The cost of stablecoins as settlement token: a case study based on Ethereum data

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Motivation - context

- Stablecoins - monetary function – increasingly proposed as a solution for cross-border payments, particularly for those regions underserved by traditional market infrastructures
- Advantages: fast, cheap, available 24/7
- But: not subject to the same level of compliance and oversight regulation as banks and payment system providers, no AML/CFT checks, exchange rate risk is transferred to the holders, non-negligible on-ramping and off-ramping costs
- Stablecoins market capitalization grew from USD 10 billion 2020 to more than USD 300 billion today
- Transactions value: reaching up to USD 1.8 trillion monthly (Visa Onchain Analytics) but only around USD 400 billion of stablecoin retail payments settled annually (Higginson et al, 2025 and Batra et al, 2026)

Motivation - question

Are stablecoins as cheap/cost-effective as claimed?

Other studies: Di Iorio et al (2026) - A mystery-shopping experiment; stablecoin remittances are often no cheaper than traditional transfers when accounting for exchange fees, foreign exchange spreads and banking rails mean

What we do – two approaches

1. Granular

- use blockchain data from Ethereum (USDT and USDC) covering year 2025
- filter the transactions to obtain a sample that mimics as close as possible real economy payments
- estimate empirically the cost of stablecoin payment transfers

2. Counterfactual analysis

- Ethereum aggregate data
- what would be the counterfactual price of stablecoin transfers should the blockchain volumes increase to levels currently observed in state-of-art instant payment systems?

Granular – data description

- USDC and USDT blockchain transactions covering the year 2025
- nearly 230 million transactions, including a broad spectrum of functions, starting from the basic *transfer* to numerous types of *smart contracts*
- a lot of noise in the data as stablecoins can be used across a range of use cases with transactions that can be initiated manually by an end user or programmatically through bots
- for this analysis the aim is to analyse the cost of genuine/organic payments activity, that is more likely to be initiated by consumers or businesses
- different approaches used for filtering: Batra et al. (2026), Higginson et al. (2026), Reuter (2025), Schaer et al. (2026), Sheffield (2025)

Granular – filtering approach

- keep only transfers, i.e. methodid==“0xa9059cbb”
- drop value below 1 USD (linked to testing, spam, bot activity)
- drop crypto-exchange-related activities

→ approx. 73 million transactions left (32% of the full sample)

Variable	Mean	Std. dev.	Min	Max
Value	68943.9	1830521.0	1.0	2000000000.0
Gas	127133.0	165257.5	40732.0	34200000.0
Gas used	50454.6	9531.5	37512.0	4579813.0

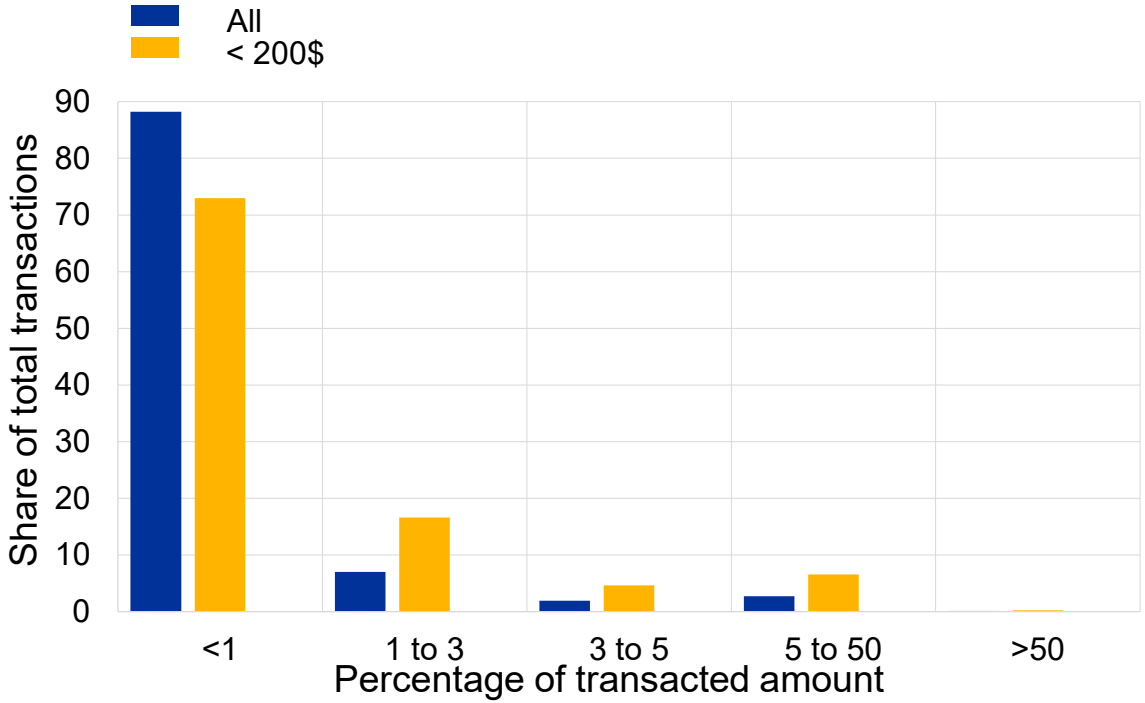
Granular – stablecoin transaction cost

Stablecoin transaction cost = gas units X gas price X USD/ETH exchange rate

- gas units: the computing power needed to execute the transactions, which depends on the complexity of the transaction
- gas price: the cost of each unit, which increases in times of greater congestion
- USD/ETH exchange rate: the exchange rate between ETH (i.e. crypto-currency of the Ethereum blockchain in which the gas price is denominated) and the fiat currency, in this case USD

Granular – transaction cost in percentages

Transaction costs in percentages of USDT and USDC transfers on Ethereum blockchain in 2025



Source: Etherscan, authors' calculations
Note: USDT and USDC transfers filtered as described

Transaction costs in USD of USDT and USDC transfers on Ethereum blockchain in 2025

	Cost in USD	
	Mean	**Median**
All	0.46	0.22
< 200$	0.39	0.19

Source: Etherscan, authors' calculations
Note: USDT and USDC transfers filtered as described

Granular – comparison with G20 roadmap for enhancing cross-border payments

	G20 Target	2025 Cross-border	2025 Stablecoins
Retail	Global average cost of payment to be no more than 1%	1.6%- 2.6% (*)	0.8%
	No corridors with costs higher than 3% by end-2027	18.3%	12.0%
Remittances	Global average cost of sending USD 200 remittance to be no more than 3% (by 2030)	6.5%	1.8%
	No corridors with costs higher than 5%	19.3%	6.9%

Source: 2025 FSB Consolidated progress report: G20 Roadmap for Enhancing Cross-border Payments, Etherscan, authors' calculations
Note: 2025 Stablecoins show results for the filtered sample used in this analysis; * across types of payments: B2B, P2P, P2B

Counterfactual analysis

Aim: Compute the counterfactual price of stablecoin transfers should the blockchain volumes increase to levels currently observed in state-of-art instant payment systems.

Approach:

1. Estimate the gas price (which depends on the blockchain volume) using regression analysis
   - Daily observations 2018 -2025
   - Assumption: constant technology
   - Counterfactual volumes: TIPS, PIX, UPI across 2025
2. Calculate cost of stablecoin transfer by multiplying the estimated gas price with the gas units typically needed for simple transfers (i.e. 45000)

Counterfactual analysis – regression estimation

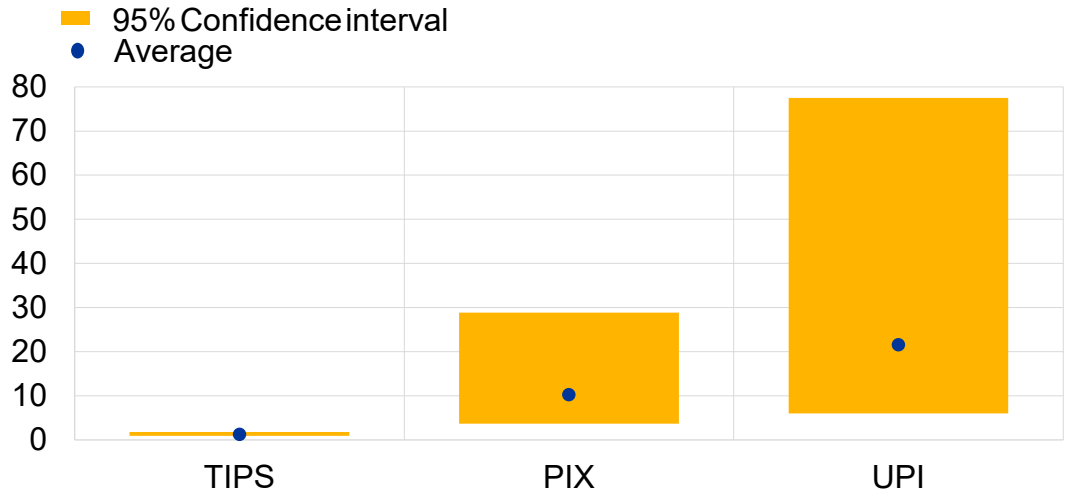
$$\Delta \ln(gas\ price)_t = \alpha + \sum_{i=1}^{5} \beta_i \Delta \ln(gas\ price)_{t-i} + \sum_{i=1}^{5} \gamma_i \Delta \ln(Etherium\ volume)_{t-i} + \sum_{i=1}^{5} \delta_i \Delta \ln(USD\ BTC\ price)_{t-i} + Week\ Day_t \Gamma + \varepsilon_t$$

	Const	Volume	Gas price (dlog)					Day of the week						USD\bitcoin (dlog)				
			L1	L2	L3	L4	L5	1	2	3	4	5	6	L1	L2	L3	L4	L5
Coefficient	-0.09	0.61	-0.35	-0.29	-0.21	-0.12	-0.11	0.23	0.13	0.15	0.15	0.07	-0.1	0.22	0.44	0.26	0.05	0.29
	(0.02)	(0.10)	(0.04)	(0.03)	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)	(0.02)	(0.02)	(0.02)	(0.02)	(0.18)	(0.14)	(0.14)	(0.16)	(0.13)
P-value	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.21	0.00	0.06	0.74	0.03

Source: gas price and volumes from Etherscan, USD\Bitcoin from Haver
Notes: Daily observations. 2018 -2025. Newey-West standard errors (in brackets) are computed to account for autocorrelation and heteroskedasticity. 95% confidence intervals.

Counterfactual analysis – counterfactual transaction costs

Counterfactual transaction costs for volumes equivalent to a selection of fast payments systems (USD)



Source: Etherscan, ECB, Central Bank of Brazil, Central Bank of India, authors' calculations

Note: Average transaction costs and confidence intervals are estimated based on 2025 data.

Conclusions

- Contribution to the stablecoin literature through an analysis of the costs associated with stablecoin transfers
- While stablecoins transfer costs are lower than those of existing payment rails for cross-border payments, they remain significantly more expensive than fast payment systems
- With current technology, costs of stablecoin transfers could rise significantly if transaction volumes were to reach levels comparable to those of existing fast payment systems, raising concerns about the scalability of stablecoins

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Thank you!

Literature

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