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# Are Blockchain Limitations Stifling Arbitrage Opportunities? Part 1



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Cryptocurrency exchanges have grown exponentially since 2017, catering to retail, institutional, and an ever-growing crowd of sophisticated calibre traders who have set up high-frequency algorithmic strategies. Notably, in the past few years, spot exchanges have taken markets by storm, adding leveraged derivatives to their suite of trading products. Derivative products have given traders an array of markets from futures and options to better hedge and access market discrepancies for profits across multiple exchanges. But global exchange growth sharing liquidity comes at a fixed cost of parking capital across numerous venues to take advantage of arbitrage opportunities. This is primarily due to blockchain transfer times that will remain slow for the foreseeable future. In this latest in-depth feature, Copper weaves together the potential effects and missed opportunities resulting from slow blockchain transfer speeds.

Blockchain transfer speeds, especially for Bitcoin, have been an inherently slow process compared to traditional technological infrastructure. This design feature of the Bitcoin blockchain has resulted in massive waiting times and potentially exorbitant fees to protect the network from attacks as blocks fill to the brim during times of extreme price action seen quite often.

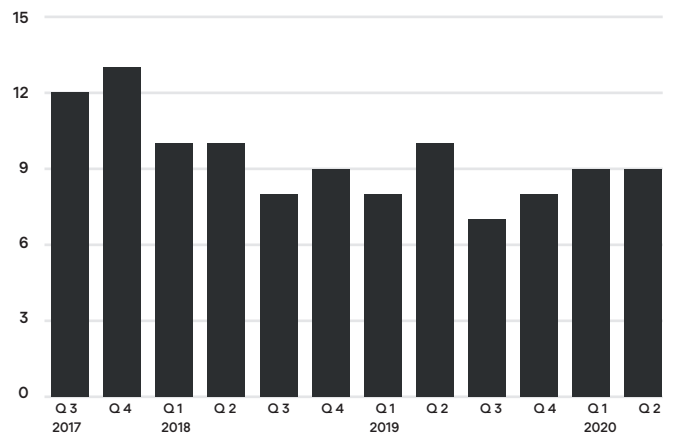
With median transaction confirmation times ranging between 4 and over 19 minutes in 2020, an important question lingers for market participants; how efficient can arbitrage traders be in times of increased activity and volatility?

Importantly, blockchain confirmation times don't account for the trading venue's own number of confirmations required for traders to have access to their assets and capital. Due to blockchain speed and security, such required policies suppress the potential of speedy trades and, in effect, hamper market liquidity at the time it's most clearly needed from both buyer and seller.

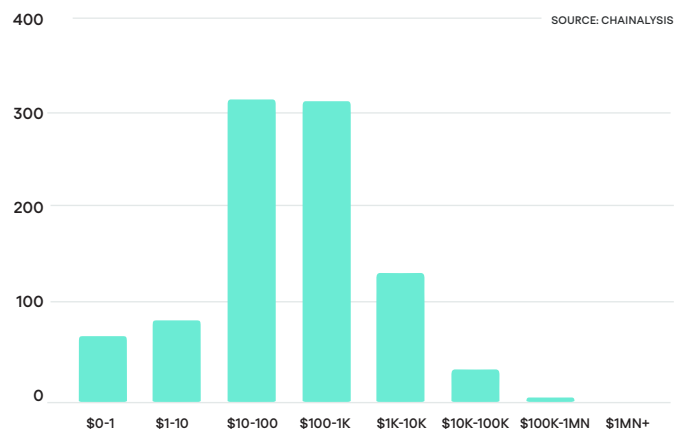
With such waiting times for Bitcoin to reach an intended exchange where algorithms may have spotted market inefficiencies, arbitrage opportunities decline unless capital has been parked across multiple trading venues in order to take advantage.

Holding assets on an exchange is an optional tactic that can be employed by High-Frequency Traders as the volatile asset whose fervent price swings have become the expected norm. The alternative would be to miss the window of opportunity that

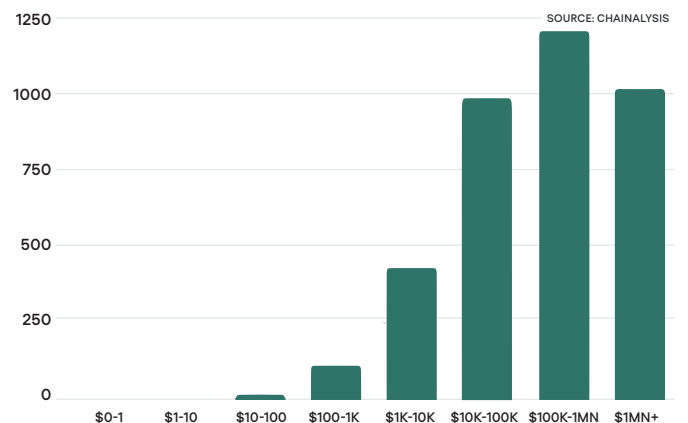
1: Bitcoin Median Transaction Times (Minutes)



2: Weekly Avg. Number of Exchange Transfers Received by Size of Transfer ('000)



3: Weekly Avg. USD Exchange Flows Received by Size of Transfer (\$mn)





might close due to slow transfer speeds or other traders who let their assets sit on an exchange ready at a seconds notice.

Parking assets and capital are increasingly looking like the norm too. Blockchain analytics firm Chainalysis estimates that 60% of Bitcoins (that are not assumed to be lost) are held by a Virtual Asset Service Provider (VASP) (see chart 4). This trend is growing.

Chainalysis has also established that only 3.5million Bitcoins are being used for active trading. That accounts for less than 20% of all mined Bitcoins. Notably, while retail traders account for a whopping 96% of all transfers sent to exchanges, these transactions only represent 15% of the total US Dollar value sent on-chain (see charts 2 & 3).

Such data gives insights into professional traders that effectively hold the liquidity and are still required to move in and out of different exchanges to capture potential gains. What they must contend with, however, are slow blockchain times and confirmations. This means fewer arbitrage opportunities as competition increases against traders with already parked assets.

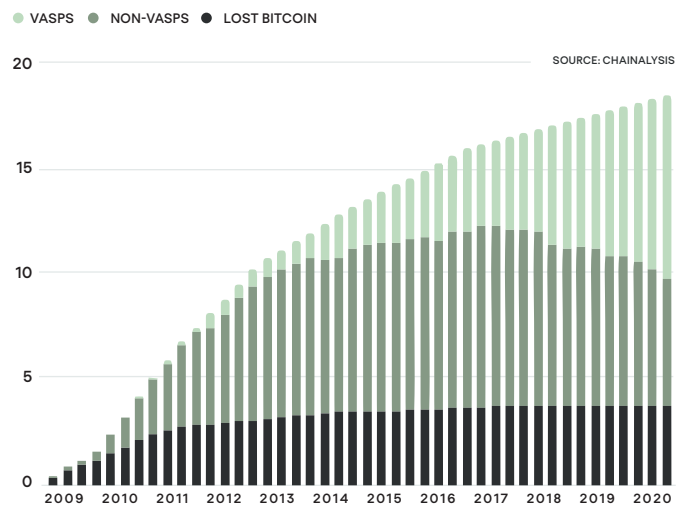
## Where are the opportunities?

Research conducted by the University of Vienna concludes that “settlement latency implies limits to arbitrage as it exposes arbitrageurs to price risk.” The assessment coming out of the university’s Department of Statistics and Operations Research concluded that “trustless markets come at substantial costs with potentially far reaching implications” and that “limits to arbitrage implied by settlement latency may harm price efficiency, as the lower activity of arbitrageurs reduces the information flow across markets.”

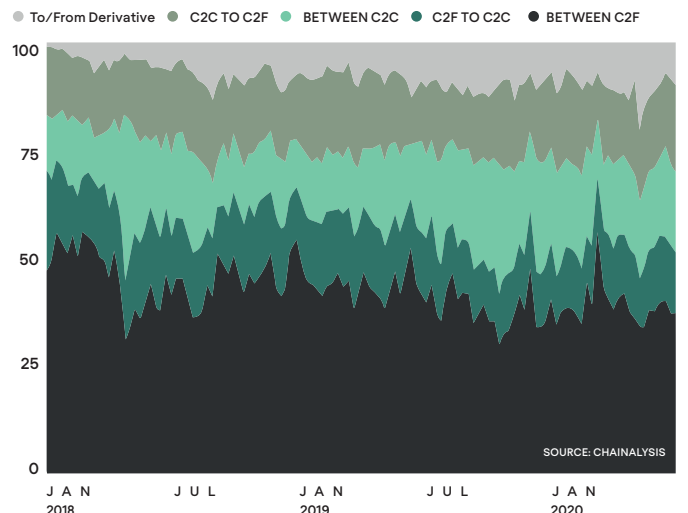
Lead-Lag analysis data shows that most arbitrage opportunities are found in spot exchanges, while derivative markets lead price discovery. This further establishes why on-chain statistics by Chainalysis show that the majority of Bitcoin flows are, to and from spot exchanges (see chart 5). This volume into spot markets comes despite derivative exchange trading volume dwarfing what is seen on predominantly retail and semi-professional exchanges.

While arbitrage opportunities arise, on-chain transfers might not be the best tactic afterall. A study conducted by asset management firm Bitwise shows that markets are fairly efficient in closing arbitrage opportunities quickly. Data shows that the chances to take arbitrage profits across different spot exchanges is an extremely small window, and in most cases gone within seconds (see chart 6). These price movements may happen multiple times during volatile periods, however should assets require to move into the exchange through on-chain routes, the opportunities dwindle fairly quickly.

4: Bitcoins Holdings (By Custodian Type) - Millions

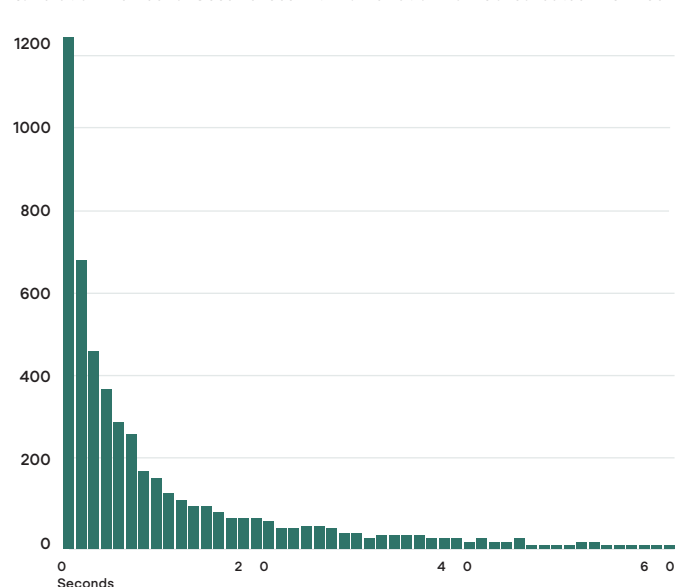


5: Bitcoin Flows Between Types of Exchanges



NOTES: C2C = CRYPTO-TO-CRYPTO EXCHANGE. C2F = CRYPTO-TO-FIAT EXCHANGE.

6: Duration/Number of Occurrences with 1% Deviation from Consolidated BTC Price



# Are you in the ClearLoop<sup>TM</sup>?



ClearLoop<sup>TM</sup>

**Assets have gone digital.** Copper ClearLoop connects custodians and exchanges in one secure trading loop – with real time settlement across the network.