El Salvador: Measuring Cross-Border Digital Trade

Management of Economic Studies and Statistics

Department of External Sector

2023
Agenda

- Background
- Information collected
- Pilot test
- Data Processing
- Visualization of cross border digital trade
- Classification challenges
Since 2021, the Central Reserve Bank of El Salvador has undertaken efforts to measure cross-border digital trade.

The measurement is based on the conceptual framework suggested in the Handbook on Measuring Digital Trade.

Source: credit and debit card payment data.

Informants: established financial institutions in El Salvador.
Payment Card schemes - Data flow

1. The bank issues a debit or credit card to its customer.

2. The cardholder places an online order in an app and pay with a credit or debit card.

3. A payment gateway receives the card data and transfers it to the acquiring bank.

4. The acquiring bank receives a payment request and forwards it to the card networks (Visa and Mastercard).

5. The card networks submit the transaction to the customer’s issuing bank for authorization.

Information collected:

- **Issuer perspective operations**: Transactions and/or online purchases made abroad with a card issued in El Salvador.

- **Acquiring perspective operations**: Transactions and/or online purchases made in El Salvador with a card issued in the rest of the world (financial institutions in El Salvador process these charges and thus obtain the information).
<table>
<thead>
<tr>
<th>N°</th>
<th>Variables</th>
<th>Description</th>
<th>Issuer</th>
<th>Acquirer</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Financial institution</td>
<td>Code of financial institutions.</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>2</td>
<td>Market type</td>
<td>Role of the financial institution in the transaction process (Issuer/Acquirer)</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>3</td>
<td>Unique Customer Identification Number (NIU)</td>
<td>Numerical or alphanumeric arrangement that is exclusively attributed to a bank customer.</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Kind of legal entities</td>
<td>It is the classification of the cardholder (1: Natural; 2: Legal).</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Gender of the cardholder</td>
<td>The gender of the cardholder.</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Document</td>
<td>The cardholder’s type of document. The documents that must be presented are DUI, NIT, and others.</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Document Number</td>
<td>It is the document code presented according to the type of document selected.</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Municipality of residence of the cardholder</td>
<td>Municipality where the cardholder lives, according to DUI or information provided by the client.</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Unique identifier or card number</td>
<td>Last four digits of the cardholder’s card number</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Card issuing country</td>
<td>This field indicates the country where the card was issued, complete this field according to the ISO 3166-alpha-3 code for countries.</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>11</td>
<td>Type of payment card</td>
<td>It is the type of card that was used in the transaction (credit or debit).</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Card franchise</td>
<td>Brand of the franchise to which the debit or credit card belongs.</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>13</td>
<td>Card category</td>
<td>Card category based on metal color.</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>transaction date</td>
<td>Date the card transaction was made; must contain the following format: YYYY-MM-DD Ex. 2021-05-01</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>15</td>
<td>establishment name</td>
<td>Name of the establishment or business where the purchase was made.</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>16</td>
<td>Merchant Category Code (MCC)</td>
<td>The Merchant Category Code (MCC) is a four-digit number listed in the ISO 18245 standard for retail financial services. It is used to classify a company according to the types of goods or services it provides.</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>17</td>
<td>Transaction amount</td>
<td>Transaction value represented in US dollars</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>18</td>
<td>Country of domicile of the establishment</td>
<td>The country of the business where the transaction payments are directed, the code will be used according to the ISO 3166 country catalog.</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>19</td>
<td>Transaction authorization code</td>
<td>It is a number that confirms or refers to the fact that the debit card or credit card transaction has been approved.</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>
Pilot test (Overcoming Challenges):

Detailed international purchase data was obtained from four banks, representing 94% of credit and debit card transactions from commercial banks in El Salvador. The subsequent analysis revealed specific characteristics of the received information.

- Informants were requested to provide online transactions only
- Enhancing Data Consistency through Catalog Standardization
- Rigorous research for a more accurate MCC assignment, and replace the initial codes provided by banks.
- Enhancing Merchant Name Standardization with Python Script
El Salvador: Cross-border digital trade measurement 2021
Data process

Data collection and storage:
- Credit and debit card transaction data is received from multiple financial institutions in a web repository. Subsequently, we download the data.

Data transformation:
- Using a Python script we process each dataset, and standardize it, for consolidation into a single database. Subsequently, data cleaning is performed, which includes tasks such as removing duplicates.

Business Name Standardization:
- Once the database is clean, one of the key challenges is standardizing the names of businesses or establishments, for which Python regular expressions are employed.

Data modeling:
- The final step is data modeling in Power BI and the analysis of data through dashboards to obtain statistics on cross-border digital trade.
EL Salvador: Cross-border Digital Trade 2021

EL SALVADOR - COMERCIO DIGITAL TRANSFRONTERIZO

Monto: $460.6M
Transacciones: 19.2M

Mujeres: 31.6%
Hombres: 57.7%

Tendencia mensual de compras

Compras de comercio digital por departamento

Top 10 establecimientos

- PAYPAL: 23966 Transacciones, $37,016,623.74 Total de compras
- AMAZON MARKETPLACE: 36869 Transacciones, $9,009,079.96 Total de compras
- EBAY: 31915 Transacciones, $2,100,278.96 Total de compras
- FACEBOOK: 23367 Transacciones, $2,051,575.91 Total de compras
- AVANCA: 19016 Transacciones, $19,327,271.25 Total de compras
- NETFLIX: 1859 Transacciones, $18,545,911.60 Total de compras
- AMAZON: 26709 Transacciones, $16,746,097.13 Total de compras
- UBER: 11103 Transacciones, $15,651,689.51 Total de compras
- APPLE: 6484 Transacciones, $15,520,699.99 Total de compras
- RECOMpra: 1172 Transacciones, $15,278,691.34 Total de compras
Cross-border Digital Trade 2021: Goods

- **Monto**: $137.1M
- **Transacciones**: 2.7M
- **Mujeres**: 33.2%
- **Hombres**: 57.4%

**Tendencia mensual de compras**
- $15 mill.
- $10 mill.
- $5 mill.
- $0 mill.

**País de compra**
- **USA**

**Top 10 establecimientos**
- AMAZON MARKETPLACE: $30,008,976.69
- EBAY: $1,820,278.95
- APPLE: $15,520,409.93
- ALIDEXPRESS: $12,982,371.33
- AURASACOM: $1,955,456.25
- SHEIN: $8,291,129.94
- WALMART: $2,611,666.29
- AEROPOST.COM: $2,438,771.42
- MAUS INTERNATIONAL: $2,378,741.31
- RFLX RHV: $1,745,464.73
Cross-border Digital Trade 2021: Services

**EL SALVADOR - COMERCIO DIGITAL TRANSFRONTERIZO**

- **Monto**: $323.5M
- **Transacciones**: 16.5M

**Mujeres**: 31.0 %

**Hombres**: 57.9 %

### Tendencia mensual de compras
- $0 mill.
- $10 mill.
- $20 mill.
- $30 mill.
- $40 mill.

### País de compra

<table>
<thead>
<tr>
<th>País de compra</th>
<th>USD</th>
<th>LLD</th>
<th>PAN</th>
<th>NLD</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>USA</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Top 10 establecimientos

<table>
<thead>
<tr>
<th>Establecimientos</th>
<th>No Transacciones</th>
<th>Total de compras</th>
</tr>
</thead>
<tbody>
<tr>
<td>PAYPAL</td>
<td>32966</td>
<td>$17,016,223.47</td>
</tr>
<tr>
<td>FB EBOOK</td>
<td>23667</td>
<td>$2,105,372.91</td>
</tr>
<tr>
<td>AVIANCA</td>
<td>19016</td>
<td>$9,512,271.23</td>
</tr>
<tr>
<td>NETFLIX</td>
<td>1819</td>
<td>$10,543,011.62</td>
</tr>
<tr>
<td>AMAZON</td>
<td>26290</td>
<td>$16,764,907.13</td>
</tr>
<tr>
<td>UBER</td>
<td>11103</td>
<td>$15,651,222.21</td>
</tr>
<tr>
<td>BOACOMpra</td>
<td>1574</td>
<td>$15,251,954.84</td>
</tr>
<tr>
<td>UNITED AIRLINES</td>
<td>9219</td>
<td>$12,371,663.29</td>
</tr>
<tr>
<td>AIRBNB</td>
<td>12692</td>
<td>$9,608,724.68</td>
</tr>
<tr>
<td>GARMBA</td>
<td>1547</td>
<td>$8,048,644.78</td>
</tr>
</tbody>
</table>
Cross-border Digital Trade 2021: DIPS
Cross-border Digital Trade 2021: Digitally ordered

**Monto**

$276.4M

**Transacciones**

7.0M

**Mujeres**

33.8 %

**Hombres**

55.8 %

**Tendencia mensual de compras**

- $30 mill.
- $20 mill.
- $10 mill.
- $0 mill.

**Compras de comercio digital por departamento**

**Top 10 establecimientos**

- **USA**: 36988, $30,006,901,662
- **EBAY**: 31915, $2,380,217,856
- **AVIANCA**: 19016, $19,327,271,229
- **AMAZON**: 25709, $16,745,901,113
- **UBER**: 11105, $13,057,693,511
- **APPLE**: 6484, $15,583,609,889
- **UNITED AIRLINES**: 9219, $12,371,569,289
- **ALIEXPRESS**: 23491, $12,083,871,333
- **ALIBABA.COM**: 7123, $11,995,446,253
- **SHEIN**: 25586, $8,291,123,944
Cross-border Digital Trade 2021: Digitally ordered and delivered
Limitations of credit and debit card information for measuring cross-border digital trade

1. Challenges in the Classification of Goods and Services: The separation between goods and services for classification becomes complicated, especially when using digital intermediation platforms. Example: Microsoft

2. Complexities with Digital Intermediation Platforms: Platforms such as Airbnb, PayPal and Uber pose particular challenges in determining the residency of countries involved in transactions. In addition, they make it difficult to clearly distinguish between the amounts attributed to purchased goods or services and the commissions retained by the platform. Uber example

3. Lack of detailed information: makes it difficult to accurately classify goods. It is not possible to use the Central Product Classification (CCP) for the classification of goods since only the name of the company is known and not the product purchased. Example: Amazon

Thank you

Contact: gabriela.aquino@bcr.gob(sv)