Central Bank Digital Currency
A central banker perspective

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Regional Payments Week 2019
Willemstad, Curacao, 19th November 2019

(The views in this presentation are those of the author and not of the Banco Central del Uruguay)
CBDC: Is this the future?
What has Banco Central del Uruguay done?

What is Banco Central del Uruguay doing now?

Why?
What has Banco Central del Uruguay done?

- Issue, put in circulation and test in the real world a Central Bank Digital Currency (CBDC) called e-Peso

- e-Peso is the Uruguayan Peso in digital
A pilot plan for CBDC

- e-Peso:
  - legal tender digital currency issued by the Central Bank
  - electronic platform for the Uruguayan Peso
- Pilot plan:
  - needed for verification of technical issues
  - needed to keep risks under strict control
- Conditions set forth by the Central Bank
  - No cost for CB
  - No cost for final users
Proposal and assessment

- Legal framework was sufficient for the issuing electronic bills as a complement of paper bills

- Cyber and information risks have been reasonably mitigated
- Other risks (e.g. financial and reputation) have been reasonably hedged

- Successful testing of the system’s component (e-Peso production, digital vault, digital wallets, transactional system, infrastructures, etc.) and business continuity
Participants

- Issues digital bills
- Provides telecom network
- GSMT (Global Solutions for Money Technologies)
- Storage, management, control of circulation and call center
- Management of users, transfers and transactions
- Cash-In and Cash-Out
Pilot plan

6 months
Nov. 17 to Apr. 18
(e-Peso bills are being destroyed now)

Limited bill issuance (20 million)

10,000 mobile phone users

Limited

$30,000 per wallet (aprox. 1000 EUROS)
$200,000 for registered business

Payment transactions in registered stores and business

Transfers P2P among registered users
Timing

1° Stage
- Issuing $20,000,000 Uruguayan pesos in digital (e-Peso)
- Transfering to virtual vault
- Transfering to RedPagos first $7,000,000 e-Pesos
- Starts Nov. 17 for 6 months
- Antel users install e-Peso app (digital wallet)
- Cash-In through RedPagos (incentives to the first 1000)
- Random, monthly, monetary incentives for active users
- Making transactions

2° Stage
- Cash-Out through RedPagos
- Returning of e-Pesos to the BCU for destruction
- Evaluation of the Pilot and decision on future steps
Description of the system
Characteristics of the system

- Instant settlement
- Does not require internet connection (just a mobile phone line)
- Anonymous but traceable
  - users’ wallets and encrypted Global E-note Manager (GEM)
- Security improved
  - e-Pesos are secured at GEM even if users lose their phones or password of digital wallet
  - Unique, traceable bills prevent double-spending and falsification
- Digital bills difficult complete fungibility
  - but GEM may change automatically
Experience and preliminary evaluation

- Very positive experience
- Developed according to expectations
- No technical incidents
- Mostly P2P transactions
- Increasing number of stores and business
- Banks interested in being part
- Zero cost for BCU
Age composition of e-peso users

**Bar Chart:**
- **Epeso users and Uruguayan population between 18 and 89 years**
- **Axes:**
  - X-axis: Edad (between 18 and 29, between 30 and 44, between 45 and 64, 65 or more)
  - Y-axis: Percentage (0% to 50%)
- **Legend:**
  - ePeso
  - Uruguay
- **Data Points:**
  - Between 18 and 29: 25%
  - Between 30 and 44: 45%
  - Between 45 and 64: 30%
  - 65 or more: 15%

**BCU**
Number and sectors of participating firms

sectors:
- Gas Stations
- Professionals
- Transport
- Importers and Distributors
- Food; Selfservice markets
- Fitness
- Medical Services
- Others
Monthly evolution of transaction size

![Graph showing monthly transaction size evolution with significant increase in April 2018.](image)
Size of transactions

Computed for all transactions bigger than 10$
Gender and transaction size

Computed for all transactions bigger than 10$
Outline

- What has Banco Central del Uruguay done?
- What is Banco Central del Uruguay doing now?
- Why?
What is Banco Central del Uruguay doing now?

- Evaluating the experience of the e-Peso from a Payment System perspective. (Strategic goal 2019-2020)
  - Analyze the feasibility of issuing legal tender in digital format and implement it in the National Payment System
    - compatible with the systems used
    - part of a payment industry, existing and challenged by the new technocologies
  - Propose different product design alternatives, showing benefits and restrictions of each of them
  - Its possible impact on the monetary policy and financial inclusion objectives (2020)
Concerns that we must deepen

- Legal power to develop it.
- Emulate the physical ticket: anonymity of the user?
- User accounts in BCU - competition
- Introduction to the National Payment System, how do the other participants play?
- Link with commercial establishments
Main questions to solve

- Model Definition
  - Who owns each module?
  - Who operates each module?

- Role of the BCU?

- Role / participation of the rest of the NPS agents ... how to generate synergies?

- Storage: accounts or devices?

- How to promote its use / accession of shops?

- Disruptive project: impact on the market? Orderly implementation
Actions done and to do

- Payment System report and proposal
- Meetings with the industry
  - Banks
  - Electronic Money Issuing Institutions
- Analysis of electronic wallets in development
  - TuApp
- Possible new pilot (2021)
Outline

- What has Banco Central del Uruguay done?
- What is Banco Central del Uruguay doing now?
- Why?
This digital era and *Fintech* imply challenges:
- rapid and big changes in payment systems
- potential disruptive impact on financial markets
- risks to monetary policy and financial stability
- risks to tax evasion and financing of illegal activities
- challenges to customer protection

Digital technologies also imply opportunities:
- reduce transaction costs and improve efficiency
- improve safety in financial transactions (crime vs. cyber risk!)
- serve financial inclusion objectives
- *Regtech* contributes to price and financial stability
Central banks in a digital era

- Central banks should:
  - be part of the new paradigm
  - be prepared to fulfill their mandates in a digital era
  - be able to profit from new technologies in their favor in order to:
    - improve efficiency,
    - protect the payment and financial systems, and
    - ensure financial stability
Central banks digital currencies could help to reduce transactions costs to operate means of payment and store of value by:

- reducing costs of printing physical/paper bills
- reducing logistics and cash management issues (importing, storing and distributing bills in the territory)

Reducing paper bills related crime, which is:

- positively correlated with demand for paper currency
- negatively correlated with credit and debit card penetration
Central banks digital currencies could also help to:

- increase efficiency and transparency in the payment system
- improve safety in day-to-day operations
- improve control of illegal activities and tax evasion
- improve customers protection and personal data security
Central bank digital currencies could promote further financial innovation:

- Central banks are part of it together with the industry
- Prolific field for startups developing new products and services (e.g. digital wallets with enhanced customers’ experience)
- Potential for incumbent banks to offer new products and services
Central bank digital currencies could promote financial inclusion:
  - traditionally financially excluded sectors of the population do access mobile phones

Financial inclusion was declared a priority by the Uruguayan government, and the financial inclusion program was created in 2011

- Financial inclusion Law (19210) was passed in 2014
  - Target
    - Universal access
    - Labor market formalization
    - Improving payments system efficiency
Being proactive

- There is an unavoidable technological trend that sooner or later will challenge central banks:
  - jurisdictions going cashless
  - markets are organized based on electronic platforms, some of them without well-defined owners and without assets
  - cryptocurrencies: unit of value, mean of payment and reserve of value? And, who to “blame”? However, increasingly traded
  - better customers experience is highly demanded
  - new products and new ways to provide traditional ones should not escape prudential regulation when involving the same risks
Central Bank Digital Currency
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Thank you!
Age composition of e-peso users

**ePeso users and Uruguayan population between 18 and 89 years**

Edad

- between 18 and 29
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- between 45 and 64
- 65 or more

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Questions and (some tentative) answers

- Impact on banks and other incumbents?
  - new equilibrium: in practice banks are interested to be onboard

- Impact on monetary policy?
  - positive: more transparent and systematic information in real time

- Impact on crisis times?
  - neutral or positive: e-Peso is legal tender as physical bills are
• Impact on users expenditures and consumption patterns?
  • limited: e-Peso will complement, not substitute, means of payment

• Impact on information?
  • positive: analysis (monetary policy, expenditure, etc.) and prevention of tax evasion, money laundry and terrorism financing

• Impact on competition and resilience?
  • positive: providing interoperability regulation and competition policy