Blockchain Research Lab

MONETARY FLOWS AND FEEDBACK TRADING IN CRYPTOCURRENCY MARKETS

EFFECTS OF STABLECOIN TRANSFERS ON RETURN AND TRADING VOLUME OF BITCOIN

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Overview

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Monetary flows and feedback trading in cryptocurrency markets: Effects of stablecoin transfers on return and trading volume of Bitcoin

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Abstract: Stablecoins are non-volatile digital currencies pegged to other assets like fiat currencies. They are a digital substitute for fiat currency and have become an important aspect of cryptocurrency markets. We analyze 1,587 stablecoin transfers of one million dollars or more between April 2019 and March 2020 to find out how they affect Bitcoin returns and trading volume. We find highly significant positive abnormal trading volume and significant abnormal returns in the hours around transfers. We further categorize the sender and receiver of each transfer as one of the following: cryptocurrency exchange, stablecoin treasury, unknown. Effects on trading volume and returns differ across the resulting nine subsamples, which suggests that information asymmetry and transfer motives vary among these groups or the market at least interprets it that way. Our findings illustrate the feedback effects between cryptocurrency markets and stablecoin usage

Keywords: Market efficiency, Informational efficiency, Price discovery, Asset pricing, Event study, Transaction activity, Tether, Feedback trading

1 Introduction

A special feature of cryptocurrencies is that anyone can monitor them on their public blockchain infrastructure. Every transfer, no matter how important or insignificant, can be tracked in close to real-time via blockchains, which offers the potential for in-depth analyses that are rarely possible for traditional currencies and markets.

Stablecoins are a specific type of cryptocurrency which peg their value to other assets, like fiat currency or gold. They play a vital role in cryptocurrency markets, as they are used a substitute for fiat currency on cryptocurrency exchanges. While in traditional markets large currency transactions can only be observed by a small circle of involved entities, stablecoin transfers, i.e. money transfers via the blockchain, can be observed by anyone. The same applies to deposits and withdrawals on cryptocurrency trading platforms. Stablecoins therefore offer unique

- Stablecoins are a digital substitute for fiat currency and represent an important aspect of cryptocurrency markets.
- Anyone can observe stablecoin transfers in close to real-time
- How does transparency of monetary flows influence secondary markets?
- Do feedback effects exist?

Framework and hypotheses (1)

- Based on blockchain address analysis, we identify known market participants that send and receive stablecoins.
  1. *unknown*
  2. *cryptocurrency exchanges*
  3. *stablecoin treasuries*
- 19 different entities account for 71.1% of senders and 60.5% of receivers (only transfers of $1 million or more).
- Likely motive of a (large) stablecoin deposit to an exchange is the purchase of cryptocurrency
- A (large) stablecoin withdrawal is likely predated by a cryptocurrency sale

→ *We expect an increase in Bitcoin trading volume around large stablecoin transfers (**H1**).*

Framework and hypotheses (2)

Type		Receiver		
	Entity	Unknown address	Cryptocurrency exchanges	Stablecoin treasuries
Sender	Unknown address	– Unknown	– Ex-post purchase of cryptocurrency	– Burning of stablecoins (decrease in market liquidity)
	Cryptocurrency exchanges	– Ex-ante sale of cryptocurrency	– Ex-ante and/or ex-post purchase or sale of cryptocurrency	– Burning of stablecoins (decrease of market liquidity) – Ex-ante sale of cryptocurrency
	Stablecoin treasuries	– Issuance of stablecoins (increase of market liquidity)	– Issuance of stablecoins (increase of market liquidity) – Ex-post purchase of cryptocurrency	– Unclear / blockchain swap *(very rare transaction type)*

Levels of information asymmetry and presumed transfer motives associated with large stablecoin transfers between different market participants.

Color represents the respective degree of information asymmetry associated with transfers:

red = high

blue = medium

green = low

Framework and hypotheses (3)

- With timing discretion, liquidity traders postpone trading to reduce risk of trade with informed counterparties (Black 1986; Admati and Pfeiderer 1988; Chae 2005).

  → *The degree of information asymmetry tied to stablecoin transfers negatively relates to Bitcoin trading volume after information becomes public* (**H2**).

- Exchange deposits most likely relate to ex-post purchases, withdrawals to ex-ante sales.

  → *Positive ex-post abnormal Bitcoin returns for stablecoin transfers with cryptocurrency exchanges as receivers* (**H3**).

  →*Negative ex-ante abnormal Bitcoin returns for stablecoin transfers with cryptocurrency exchanges as senders* (**H4**).

Framework and hypotheses (4)

- A transfer from a stablecoin treasury (=operator) likely refers to new stablecoins entering the active market

  → *Transfers from stablecoin treasuries lead to ex-post purchases of cryptocurrency or are perceived as signal of increasing market liquidity, which results in positive abnormal returns after the transaction* (**H5**).

- A transfer to a treasury likely leads to the subsequent burning of the coins, i.e. the withdrawal of liquidity from the market.

  → *Transfers sent to stablecoin treasuries can be expected to align with ex-ante sales of cryptocurrency or are perceived as signal of decreasing market liquidity, which results in negative abnormal returns around transfers* (**H6**).

- A higher transfer value should be preceded by a comparatively larger sale or may be followed by a comparatively larger purchase.

  → *The size of stablecoin transfers correlates positively with abnormal returns and trading volume* (**H7**).

Data

Stablecoin data

- Stablecoin transaction data between Apr 2019 and Mar 2020.
- Six different stablecoins that peg their value to the US-Dollar (*USDT, USDC, PAX, BUSD, HUSD, GUSD*).
- Data from *Ethereum* blockchain (and for USDT also *TRON* and *Omni/Bitcoin*).
- We collected *timestamp*, *transaction size*, *transaction value in USD* and involved *blockchain addresses.*
- We choose the arbitrary cut-off value of $1 million and exclude any transfers below that value.
- We end up with 1,587 stablecoin transfers.

Cryptocurrency market data

- Hourly BTC/USD price and volume data from *Bitstamp* exchange.
- For robustness checks: ETH/USD, XRP/USD, LTC/USD from Bitstamp; BTC/USD from *Bitfinex* and *Coinbase*; BTC/USDT from *Binance.*

Methods and variables

Event study methodology

- Dependent variables: *Log returns* and *log trading volume*
- Time periods under consideration
  - Event window around the stablecoin transfer: t = -12 to 12
  - Estimation window before the event window: t = -150 to -15
- Significance tests
  - Parametric (*t-test*) and non-parametric (*Wilcoxon sign rank test*)
  - We only deem results valid that are significant for both tests.

Independent and control variables

- Nine dummy variables, one each per sender/receiver combination
  - For example, *UNTR* = UN*known* to Tr*easury*
  - UNUN, UNTR, UNEX, TRUN, TRTR, TREX, EXUN, EXTR and EXEX
- *Transfer size (log), Bitcoin price (in $1,000), stablecoin dummies, day-of-week dummies*

Descriptive statistics

- USDT accounts for 80.1% of the sample's transactions.
- On average, a stablecoin transaction in the sample has a value of $11.9 million (skewed distribution; SD = 25.1).
- Largest shares
  - UNEX 21.9%
  - TRUN 20.6%
- Observation window(s) vs. estimation window
  - Higher average hourly returns 0.022-0.024% vs. 0.003%
  - Higher average trading volume $3.851-3.998 million vs. $3.802 million
- Initial results suggest that stablecoin transfers are a relevant metric for Bitcoin returns.

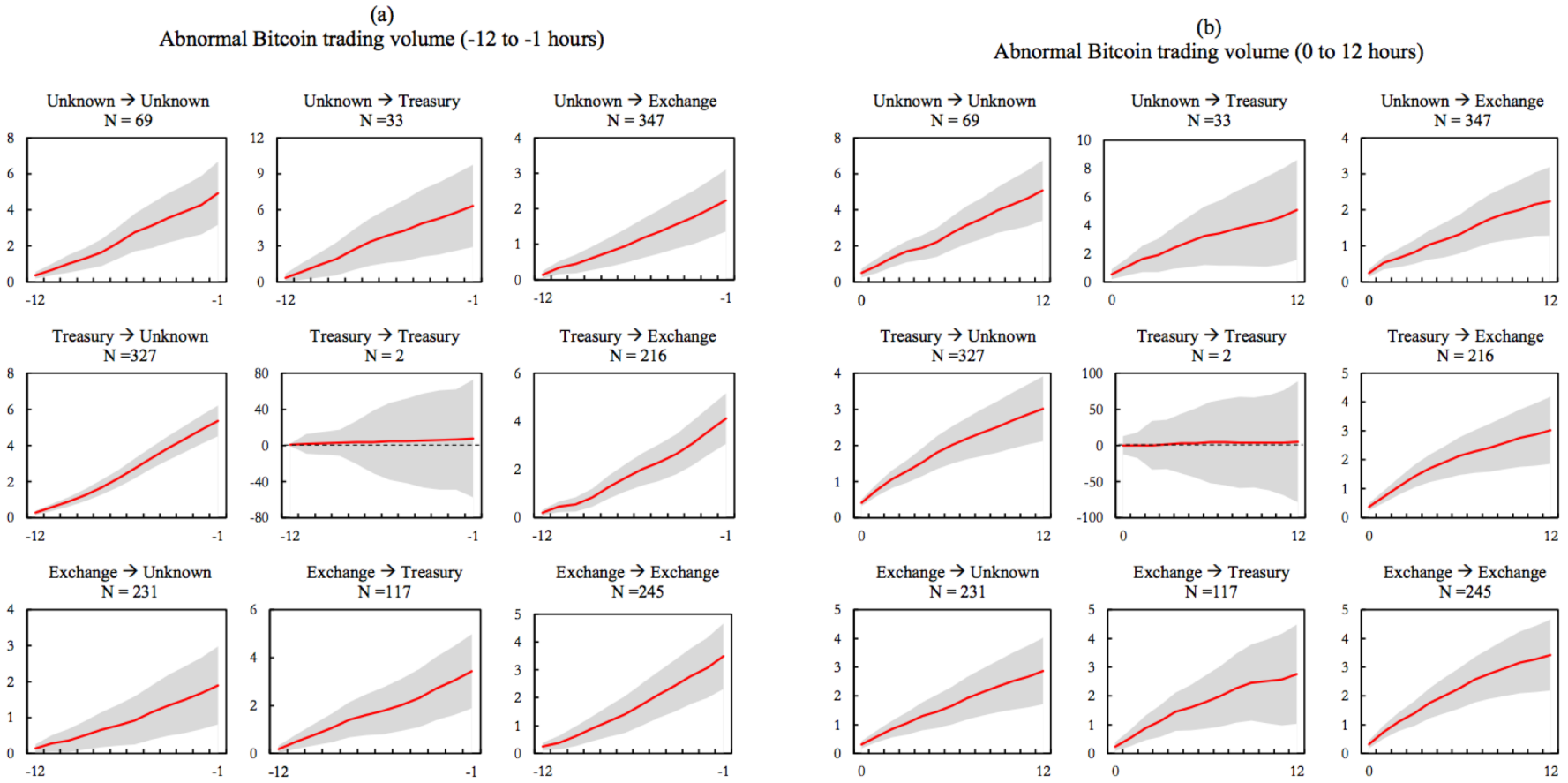
Event study results (full sample)

- We find strong positive effects on trading volume for all time windows and hours before and after the transactions (**H1**) ✓
- Ambiguous results for returns

	Log return				Log trading volume			
Window	CAR	*t*-test	*z*-test	pos	CATV	*t*-test	*z*-test	pos
[−12, −1]	0.001034	2.08**	1.77*	51%	3.5752	17.01***	15.10***	65%
[−6, −1]	0.000800	2.24**	1.49	52%	2.0749	17.79***	16.13***	67%
[0, 6]	0.000616	1.48	0.33	51%	1.9128	15.13***	12.34***	65%
[0, 12]	0.001277	2.42**	1.06	50%	3.0043	13.47***	12.34***	62%

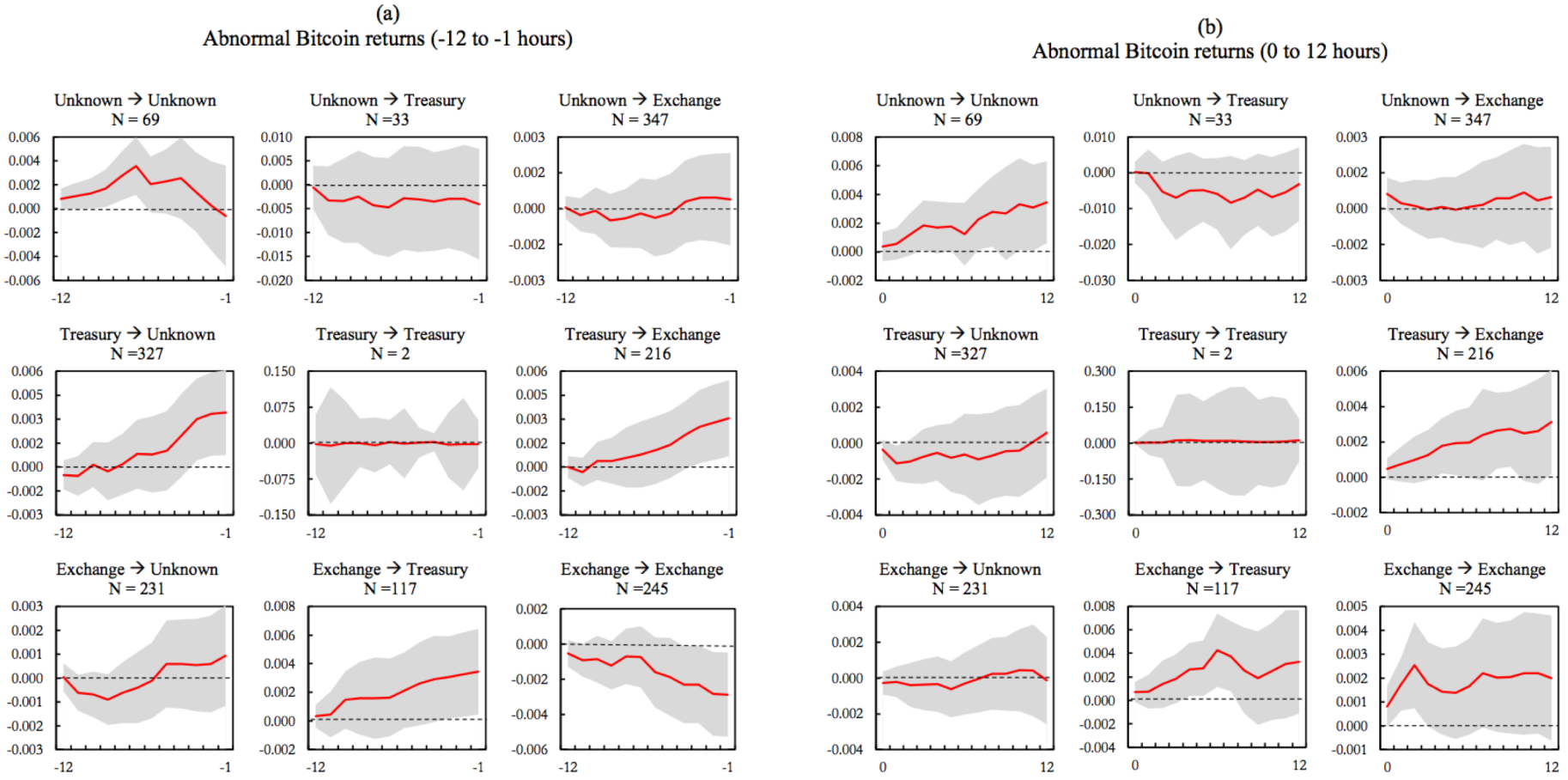
*, **, *** indicate significance at the 10%, 5% and 1% level.

Event study results (volume by cluster)



Highly significant results for “all” clusters (*TRTR has only 2 observations*).

Event study results (returns by cluster)



Clear differences across address clusters; positive and negative effects.

Predicting abnormal effects

- Regression models predicting CAR and CATV:
  - Each for t = -1 to -12 and t = 1 to 12
  - Testing effects of size and cluster dummy
  - controlling for BTC/USD at the time of the transfer, stablecoin dummies and day-of-week effects
- Abnormal trading volume
  - Ex-post trading volume does not relate to implied information asymmetry (**H2**) X
- Abnormal returns:
  - Ex-ante: one positive effect (TREX), multiple negatives (e.g. TRTR 0.43% and EXEX 9.47%; both 1% significant) → no results generalizable for all transfers of exchanges (**H3 & H4**) X
  - Ex-post: only one significant effect for TRUN (-0.28%) → (**H5**) X
  - Ex-ante: all significant effects of transfers to treasuries in the window from 12 to 1 hours before the event negative → (**H6**) ✓
- Size is highly significant positive determinant of abnormal effects in all models. (**H7**) ✓

Conclusion

- Large stablecoin transfers affect Bitcoin prices and trading volume.
- While effect on trading volume exists for all types of transactions, price effects differ depending on sender and receiver.
- Open question whether reactions are related to the monitoring of blockchains (or rather monetary flow via stablecoins) or caused by observed market movements (e.g. price or volume reactions).
- Transparency and real-time traceability of cash flows – a unique phenomenon of cryptocurrency markets – can provide insights into historical and future market events.
- Could transparent real-time (on-chain) transaction data be beneficial for the efficiency of traditional markets?

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THANK YOU!

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