



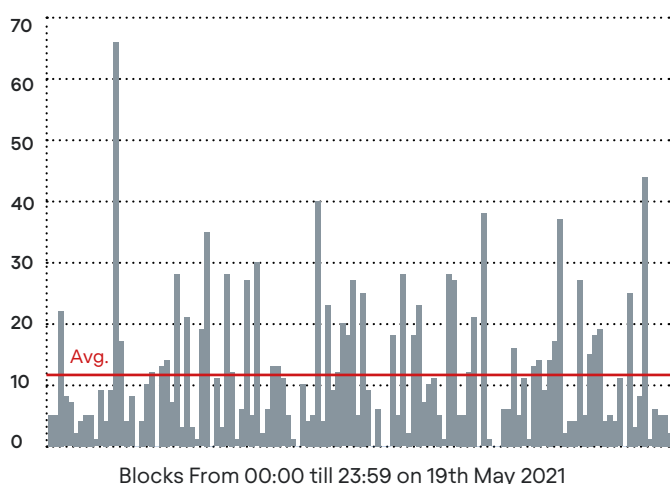
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Moving Bitcoin: Risk and opportunity cost of confirmations

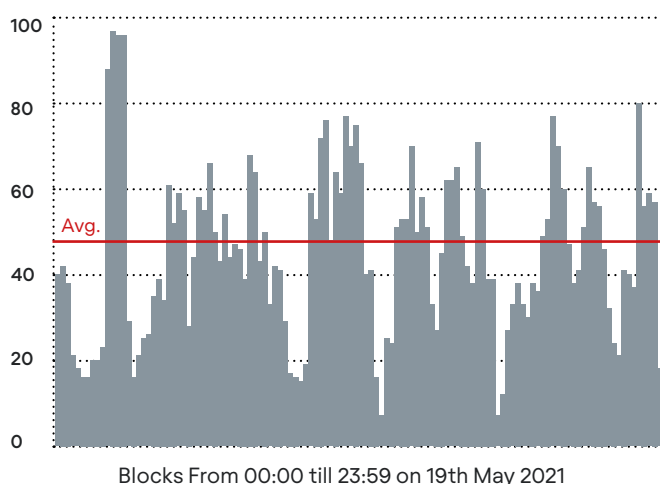


Moving Bitcoin: Risk and opportunity cost of confirmations

1: Time taken to confirm Bitcoin blocks on 19th May 2021



2: Time taken to confirm 3 blocks on 19th May 2021 (Spot market conf. req)



“Good things come to those who wait,” they say. Except for cryptocurrency traders. Waiting for blocks that are filled to the brim to confirm multiple times is fairly painful. The wait for accounts to be credited on exchanges all the while watching prices plummet makes patience very costly. On the flipside, this also means getting in at an opportune time is also potentially lost due to confirmation delays. In this In-Depth, Copper looks at some of the most volatile days in Bitcoin and what the cost would be from the decision to sell or buy, to actually being able to execute.

Hardcoded into Bitcoin’s network is the mathematical goal that a block is solved, on average, every 10 minutes. But a great deal can happen in that time frame in crypto. Price swings can be so volatile that the network faces multiple jams with people sending their Bitcoin to exchanges for sale that result in much longer times for blocks to be solved.

Compounding to this delay is the fact that most spot market exchanges require at least three block confirmations before accounts are credited; most derivative exchanges need two. This poses a serious problem for traders looking to go in and out of a trade as fast as possible.

The options for traders aren’t plenty. Either they must take on considerable counter-party risk leaving their cryptocurrency on exchanges with hopes and trust they will not be hacked, or accept potential time-delays that would lead to either steep losses or missed buying opportunities.

2017-2019 was not part of this research in part due to the fact that SegWit usage was very low. Wallets and address management of inputs has become more efficient. In essence, Bitcoin’s network has made steps forward.

But it might not be enough to meet institutional expectations on settlement finality that would allow investors to trade at fast rate in a highly volatile market.

In order to quantify this more accurately to the times, Copper looked at the most volatile days Bitcoin has seen recently and assessed blockchain confirmation times against the price movement.

This allows us to have a better picture for when a trader decides to sell, for example, and their ability to actually do so should they not be holding their Bitcoin on an exchange and require to wait for the confirmations that will allow them to execute.

The charts above show the blockchain confirmation times on 19th May 2021 that saw Bitcoin price swing from \$43k down to \$30k.

On that day, 40% of blocks took over 10 minutes to confirm. This compounds to the eventual confirmations that is required by exchanges reaching as high as a good hour and a half. The rest of the day, given the volatility, didn’t fair much better for traders who self-custody without appropriate tools that would both eliminate counter-party risk and have instant exchange settlement finality.



You wanted to sell right?...or buy?

Despite 19th May bouncing back in grand Bitcoin style, any traders looking to offload their position would still have most likely faced a loss from the time they sent their Bitcoin to an exchange until it was actually credited with the appropriate number of confirmations (see chart 3 and 4). Buying the dip would have also been difficult given the speed of the recovery versus blockchain confirmation times.

And that particular day was certainly not an exception (see charts below).

2021 saw price swings from high to low exceeding 5% over 60% of the year. These opportunities would have been likely missed due to confirmation time requirements.

The reality is, that even during non-volatile periods, capturing the intended price as a taker is still difficult at best.

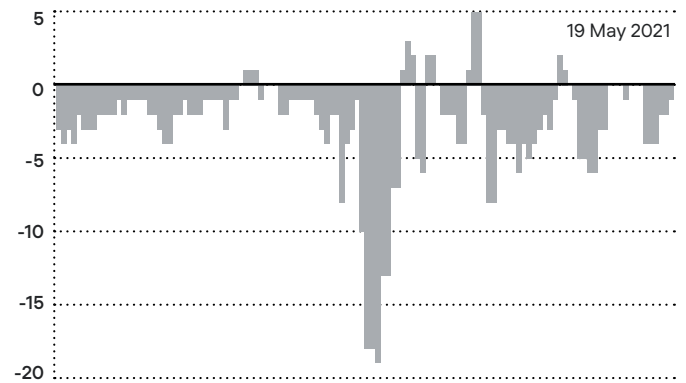
Which leads to other questions when Financial Institutions (FI) and asset managers are required to comply with 'Best Execution' practices when the blockchain faces delays.

Un-cherrypicking the data

Now, granted, we've looked at the data on Bitcoin's most volatile days, when de facto, there is an increase in transactions. But even looking at Bitcoin's least volatile day would see some traders fiddling their thumbs for a good 80 minutes (see chart 5).

Bear in mind, the blockchain is working very well. It's doing what it's intended to do averaging out blocks to 10 minutes. Ultimately, though, it's random. This poses a problem for investors as to how reliably they can execute on a position at the right time.

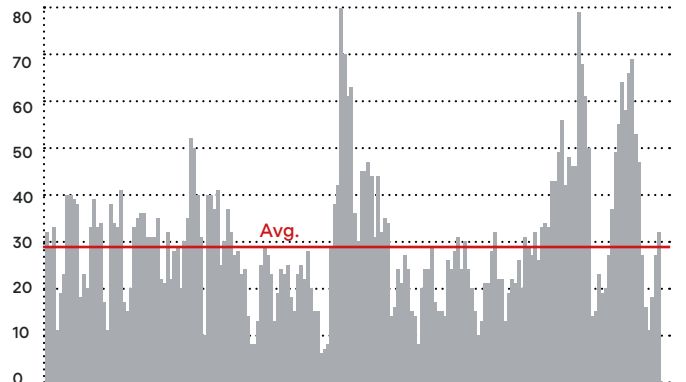
3: % Loss/Gain from time of outgoing BTC transaction to 3-confirmations



4: 19 May 2021: BTC/USD (k) High Low

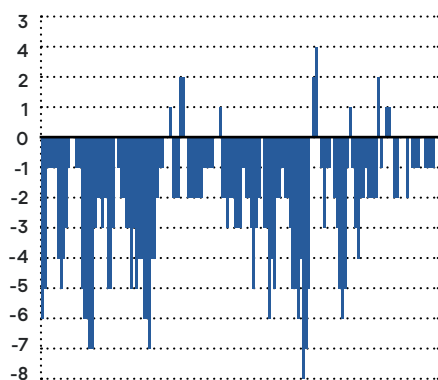


5: 2 Oct 2021: Bitcoin's least volatile day in 2021 - 3 Confirmations time (min)

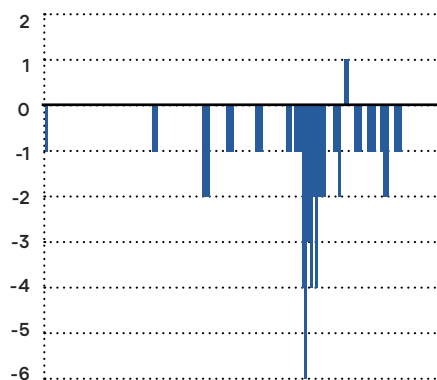


6: Bitcoin % Loss/Gain from time of decision to sell to being able to after three confirmations (Based on actual block time confirmations)

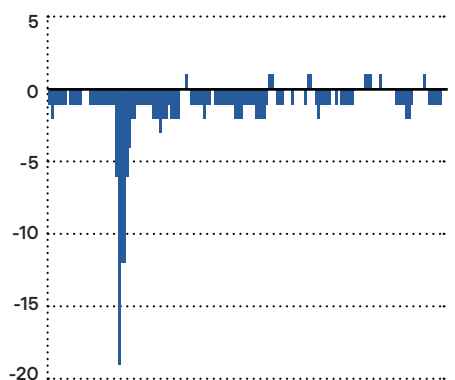
11 Jan 2021



7 Sep 2021



4 Dec 2021



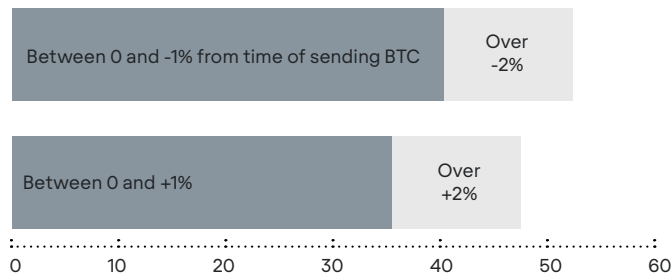


The average argument

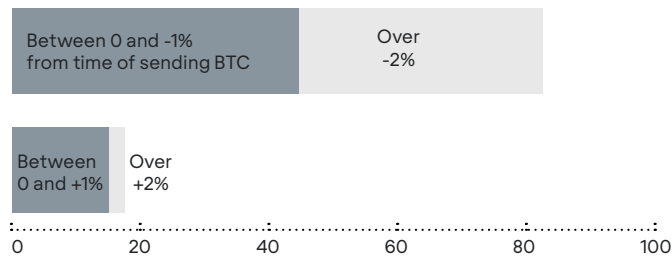
We did the exercise of assuming the Bitcoin blockchain was running smooth as silk, and every single block was confirmed within the 10-minute goal. Considering three confirmation requirements on spot markets, things still would be fairly precarious for traders on volatile days.

Looking at Bitcoin on days that saw volatility upwards of 10% from high to low, in either direction, still made for a difficult pill to swallow for investors who are looking to sell.

On a best-case scenario, when Bitcoin hit a high that was a trader's target, waiting for confirmations and selling also at a high upon having their accounts credited would still have resulted in a lower price than intended over 52% of the time (see chart below).



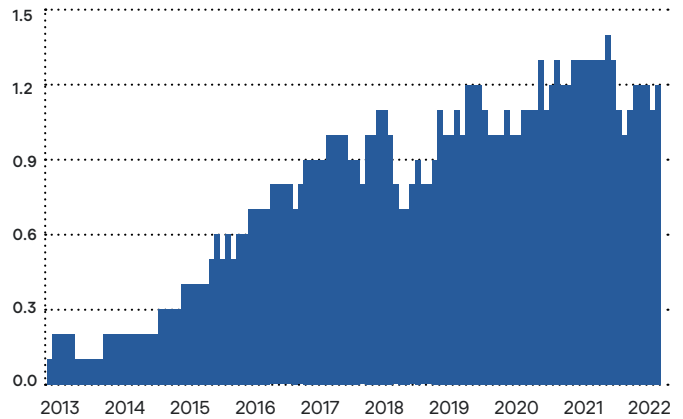
On the worst-case scenario, selling at a low within a 30-minute period on these volatile days would have seen price point targets missed over 80% of the time (see chart below).



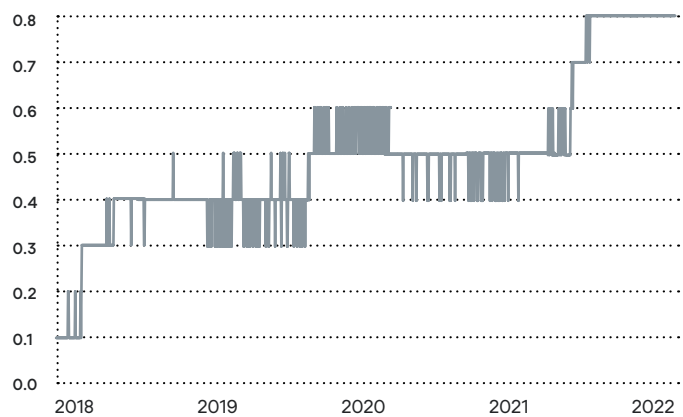
Even if we are to consider the full year of 2021 that saw bull and bear market cycles multiple times, the ability to capture a high price target that would initiate the process of selling turns out to have chances akin to a flip of a coin. For retail investors that might not matter. But for asset managers, a basis point of difference is a massive knock to performance.

And these are the best-case scenarios. The above data numbers discount many variables such as transaction queues, actual blockchain times, orderbook depth and, crucially, being a market-taker increasing fees and losses further still. We haven't even mentioned Bitcoin transactions costs.

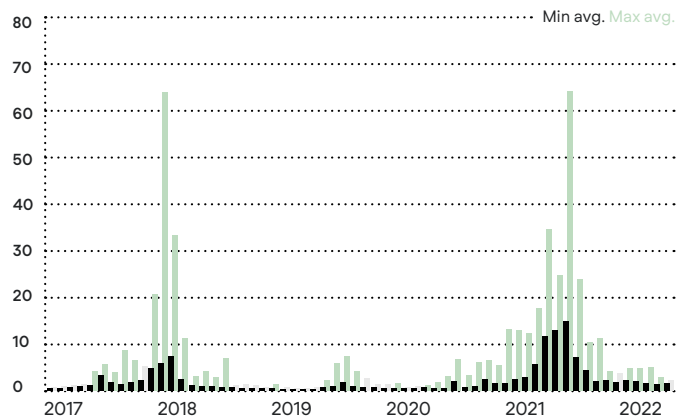
Average Block size on Bitcoin continues to grow (mb)...



...Thankfully, SegWit (%) usage has also increased...But...



...Average fees continue to spiral to new heights during high demand (\$)



Data Sources

CoinAPI - CryptoQuant - Glassnodes - Blockchair

[Read about Clearloop](#)

[Copper's Instant Settlement Exchange Network](#)

the unfair advan⁺tage

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