Stablecoin as a Novel Channel of International Capital Flows

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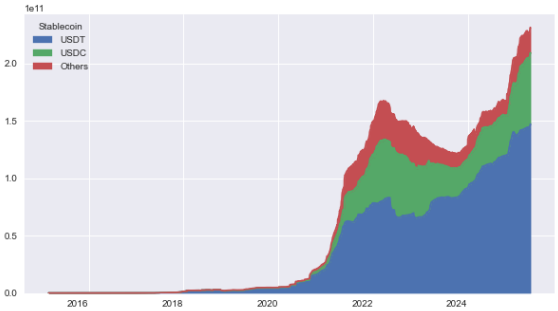
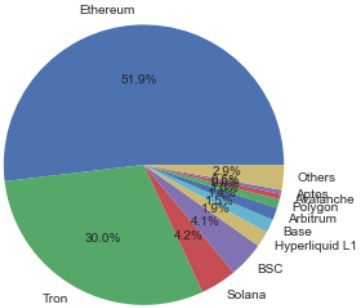
Motivation: The Rise of Dollar-Denominated Stablecoins

- **Stablecoin**: Cryptocurrencies on blockchain networks that are pegged to a fiat currency (predominantly USD), backed by liquid reserves such as Treasuries.
- Stablecoin market is big + growing fast:
  - Tether + USD Coin = $260 billion+ in market capitalization.
  - Tremendous growth: $4 billion in January 2019
- Exists on blockchains (Ethereum, Tron, etc) $\Rightarrow$ enables near-instant, peer-to-peer cross-border transfer without traditional intermediaries or regulatory friction.
  - Significant transfer activities between crypto exchanges' blockchain wallets.
  - e.g. sending USDT from my Upbit wallet to Binance wallet.

Dollar Stablecoin Market



(a) Stablecoin Issuance



(b) Blockchains by Supply

Research Question

- **Research question**: Do dollar-denominated stablecoins function as a novel channel of international capital flows?
- **Three empirical questions:**
  1. **Magnitude**: How large are stablecoin-based capital flows relative to traditionally recorded flows?
  2. **Drivers**: Do stablecoin flows respond to the same drivers as conventional international capital flows?
  3. **Consequences**: Do stablecoin outflows exert depreciation pressure on the exchange rate?
- Use blockchain wallet-level transfer data from two major cryptocurrency exchanges (Upbit and Bithumb) in South Korea to answer these questions.

Stablecoin Market in Korea and Shadow Cross-border Capital Flows

- Regulatory features in South Korea create a unique environment in which we can study stablecoin flows.
  - **Strict know-your-customer rule since 2018**: Users must link exchange accounts to verified domestic bank accounts (real-name verification).
    - Trading on these exchanges predominantly reflects domestic investors.
  - **KRW-quoted prices:** Crypto is purchased directly in Korean won, unlike most global exchanges where stablecoins serve as the trading pair.
  - **Only spot trading on Korean exchanges:** Primary motivation for Korean crypto investors to transfer stablecoins to foreign exchanges is to invest in levered derivative products.
  - **Strong capital control.**
- We view:
  - Buying USDT/USDC on a Korean crypto exchange $\approx$ Converting KRW to USD
  - Transferring USDT/USDC to foreign wallets $\approx$ Sending USD abroad
    - But through a channel outside the traditional FX system
- **On-chain flows of dollar-denominated stablecoin = shadow cross-border capital flows**

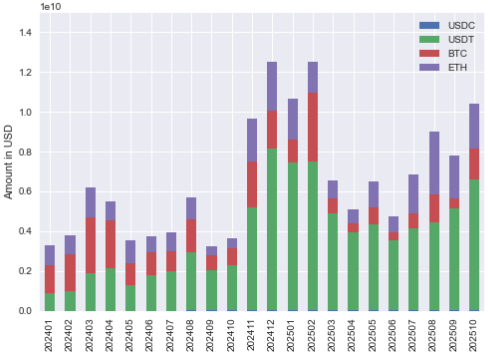
Preview of Main Findings

1. **Magnitude**: Stablecoin (USDT/USDC) outflows amount to 28% of South Korea's recorded financial account outflows in the balance of payments over the sample period (Jan 2024 - Oct 2025).
   - Gross stablecoin outflows matter: inflows and outflows appear similar, but stablecoin transactions convert KRW into offshore dollar claims, effectively completing capital outflows through blockchain transfers.
2. **Drivers:** Stablecoin flows respond to the same drivers as traditional capital flows, often reacting faster:
   - Domestic political shocks (Korean martial law announcement)
   - Global political events (U.S. presidential election)
   - U.S. monetary policy surprises
3. **Consequences:** Stablecoin outflows cause persistent KRW depreciation.
   - \$1M outflow $\Rightarrow$ KRW/USD increases by 0.027%

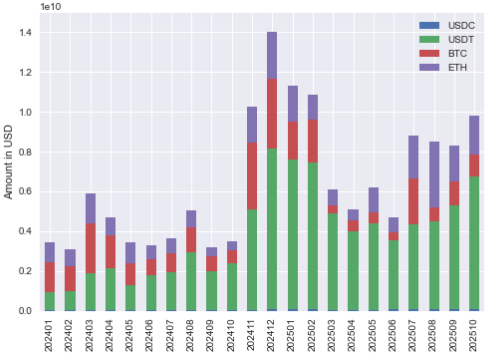
Data: Sample Construction

- Our data:
  - Every inbound and outbound transfers of USDT and USDC that we could identify
  - Transfers between two major Korean crypto exchanges' (Upbit and Bithumb) wallets and outside wallets
  - Using Ethereum and Tron blockchain networks
    - The transaction-level data that records block timestamps, sender and receiver wallet addresses, token names, and transfer amounts.
  - From January 2024 to October 2025
    - USDT/USDC were listed on Bithumb on December 2023 and on Upbit on June 2024
- Problem with the blockchain data: we do not know which blockchain wallet belongs to whom.
  - We map the wallet addresses to identifiable entities using Arkham address labels.
- We exclude transfers among domestic exchanges to isolate cross-border stablecoin transfers.

Transfers of Major Cryptocurrencies and Stablecoins



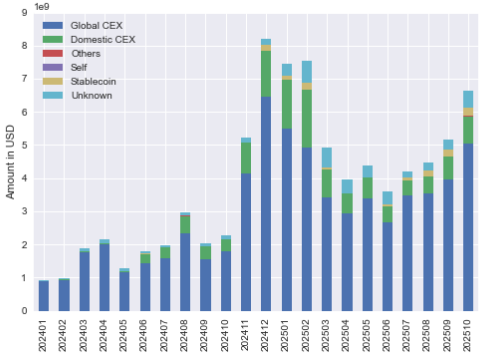
(a) Inbound Transfers



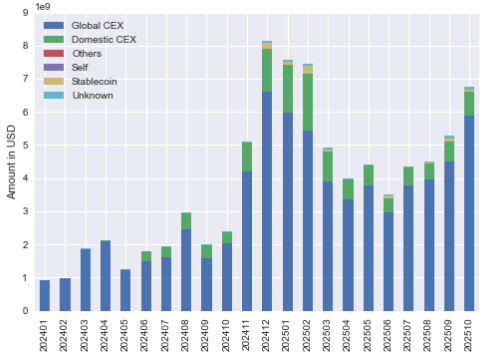
(b) Outbound Transfers

Result 1. International Stablecoin Capital FLows

Stablecoin Transfers by Entity Type



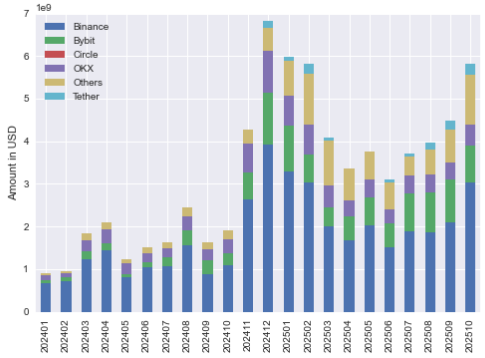
(a) Inbound Transfers



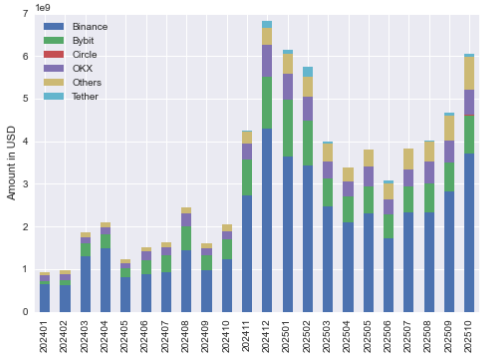
(b) Outbound Transfers

- Majority of transfers occur with respect to foreign cryptocurrency exchanges.
- Consistent with the observation that stablecoin transfer demand is driven by exposure to levered derivative crypto products.

Cross-Border Stablecoin Transfers by Entity



(a) Inbound Transfers



(b) Outbound Transfers

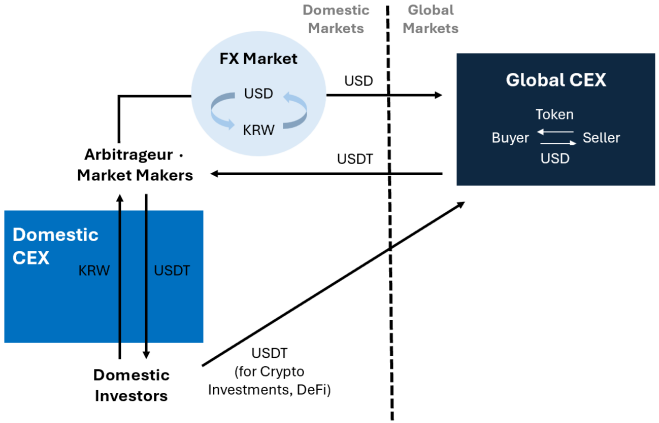
- Transaction with other Korean domestic exchanges and self transactions are excluded.
- 60% of total transfer to Binance, 20% to Bybit.

Summary Statistics of Daily Stablecoin Flows

Variable	Mean	Median	Std. Dev.	Min	Max
Stablecoin Inflow	98.91	80.13	78.11	9.35	777.01
Stablecoin Outflow	106.58	89.72	81.00	12.31	745.20
Stablecoin Net flow	7.67	2.15	28.10	-184.99	152.26

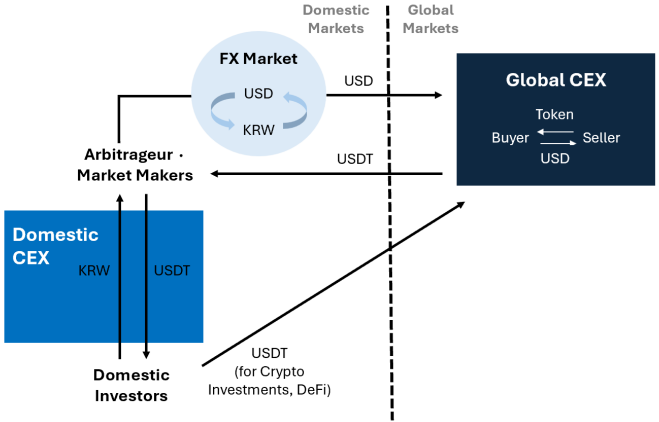
Unit: millions of dollar

Cross-Border Stablecoin-Related Transactions of Real Dollars



- USDT and USDC are not issued in Korea ⇒ Cross-border transactions of real dollars are intrinsic to the functioning of dollar-pegged stablecoins in Korea.
- Arbitrageurs sits in the middle to profit from stablecoin premium in the Korean market.

Cross-Border Stablecoin-Related Transactions of Real Dollars

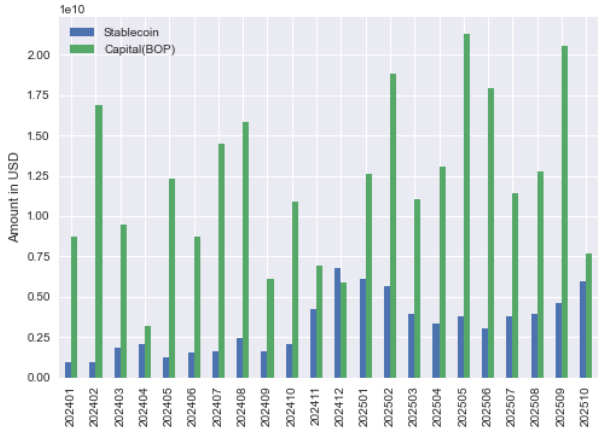


- Gross stablecoin outflows matter: inflows and outflows appeared similar, but stablecoin transactions convert KRW into offshore dollar claims, effectively completing capital outflows through blockchain transfers.

Stablecoin Flows vs. Traditional Capital Flows

- Our empirical approach to measuring stablecoin flows:
  - We focus on gross outbound on-chain stablecoin transfers from domestic exchanges to foreign institutions.
  - This measure more directly captures the effective cross-border deployment of domestic purchasing power, providing a cleaner proxy for stablecoin-based capital outflows.
- **Measure of traditional capital flows**:
  - Bank of Korea balance of payments financial account for monthly analysis
  - Portfolio investment (equity + debt securities) flows within BOP financial account for daily analysis
- **Measure of stablecoin capital outflows:**
  - Outbound on-chain transfers from domestic exchanges to foreign wallets

How Real Dollar Flows Against Stablecoin Flows



Stablecoin outflows amount to approximately **28%** of the size of conventional capital outflows.

Result 2. Drivers of International Stablecoin Flow

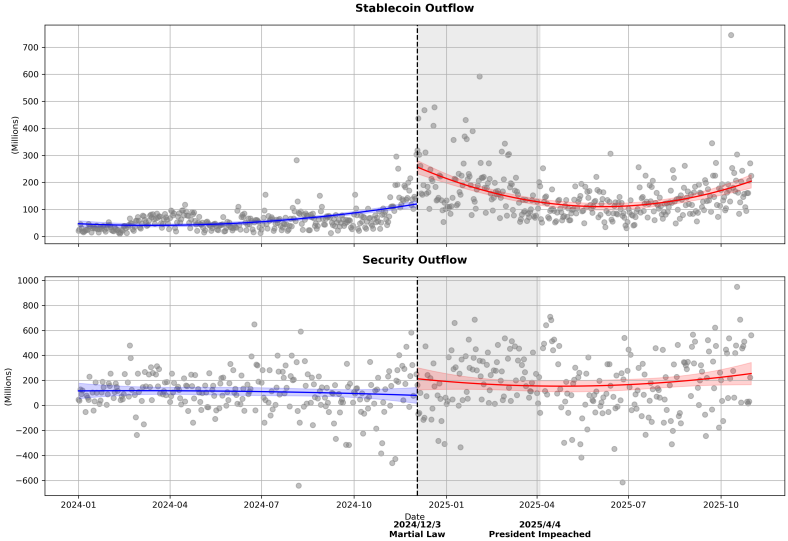
Drivers of International Stablecoin Flow

- Examine what drives the flow of dollar-denominated stablecoins, and how it operates as a novel and unregulated channel of international capital flows in an emerging market.
- Use drivers of traditional cross-border capital flows in the literature to see if they affect cross-border stablecoin flows as well.
  1. Political shocks
     - ⋆ the surprise declaration of martial law in South Korea on December 3, 2024.
     - ⋆ the US presidential election outcome on November 5, 2024.
  2. US monetary policy shocks

Effect of Domestic Political Uncertainty on Stablecoin Flows

- A well-established literature in international finance shows that political uncertainty within a country induces international capital outflows, particularly from emerging economies.
  - Have dollar-denominated stablecoins emerged as a new channel of capital flight from politically unstable countries?
- Exploit the surprise declaration of martial law by the South Korean president on December 3, 2024.
- A plausibly exogenous political shock for identification:
  - Use of emergency measures such as martial law has been absent from the country's political landscape for decades
  - The announcement was made abruptly through a late-night news broadcast and was not anticipated
  - The knowledge of the decision was confined to the president and a small circle of close aides
- Use regression discontinuity design around the martial law date to identify the causal effect of political uncertainty on stablecoin flows.
  - Compare the effect on stablecoin flows to portfolio investment flows in BOP financial account (security flow)

Effect of Domestic Political Uncertainty on Stablecoin Flows



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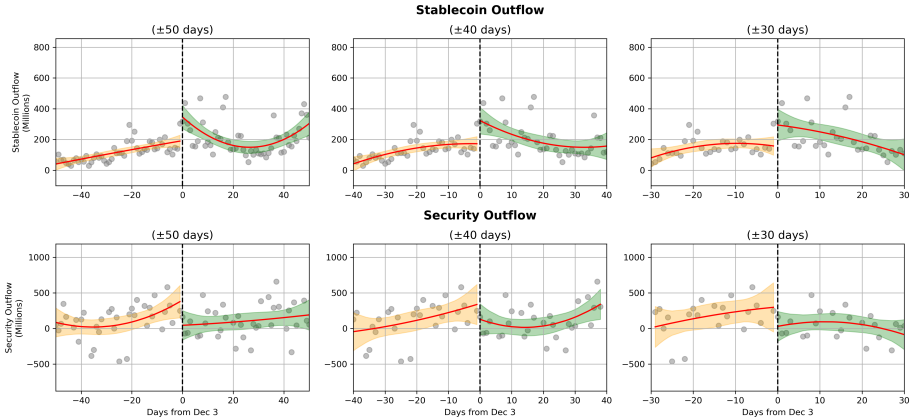


$$\text{Stablecoin Outflow}_t = \alpha + \beta \mathbf{1}\{\text{Date}_t \geq 0\} + f(\text{Date}_t) + \mathbf{1}\{\text{Date}_t \geq 0\} \cdot g(\text{Date}_t) + \varepsilon_t$$

where functions f and g are linear and quadratic functions and we vary the estimation window from $\pm$ 30 days to $\pm$50 days.

Effect of Domestic Political Uncertainty on Stablecoin Flows

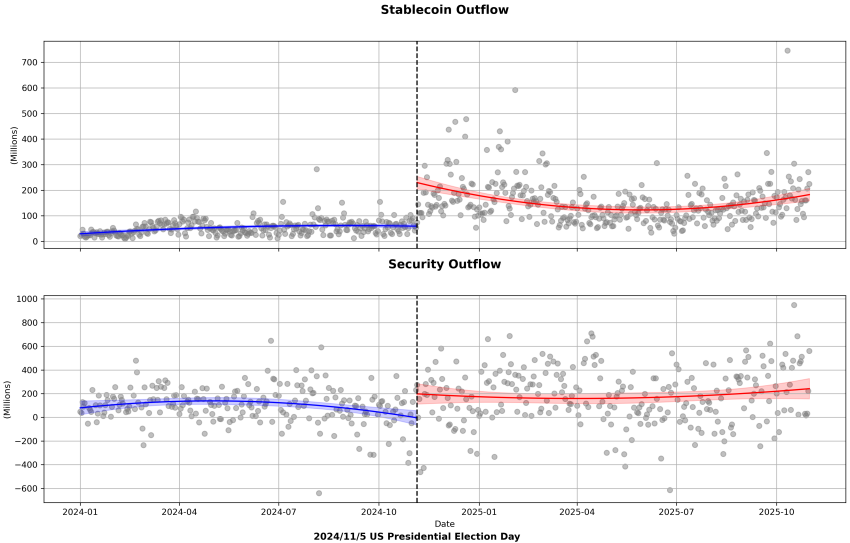
$\pm$ 30 days	Stablecoin outflow		Security outflow	
	Linear	Quadratic	Linear	Quadratic
RD estimate	117.092***	140.368**	-227.455*	-273.448
	(41.461)	(62.976)	(129.964)	(202.533)
$\pm$ 40 days	Stablecoin outflow		Security outflow	
	Linear	Quadratic	Linear	Quadratic
RD estimate	82.155**	150.991***	-323.258***	-222.436
	(34.656)	(51.627)	(120.616)	(181.115)
$\pm$ 50 days	Stablecoin outflow		Security outflow	
	Linear	Quadratic	Linear	Quadratic
RD estimate	38.079	154.121***	-218.134**	-353.859**
	(33.269)	(44.594)	(105.154)	(158.461)

Unit: millions of dollars

Effect of US Presidential Election on Stablecoin Flows

- A well-established literature in international finance shows that elections and resolution of policy uncertainty play an important role in shaping international capital flows.
- Exploit the result of US presidential election on November 5, 2024.
- A plausibly exogenous setting for identifying the effects of policy regime resolution on international stablecoin flows:
  - Donald Trump's pro-crypto position vs. Kamala Harris' regulate-crypto position.
  - The election was widely viewed as historically close contest with no clear favorite up until the election day
    - ⋆ Expectations about the future policy environment governing stablecoin markets remained unresolved until the outcome was announced.
- Use regression discontinuity design around the election date to identify the causal effect of policy uncertainty resolution on stablecoin flows.
  - Compare the effect on stablecoin flows to portfolio investment flows in BOP financial account (security flow)

Effect of US Presidential Election on Stablecoin Flows



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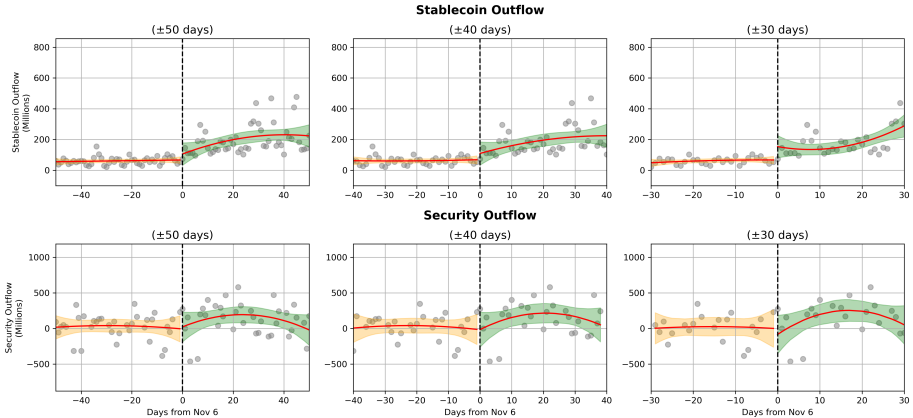


$$\text{Stablecoin Outflow}_t = \alpha + \beta \mathbf{1}\{\text{Date}_t \geq 0\} + f(\text{Date}_t) + \mathbf{1}\{\text{Date}_t \geq 0\} \cdot g(\text{Date}_t) + \varepsilon_t,$$

where functions f and g are linear and quadratic functions and we vary the estimation window from $\pm$ 30 days to $\pm$50 days.

Effect of US Presidential Election on Stablecoin Flows

$\pm$ 30 days	Stablecoin outflow		Security outflow	
	Linear	Quadratic	Linear	Quadratic
RD estimate	47.028*	96.972**	-6.107	-277.254
	(27.389)	(39.321)	(131.266)	(182.821)
$\pm$ 40 days	Stablecoin outflow		Security outflow	
	Linear	Quadratic	Linear	Quadratic
RD estimate	69.315**	53.216	59.703	-174.490
	(27.471)	(41.794)	(110.430)	(160.290)
$\pm$ 50 days	Stablecoin outflow		Security outflow	
	Linear	Quadratic	Linear	Quadratic
RD estimate	77.561***	49.147	80.763	-71.481
	(26.355)	(39.597)	(97.584)	(143.056)

Unit: millions of dollars

Effect of U.S. Monetary Policy Shock on Stablecoin Flows

- A well-established literature in international finance shows that U.S. monetary policy drives global financial cycle and capital flows to and from emerging economies.
  - How does the US monetary policy affect international stablecoin flows?
- Exploit the high-frequency identified monetary policy surprise series (BRW series) that is widely used in the literature.
- Use local projection method and trace the dynamic response of stablecoin flows to exogenous US monetary policy shocks identified at the daily frequency.

$$\Delta\text{Stablecoin Outflow}_{t+h} = \alpha_h + \beta_h \,\text{MPShock}_t + \Gamma_h' X_{t-1} + \varepsilon_{t+h}$$

where

$$\Delta\text{Stablecoin Outflow}_{t+h} = \text{ Stablecoin Outflow}_{t+h} - \text{Stablecoin Outflow}_{t-1}$$

for $h = 0, 1, 2, 3$.

- X_{t-1} : Vector of control variables capturing global and domestic financial conditions including S&P 500 return, KOSPI return, Korean Won-US dollar exchange rate, VIX, and NASDAQ crypto index return.

Effect of U.S. Monetary Policy Shock on Stablecoin Flows

	(1) Stablecoin outflow	(2) Security outflow
$h = 0$	12.062**	-5.187
	(5.991)	(47.327)
$h = 1$	78.424**	215.446***
	(39.379)	(53.894)
$h = 2$	93.249*	195.013***
	(48.788)	(51.890)
$h = 3$	5.541	135.491***
	(11.546)	(44.531)

- Stablecoins flow responds systematically to US monetary policy shocks alongside traditional financial asset flows.
  - Contractionary monetary policy $\Rightarrow$ Stablecoin outflow
- Stablecoin flows respond more rapidly to US monetary policy shocks than traditional capital flow channels.
  - This difference in timing is consistent with lower transaction costs, fewer institutional and regulatory frictions, and the peer-to-peer nature of blockchain transactions.

Result 3. Stablecoin Flows and Exchange Rates

Stablecoin Flows and Exchange Rates

- How international outflows of dollar-denominated stablecoins from a country affect the exchange rate between that country's currency and the US dollar.
  - How stablecoin outflow from two major crypto exchanges in Korea affects the KRW/USD exchange rate.
- Korean cryptocurrency exchanges quote cryptocurrency prices in Korean won and allow cryptocurrencies to be purchased directly using domestic fiat currency.
  - This institutional feature makes the purchase of dollar stablecoins on Korean exchanges a close analogue to converting Korean won into US dollars.
  - The mechanism that brings dollar stablecoin from foreign crypto exchanges to Korean exchanges by arbitrageurs also affect the exchange rate dynamics.

Identification Strategy

- Identifying a causal effect of stablecoin outflows on the exchange rate is challenging because many factors can simultaneously affect both capital flows and exchange rate movements.
  - e.g. Global risk sentiment, US monetary policy, domestic macroeconomic conditions, and geopolitical developments, etc.
- We adopt an IV strategy based on a shift-share design to address this challenge.
  - Isolate plausibly exogenous variation in stablecoin outflows driven by global cryptocurrency market conditions that are orthogonal to contemporaneous exchange rate movements in South Korea.
  - We exploit variation in BTC-USDT perpetual futures funding rates on major global cryptocurrency exchanges, Binance and Bybit.

Identification Strategy

- **Relevance** of BTC-USDT perpetual futures funding rates:
  - Exploit variation from the institutional difference between Korean vs. global crypto exchanges:
    - Korean exchanges offer spot trades only
    - Global exchanges offer different leveraged derivatives.
  - Stablecoin outflows from South Korean exchanges are largely driven by the relative attractiveness of leverage and funding conditions across global trading venues.
- **Exogeniety** of BTC-USDT perpetual futures funding rates:
  - These rates are largely driven by exchange-specific market microstructure.
    - Contract design, margin requirements, liquidation rules, incentive policies, etc.
  - These microstructure-driven funding rate fluctuations are largely unrelated to global capital flows and to movements in the KRW–USD exchange rate.
- Our IV:

$$Z_t = \sum_{e \in \{\text{Binance, Bybit}\}} \omega_e \cdot \text{Funding Rate}_{e,t}$$

where ω_e denotes the exposure share of South Korean stablecoin outflows routed to exchange e (60% for Binance, 20% for Bybit).

Identification Strategy

- Estimate the following 2SLS model:
  - First stage:

$$\text{Stablecoin Outflow}_t = \gamma + \pi Z_t + u_t$$

    First-stage F-stat all over 10.

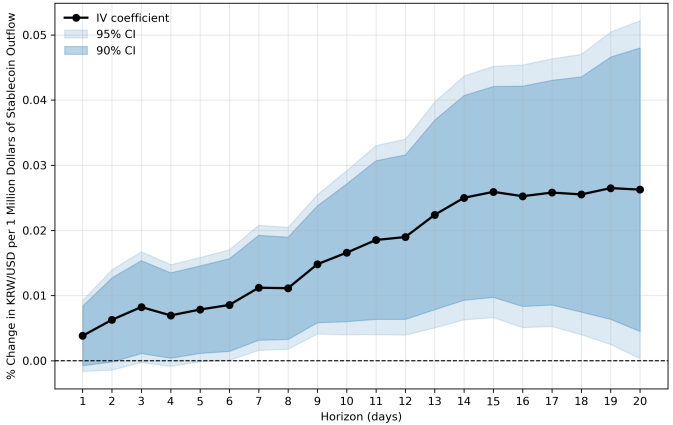
  - Second stage:

$$\Delta \log(\text{KRW/USD})_{t+h} = \alpha_h + \beta_h \widehat{\text{Stablecoin Outflow}}_t + \Theta_h' X_{t-1} + \varepsilon_{t+h}$$

    for $h = 0, \ldots, 20$ where $\Delta \log(\text{KRW/USD})_{t+h} = \log(\text{KRW/USD})_{t+h} - \log(\text{KRW/USD})_{t-1}$ so that we are looking at cumulative effect of the stablecoin outflow up to 20 days.

- X_{t-1}: vector of controls lagged one day capturing global risk and financial conditions that includes daily effective federal funds rate, S&P 500 returns, NASDAQ cryptocurrency index return, and VIX.
- Newey-West heteroskedasticity and autocorrelation consistent estimators.

Effect of Stablecoin Outflows on KRW/USD Exchange Rates



1 millions dollar outflow $\Rightarrow$ KRW/USD exchange rates increases by 0.027% after two weeks.

Differential Exchange Rate Effects by Destination

- Binance accounts for approximately 60 percent of total outflows, while Bybit accounts for roughly 20 percent.
- Examine whether the exchange rate effects of stablecoin outflows differ depending on the destination exchange.
- Estimate first stage separately for $EX \in \{\text{Binance,Bybit}\}$

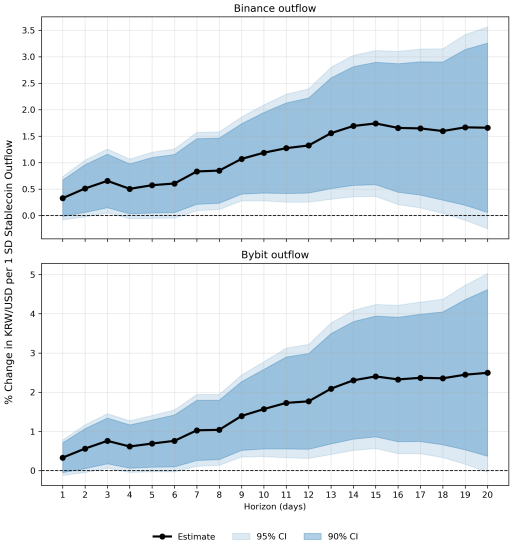
$$\text{Stablecoin Outflow to Exchange } EX_t = \gamma + \pi Z_t + u_t,$$

then estimate second stage

$$\Delta \log(\text{KRW/USD})_{t+h} = \alpha_h + \beta_h \widehat{\text{Stablecoin Outflow to } EX_t} + \Theta_h' X_{t-1} + \varepsilon_{t+h}$$

for $h = 1, \ldots, 20$.

Differential Exchange Rate Effects by Destination



Conclusion

- We showed:
  1. **Magnitude**: Stablecoin (USDT/USDC) outflows amount to 28% of traditionally recorded capital outflows over the sample period (Jan 2024 - Oct 2025).
  2. **Drivers:** Stablecoin flows respond to the same drivers as traditional capital flows often reacting faster.
  3. **Consequences:** Stablecoin outflows cause persistent KRW depreciation via a global dollar channel.
     - ⋆ \$1M outflow $\Rightarrow$ KRW/USD increases by 0.027%
- Dollar-denominated stablecoins (USDT/USDC) constitute a quantitatively meaningful, macro-financially relevant, and causally identified shadow channel of international capital mobility
  - ▸ They operate outside the traditional financial system but behaving in economically familiar ways.
- Blockchain-based capital flows are scaling rapidly
  - ▸ Incorporating them into the framework of international macro-finance becomes increasingly urgent for both researchers and policy makers.