CURRENT TECHNOLOGIES ON PAYMENTS – TRENDS AND CHALLENGES
CURRENT TECHNOLOGIES ON PAYMENTS – TRENDS AND CHALLENGES

• Emergence of new non-traditional players - Tech Giants, telcos, etc.
• FinTech players - pushing innovation and disrupting markets
• Regulation - facilitating market access and competition
• Mobile and internet penetration growing
• Instant Payments being implemented in a growing number of countries
• Consumer demand - growing adoption, in particular by middle-class and millennials
• Disruption, consumer disloyalty and more competition is challenging the incumbents
TECHNOLOGY IS FACILITATING THE EMERGENCE OF NEW PLAYERS AND NEW MEANS TO PAY

Source CTMfile
Using a Mobile Phone or the Internet to Make Payments

- Mobile phones and the internet increasingly offer an alternative to make a payment from an account – either a mobile money account or, through an app or a website, from a financial institution account.

- In high-income economies 55 percent of account owners have done so and 19 percent in developing economies.
FAST PAYMENTS: ADOPTION

Note: EG represents Afreximbank’s Pan-African Payment & Settlement Platform project which is expected to cover all African countries (Afreximbank’s HQ being in Egypt).
What are APIs?

- APIs provide machine-readable access to consumer data stored by financial institutions. They may also allow third parties to programmatically initiate transactions (e.g. payments).
- Third parties can add value to the customer by using bank account data to provide new services. Example: analyze transaction history to recommend best savings or loan products.
- APIs evolved from the practice of ‘screenscraping’, allowing third parties to access internet banking services on behalf on their customers. Screenscraping has been considered inefficient and unsafe.

Example data/services provided through bank APIs:

“Read access”
- Access to the list of accounts held with a financial institution
- Access to account balances
- Access to transaction histories, including transaction-level data (e.g. merchant name/type)

“Write access”
- Initiation of different types of payments
## APIs and Open Banking Around the World

<table>
<thead>
<tr>
<th></th>
<th>European Union (PSD2)</th>
<th>United Kingdom (Open Banking UK)</th>
<th>India (Universal Payments Interface)</th>
<th>Other countries</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Legal basis</strong></td>
<td>Second Payment Services Directive (PSD2)</td>
<td>Enforcement action by the competition authority (CMA)</td>
<td>Regulatory action</td>
<td>Australia is planning to issue binding Open Banking regulations later in 2018, following the completion of public consultations. Japan, Singapore and Hong Kong are considering similar measures. Elsewhere, banks (e.g. BBVA) provide API access to selected partners.</td>
</tr>
<tr>
<td><strong>Institutions affected</strong></td>
<td>All banks</td>
<td>Nine largest banks</td>
<td>All banks</td>
<td></td>
</tr>
<tr>
<td><strong>Scope of API access</strong></td>
<td>Read and write: “account information” and payment initiation</td>
<td>Read and write: accounts, balances, account statements, beneficiaries, standing orders, direct debits, scheduled payments, payment initiation</td>
<td>Read and write: access to balances, payment initiation, payment request initiation. Account address resolution service (routing the API call to an appropriate institution based on an e-mail-like account address)</td>
<td></td>
</tr>
<tr>
<td><strong>Institutional setup</strong></td>
<td>The directive does not prescribe any institutional setup. Banks are free to set up their own consortia if they wish so (e.g. “The Berlin Group”)</td>
<td>“Open Banking Implementation Entity”: a utility (Open Banking UK Ltd.) created by the CMA to steward the standard and oversee its implementation. Funded by the participating banks</td>
<td>API service provided by a payment system operator (National Payments Corporation of India)</td>
<td></td>
</tr>
<tr>
<td><strong>Technical standards</strong></td>
<td>No precise technical standards prescribed, but “strong consumer authentication” (2FA+) required</td>
<td>Prescribed API based on RESTful principles; where practicable, ISO 20022 field names and definitions are used</td>
<td>A custom messaging standard based on XML/Web Services.</td>
<td></td>
</tr>
</tbody>
</table>
What is tokenization

- "The process of substituting a sensitive data element with a non-sensitive equivalent"
- In card payments, it refers to the replacement of the “Primary Account Number” (PAN) with another number, which uses a similar format
- Issuers do not store token/PAN pairs. Only the vault maintained by the “Token Service Provider” can convert between the two
- Tokens can be “domain-restricted”: limited to use with a single merchant or a single device
- Current use cases: ApplePay/Google Pay, card-on-file. In the future: IoT, web payments and more
1. Blockchain-based DLT systems take the form of an append-only chain of data ‘blocks’. New additions to the database are initiated by one of the members (nodes), who creates a new “block” of data containing several transaction records.

Member A creates new transaction block with a transaction from member A to member B.

2. Information about this new data block is then shared across the entire network, containing encrypted data so transaction details are not made public.

3. All network participants collectively determine the block’s validity according to a pre-defined algorithmic validation method (‘consensus mechanism’). Only after validation, all participants add the new block to their respective ledgers. Through this mechanism each change to the ledger is replicated across the entire network and each network member has a full, identical copy of the entire ledger at any point in time.

What is a Cryptocurrency?

Cryptocurrencies are digital representations of value that are denominated in their own unit of account, distinct from e-money.

**Distinct characteristics:**

1) Not backed by an underlying asset (have no intrinsic value; value is determined by demand & supply)
2) Do not represent a liability on any institution
3) Exchanged through distributed ledgers absent central record keeping and absent trust between network members
4) Do not rely on institutional arrangements or intermediaries for P2P transfers

**Motivations:**

- Solve “double-spend” problem
- Eliminate need for trusted central party & enable P2P transfers of digital value
- Eliminate government control over money supply

**Risks:**

- High price volatility driven by speculative behavior
- Lack of regulation/uncertainty about regulation
- Data loss problem
- Not widely accepted as unit of exchange for goods & services; conversion to fiat currency necessary

Source: CPMI, "Digital Currencies", BIS, November 2015
THE WORLD IS MOVING TOWARDS CASHLESS, CONVENIENCE AND SPEED IN PAYMENTS

- **Mobiles** provide the ability to pay everywhere and at any time.

- **Instant payments** provide the ability to pay and be paid in real time.

- New technologies such as **Blockchain** provide new means for direct and transparent payments without a central counterparty and are being explored for multiple use-cases.

- **Tokenization** provides an efficient means for protecting sensitive payments data.

- **Cryptoassets** provide new means for making payments – but also bring new risks which need to be analyzed in the context of security, convenience and transparency.

- **Artificial Intelligence** (AI), machine learning and Reg Tech provide new tools for compliance.
CHALLENGES FOR CENTRAL BANKS – KEEP THE PACE

Central Banks will need to be dynamic and agile in order to quickly react to market developments and

- Assess and review legacy systems in light of the need for enhanced efficiency

- Ensure an **appropriate legal framework** guided by the main principles:
  - Open Access and a Level Playing Field
  - High level of consumer protection
  - Facilitating (not hampering) innovation
  - Providing flexibility for innovation (Fintech accelerators, Sandboxes)

- As overseers
  - Ensure that an appropriate oversight framework is in place
  - **Identify new risks and risk mitigations**
  - Address cyber-risk

- As a catalyst
  - Monitor market developments
  - **Promote collaboration between different players**
  - Identify needs for standardization or other collaboration
DRIVERS FOR SUCCESS

• Appropriate **legal framework** - ensuring market access, competition, consumer protection, and safety and efficiency of payments

• Interoperability

• Consumer-centric, easiness of use

• **State of the art payment infrastructures** with non-discriminatory direct or indirect access, in particular for new players

• Making room for **innovation**:
  - Open banking
  - APIs (Application Programming Interfaces)
In India, solving for the payment inefficiencies through e-payments can result in large direct monetary benefits to government equal to USD 15.8 billion annually.

McKinsey Global Institute, 2010

A more intensive use of electronic payment instruments would result in annual social cost savings amounting to approximately 0.4% of GDP.

Central Bank of Hungary, 2011

Approximately 1% of the annual GDP could be saved at the economy level in Albania if 75% of current paper-based payments were digitized.

World Bank, 2017
THE REMITTANCES AND PAYMENTS PROGRAM IN ALBANIA: A DECISIVE EFFORT TO FACILITATE REMITTANCES AND DIGITALISATION

- A decisive effort by the Bank of Albania to develop the national payments system and improve access and usage of a transaction account
- Diagnostics of remittances markets and financial inclusion, from a payments perspective
- Cost study of retail payment instruments
- Adoption of retail payments strategy
- Comprehensive review of the legal framework, based on EU standards
- Inclusive consultation process and encouraging collaboration through the NPSC
- Financial education activities – Greenback 2.0 approach
- Focus on improving payment infrastructures to leverage on new technologies
Thank You!

Céu Pereira
World Bank, Payment Systems Development Group

c eupereira@worldbank.org

The Remittances and Payments Program (RPP) is supported by the Government of Switzerland