

**Discussion of:**

**Crypto Capture of Foreign Aid**

**by Sumit Agarwal, Peiyi Jin, Eswar Prasad, Daniel Rabetti**

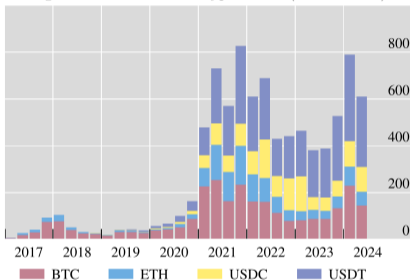
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**Congratulations on an important, timely, and well-executed paper!**

- 1. Crypto in cross-border flow.**
- 2. What the paper does.**
- 3. Four comments:**
  - *Identification* – what does the spike measure?
  - *Measurement* – geo (VPN) & volume (wash trading).
  - *Magnitude & mechanism* – substitute or complement for offshore banking?
  - *Enforcement* – which policy levers?

# Crypto in global cross-border flow

Figure 1: Cross-border crypto flows (US\$ billions)



Source: Auer et al. (2025), BIS WP 1265, Figure 1.

Quarterly aggregates, Q1 2017–Q2 2024.

## Cross-border crypto flows:

- ▶ Quarterly peak **~\$800B in Q4 2021**; annual peak **\$2.6T (2021)** ~12% of global goods trade.
- ▶ 2023–24: annual flow **~\$2.3T**; BTC \$593B, ETH \$226B, USDC \$338B, **USDT \$1.16T**.
- ▶ BTC's share: **~80% pre-2019** → **< 25% in 2024**.
- ▶ Stablecoins now dominate.

## Pros

Speed: minutes vs T+2; cost ~1% vs ~6.4% remittance; no bank account / correspondent; programmable; on-chain transparency.

## Cons

AML gaps; **illicit use** (laundering, capital flight, aid diversion); issuer / exchange counterparty risk.

## Legitimate aid pilots

- ▶ **UNHCR / Ukraine:** USDC cash, **85% lower fees**.
- ▶ **WFP Building Blocks:** \$555M, \$3.5M fees saved.
- ▶ **Mercy Corps / Syria:** **96% faster, 60% cheaper** than hawala.
- ▶ **UN DHoTS (2024):** 15-agency shared treasury.

## Same features enable diversion

- ▶ **Pseudonymity:** new wallet at zero cost.
- ▶ **Borderless & instant:** no SWIFT, no reporting.
- ▶ **Tax-haven exchanges:** KYC arbitrage.
- ▶ **Mixers / chain-hopping:** cheap obfuscation.

**Dual use:** same features that make pilots succeed lower the cost of diversion. Paper measures the second margin.

## Research question

- ▶ Do corrupt elites turn to cryptocurrencies as a new conduit for laundering diverted public funds?

## Identification

### Treatment & exogeneity:

- ▶ Treatment = aid tranche arrival, staggered across countries.
- ▶ Tranche timing driven by **procurement benchmarks, audit cycles, board calendars** (Kraay (2012), Andersen et al. (2022)) — exogenous to contemporaneous local shocks.

### Design:

- ▶ Stacked DiD (Cengiz et al. (2019)).
- ▶ Control: “no-overlap” countries with no WB aid in the analysis window.
- ▶ Country×platform×episode and calendar-month FE.

# Tracing the placement–layering–integration cycle on-chain



## Findings:

- ▶ Largest absolute volume on **non-haven exchanges** (banking-linked on-ramp).
- ▶ Entire new-wallet margin is **anonymous** — concealment from first contact.

## Findings:

- ▶ **+116%** anonymous volume on tax-haven exchanges; identified  $\approx$  half.
- ▶ Near-100% of new tax-haven wallets are anonymous.
- ▶ Off-chain trading on tax-haven exchanges up **10 $\times$**  vs regulated.
- ▶ Amplified by offshore exposure.

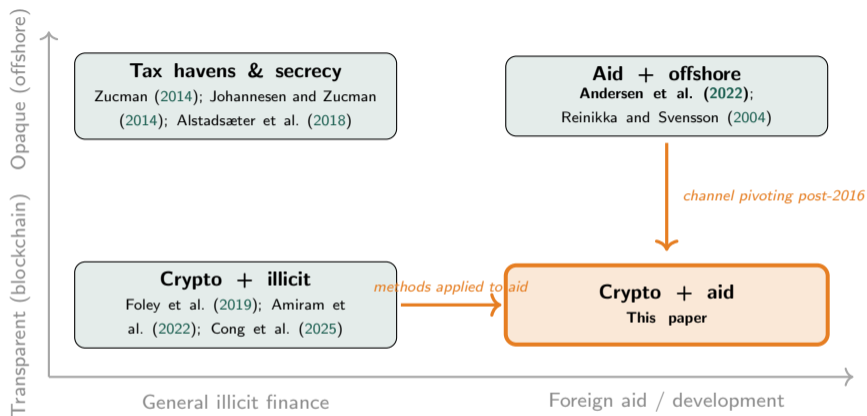
## Findings:

- ▶ Tax-haven outflows  $\approx$  inflows  $\rightarrow$  off-ramping.
- ▶ Network reverts in  $\sim$ 6 months  $\rightarrow$  front-loaded, not persistent.
- ▶ Disposition (fiat vs storage) not directly observed.

**Leak ratio:** 2–10 cents per aid dollar.

**Identification:** *Pandora 2021* attenuates *only* identified channels — anonymous unaffected (insulated from document-based shocks). *Disaster placebo* (no aid) gives *negative* crypto response — rules out capital flight.

# Where the paper sits in the literature



**Why aid & aid capture matter:** aid is the largest external resource for many low-income countries; diversion erodes development outcomes *and* donor confidence.

**Contribution:** bridges “diversion of aid” and “crypto for illicit”. Crypto as the new dynamic margin for **aid capture**.

# Comment 1: Does the outcome identify aid capture by elites?

Paper framed as digital analog of Andersen et al. (2022). But the outcome variable differs:

	Andersen et al. 2022: offshore deposits	This paper: anonymous BTC wallets in NH and TH
Setup	\$1M+ minimum; lawyers; shell co's	\$0; 5 min; mobile app
Holders	elite by construction	anyone with internet
Inference	"deposits $\uparrow$ $\Rightarrow$ elites" tight	"wallets $\uparrow$ $\Rightarrow$ elites" weak

## Candidates for the spike:

- ▶ Corrupted elites; contractors; aid beneficiaries (WFP/UNHCR); household capital flight; retail liquidity.
- ▶ 4 of 5  $\neq$  "elite capture."

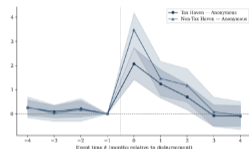
## Symptoms:

- ▶ No heterogeneity by country's corruption level.
- ▶ Persistent rather than sharp spikes of on-chain activities.

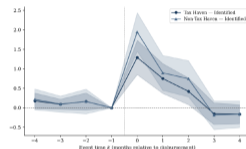
## Tests to earn the elite label

- ▶ Project type: budget support (elites) vs. cash transfers (contractors); bad vs good project outcomes.
- ▶ Wallet size & top-decile concentration.

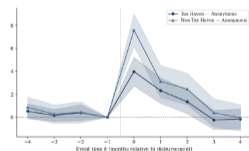
# Comment 1 (cont'd): The spike is not sharp



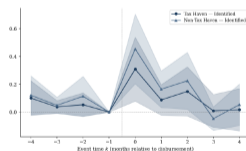
(a) Transaction volume: anonymous wallets



(b) Transaction volume: identified wallets



(c) New accounts: anonymous wallets



(d) New accounts: identified wallets

- ▶ Spike at month  $k = 0$ , then **slowly declines** through  $k = 1, 2$  — Andersen et al. (2022)'s offshore response is much *sharper* at the disbursement quarter.
- ▶ **Internal tension:** abstract says effects “dissipate within 1–2 months,” yet the 10.5% magnitude averages  $\hat{\beta}$  over  $k = 0, \dots, 4$  (5 months). Late-window mass = liquidity / news  $\Rightarrow$  magnitude overstated.
- ▶ Similar time-shape on anonymous vs identified *and* tax-haven vs non-haven  $\Rightarrow$  **common shocks** dominate; the differential is small.

## Comment 1 (cont'd): Placebo events are not just “treated minus aid”

### Treated events

(WB disbursement)

- **Country:** WB IDA/IBRD-eligible & project-active
- **Disaster:** severe enough to trigger WB response
- **Donor relationship:** active program
- **Aid:** **yes**

≠

### Placebo events

(EM-DAT disaster, no WB disbursement)

- **Country:** *anything* — WB-ineligible, eligible without active project, or politically excluded
- **Disaster:** below trigger / slow-onset / smaller
- **Donor relationship:** weaker or absent
- **Aid:** **no**

The placebo doesn't isolate “no aid” — it **switches the event type and the country population at the same time**. Negative coefficient may reflect composition, not absence of aid.

**Fixes:** balance table → restrict to IDA-eligible → match on severity/type/year (CEM/PSM).

### Decomposition (§4.2):

- ▶  $\tilde{Y}_{cpt} = \text{VisitsRatio}_{cpt} \times G_t$ ;  $G_t$  has no country variation.
- ▶  $\Rightarrow$  **100% of cross-country variation** = VisitsRatio.

### Why fragile:

- ▶ VPN penetration in sample: Indonesia 55%, Saudi 53%, India 41%, Vietnam 35%;  $\geq 80\%$  for crypto users in China/Russia.
- ▶ **Paradox:** diverters care *most* about not leaving trails  $\rightarrow$  *most* motivated to use VPNs  $\rightarrow$  geo proxy may systematically misidentify the location of the compliers (the actors the paper aims to capture).
- ▶ Chainalysis  $\rho=0.69-0.86$  validates ranking but uses related IP methods.

### Cleaner geo signal: BTC premium

Makarov and Schoar (2020); Bao, Yu, and Zhang (2025)

#### Two cases by disbursement currency:

- ▶ **Case A (USD disbursed):** cross-exchange BTC–USD premium

$$\text{Prem}_{ct}^A = P_{c,\text{local exchange},t}^{\text{BTC/USD}} / P_{\text{global},t}^{\text{BTC/USD}} - 1$$

- ▶ **Case B (local currency disbursed):** BTC local-fiat premium vs USD price

$$\text{Prem}_{ct}^B = P_{ct}^{\text{BTC/local}} / [P_{\text{global},t}^{\text{BTC/USD}} \times \text{FX}_{ct}^{\text{official}}] - 1$$

Both: VPN-proof, market-clearing, country-anchored.

**Test:** replace VisitsRatio with  $\Delta\text{Prem}$ .

Table 1 Panel D:

Country	Volume 24h (USD thousands)	Fraction
Malta	71,954.47	0.33
Singapore	60,677.21	0.27
Seychelles	26,541.83	0.12
South Korea	12,887.99	0.06
Hong Kong	11,673.39	0.05
UAE	10,125.61	0.05
USA	6,096.03	0.03
Australia	5,757.90	0.03
Estonia	3,793.66	0.02
Cayman Islands	2,792.98	0.01
<b>Total (top 10)</b>	<b>212,200.07</b>	<b>0.97</b>

### The ranking is surprising:

- ▶ Malta + Singapore + Seychelles = **72%** of global 24-hr volume; US = **3%**.

### What might be going on:

- ▶ Cong et al. (2023): unregulated exchanges inflate volume by 70%+ via wash trading; tax-haven platforms are the worst offenders.
- ▶ Tables 2–5 classification **inherits** this; Table 4's “10×” contrast is partly mechanical.

**Fix:** deflate by Cong et al. (2023) indices; restrict to audited platforms.

## Comment 3: Magnitudes of the leak ratio

Andersen et al. stock:



This paper flow:



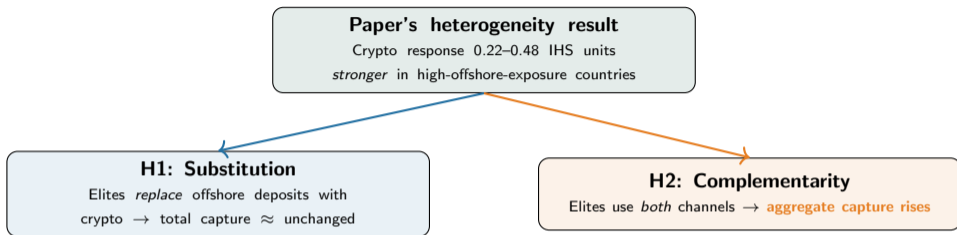
Why 7.5% and 2–10% aren't directly comparable:

- ▶ **Different objects.** Stock = what's parked; flow = what passes through.
- ▶ **Turnover assumption.** Range driven by an **assumed** multiplier ( $m$ ).
- ▶ **Lower bound.** BTC-only misses **USDT/Tron, Monero**, etc — dominant vehicles later on.

### Suggestions

- ▶ More validation and checks on  $m$ .
- ▶ **Stablecoin back-of-envelope:** apply Chainalysis 2024 USDT/BTC illicit ratio to the BTC headline.

## Comment 3 (cont'd): Substitute or complement?



### First-order economics:

- ▶ **H1:** Andersen et al. (2022)'s 7.5% *replaced* by 2–10% crypto → aggregate unchanged, just digitized.
- ▶ **H2:** 7.5% offshore (partially) **stacks** with 2–10% crypto → total ≈ 10–17%.
- ▶ Crypto channel *requires* banking on-ramp (fiat aid → regulated exchanges → crypto). **Pure substitution structurally infeasible** ⇒ favors H2.

### Discriminating tests

- ▶ **Bank AML as offshore cost shocks.** H1: crypto jumps in implicated jurisdictions; H2: crypto channel weakens.
- ▶ **BIS dynamics:** does offshore-deposit growth slow where crypto rises? H1 prediction.

## Comment 4: Blockchain forensics work as a policy lever.

**Paper:** blockchain forensics is a *new* enforcement tool. **When does it actually bind?**

### Regime A: aid on-chain from day 1

*Hypothetical: aid disbursed in regulated stablecoins to known wallets.*

- ▶ Aids originated from and first delivered to known actors.
- ▶ Every transfer on the public ledger from origin.
- ▶ In-network laundering still possible but *detectable from known origin*.
- ▶ ⇒ **Blockchain forensics is fundamental.**

### Regime B: aid in fiat, on / off-ramps required

*Status quo: fiat disbursement.*

- ▶ KYC decides whether diverters enter and leave crypto *anonymously*.
- ▶ Forensics *aids* surveillance but doesn't bind.
- ▶ ⇒ **KYC binds**. FATF travel rule on VASPs, sanctions on tax-haven exchanges, donor-side tranche conditioning.

**Bottom line:** forensics is the *fundamental* lever when aid is crypto native; in the fiat-aid status quo, forensics *aids* surveillance but **KYC/AML binds**.

# Summary

1. **Important paper.** First evidence of crypto as a conduit for aid diversion.
2. **Four comments:**
  - C1 Identification:** “elite capture” framing requires more evidence.
  - C2 Measurement:** VPN bias in geo proxy; wash trading in off-chain activities.
  - C3 Magnitude:** substitute or complement offshore deposits.
  - C4 Enforcement:** exchange KYC at entry/exit vs blockchain forensics.
3. **Looking ahead.** The methodology — wallet clustering + off-chain + geo-attribution — applied to illicit-finance research. Looking forward to extensions to stablecoins, privacy chains, and cross-chain bridges.