Central Bank Digital Currency
A central banker perspective

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SUERF/BAFFI CAREFIN Centre Conference
Milan, 7 June 2018

(The views in this presentation are those of the author and not of the Banco Central del Uruguay)
Outline

- What has Banco Central del Uruguay done?
- Why?
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  - 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
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
<table>
<thead>
<tr>
<th>Participants</th>
<th>Issues digital bills</th>
<th>Provides telecom network</th>
<th>GSMT (Global Solutions for Money Technologies)</th>
</tr>
</thead>
<tbody>
<tr>
<td>50 Aniversario BANCO CENTRAL DEL URUGUAY</td>
<td>antel</td>
<td>RGC</td>
<td></td>
</tr>
<tr>
<td>Storage, management, control of circulation and call center</td>
<td>IN Switch Solutions</td>
<td>redpagos</td>
<td></td>
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<tr>
<td>Management of users, transfers and transactions</td>
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<td></td>
<td>Cash-In and Cash-Out</td>
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</tbody>
</table>
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
- Issue $20,000,000 Uruguayan pesos in digital (e-Peso)
- Transfer to virtual vault
- Transfer to RedPagos first $7,000,000 e-Pesos

2° Stage
- 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
- Make transactions

3° Stage
- Cash-Out through RedPagos
- Return 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

- Instantaneous 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
- Unique bills difficult complete fungibility
  - but GEM makes change automatically
Experience and preliminary evaluation

- Very positive experience
- Develops according to expectations
- No technical incidents

- Mostly P2P transactions
- Increasing number of stores and business
- Banks interested in entering
Further 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
Outline

- What has Banco Central del Uruguay done?
- Why?
Change of paradigm

- This digital era and *Fintech* implies 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 (e.g. M-Pesa in Kenya)
  - *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 exploit new technologies in their favor in order to:
    - improve efficiency,
    - protect the payment and financial systems, and
    - ensure financial stability
Reducing transaction costs

- 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

- These costs may be important in magnitude:

<table>
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<th>% of GDP</th>
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<tbody>
<tr>
<td>Uruguay</td>
<td>0.54%</td>
</tr>
<tr>
<td>of which:</td>
<td></td>
</tr>
<tr>
<td>Central bank</td>
<td>2.2%</td>
</tr>
<tr>
<td>Banks and retails</td>
<td>87.6%</td>
</tr>
<tr>
<td>Households</td>
<td>10.2%</td>
</tr>
<tr>
<td>Netherlands</td>
<td>0.43%</td>
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<td>(Nederlandsche Bank, 2004)</td>
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<tr>
<td>Sweden</td>
<td>0.42%</td>
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<td>(Bergman et al., 2007)</td>
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</table>

- Crime rates are (Rogoff, 2016):
  - 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

Increasing transparency and 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

And financial inclusion:

- traditionally financial excluded sectors of the population do access mobile phones
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”? But, 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

Being proactive
Central Bank Digital Currency
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Grazie mille!