

11th IMF Statistical Forum
**MEASURING MONEY IN THE
DIGITAL AGE**

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#StatsForum



Cross-Border Crypto Flows: Measurement, Drivers & Policy Implications*

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(*) The views expressed in this paper are those of the authors and do not represent those of the IMF, IMF Management, or its Executive Board. Furthermore, the work does not intend to give any particular policy recommendations.

Motivation

Cross-border crypto flows (CBCFs)

- May significantly **alter the trade offs between the benefits Vs costs of cross-border flows** by impacting the **level and/or volatility** of flows
- May significantly **reduce the potency of CFMs**
- Are **not systematically measured** by statistical agencies around the world
- Have been **measured** by an increasing and heterogenous variety of **ad hoc methods**

Key questions

1. Definition

- What is a cross-border crypto flow (CBCFs)?

2. Measurement

- What estimates of CBCFs exist?
- What assumptions do they rely on?
- What similarities/differences do they exhibit?
- How large/small are they relative to traditional capital flows?

3. Dynamics and Drivers

- Are CBCFs more/less volatile than traditional flows? Are they correlated? Pro-cyclical?
- Do they respond to push/pull factors? Are they related to remittances?

4. Normative

- What policy recommendations can be drawn from these results?

How we do it

1. Definition:

- Provide working definition of CBCFs

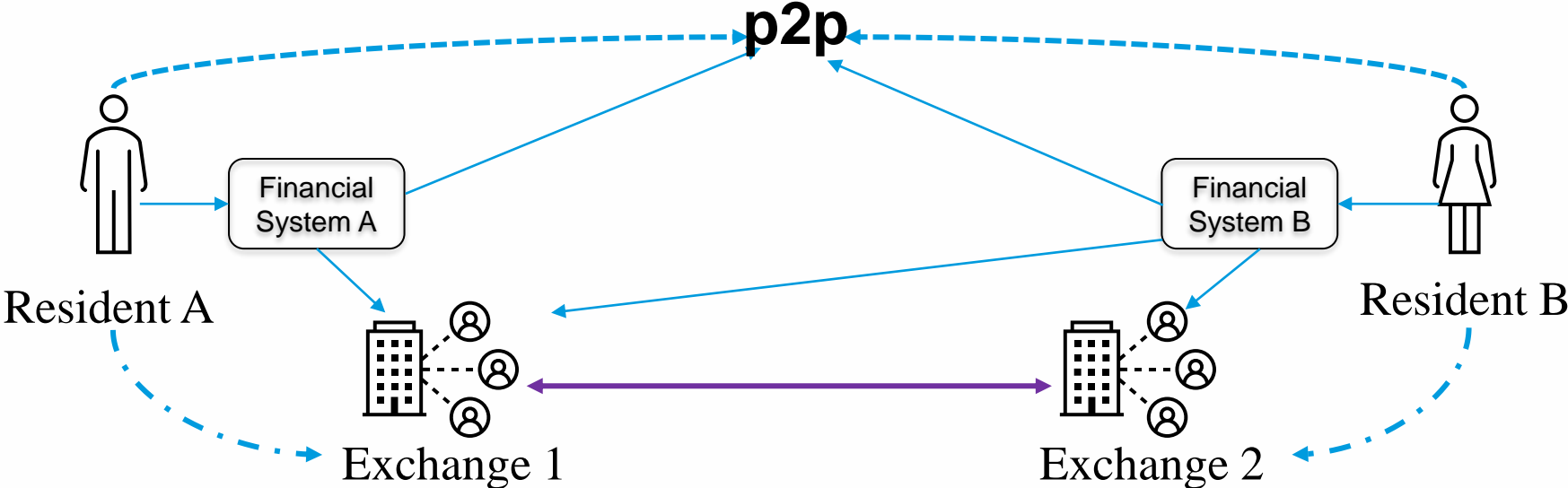
2. Measurement:

- Describe and compare alternative methodologies
- Two Case Studies
 - Brazil
 - Global CBCFs

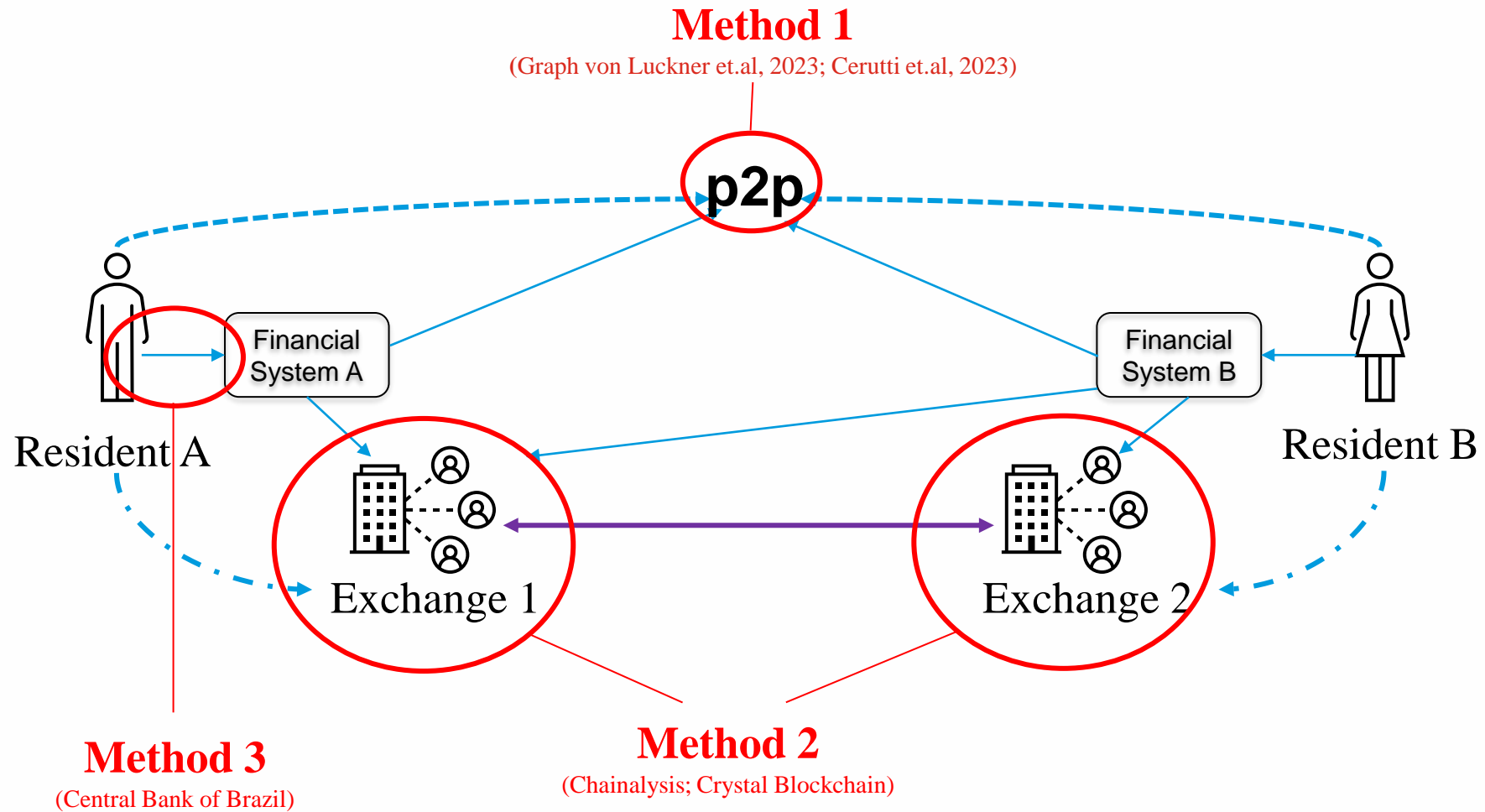
3. Drivers:

- Push/pull factors analysis through a SVAR (Brazil)

Cross-Border Crypto Flows in Practice

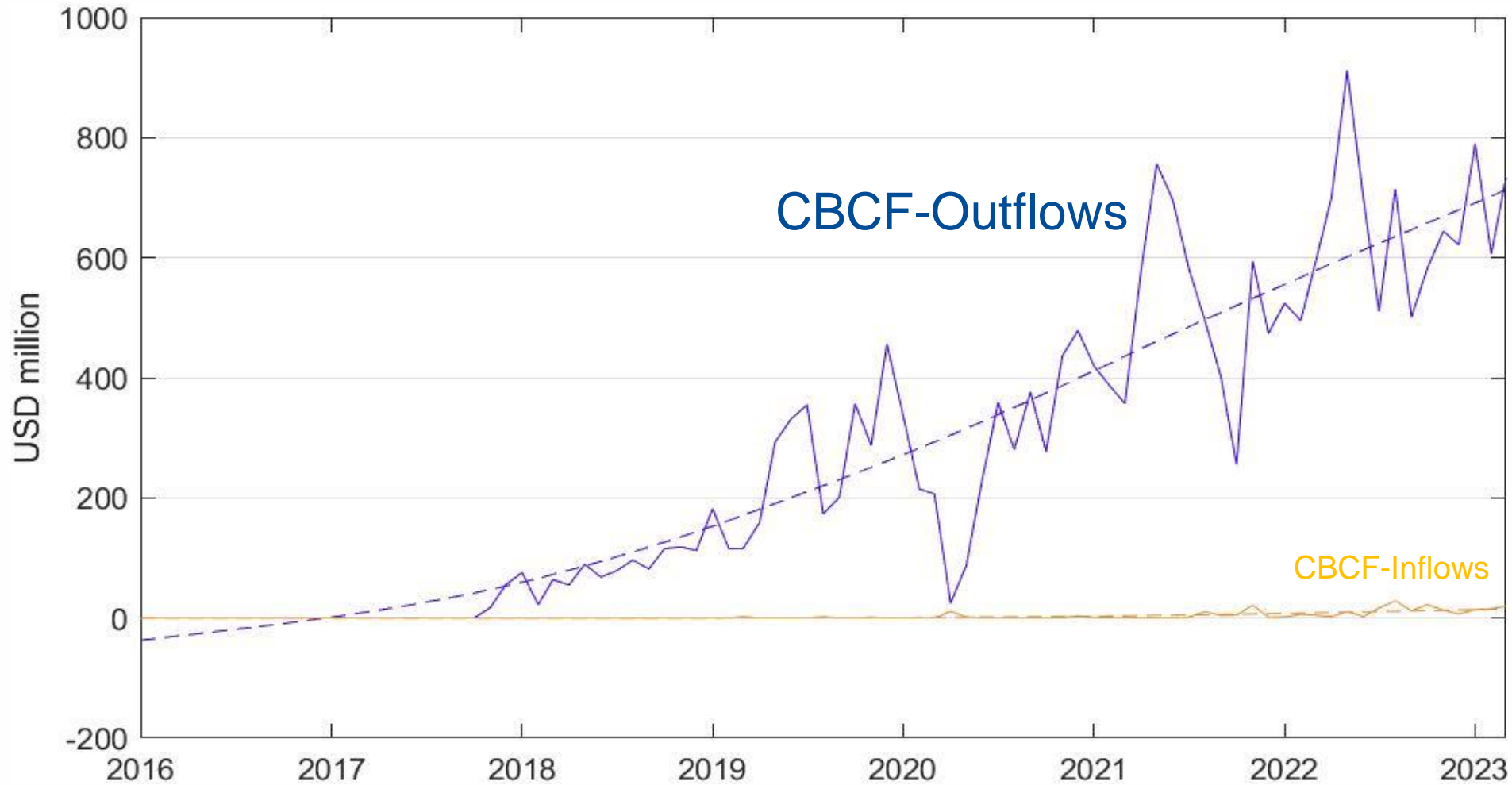


Measuring Cross-Border Crypto Flows in Practice



Case Study: Brazil

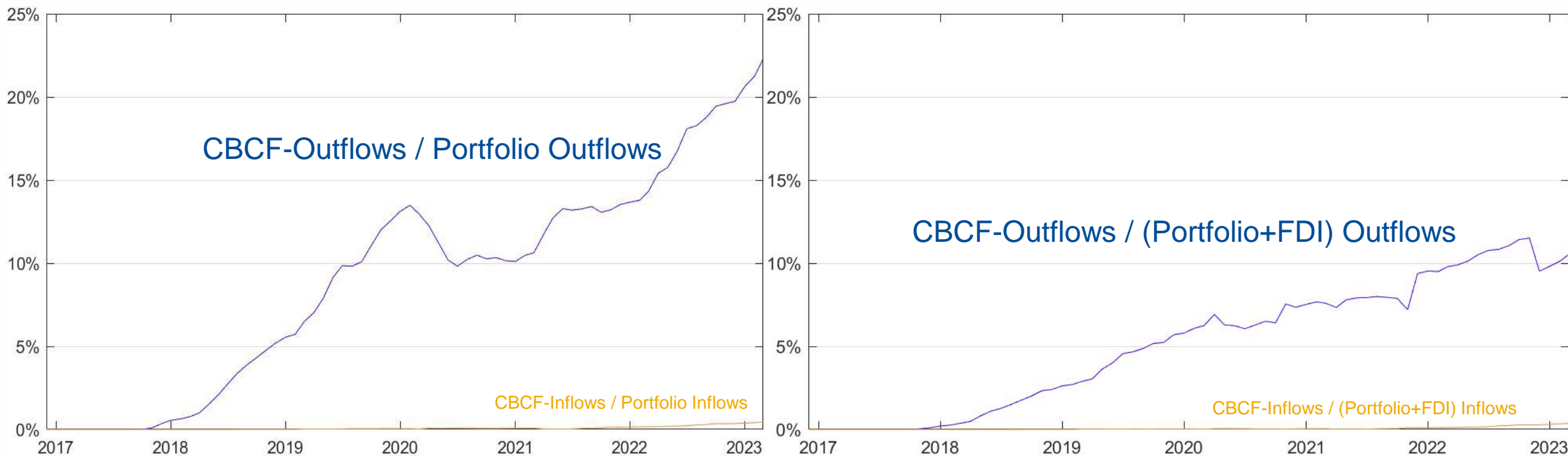
There is upward trend in the level of net CBCF Outflows (net crypto imports) by Brazilians



Note: Stablecoins are included. Source: Central Bank of Brazil and author's calculations

Case Study: Brazil

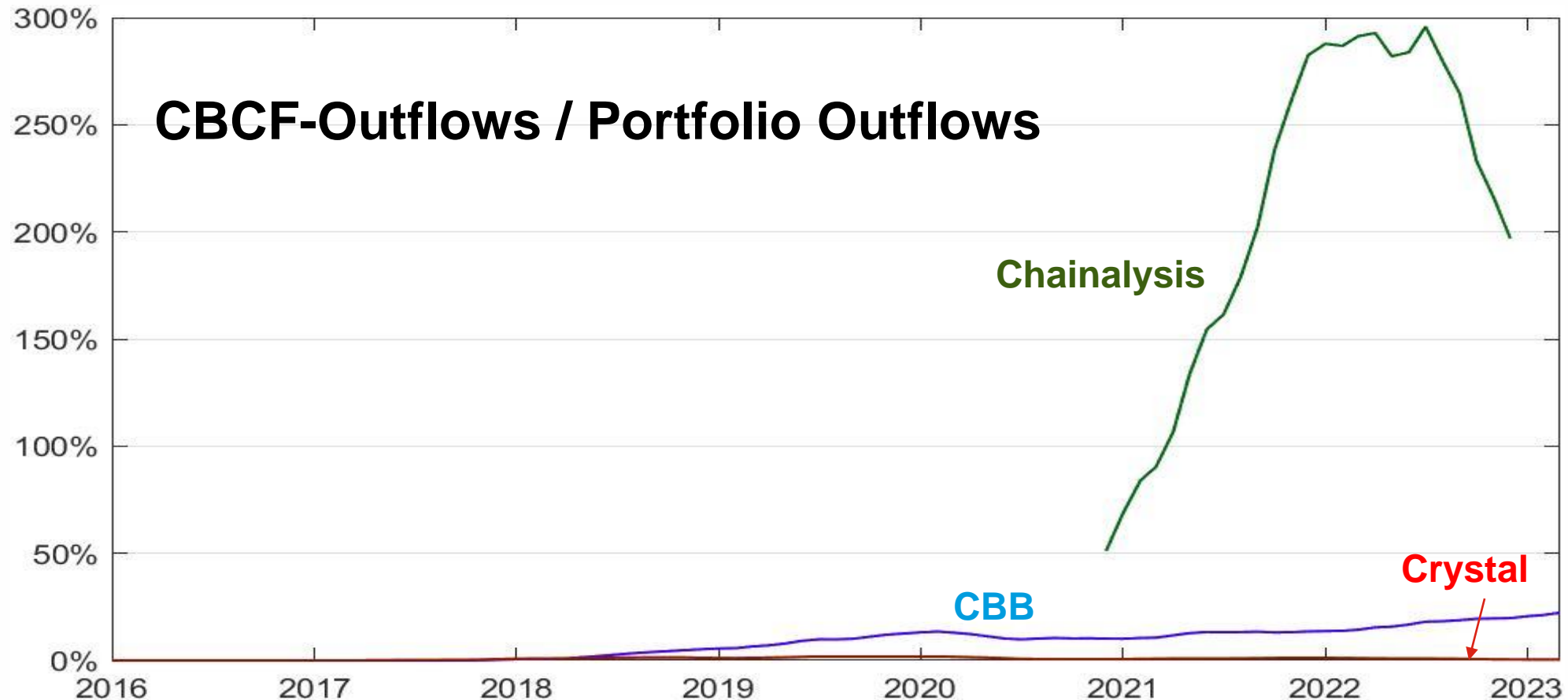
- The share of outflows* via CBCF relative to traditional capital outflows has also steadily increased, reaching near 25% and 10% relative to Portfolio (PF) and PF+FDI



(*) Note: 12-month moving average. Portfolio outflows refers to acquisition of portfolio assets by Brazilian residents. Source: Central Bank of Brazil and author's calculations

Case Study: Brazil

Strong differences across methodologies: While Chainalysis outflows are an order of magnitude higher, those of Crystal are much lower

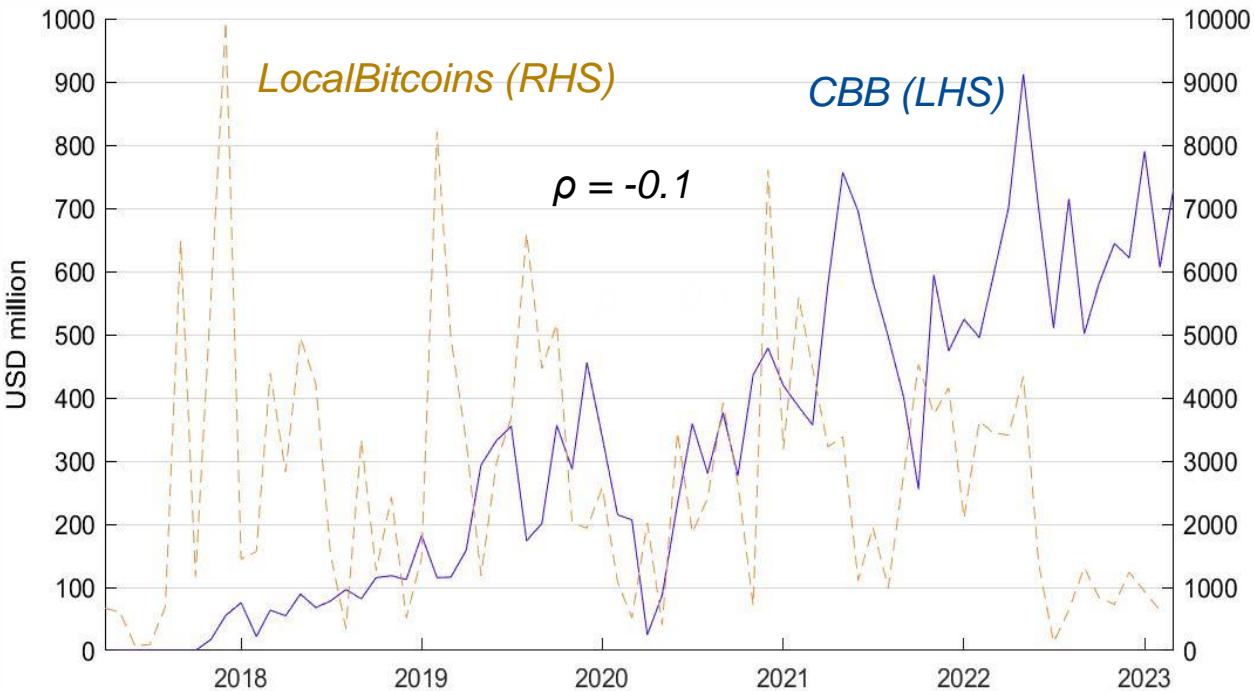


Note: 12-month avgs. Crystal data does not include two exchanges included in the report “Geography of Bitcoin Transaction Dynamics”, as they are now registered in Brazil and other countries (not only Brazil). Source: Central Bank of Brazil, Chainalysis, CrystalBlockchain and author’s calculations.

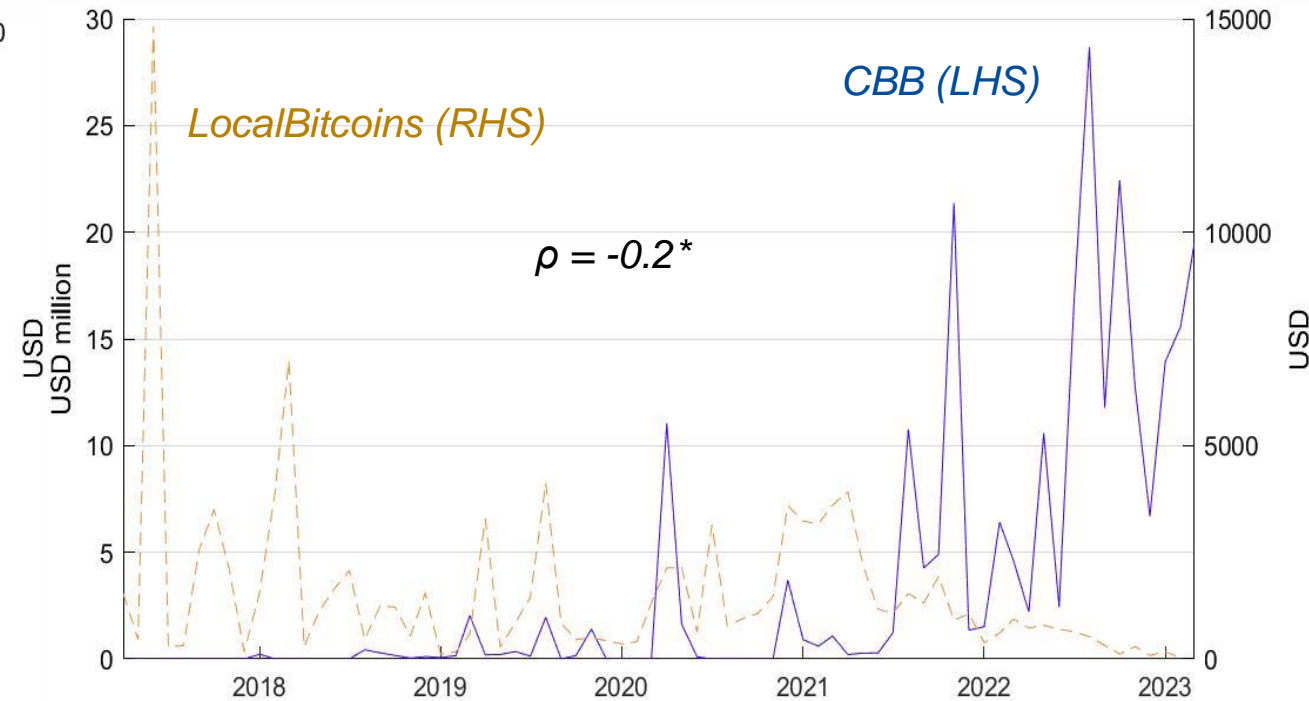
Case Study: Brazil

Data from LocalBitcoins is largely at odds with CBB in both levels and direction of flows

CBCF - Outflows



CBCF - Inflows



Note: LocalBitcoins data comes from Cerutti et.al (2023). Source: Central Bank of Brazil, Cerutti et.al (2023) and author's calculations.

Case Study: Global CBCFs

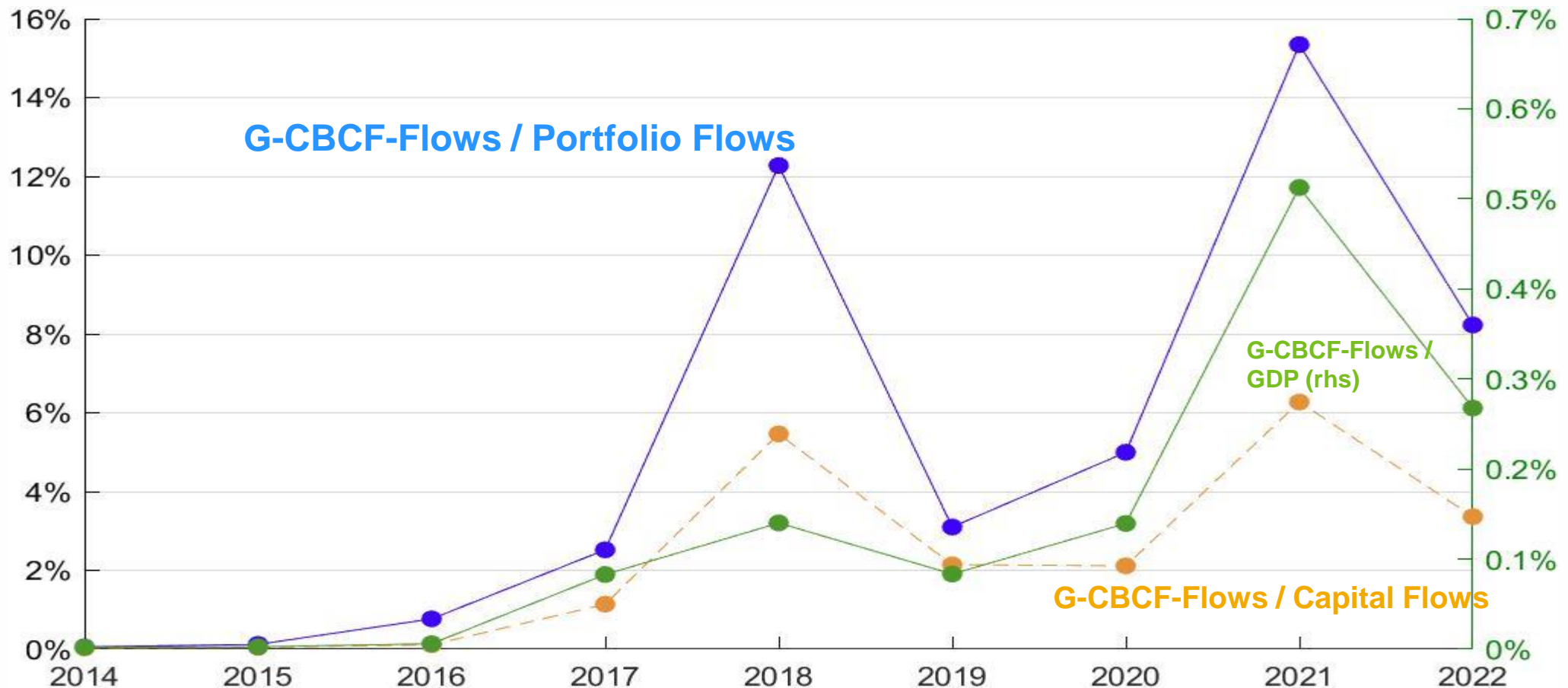
While bilateral country flows identified from transactions between exchanges might be biased, the **summation across all transactions may provide an unbiased proxy of Global-BCCFs**

- The transactional data from CrystalBlockchain (from 2014) and Chainalysis (2022-23*) is informative for this exercise
 - We acquire the data through collaboration with IMF Library
 - Both have BTC and other crypto assets

- We scale these flows by various metrics
 - Total Portfolio Flows, Total capital flows, and total GDP

Case Study: Global CBCFs

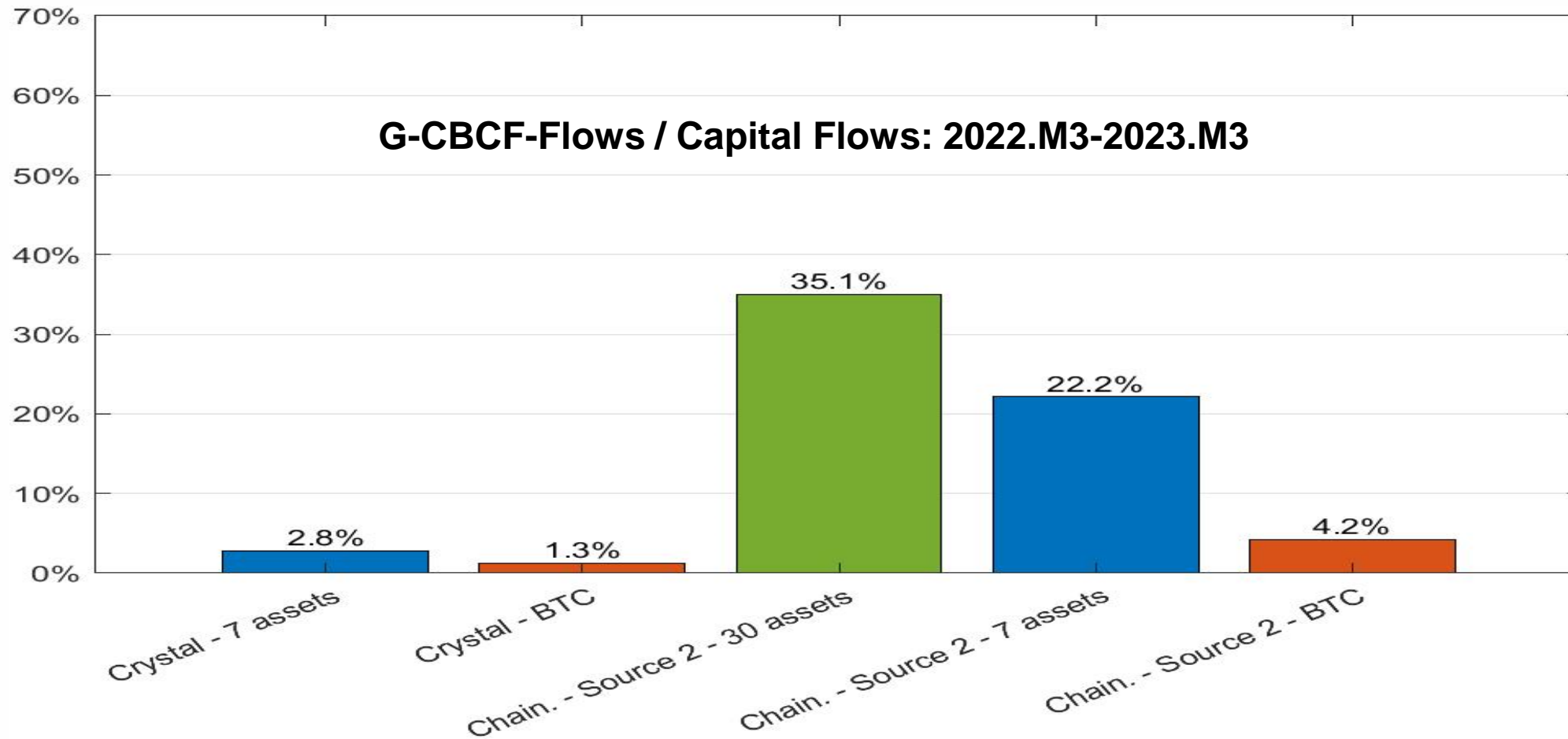
G-CBCFs have trended upward, with some volatility, and stand around 8% (3%) of portfolio (total) flows, and around 0.3% of GDP



Note: Yearly crypto flows are the sum of every transaction across assets and exchanges in a year
Yearly financial inflows or GDP are the sum across 188 countries in a year. Source: Crystal and FFA

Case Study: Global CBCFs

As share of total capital flows, G-CBCFs in 2022-23 ranged between 3% and 22% on the main 7 crypto assets (35% if one adds more assets), of which BTC alone account for 1.3% to 4.2%



Note: Source 2: Sum across countries, **excluding** flows within the same country. 7 assets are BTC, BUSD, DAI, ETH, USDT, TUSD, USDC.

SVAR Analysis: Push vs Pull Factors

Baseline Results for Gross Outflows (acquisition of foreign assets by residents)

| | CBCFs Outflows | PF Outflows | PF + FDI Outflows |
|---------------|-------------------|----------------|----------------------|
| Sequential | | | |
| Non-corrected | 0.410 | 0.173 | 0.227 |
| Bias | 0.087 | 0.114 | 0.123 |
| Corrected | 0.323 | 0.059 | 0.104 |
| Joint | | | |
| Non-corrected | 0.414 | 0.132 | 0.301 |
| Bias | 0.115 | 0.216 | 0.163 |
| Corrected | 0.299 | -0.085 | 0.138 |

- A third of CCF-outflows is explained by external factors
- This is between 6 and 3 times the share explained in portfolio and portfolio+FDI
- Robust to sequential or joint analysis

Note: Sample period is 2018.M1 to 2022.M3. Source: authors' calculations.

Policy Implications

1. Need for better, more accurate and comprehensive measurement and monitoring of CBCF by country authorities, as they do with regular capital flows

- A. Proper measurement of CBCFs is needed, regardless of where the regulatory perimeter to CBCFs is set:
 - Crypto exchanges and platforms should gather residency information and report bilateral flows across countries
 - Recommendation 11 on Digital Money
- B. The usefulness of industry and academic measurements of crypto flows for policy analysis is limited. Need for official statistics that can be comparable across countries
 - The methodology developed by the CBB ought to be a useful benchmark for other countries

2. Need to think about the optimal design for CFM in a digital world with CBCF poorly measured

- A. The increase in size of these flows could increase the risks associated to volatile capital flows
- B. Compounded by the evidence that these flows may be more responsive to external factors outside of the control of policymakers
- C. Evidence that CBCF might be used to circumvent traditional CFM

Thanks!

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