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## 3 Reasons Cryptocurrency May Raise Antitrust Issues

By **Marc Martos-Vila** (January 29, 2019, 2:55 PM EST)

Bitcoin has attracted a substantial amount of attention and investment. Two years ago, its market capitalization was about \$11 billion.[1] Today, it is approximately \$111 billion, a tenfold increase.[2] Bitcoin is the first of many cryptocurrencies. But it is more than that. Bitcoin is also the underlying technology behind these cryptocurrencies. The pillar of this technology is what is known as blockchain, a distributed ledger technology. The cryptocurrency approach to payments was originally designed to provide services in a more decentralized and transparent manner. This article will provide three reasons why we should be careful not to draw the conclusion that these markets won't be the subject of antitrust concerns.



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Let's start by defining some terminology. First, the term cryptocurrency comes from the fact that the technology uses cryptography to make transactions secure.[3] Second, distributed ledger technology means that transactions are public records that get disseminated, peer-to-peer, into a network of computers. It is a decentralized ledger, because it is not maintained by a centralized institution.

This decentralization is in contrast with the traditional payments system, where one trusts that a bank will verify and record all transactions. Bitcoin was specifically formulated to remove the element of trust in centralized institutions, such as banks.[4] In fact, the key innovation in bitcoin is not the use of cryptography or its virtual nature, it is the theoretical decentralization of its ledger.

The notion of decentralization suggests increased competition. With more competition there are less concerns that there will be price-fixing or any other form of abuse of market power. However, studies have suggested that decentralization has not "fully come to fruition." [5] As a result, these new markets may not be immune from potential abuse of market power. In order to illustrate this, let's consider two new products that have been created around cryptocurrencies.

The first are exchange services. In exchange platforms, one can trade a cryptocurrency for another one, or a cryptocurrency for a traditional (fiat) currency. There are more than 200 global exchanges, about half of them launched in the last year or two.[6] However, this rate of entry into the industry has also been accompanied by significant exits,[7] of which the most notable example is the failure of Mt. Gox, an exchange that in 2012 "served over 80 percent of all Bitcoin transactions." [8], [9]

The active influx and outflux of companies highlights that it is relatively easy to enter into, but also exit, this market. Despite this fact, trading appears to be concentrated around a few exchanges. Using data on exchanges of bitcoin vis-a-vis fiat currencies, Table 1 lists the top five Bitcoin exchanges during the first quarter of 2015 and 2018.[10], [11] BTC China, Huobi and OkCoin, once top platforms, as illustrated in the table below, were no longer ranked among the top five during the first quarter of 2018.[12] The combined trading volume of the top five exchanges in the first quarter of 2015 was 89 percent, and for 2018 it was 81 percent.

**Table 1. Top 5 Bitcoin-to-Fiat-Currency Exchanges by Trading Volume**

<i>First Quarter 2015</i>	<i>First Quarter 2018</i>
BTC China (BTCC)	Bitfinex
OkCoin	Kraken
Huobi	Coinbase
Bitfinex	Bitflyer
Bitstamp	Bitstamp

Despite the existence of publicly available data on trading volume by exchange, discerning the extent of concentration may be limited by allegations that these volumes are inflated. Some market analysts find that volume might be inflated due to the existence of wash trading — which occurs when the trader simultaneously submits a buy and sell order.[13]

The second product related to cryptocurrencies is mining. Mining is an essential service for cryptocurrencies because it is the process by which blocks (groups of transactions) in the ledger are created. Mining allows a cryptocurrency transaction to be verified and recorded in the blockchain. It consists of solving a complex mathematical puzzle with computing power. Nowadays, most of the mining occurs in pools where miners join forces and share the revenue obtained from mining.[14]

Concentration in mining pools could pose safety perils. The bitcoin community has argued that a mining pool controlling more than 50 percent of all mining power could manipulate the blockchain, among other issues.[15] This is intuitive because it is the decentralized nature of blockchains that provides, in part, increased safety — there is no centralized figure that can manipulate.

The table below lists the five largest mining pools measured by hashrates, a common measure of mining power.[16] In 2015, the top five mining pools collectively accounted for about 40 percent of total hashrates. Three years later, the top five mining pools represented a combined 71 percent of all mining power.

**Table 2. Top 5 Bitcoin Mining Pools by Hashrates**

<i>First Quarter 2015</i>	<i>First Quarter 2018</i>
F2Pool	BTC.COM
AntPool	AntPool
BWPool	ViaBTC
BTCC Pool	SlushPool
Gash.io	BTC.TOP

Aside from the market structure of these new products, a second issue relates bitcoin and competition. It is the effect of the blockchain technology on other, existing, product markets. A study has argued that a decentralized ledger technology, by providing more transparency, can benefit and foster competition.[17] Its authors argue that increasing transparency eliminates some information asymmetries, which can act as a barrier to entry.[18] However, the paper also argues that increased transparency and information might facilitate collusion, hampering competition.[19] It explains that by sharing the use of the same public ledger, competitors have increased access to relevant information, such as prices, which makes it easier for them to establish a cartel.

The effect of transparency on facilitating collusion is simple. Let's imagine that a group of competitors coordinates on a supracompetitive price for a given product. Maintaining such collusive agreement is hard because each competitor typically cannot observe all the transactions in the market place. Furthermore, each cartel member has an incentive to deviate from the agreement and charge a lower price, to gain more revenue from the rest. A punishment must be designed to make the agreement incentive compatible. Given these considerations, it follows that the success of a cartel depends on how well it can enforce the prices they all agree on.

If the blockchain technology makes relevant market information public, it could make it easier for the group of competitors to recognize if any one deviates from the supracompetitive price. Therefore,

more transparency can act as a vehicle to facilitate and maintain a collusive agreement. The trade-off between the costs and benefits of increased transparency is not new to antitrust economics. The key question here is whether blockchains will tilt the balance in favor of one or another.

We have discussed competition in cryptocurrency-related new products and the potential effects of the bitcoin technology on existing markets. A third issue is related to allegations of bitcoin price manipulation.

A recent academic study purports to show that periods when the price of bitcoin fell significantly were followed by equal increases, offsetting the initial price decline.[20] The authors argue that this reversal in the price of bitcoin is "consistent with the Tether issuers [another cryptocurrency] pushing out Tether to stabilize the price of Bitcoin." [21] The authors find that Tether issuers used this cryptocurrency to artificially increase the demand for bitcoin, in exchange for Tether, and that this occurred only after significant bitcoin price drops. Thus, they argue, the increased demand for bitcoin served to reverse the initial drop in Bitcoin's price and stabilize the cryptocurrency.

In a well-functioning market with many investors, the ability of one to manipulate the price of whatever is being traded is slim. This is true because an individual's trade is small relative to all trades considered. Therefore, assuming the type of price manipulation explained above occurred, one should contemplate that a reason might have to do with a group of bitcoin traders, the Tether issuers and/or others, exercising market power. Tackling this question is complicated by the fact that Bitcoin's trading data, while public, does not disclose the trader's identity. This creates a challenge when trying to identify trades from one investor. Research up to date, including the above-mentioned paper, utilizes computer science methods to group transactions that reasonably appear to come from the same investor.

In summary, we have explored three reasons why bitcoin-related markets could be the subject of antitrust concerns. Despite the fact that bitcoin is designed to achieve greater decentralization and more transparency, studies have pointed at potential issues with this goal. Moving forward, an economics expert will be crucial to understand the complexity of these issues and analyze how this new technology interacts with the economic forces at play in our markets.

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[1] [www.coinmarketcap.com](http://www.coinmarketcap.com) (accessed November 12, 2018).

[2] *Id.*

[3] Dourado, E. and J. Brito: "Cryptocurrency". The New Palgrave Dictionary of Economics, 2014. S. N. Durlauf and L. E. Blume, eds.

[4] Nakamoto, S.: "Bitcoin: A Peer-to-Peer Electronic Cash System." White paper, [www.bitcoin.com](http://www.bitcoin.com).

[5] Bohme, R., N. Christin, B. Edelman, and T. Moore (2015): "Bitcoin: Economics, Technology, and Governance". Journal of Economic Perspectives, volume 29, number 2, pp. 213-238.

[6] <https://news.bitcoin.com/the-number-of-cryptocurrency-exchanges-has-exploded/>.

[7] Moore and Christin (2013) report a 45% failure rate. See Moore T. and Christin N. (2013): "Beware the Middleman: Empirical Analysis of Bitcoin-Exchange Risk." In Sadeghi AR (eds.): Financial Cryptography and Data Security. FC 2013. Lecture Notes in Computer Science, vol. 7859. Springer, Berlin, Heidelberg.

[8] Bohme et al. (2015).

[9] Gandal, N. and H. Halaburda (2014): "Competition in the Cryptocurrency Market," Bank of Canada, working paper 2014-33. or <https://www.bloomberg.com/news/articles/2018-09-27/crypto-s-open-secret-its-multibillion-dollar-volume-is-suspect>.

[10] Source: [www.bitcoinity.org](http://www.bitcoinity.org), accessed November 12, 2018.

[11] Note that this ranking does not account for trading volume corresponding to exchanges of Bitcoin and other cryptocurrencies. Bloomberg included all currencies in a different ranking. It ranked exchanges by estimating daily revenue using trading volume reported on data tracker [coinmarketcap.com](http://coinmarketcap.com), and fees listed on the exchanges' websites. Bloomberg ranked Binance as the top exchange by estimated daily revenue, followed by Upbit and Huobi. See Russo, C. (2018): "Crypto Exchanges Are Raking in Billions of Dollars." <https://www.bloomberg.com/news/articles/2018-03-05/crypto-exchanges-raking-in-billions-emerge-as-kings-of-coins>.

[12] It appears that the major contributing factor for this decline was the enactment of Chinese regulation regarding cryptocurrency trading.

[13] See, for example, <https://news.bitcoin.com/study-finds-3b-worth-of-faked-cryptocurrency-volumes-and-wash-trades/>.

[14] For a simple explanation of the mechanics, see Harvey, C. (2016): "Cryptofinance". Working Paper, Duke University.

[15] See Bohme et al. (2015). However, Eyal and Sirer (2014) shows that mining is vulnerable even at lower thresholds. See Eyal, I and E.G. Sirer (2014): "Majority Is Not Enough: Bitcoin Mining Is Vulnerable". Financial Cryptography and Data Security - 18th International Conference, Christ Church, Barbados, March 3-7, 2014, Revised Selected Papers, pp. 436-454.

[16] Source: [www.btc.com](http://www.btc.com) and [www.blockchain.com/en/charts/hash-rate](http://www.blockchain.com/en/charts/hash-rate), accessed November 12, 2018.

[17] Cong L.W. and Z. He (2018): "Blockchain Disruption and Smart Contracts". NBER Working Paper 24399.

[18] A different benefit is explained in Abadi and Brunnermeier (2018). See Abadi, J. and M. Brunnermeier (2018): "Blockchain Economics". Working paper, Princeton University.

[19] Cong and He (2018).

[20] Griffin J. and A. Shams (2016): "Is Bitcoin Really Untethered?". Working paper, University of Texas at Austin.

[21] Id.