrastructures new systems may have unknown weaknesses that are not apparent in the trials, leading to financial disruption and critical episodes such as “flash crashes”. Retail payment systems may add credit risks during offline operations and transparency issues in prepaid systems.

Users of payments and transfers systems may also be pressed to undertake unwanted credit operations, while “smart contracts” that are automatically executed may enhance instability if the system fails to check the solvency of each counterpart. Algorithm-based credit assessments may generate biases in the access to financial products and replace know-your-client approaches, increasing transactional costs and engendering volatility and herd behavior. Uninsured deposit-taking is an area of particular concern due to its exposure to fraud.

The emergence of cryptocurrencies poses a number of challenges to financial systems and central banks alike. The main risks in the use of DLT-blockchain technology to support privately issued currencies lie in the monitoring of money aggregates, the potentially damaging volatility of rates of exchange, the broader risk of volatility under fixed or unexpected changes of supply, and the risk of runs due to losses of confidence when such currencies coexist with legal tender and deposit-taking banks.

Perhaps the greatest risk of FinTech is that of cybersecurity. The more financial systems depend on electronic platforms and digital records, the more exposed they are to cyberattacks, which can disrupt the flow of funds across the economy. Of course, this is not an exclusive risk of the more innovative FinTech developments, but of any electronic-based financial system.

**Slide 15**

## Potential for financial development

- DLT may contribute for the development of emerging countries in several aspects:
  - i. Universal access to financial services by consumers and small-medium enterprises
  - ii. Enhanced security of remittances and transactions among vulnerable sectors
  - iii. Higher competition and less concentration of the financial sector
  - iv. Reduced costs for participation in the formal economy
  - v. Easier access to public services based on improved government databases

### ***Potential for financial development***

[SLIDE 15] DLT may contribute for the development of emerging countries in several aspects: (i) universal access to financial services by consumers and small-medium enterprises; (ii) enhanced security of remittances and transactions among vulnerable sectors (the poor, migrants, rural areas); (iii) higher competition and less concentration of the financial sector, and (iv) reduced costs for participation in the formal economy and easier access to public services based on improved government databases. Recent experiences with M-Pesa in Africa and with Unique ID in India are good examples of such development trends.

However, some obstacles and risks still deserve attention. An efficient use of financial services may require larger investments in education and financial literacy. Recent experience shows that even in developed countries people often misuse financial instruments. Consumers often suffer from large debt burdens and complex contracts that they do not understand. Also, some of the new financial instruments—such as digital currencies—may facilitate tax evasion, fraud and illegal transactions. Regulations of Anti Money Laundering (AML) and Know Your Customer (KYC) should be enhanced to prevent such risks. Finally, use of digital services requires better telecommunication infrastructure and internet access in some areas.

### ***Central Bank Digital Currencies***

Central Bank Digital Currencies (CBDC) represent an even more ambitious project that could be developed with a Blockchain/DLT infrastructure. A CBDC could imply several advantages for its users: (i) lower costs and higher speed for the interbank market; (ii) the possibility to implement central bank open market operations in a calendar of 24h/7days and reduce the current overnight transaction risk; (iii) an easier framework to pay interests on central bank currency and avoid restrictions coming from a zero-lower-bound (ZLB), and (iv) separate the current joint roles of credit and money creation by commercial banks, creating a more narrow banking system in which banks and financial institutions work with a 100% equity and no leverage.

Allowing a massive access, the balance sheet of the central bank creates almost unsurmountable challenges and risks, though. The main challenge is to move from a few dozens of wholesale partners to thousands or even millions of retail account holders, many of which could massively join as a part of a run on commercial banks. Speculators may observe relevant information about the weaknesses of one particular financial institution or the system as a whole and exploit such information in speculative attacks that target certain assets when the central bank or another institution may have low reserves or liquidity problems.

CBDC seems to lead inevitably to the replacement of the classical role of central banks at the top of a tiered liquidity system to that of a massive retailer, where deposit-taking may soon combine with loan-making. For this reason, the experiments with RSCoin at the Bank of England and CAD-Coin at the Bank of Canada take a very cautious approach, aiming at addressing technical issues before any definite step in such direction. This means that a real CBDC may still be many years away.

**Slide 16**

## Challenges and dilemmas for central banks and financial regulators

- FinTech is not necessarily a threat to a central bank
- **Smets (2016)** | FinTech offers good opportunities to central banks coming from the cost reduction implied by the DLT
- The ability to align FinTech developments with central bank objectives depends on the regulations issued by central banks and financial authorities

**Developments vs stability and trust**

- Inclusiveness vs risk of uninformed decisions
- Decentralization, choice and competition vs. operational efficiency, economies of scale and client knowledge
- Personal credit assessment and privacy

### **Challenges and dilemmas for central banks and financial regulators**

[SLIDE 16] FinTech is not necessarily a threat to a central bank, no matter how striking the contrast between its sobriety and the exuberance of FinTech developers. The Governor of the National Bank of Belgium Jan Smets,<sup>4</sup> has argued that FinTech offers good opportunities to central banks coming from the cost reduction implied by the “distributed ledgers” technology; in his opinion, the greatest revolution of FinTech.

The ability to align FinTech developments with the objectives of inflation control and financial stability depends to a large extent on the regulations issued by central banks and financial

---

<sup>4</sup> Smets, J. (2016), “*FinTech and Central Banks*,” speech delivered at the Conference “*FinTech and the Future of Retail Banking*,” Brussels, 9 December, 2016.

authorities themselves. As a result, the latter face an acute dilemma: how to articulate regulations in a way that allows innovations to emerge and develop without compromising stability and trust?

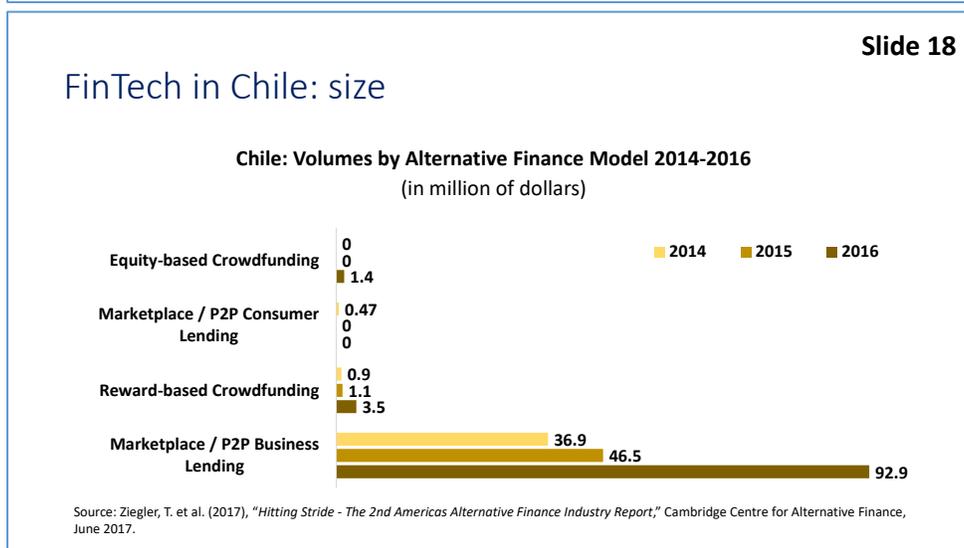
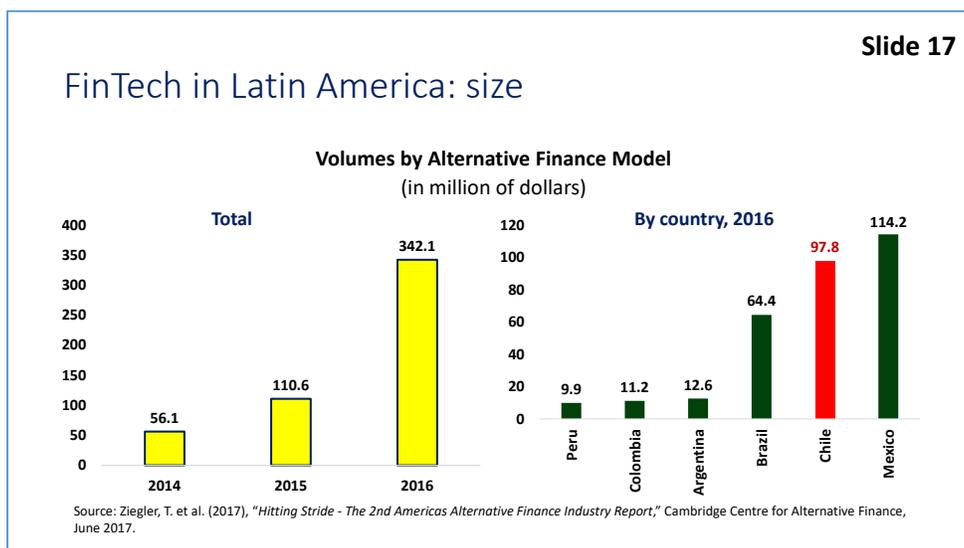
According to the Governor of the Bank of England, Mark Carney, FinTech innovations should not be in the “Far West,” nor be choked at birth. In the same vein, Fed Governor Lael Brainard argues that regulators and supervisors should not overburden financial innovations, as this could push them outside the regulatory perimeter, thus creating more risks and less transparency.

But the dilemmas for economic authorities do not stop at this philosophical level. There are a number of concrete dilemmas between valid policy goals.

- *Inclusiveness vs risk of uninformed decisions.* One of the main potential benefits of FinTech innovations, particularly for emerging economies, is financial inclusion, as many more people can have access to financial services. However, while this may be unambiguously positive for the most basic financial products, such as payment systems, it may be not so if people make uninformed credit or investment decisions. In order to address this issue, the policy response should comprise financial education (which is a long-term solution) and a proper financial consumer protection framework.
- *Decentralization, choice and competition vs. operational efficiency, economies of scale and client knowledge.* Should FinTech innovations result in an unbundling of the core functions of financial institutions, a large number of relatively small firms may have a large share of the financial industry (decentralization). Having more firms would allow clients to be provided with more choices of financial services and an overall increased competition. However, scale is important in the financial sector, and having too many firms providing the same service may not be efficient. In this sense, incumbents may have an edge over FinTech innovations, as they also have because of the prior knowledge of their clients. Striking the right balance between competition and efficiency is up to the market to decide; but from a regulator perspective ensuring a levelled playing field is important and how decentralization unfolds, if at all, should be followed closely.
- *Personal credit assessment and privacy.* Financial information is very sensitive by its very nature, and ownership or access to it may be controversial. It is true that having access to that information could allow for a better and more targeted supply of financial products, and having a record of sound financial behavior can improve credit scoring, which can bring benefits for consumers. However, spreading that information raises concerns. Unrestricted access for FinTech companies to financial information is not an appealing option, whereas a full ban in practical terms may choke them. A middle ground can be to allow for some sort of access and use of financial information by FinTech companies, with strict sanctions for misuse or leakages.

## FinTech in Chile

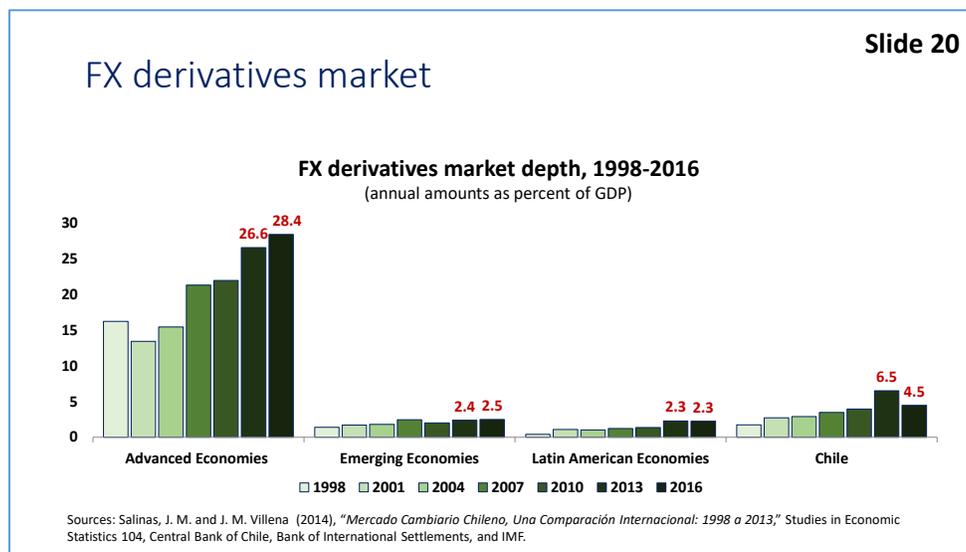
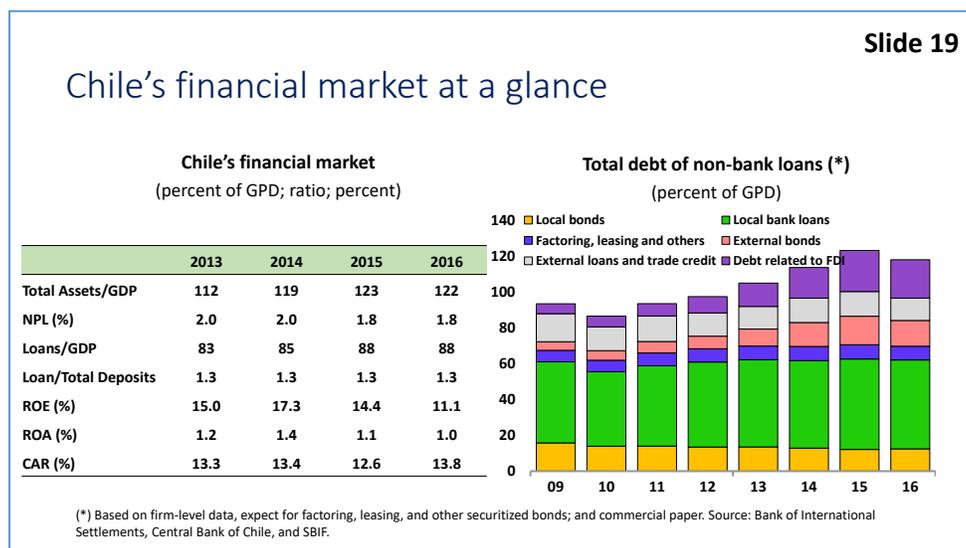
[SLIDES 17 and 18] According to the CCAF 2017 *The Americas Alternative Finance Industry Report - Hitting Stride*, Chile is the country with the largest development in FinTech services. This is due to a large extent to the fast development of crowdfunding platforms in Chile<sup>5</sup>, which appear to have flourished from their connection to factoring services.



[SLIDE 19] This coexists with a rather large, diversified and deep market for conventional financial services. Under this framework firms can get financing from several sources including banks and bond market among others. In recent years, an increase of external financing is consistent with lower cost and the size of the operations of those sources. Firms used those external resources mainly for two purposes: (i) financing operations in the country or abroad and (ii) refinancing other

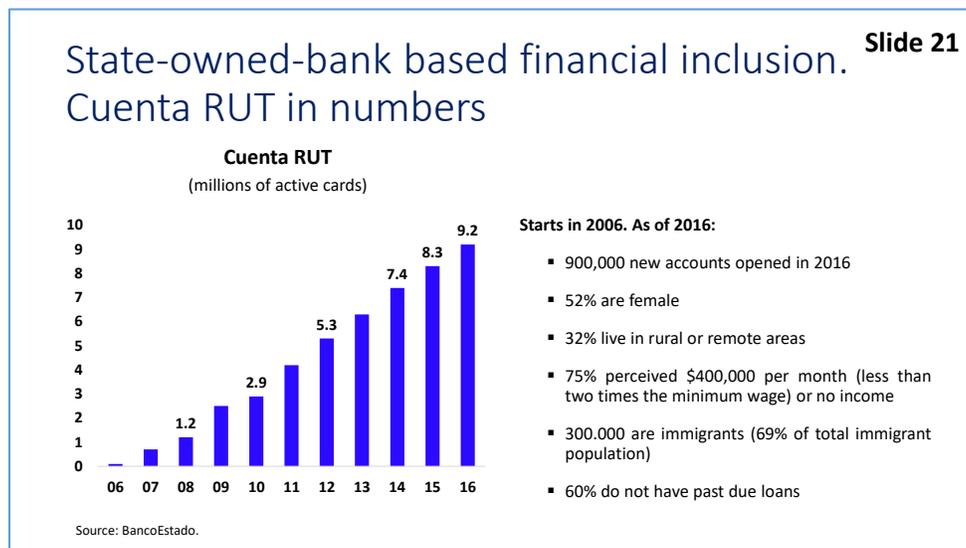
<sup>5</sup> According to the Report "*Breaking New Grounds*" by the *Cambridge Centre for Alternative Finance*, Chile accounts for half of Latin America's alternative financing industry.

debts. [SLIDE 20] Further, granular data confirm that currency risks are relative low from a historical perspective, which is possible due to availability of FX derivatives and flows from investments abroad. It should be noted that about a third of the total debt of the corporate sector is holding by firms which get financing only with local sources and do not report to local supervisor (SVS). Most of that local financing is provided by commercial banks which cover those loans with collaterals and provisions.



[SLIDE 21] In addition to the above, it should be noted that Chile has reached almost universal coverage of basic services through the so-called Cuenta RUT (ID bank account), managed by the state bank (BancoEstado). This is a sight account that can be opened only with a legally issued ID. At present, there are some 9 million of these accounts under operation (for a total population of 17 million), allowing its bearers access to electronic transfers, debit cards and ATM cash withdrawals.

Cuenta RUT is a hybrid financial product that provides a good example of the factors that facilitate technologically-enabled financial products in Chile. These include: universal and secure identity registration; universal online invoicing; internet penetration, and regulations that foster cash-flow services, like factoring and leasing.



- Slide 22**
- ### FinTech enablers in Chile
- Last year, a bill was passed allowing for the issuance of prepaid cards by non-bank institutions
    - The Law establishes integrity requirements for these issuers
    - Restrictions on how the funds can be used
    - Requires the Central Bank to issue regulations with the prudential requirements
  - The Central Bank took the opportunity to undertake a full revision of its retail payments regulation
  - The new regulations not only set the prudential requirements
    - Narrows down the scope of regulated entities dealing with the processing of transactions
    - Changes their capital requirements
  - These features give some ground for optimism on the potential contribution of FinTech not only to the democratization of financial services but also to price and financial stability and development in Chile

[SLIDE 22] These same factors have provided the basis for the most important step in the development of electronic retail payment services. Last year, a bill was passed allowing for the issuance of prepaid cards by non-bank institutions. Its objective is to foster financial inclusion and competition. Given the sensitive nature of deposit-taking, the Law establishes integrity requirements for these issuers, restrictions on how the funds can be used, and requires the Central Bank to issue regulations with the prudential requirements for this industry.

The Central Bank used this opportunity to undertake a full revision of its retail payments regulation. Following a public consultation process, its final version is about to be published and we expect it to be a relevant contribution to the development and updating of our retail payments market. The new regulations not only set the prudential requirements for non-bank prepaid card issuers. It also narrows down the scope of regulated entities dealing with the processing of transactions, and changes their capital requirements, aiming to facilitate the entrance of new participants to the acquiring and processing business.

By removing requirements that may be burdensome for small entities, and by considering explicitly the possibility of non-physical payment cards, as well as remote purchase and acquiring, we expect to see the retail payments market in Chile taking a new shape in the near future. That almost certainly would involve—and perhaps require—and active participation of FinTech entities.

These features give some ground for optimism on the potential contribution of FinTech not only to the democratization of financial services but also to price and financial stability and development in Chile.

Ladies and gentlemen,

A few blocks from where we are gathering today, on Regent St. and Park Terrace was the bank branch where I opened my checking account as a Cambridge student. There I was handed my first debit card, which I could use to withdraw cash from the automatic teller outside. Coming from a country where banks were places where people lined up in front of a human cashier to perform basic banking transactions, these seemed enormous changes to me.

Revolutionary as they were for the public, these changes didn't transform the banking business substantially. Banks kept taking short-term deposits to on-lend at longer maturities. They kept clearing funds and settling balances with one another and with the central bank to meet liquidity and reserve requirements. The main change for monetary policy in most countries was to switch from the control of monetary aggregates to the fixing of the policy rate for overnight liquidity operations.

Technology is now creating opportunities for changes in financial services that are more far-reaching, both for the public, financial institutions and central banks. Information technologies are doing this because finance is an information and record keeping business. By challenging the conventional centralized, multi-layered settlement and clearing system, distributed ledgers, supplemented by a number of other technological developments, create the possibility of an unbundling of financial services that question the very notion of a bank.

These are exciting times not only for financial start-ups and the public, but also for leaders of developing countries, that see in these technological developments the opportunity to leapfrog financial development and remove one major roadblock to inclusive economic growth. To materialize this, however, policy makers—including central banks—need to make sure that they are not exposing people to greater risk, especially when they are using financial services for the first

time. Moreover, they may want enhanced access to financial services to facilitate formalization of economic activity rather than grow the shadow economy further.

To this end, FinTech innovations should be in principle governed by the same regulatory framework as traditional entities, adapting such regulations to jointly address issues like the transparency of financial charges, the clarity in remote contract opening and massive contract adjustment. I am sure that most of the developers and investors in FinTech start-ups aim at business opportunities that draw from and cultivate financial literacy, not the opposite.

In Chile, we have a solid ground to build from. Safe identity registration, massive access to the internet, a broad supply of complementary net-based services and, above all, near-universal bank accounts mean that rather than leapfrog, we can move fast in the FinTech highway. This means that banks may play an important role in this trip rather than remain in the side-lines. But they will need to adapt their business models and to be prepared to share the road with other non-traditional travellers.

As for the Central Bank, we need to keep the pace with change. We need to be prepared to adapt our regulations, use new indicators and big data to monitor macroeconomic developments and assess financial risks. We need to adapt financial infrastructures and to enhance cybersecurity at all levels. To do this we can learn from other Central Banks that are facing the same challenges.

The main asset of a Central Bank today is not gold stored in their vaults, but trust from the public. Being able to understand the FinTech revolution and to ensure that this contributes to economic stability and people's welfare is one crucial way to remain trustworthy.