Roberto Campos Neto

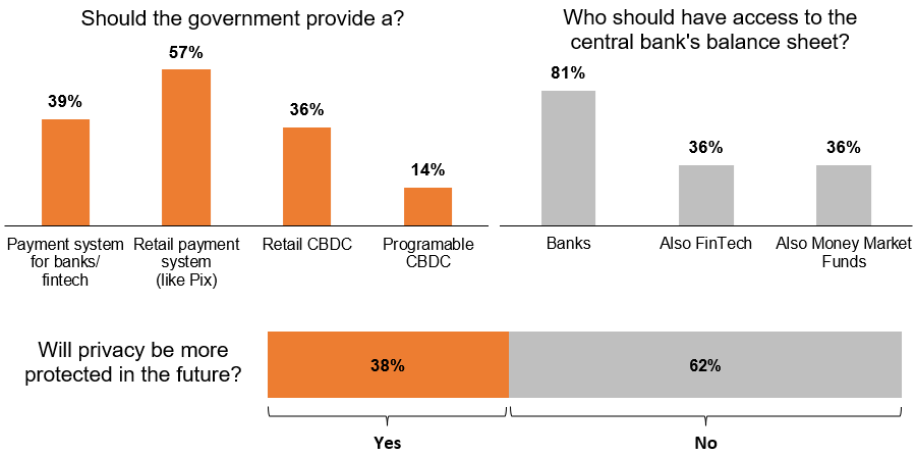
The Future of Financial Intermediation

On Thursday, October 3, Roberto Campos Neto joined Markus' Academy for a conversation on The Future of Financial Intermediation. Roberto Campos Neto is a Brazilian economist and the current President of the Central Bank of Brazil.

A few highlights from the discussion.

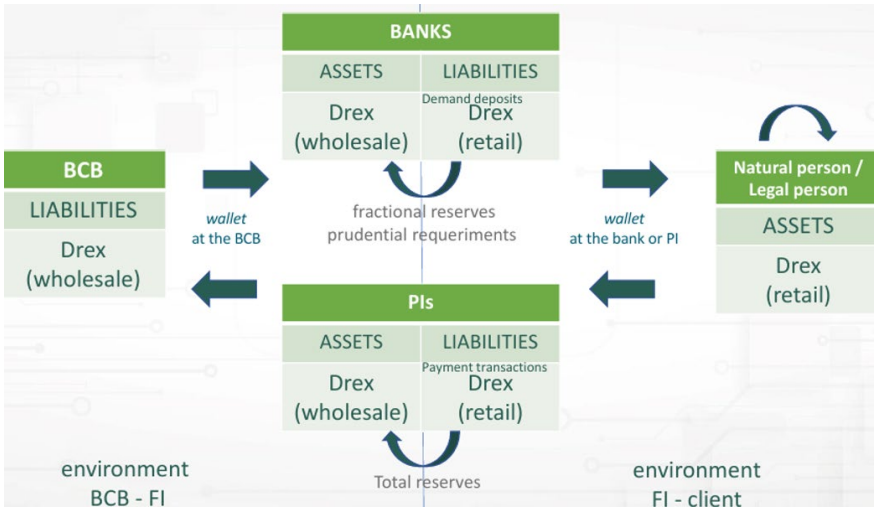
- **A summary in four bullets**
  - "If the tokenization thesis holds true then the 21st century may see the creation of regulated global token-based multi-asset networks" (Citibank, 2021)
  - The Central Bank of Brazil's integrated agenda for the tokenization of the economy has four pieces: (1) Pix, its instant payments system, (2) Open Finance, a framework supporting the voluntary sharing of data through technological infrastructure, (3) Internationalization efforts related to the currency and Pix, and (4) the tokenization of the economy with Drex, which will include the CBDC
  - Pix was rapidly adopted throughout the country, with ~75% of the population using it in just a few years since launch. The system has boosted financial inclusion, increased competition, enabled innovation in payment processing, and lowered transaction costs
  - The Central Bank of Brazil saw it best to disentangle the retail portion of Drex from its own balance sheet, creating a two-part structure: (1) a wholesale segment for banks and payment institutions, and (2) a retail segment consisting of tokenized bank deposits, or "commercial bank digital money." Only the wholesale segment will be recorded as liabilities on the central bank's balance sheet. Drex will be implemented over the next two years

- **[0:00] Markus' introduction and poll questions**
  - In recent decades there has been a secular decline in the size of traditional bank balance sheets as a % of GDP (Buchak et al., 2024)
  - There are potentially five futures for financial intermediation: (1) banks remain dominant, (2) decentralized blockchain finance takes over, (3) big tech takes a larger role, for example establishing currencies (4), governments provide public utility-type ledgers, and (5) CBDCs replace deposits, and banks become floating value funds
  - Big Tech can naturally provide digital ledgers, using the threat of exclusion from their platforms to incentivize loan repayments (Brunnermeier and Payne, 2024). Should the government issue a CBDC to curb this monopoly, even if it removes the exclusion incentive?
  - Big Tech tends to support interoperability with banks, while banks resist it. Due to the increased competition from interoperability, platforms may incur losses on lending but can offset them with fees from other services. Regulating platforms and banks jointly would be necessary in this context



- **[9:12] The Central Bank of Brazil's integrated agenda**
  - The shift towards a tokenized economy has already begun, with encryption and Distributed Ledger Technology (DLT) enabling more efficient asset transactions
  - The Central Bank of Brazil's integrated agenda for the tokenization of the economy has four pieces: (1) Pix, its instant payments system, (2) Open Finance, a framework supporting the voluntary sharing of data through technological infrastructure, (3) Internationalization efforts related to the currency and Pix, and (4) the tokenization of the economy with Drex, which will include the CBDC
  - In an effort to keep citizens engaged the Bank first prioritized payments as its benefits are immediate (while those of Open Finance may be harder to see). In designing its instant payments system it prioritized that payments be programmable – allowing for scheduled payments, blocking transactions, or (in the future) mimicking credit card functions
  - Pix was rapidly adopted, with ~75% of the population using it in just a few years since launch. The system has boosted financial inclusion, increased competition, enabled innovation in payment processing, and lowered transaction costs.
  - It costs the central bank around $10 million annually to operate it, and banks have gained more from the newly acquired clients than they have lost in fees
  - New functions are being added, such as recurring payments or every cash register in the country being able to perform basic ATM services. Keep in mind that around 1,000 cities in Brazil don't have bank branches
  - The prioritization of programmability in the instant payments system was specific to Brazil. India's Unified Payments Interface for example prioritized providing government services, leading to a different relationship of the system with the digital currency
  - Once Pix is complete one can then connect it to an open platform, allowing for the comparability and portability of products, and where users can share their data voluntarily. This is the goal of the Open Finance environment
  - Once the country has a programmable, multi-functional, and open payment infrastructure, it can then be tokenized – this is where Drex comes in
  - Discussions at the BIS yielded one main suggestion to prevent bank disintermediation from the introduction of a CBDC: to limit the amounts issued. However this could be difficult to implement because restricting the supply might cause it to be in high demand, potentially leading to a premium

on the digital currency over physical cash, which would primarily benefit more sophisticated actors that are better able to acquire it
    - As a result, the Central Bank of Brazil (“BCB” in the chart) saw it best to disentangle the retail portion of Drex from its own balance sheet, creating a two-part structure: (1) a wholesale segment (“wDrex”) for banks and payment institutions ("PIs" in the chart), and (2) a retail segment (“rDrex”) consisting of tokenized bank deposits, or "commercial bank digital money."
    - Only the wholesale segment will appear as liabilities on the central bank’s balance sheet (MA note: so only this part is a CBDC in the strict sense)



    - Previous CBDC discussions overlooked the interaction between tokenization and open finance. However, Carstens and Nilekani (2024) pointed out the inefficiencies of managing a CBDC with multiple interconnected ledgers. It is more efficient to integrate various products into a single hyperledger and tie it to the CBDC
    - At the same time, having tokenization without open finance leaves a lot of gains on the table, such as the ability to do digital auctions of collateral, programmable auctions against tokenized payments, or programmable payments according to different risk exposures
    - Two additional blocks are being discussed beyond this four-pillar agenda. First, using generative AI to promote user’s financial education and to better segment products. Second, allowing people to monetize their data, which would be aggregated in the financial marketplaces being promoted under Open Finance

- **[28:24] The cross-border dimension**
    - There are three challenges of connecting international payments systems
    - The first was connecting DLT systems to centralized systems, but solutions have become available
    - The second is that currency transactions have to be settled. This can be solved with liquidity token pools, where central banks have an amount of tokenized currency and can settle transactions between each other when the

market is closed. However challenges remain when there are currency controls that make these non-convertible
    - The hardest challenge is about governance, as countries have varying anti-money laundering and counter-terrorism financing regulations, as well as different tax systems
    - Endorsed by the G20, the BIS is developing a taxonomy with minimum harmonized rules. Nexus is also already connecting some countries in Asia
    - There is also the issue of liquidity gates. Is it a good idea in terms of financial stability for anyone in Brazil to be able to withdraw a Brazilian digital currency and purchase an American one without limitation?

- **[33:05] Open Finance**
    - The Open Finance environment is facilitating the emergence of financial services aggregators ("superapps") and finance marketplaces
    - With programmability in instant payments, with open finance users will be able to have all of their data in one place, subject to their permission, enabling access to more products
    - For any payment users may want to make, they will be able to select which of their banks they want the money to come from (and the payment will be executed by Pix). For any given loan they may want to take out, banks will have to compete for it. This is portability and comparability
    - A few companies are already developing these aggregators, but it is unclear whether it will be a winner-take-all market, or whether different types of clients will use different apps
    - The financial regulator will regulate the aggregators to supervise transactions and cybersecurity. At the same time, there may be privacy and scalability issues if these apps include unregulated services (Carstens and Nilekani, 2024)
    - From the institutions already in Open Finance there are some clear benefits in reducing overdraft fees, improving the efficiency of credit origination and recovery, easier account opening processes, and better investment performance. For example, 2.6 million clients were notified that they have idle funds in an institution that could be earning interest
    - The central bank is working with Google to develop contactless payments in Pix, whereby customers will be able to add their bank accounts to their preferred digital wallet

- **[39:03] Drex**
    - With the two-part approach to a Drex, tokenization is integrated into banks' balance sheets, in this way having them think about their assets and liabilities in terms of tokens, rather than in terms of accounting
    - With a single hyperledger in place, once an asset is purchased in the real world it can be migrated onto the platform. It will then be easier to transact, collateralize, and negotiate, while also improving its divisibility (allowing assets to be split into smaller, tradable units). This will reduce frictions between buyers and sellers and cut down on the bureaucracy involved in registering (and seizing) assets

    - The retail side of the Drex environment will see a top layer with the aggregators (the “superapps”), another layer of product markets under it, and oracles connecting the two (oracles are systems that act as bridges between a blockchain and external sources of information)
    - Below these, two layers will handle tokenized assets and settlements, using distributed ledger technology (DLT) to track transactions, while also supporting cross-border payments and integration with other services like digital wallets
    - Policymakers should not set themselves on whether the system will be for retail or wholesale, at first with Pix it was unclear who it would be taken up by
    - Many details of Drex have not been solved yet, but the plan is to implement it over the next two years
    - A key problem is that, with the current technology, a trilemma emerges when implementing Drex at scale between (1) privacy, (2) programmability, (3) and decentralization. DLT emerged as an effort to have transparency without any privacy, so it must be modified. One solution to protect privacy could be to introduce intermediary layers to make it harder to trace individual transactions back to specific users
    - The first phase of Drex’s pilot has focused on the market for government debt, where privacy concerns are less relevant. The second phase will focus on scalability and expansion to other markets like credit collateralization, real estate, or vehicles

- **[54:38] Q&A**
    - Markus’ question: how do you ensure that central banks can keep up with the speed of the system, where transactions may be cleared in microseconds, to continue performing their basic functions like being the lender of last resort)?
    - For now, programmable payments are about things like recurring billing, rather than limit order books in the stock market (where payments are contingent on certain events happening). These concerns are far in the future
    - For people it's important to be able to program bills. After this it will be important to be able to block or reverse payments; this will allow for mimicking the function of credit cards in Pix at a much lower cost, removing the need for merchant acquirers and card issuers
    - Markus’ question: which other countries are at the forefront?
    - Singapore is one example; the Nordics are advancing in payments. Different countries have different realities. For example in Brazil it was possible to ensure that banks participated in Pix (despite their reluctance), while having only two key regulators eased implementation

Timestamps: