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FinTech Data Challenges

IFC-BNM Satellite Seminar on “Statistics on Fintech – bringing together demand and supply to measure its impact”

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Content*

- Data collection: CEMLA survey
- Data needs
- Use of information in Fintech industry
- FinTech Data collection efforts
- Conclusions

**The views expressed in this presentation are exclusively the responsibility of the author and do not necessarily reflect those of CEMLA, Banco de México or Fintech Forum Membership.*

FinTech – Overview – CEMLA Survey

- The information gathered from CEMLA Survey on FinTech Regulation for Latin America and the Caribbean region 2019, we found the following:

Authorities: Fintech is relevant for inclusion, competition and efficiency

New entrants: Fintech will influence the inclusion and competition, efficiency and transformation of the sector.

Incumbents: Fintech could improve efficiency, competition and inclusion.

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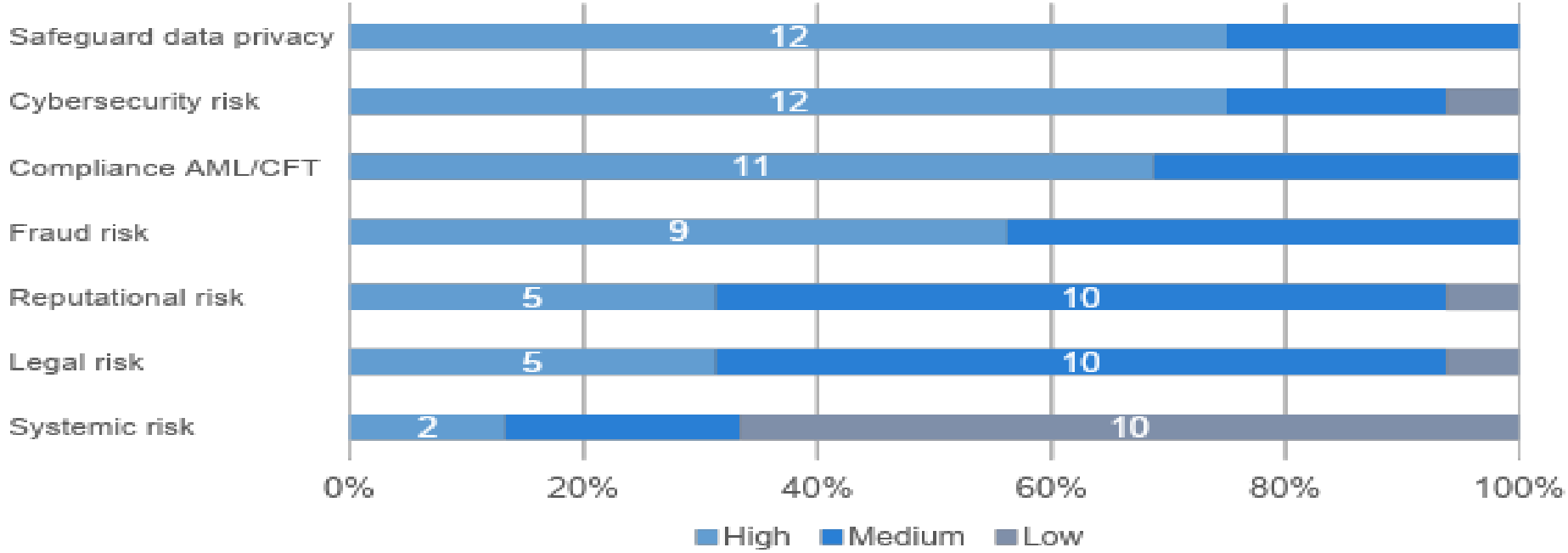
CEMLA Survey - Authorities perspective

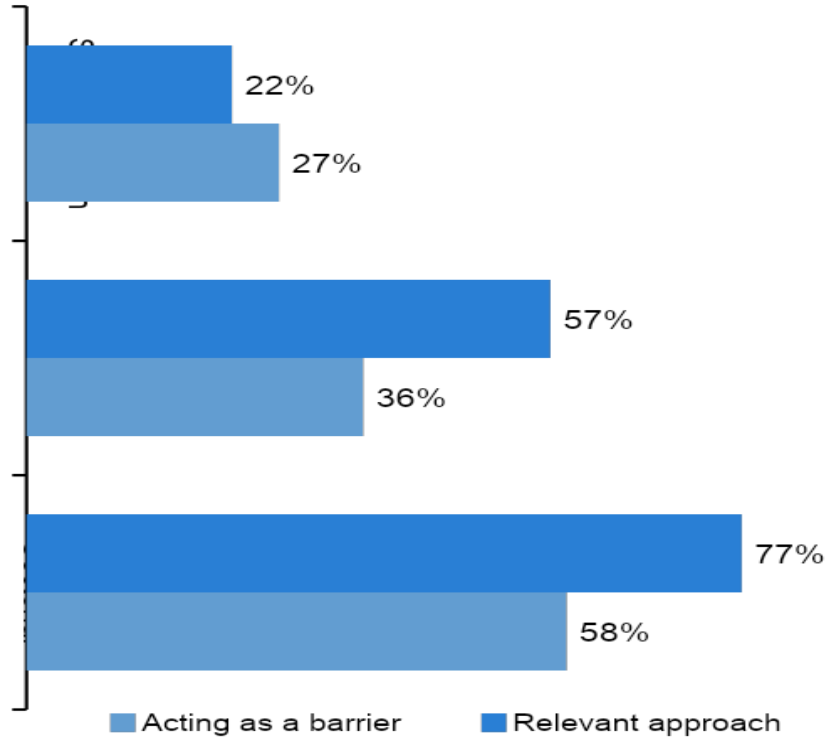
- Risks associated with the Fintech industry



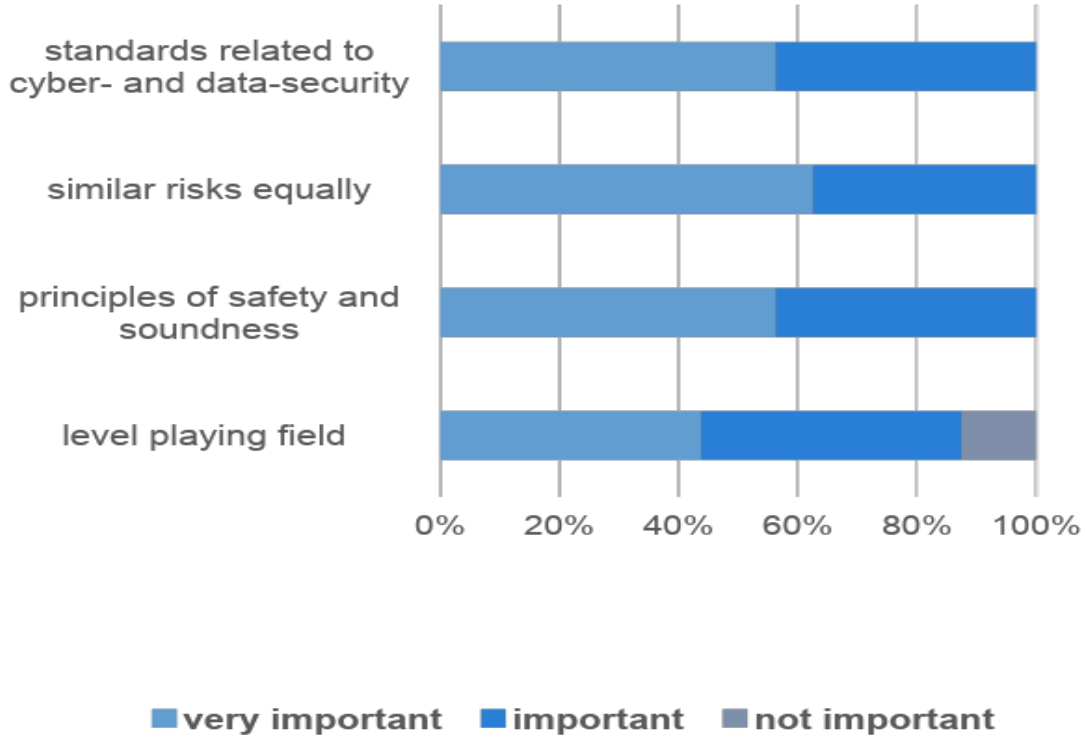
- Risks classified as main concern are: data privacy, cybersecurity, anti-money laundering and counter-terrorist financing (AML/CTF).
- 63% considers systemic risk as the less important.
- Reputational, legal and systemic risks are considered to be of lower intensity at the moment.

CEMLA Survey - Authorities perspective

- The regulatory approach has a fundamental role



- Importance of policy aspects related to Fintech



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FinTech- Data needs

- The regulatory framework faces important challenges, for example new data requirements for regulating new financial services (FinTech).

- It is important a flexible regulation for new FinTech entrants, such as PayPal, ApplePay, Libra-Facebook, AmazonPay, AliPay, etc.

- Consolidation of the data in a unique database is a task that must be address by Central Banks, since the new financial products produced the decentralization of information.

- **Lending online platforms (P2P**) are using **Machine Learning and AI methods** for loan screening and origination. Credit applications and origination data is important for Central Banks to measure credit crunching and default rates. *(FinTech credit: Market structure, business models and financial stability implications, FSB 2017)*

- The **financial sandboxes and the innovation hubs** are useful to test innovative regulation mechanisms so regulators can learn about FinTech services and adapt their future reporting processes. Data generated from Sandbox cases will be the base for new regulations.

- The **Legal Entity Identifier** is needed for the integration of data both from the traditional financial system and Fintechs.

New market structures – Peer to Peer (P2P) lending

- The changes and adjustments caused by technological innovation have led to study the effects on centralized, as has been the case in peer to peer (P2P) economic activities.
- *Balyuk et.al.:* Lending market – Fintech start ups:
  - Fintech start-ups: Peer to peer lending P2P.
  - Transforming from:

    Access points → **new credit intermediaries**
  - Potential situation: **Moral hazard**
  - *A relevant finding is that, given the growing role of these new actors, this can result in a **highly centralized market**, the software of some platforms have replaced traditional financial intermediaries as key decision maker (in the allocation of credit), These findings bring some important implications for financial authorities.*

New market structures - Impact of DLT systems on financial markets

- Listing and issuance (desirable P2P model SMEs and retail investors)
- Trading (decentralization and transparency)
  - Price discovery, liquidity, market integrity, AML
- Clearing (Smart contracts)
  - Liquidity, risk management, price Discovery, reduced volume
- Settlement (Smart contracts)
  - Not tested, segmentation

New market structures - Challenges for DLT technology

- Security
- Scalability
- In the case of large value payment system, liquidity provision
  - Morris & Shin (2019) Distributed ledger technology and large value payments: a global game approach
- Regulation
- Lack of understanding by the general public
- **Risks:**
  - Liquidity
  - Volatility
  - Leverage
  - Operational
  - Legal

New market structures - Crypto-assets issues

Relatively small to the global size of the financial system.

- Duffie (2019): “Although the issuing bank can conduct anti-money-laundering (AML) and other compliance checks on its own transactions with Alice, the payments that Alice makes with her stablecoins are only monitored for AML and other regulatory purposes to the extent that the authorities have access to the digital ledger or exchanges on which the stablecoins are subsequently transferred. This may suggest the use of stablecoins that are kept only on bank-maintained or at least bank-monitored ledgers, in order to enable compliance with know-your-customer (KYC) and AML regulations.”[1]

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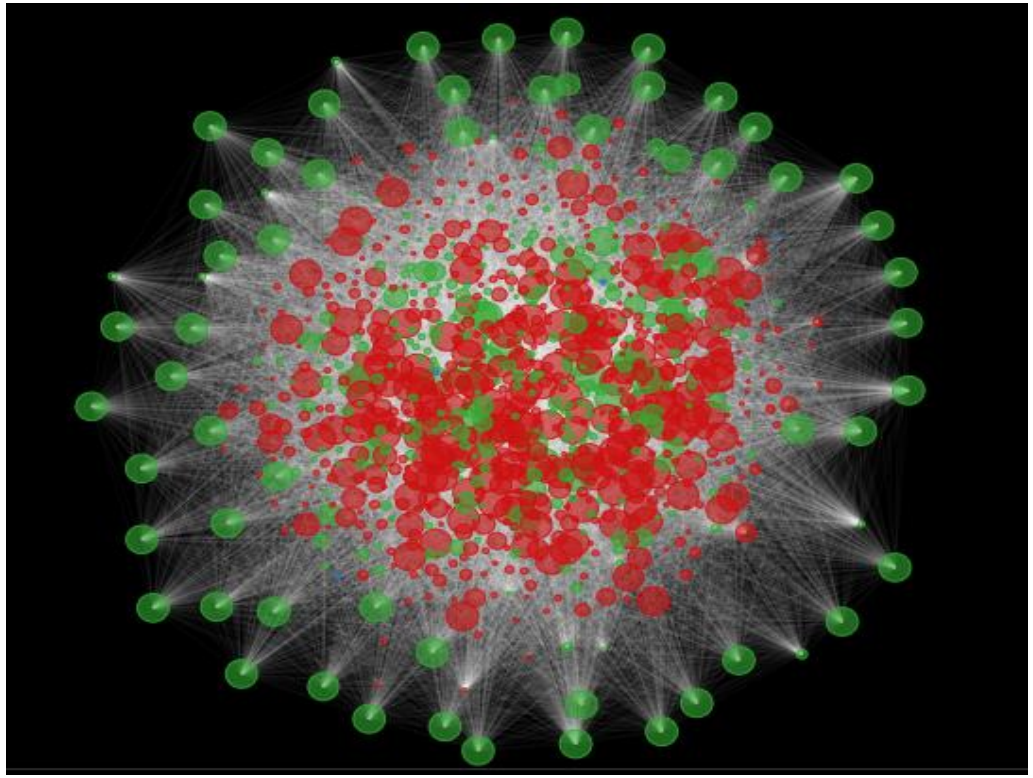
[1] Darrell “Digital Currencies and Fast Payment Systems: Disruption is Coming”, presented at the Asian Monetary Policy Forum May, 2019

New market structures - Ripple

- Ripple headquarters are in San Francisco, with offices in New York, London, Mumbai, Singapore and Sydney.
- Ripple has more than 200 clients, composed by worldwide banks and payment providers, such as MUFG, BBVA, SEB, Akbank, Axis Bank, YES BANK, SBI Remit, Cambridge Global Payments, Star One Credit Union and eZforex.com.
- Ripple receives New York's first BitLicense for an Institutional Use Case of Digital Assets, and they support Regulation as a growth framework for FinTechs.



FinTech data issues - Complexity in FinTech ecosystem

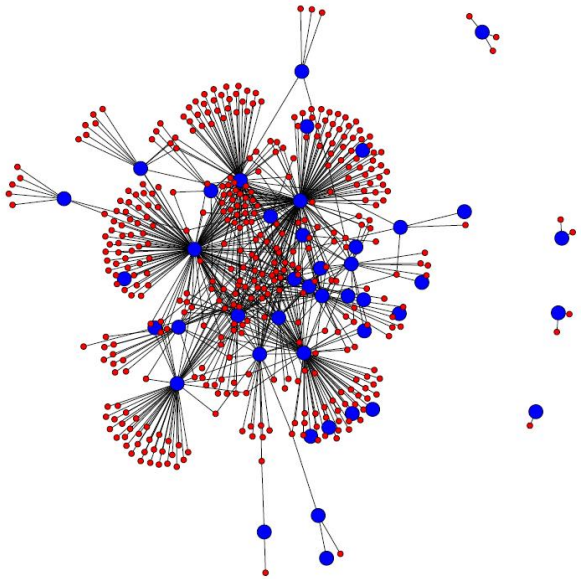
- Fintech and the new participants could increase the **financial system complexity.**
  - **Increasing the level of interconnectedness*** and changing the structural properties of such ecosystem.
  - Small shocks may spread and expand.
  - **Interconnectivity** is not "bad" per se, but its potential risk could be mitigated by analyze and measure it.
    - *Martinez-Jaramillo, S., Carmona, C., Kenett D. (2019) "Interconnectedness and financial stability" Journal of Risk Management in Financial Institutions, Vol. 12, 2, pp. 163–178.*

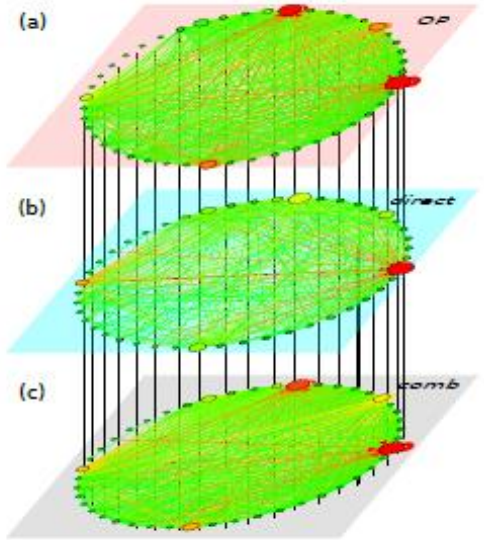
- Battiston et al. (2016): *"From the point of view of financial regulators, our findings show that the complexity of financial networks may decrease the ability to mitigate systemic risk, and thus it may increase the social cost of financial crises".*
  - *Battiston, S:, Caldarelli, G., May, R., Roukny, T., and Stiglitz J., (2016) "The price of complexity in financial networks", Proceedings of the National Academy of Science, Vol. 113, No. 36, pp. 10031–10036.*

Sovereign and financial risk

- Banks are exposed to systemic risk directly and indirectly
  - Propagate through different mechanisms and channels of contagion.
- Overlapping portfolios
  - Indirect interconnection. Financial institutions invest in common assets. An important source of contagion and systemic risk.
  - *Poledna et al (2019)*[1] propose a network model to quantify systemic risk from direct and indirect exposures.

Red: assests
Blue: banks





Multi-layered Mexican banking network

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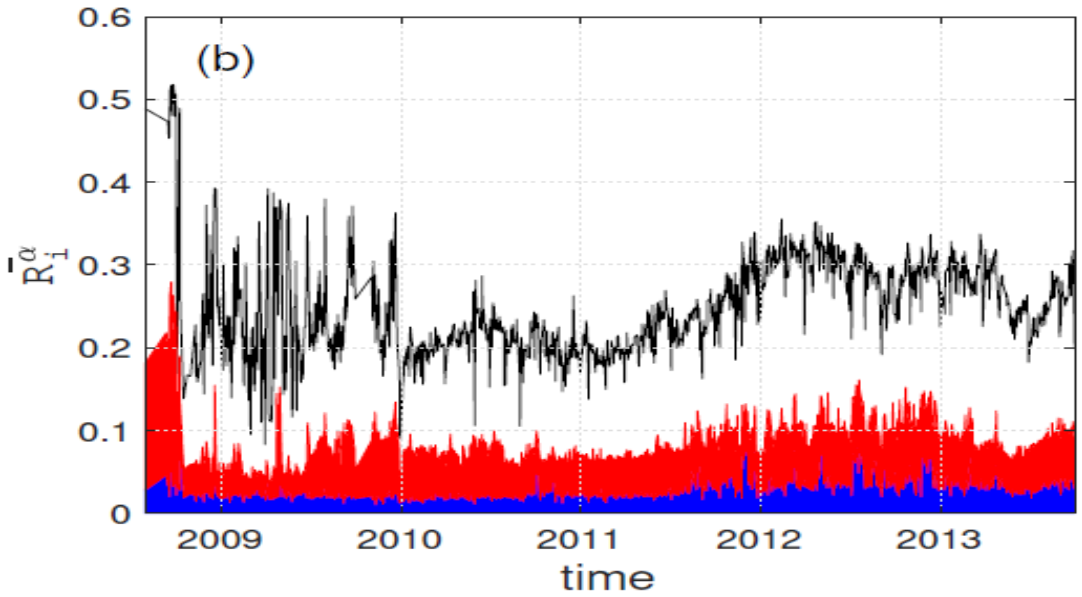
Poledna, S., Martinez-Jaramillo, S., Caccioli, F., Thurner, S., 2019. "Quantification of systemic risk from overlapping portfolios in the financial system." To be published, Journal of Financial Stability

Sovereign and financial risk

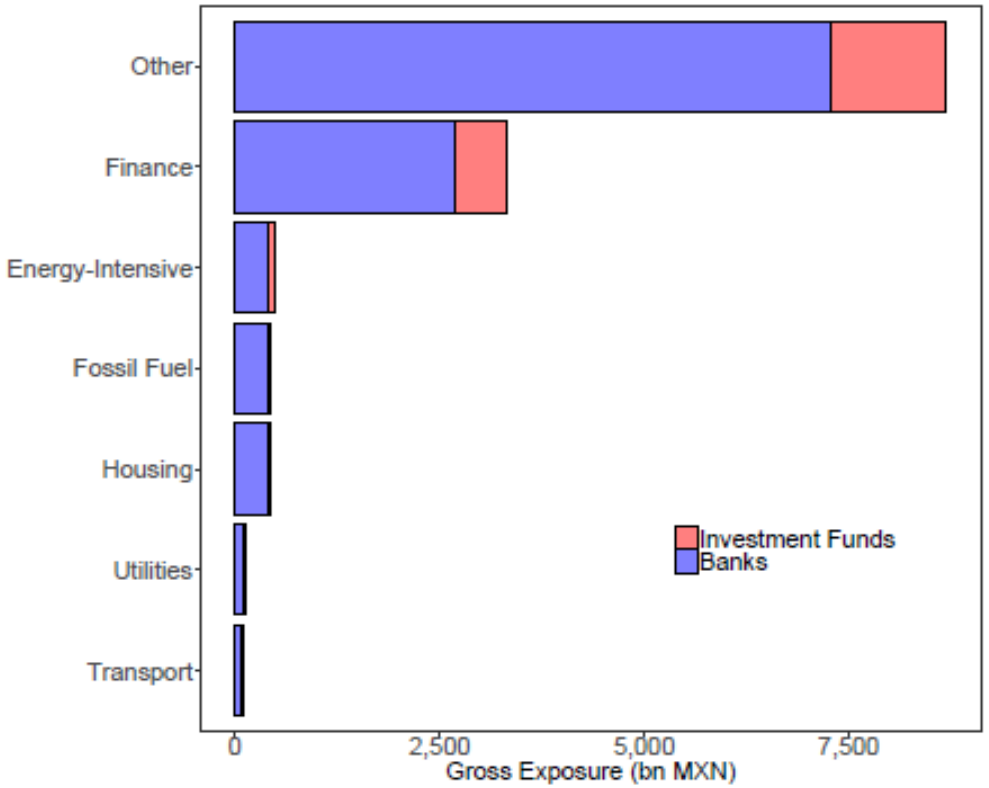
- The systemic risk metric of direct exposures is **considerable smaller** to the one of overlapping portfolios.
- When both exposures are taken into account in tandem, the metric is usually considerably higher.
- This metric could be even higher if common exposures to sovereign risk are also considered.
  - Existing capital regulation assigns zero risk weight to domestic sovereign securities. Additionally, government debt holdings are exempted from concentration limits and are even encouraged by the recent liquidity regulation.

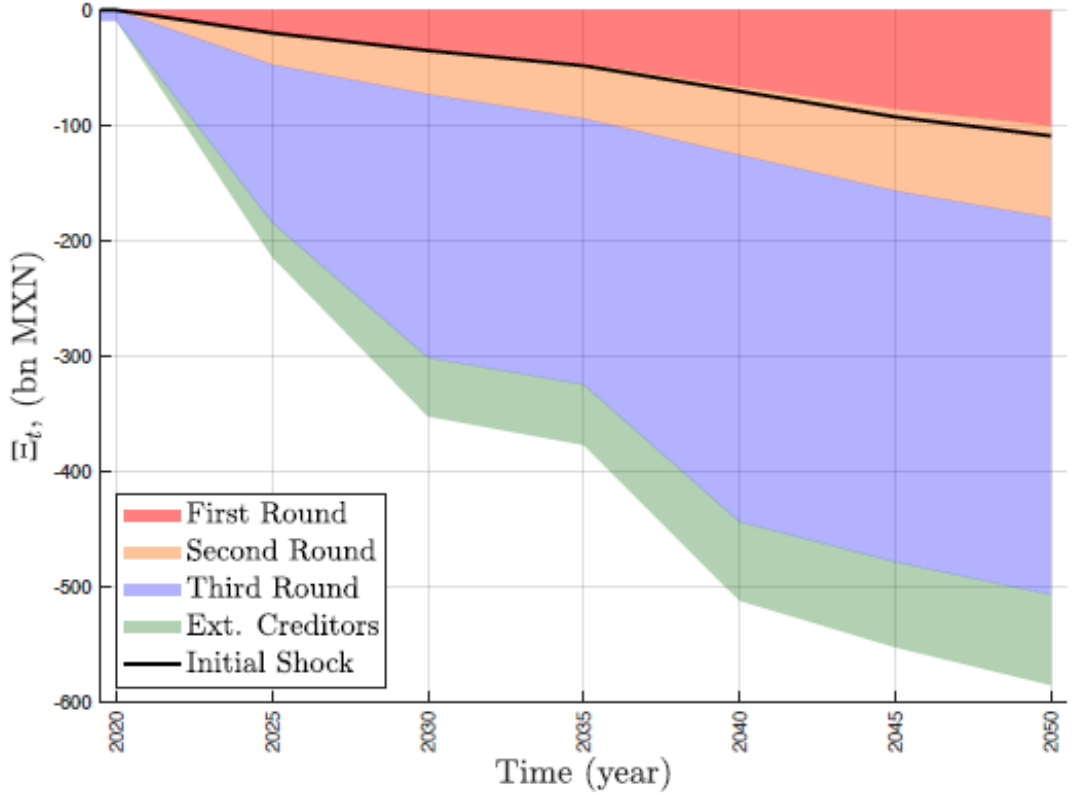


Daily average debt

Blue: direct
Red: OP
Black: combined

Climate change and Financial Stability





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FinTech data issues - Complexity in the FinTech ecosystem

- **Complexity** of the financial networks
  - Information technology applications
  - Trend: lots of pieces of software interacting with each other
- ***Software complexity*:** maintenance cost growing non-linear, which will open vulnerabilities in the process
- Multiple open vulnerabilities should be an important concern for financial authorities.
- Currently there is no information to perform:
  - Contagion studies
  - Systemic risk analysis
  - Determine vulnerabilities
  - Stress testing

Martinez-Jaramillo, S., Carmona, C., Kenett D. (2019) "Interconnectedness and financial stability" Journal of Risk Management in Financial Institutions, Vol. 12, 2, pp. 163–178.

FinTech Data collection efforts:

- Dias and Staschen (2017), provides the different practices in data collection for digital financial services (DFS) and the issues in regulatory data collection mechanisms.

- The authors collected data on e-money issuers, bank and non-bank agents, and electronic retail payment statistics, since actual report templates used by DFS supervisors. Additionally, qualitative information about descriptions of incidences of frauds, contingency and continuity plans, etc.

- The report templates contains information about e-money issuers that refers to volume/value of e-money transactions; number of agents; transaction types (withdrawals, transfers, payments, deposits; geographic location; type of distribution channel.

- LAC Countries with data reporting available from FinTech industry are the following: Brazil, Colombia, El Salvador, Guatemala, Mexico, Nicaragua, Paraguay, Peru, and Uruguay; but **Mexico, Brazil, Colombia and Peru** publicize DFS reporting requirements in more detail on their websites.

Working Group on Fintech Data Gaps/Needs

- Objective: to identify and assess the key challenges Central Banks face relate to gather data on Fintech activities and, potentially, to identify sound practices from the regional experience.

- The WG is divided in 2 task forces.
  - Section A will address common reporting LAC practices for Fintech-based activities on experiences and challenges to improve the existing reporting framework to better address fintech.
  - Section B will monitor policy implications related to fintech data gaps, including financial stability, payments, supervisory and monetary policy.

- WG members: Brazil, Costa Rica, Honduras, Jamaica, Mexico, El Salvador, Trinidad & Tobago, Spain and CEMLA.

- Methodology: The task forces agreed to work on taking stock of relevant experience and review literature experiences, including a survey on existing fintech reported data in each Central Bank.
  - Brazil is already working on the type of data that would be desirable to have (i.e. like a minimum set of critical information) and is also preparing a template to survey of what type of data is already gathered by Central Banks in terms of Fintech activity.
  - Jamaica and Spain have a department that analyzes fintech issues and are already preparing a list of observed problems to gather data, Costa Rica is focusing on data and research about crypto-tokens. Trinidad and Tobago have started to identify fintech relevant data, with regulatory purposes.

Working Group on Central Bank Digital Currency (CBDC)

- Objective: Digging deep in “on-live” CBDC experimentation across the region (Bahamas, ECCB, Uruguay) and taking stock of the appetite, views and position from regional central banks concerning CBDC implications, as well as pros and cons of different CBDC systems and its links and differences with other relevant infrastructures (RTGS) enabling fast payments.

- WG Members: Bahamas (to be confirmed), Colombia, Curacao and Saint Marteen, ECCU, Ecuador, Jamaica, Peru, Uruguay and CEMLA.

- Methodology: To yield a report addressing:
  - CBDC situation today, setting down the departing point in each jurisdiction. Motivation for studying, implementing or not; focus on different designs, its challenges and opportunities.
  - Description of the main results (mainly for on-live CBDC project) and implications for financial system and monetary policy.
  - Alternative options, like RTGS instant payments.
  - Forthcoming outlook regarding legal aspects, costs, usability, scalability, risks, strategy, among others

- NOTE: CEMLA is also aiming at better understanding financial and monetary implications of CBDC, based on practical experience and academic work underway.

Final remarks

- It is important to have a detailed mapping of data needs.
- Data collection for the maintenance of financial stability.
- Information obtained from Sandboxes and Innovation Hubs use cases has to serve for the development for new financial products
- Although Central Banks from the region are starting to collect and understand the data generated by FinTech companies, a further effort is needed for the implementation of optimal data collection mechanisms (granular, complete and low cost).