What is Driving Financial De-dollarization in Latin America?

Mercedes García-Escribano and Sebastián Sosa

WHD-IMF

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Financial dollarization has been a feature of many LA countries, consequence of a history of severe economic crisis and high inflation.

Since early 2000s: gradual and sustained market-driven de-dollarization.

What have been the drivers of de-dollarization?
Literature on de-dollarization—limited

Extensive literature on causes of dollarization but... **literature on determinants of de-dollarization is scant.**

- Reinhart, Rogoff, and Savastano (2003); Galindo and Leiderman (2005); Erasmus et al. (2009); Kokenyne et al. (2010): **review international experience** with de-dollarization
  - Dollarization not easily reversed, even after removing causes.
  - Forced de-dollarization (Bolivia and Peru in 1980s): high macroeconomic costs and returns.
  - Successful cases are market-based and combined macroeconomic stability with other policies (such as financial sector development in local currency).


This paper...

- Explores the factors that explain de-dollarization in Bolivia, Paraguay, Peru, and Uruguay.

- Standard unrestricted VAR:
  - changes in dollarization of deposits and credits
  - 3 groups of factors:
    - macroeconomic variables
    - prudential regulations
    - development of the capital market in domestic currency
This paper…

Finds:

- **Drivers of deposit de-dollarization** are different from those of credit de-dollarization
- **Appreciation** trends key for deposit de-dollarization
- active management of **reserve requirements** contributed to credit de-dollarization
- **Other prudential measures** also discouraged lending in foreign currency
- **Extension of the domestic currency yield curve** facilitated de-dollarization of credit
- **De-dollarization of deposits** also contributed to credit de-dollarization
- **Exchange rate volatility**, associated to appreciation, helped credit de-dollarization in Peru
I. INTRODUCTION

II. DE-DOLLARIZATION—STYLIZED FACTS

III. EXPLAINING DE-DOLLARIZATION: EMPIRICAL APPROACH

IV. EXPLAINING DE-DOLLARIZATION: MAIN RESULTS

V. CONCLUDING REMARKS
II. De-dollarization—stylized facts

- De-dollarization: gradual; period of macroeconomic stability; do not reflect valuation effect
- Deposit de-dollarization (Bolivia, Peru) reversed following Lehman Brothers, but quickly reserved thereafter.

![Graphs a. Dollarization of Credit and b. Dollarization of Deposits](image)

**a. Dollarization of Credit 1/**
(Percent of total credit outstanding)

**b. Dollarization of Deposits 1/**
(Percent of total deposits)

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1/ Foreign currency credit evaluated at constant exchange rate.

2/ Excludes foreign currency deposits for nonresidents.
II. De-dollarization—stylized facts

Table 1. De-dollarization (in percent), 2001-2010 1/

<table>
<thead>
<tr>
<th></th>
<th>Dollarization 2001:Q1</th>
<th>Dollarization 2010:Q3</th>
<th>De-dollarization 2001-2010</th>
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<tbody>
<tr>
<td>Peru</td>
<td>deposits</td>
<td>78.5</td>
<td>49.7</td>
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<tr>
<td></td>
<td>credit</td>
<td>78.9</td>
<td>52.1</td>
</tr>
<tr>
<td>Paraguay</td>
<td>deposits</td>
<td>69.7</td>
<td>43.5</td>
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<td>credit</td>
<td>53.3</td>
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<tr>
<td>Uruguay</td>
<td>deposits 2/</td>
<td>87.0</td>
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<td>credit</td>
<td>75.1</td>
<td>52.5</td>
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<td>55.3</td>
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<tr>
<td></td>
<td>credit</td>
<td>75.4</td>
<td>49.2</td>
</tr>
</tbody>
</table>

1/ Foreign currency deposits and credit evaluated at constant exchange rate.
2/ Excludes foreign currency deposits for nonresidents.
II. De-dollarization—stylized facts

- Dollarization declined for all types of deposits
- Dollarization continues to be higher for less liquid deposits

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**a. Bolivia. Deposit Dollarization by Maturity (in percent)**

**b. Peru: Deposit Dollarization by Maturity**

1/ Foreign currency deposits evaluated at constant exchange rate.
II. De-dollarization—stylized facts

- Dollarization declined for all credit sectors
- Dollarization continues to be higher for loans with longer maturity (mortgages and commercial credit)

![Graphs showing credit dollarization by sector in Bolivia and Peru.](image)
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III. EXPLAINING DE-DOLLARIZATION: EMPIRICAL APPROACH

IV. EXPLAINING DE-DOLLARIZATION: MAIN RESULTS

V. CONCLUDING REMARKS
III. EXPLAINING DE-DOLLARIZATION: EMPIRICAL APPROACH

- Standard unrestricted VAR
- Examine the drivers of short-term variations in both deposit and credit dollarization
- VAR also include 3 sets of variables:
  - macro-variables
  - introduction of prudential measures
  - development of the capital market in local currency
- Choleski decomposition (results robust to different ordering)
- The model is estimated with three lags
- Data: monthly for the period 2001-2010 (starting in 2003 and 2004 for Bolivia and Uruguay due to financial crises)
III. EXPLAINING DE-DOLLARIZATION: EMPIRICAL APPROACH

- **Macro-variables**
  - inflation (cumulative over two months)
  - percentage change of the nominal exchange rate (cumulative over two months)
  - volatility of daily change of the nominal exchange rate over 90-days
  - change of the EMBI spread

- **Prudential variables**
  - change of the spread between RR rate in foreign to domestic currency
  - dummy=1 (for three months) after the introduction of other prudential measures

- **Development of local currency bond market**
  - dummy=1 if medium-to-long-term bonds were issued (between 10-30 years, depending of the country)

- **Financial dollarization**
  - change in deposit dollarization
  - change in credit dollarization
Macroeconomic Stability: Inflation

Figure 5. Evolution of Inflation
(average annual inflation, in percent)
Introduction of Prudential Measures

- Effective management of the ratio of foreign-to-local currency RR rates.
- Raised **provisions for foreign currency loans**.
  - Bolivia (early-2009): additional provision of up to 1.5 percent for foreign currency denominated loans classified as “A” (best quality).
  - Peru (mid-2006): carry out a routine evaluation of currency risks, or set up an additional reserve ranging from 0.25 to 1 percent for credit in foreign currency not evaluated.

- Tightened capital requirements against **open foreign exchange positions**.
  - Bolivia (late 2009): reduced long open position to 60 percent, from 70 percent.
  - Paraguay (mid-2007): introduced a net open position limit of 50 percent of capital and (in late-2008) reduced the long position to 30 percent.
  - Peru (early-2010): changed the long (short) open position to 75 (15) percent of capital in, from 100 (10) percent of capital.
  - Uruguay (late-2003): set a net open position limit of 150 percent of minimum required regulatory capital.

- Uruguay (mid-2006): **differentiated capital risk weights on foreign currency loans**.

- Bolivia (mid-2006): **FTT** on foreign currency loans and credits, while exempted transactions in Bolivianos.
Issuance of Local Currency Long-term Bonds

- Bolivia, Peru and Uruguay issued public bonds in domestic currency with maturities exceeding 10 years
- Facilitating bank funding and pricing of long-term loans in domestic currency.
- The longest maturity of government paper in domestic currency
  - In Peru: 32 years (5 years in 2003)
  - In Bolivia: 30 years
  - In Uruguay: 15 years

a. Credit dollarization and issuances of long term public debt in domestic currency

b. Peru: Domestic sovereign yield curve

1/ Foreign currency credit evaluated at constant exchange rate.
Changes in the Exchange Rate and Dollarization Ratios
2003-2010 1/2/

2/ Foreign currency deposits evaluated at constant exchange rate.
3/ Excludes foreign currency deposits for nonresidents.
Exchange Rate Developments

Bolivia 1/
- credit dollarization
- deposit dollarization

Paraguay 1/
- credit dollarization
- deposit dollarization

Peru 1/
- credit dollarization
- deposit dollarization

Uruguay 1/
- deposit dollarization
- credit dollarization

1/ Foreign currency credit evaluated at constant exchange rate.
Exchange Rate Volatility

Monthly standard deviation of daily percentage change of nominal exchange rate over past 90-days

1/ Foreign currency credit and deposits evaluated at constant exchange rate.
Outline

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IV. EXPLAINING DE-DOLLARIZATION: MAIN RESULTS

V. CONCLUDING REMARKS
Response of Dollarization to a Shock to Differential Reserve Requirement Ratios 1/

Figure 10. Response of Dollarization to a Shock to Differential Reserve Requirement Ratios 1/
Source: authors’ calculations.

1/ One standard deviation shock + - 2 s.e.
Response of Dollarization to the Introduction of Prudential Measures 1/

Figure 11. Response of Dollarization to the Introduction of Prudential Measures 1/
Source: authors' calculations.
1/ One standard deviation shock $+ - 2 \text{ s.e.}$
Response of Dollarization to the Issuance of Local Currency Long-term Bonds 1/

Figure 12. Response of Dollarization to the Issuance of Local Currency Long-term Bonds 1/

Source: authors’ calculations.
1/ One standard deviation shock + 2 s.e.
Response of Dollarization to an Exchange Rate Shock 1/

Source: authors’ calculations.
1/ One standard deviation shock + - 2 s.e.
Response of Dollarization to an Exchange Rate Volatility Shock 1/

Figure 14. Response of Dollarization to an Exchange Rate Volatility Shock 1/

Response of Deposit Dollarization
Bolivia

Response of Credit Dollarization
Bolivia

Source: authors’ calculations.
1/ One standard deviation shock  + - 2 s.e.
Response of Dollarization to Exchange Rate Shocks

Size of the Shock 1/

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<th>ER changes</th>
<th>ER volatility</th>
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<td>Paraguay</td>
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<td>Peru</td>
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<td>Uruguay</td>
<td>2.06</td>
<td>0.16</td>
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1/ One st. dev. shock
Response of Credit Dollarization to a Shock to Deposit Dollarization

Figure 15. Response of Credit Dollarization to a Shock to Deposit Dollarization

Bolivia

Paraguay

Peru

Uruguay

Source: authors' calculations.

1/ One standard deviation shock + - 2 s.e.
Table 5. Variance Decomposition of Changes in Credit Dollarization

<table>
<thead>
<tr>
<th>Horizon (months)</th>
<th>Bolivia (in percent)</th>
<th>Paraguay (in percent)</th>
<th>Peru (in percent)</th>
<th>Uruguay (in percent)</th>
<th>Average (in percent)</th>
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<tr>
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<td>7.9</td>
<td>4.0</td>
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<td>3.1</td>
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</table>

Source: authors’ calculations.

Contribution of shocks to local currency bond market development

<table>
<thead>
<tr>
<th>Horizon (months)</th>
<th>Bolivia</th>
<th>Peru</th>
<th>Uruguay</th>
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<td>0.3</td>
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<td>3</td>
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<td>15.8</td>
<td>7.8</td>
<td>9.2</td>
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</table>

Source: authors’ calculations.

Contribution of shocks to deposit dollarization

<table>
<thead>
<tr>
<th>Horizon (months)</th>
<th>Bolivia (in percent)</th>
<th>Paraguay (in percent)</th>
<th>Peru (in percent)</th>
<th>Uruguay (in percent)</th>
<th>Average (in percent)</th>
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<td>0.1</td>
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</table>

Source: authors’ calculations.
Table 6. Variance Decomposition of Changes in Deposit Dollarization

<table>
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<tr>
<th>Horizon (months)</th>
<th>Bolivia</th>
<th>Paraguay</th>
<th>Peru</th>
<th>Uruguay</th>
<th>Average</th>
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<td>9.2</td>
<td>8.9</td>
<td>7.6</td>
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Source: authors’ calculations.
### Table 7. What Drives De-dollarization?

Impulse Response Functions: Summary of Results

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<td><strong>Credit Dollarization</strong></td>
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- The steady decline in FD in these countries has been remarkable, but dollarization levels are still high

**Challenge:** continue striving to lower FD

**Policy implications**

- Maintaining macroeconomic stability (especially low and stable inflation)
- Prudential regulatory measures (including active management of RR) to ensure that currency risks are properly internalized by agents
- Capital market in domestic currency in these countries is still narrow; its development would help enhancing de-dollarization (not only public but also private bonds)
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