BTC Halving: A Review of its Consequences in the Environment of Cryptocurrency Trading

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Abstract

The cryptocurrency community is once again at the gates of an event that may define the future of the entire market for the following 3 to 4 years: the third Bitcoin Halving, which cuts in half the rewards given to miners for solving a new block. This will bring great changes in supply and demand of BTC, sentiment towards mining and trading, viability of altcoins and integration of cryptocurrency into new economic landscapes, and we take a look at some of these effects.

***Index Terms* – Blockchain, mining, reward, halving, upper cap,**

I. Introduction

We live in times when technology has disrupted almost every aspect of our day-to-day life. Since the widespread of the internet and its implementation into devices that we now use for the majority of the day, we have seen how technology took over entertainment, transport, navigation, communications and banking. It would be a great challenge to find a company that does not offer web services these days.

However, back in 2007, a visionary (or group of visionaries) under the pseudonym of Satoshi Nakamoto predicted a problem that would arise with this uncontrolled growth: data management. Since every company needs to hold the information of their services in a server, each company would hold a copy of the data given by every user. This data can sometimes contain sensitive information, especially when we talk about banking, so Nakamoto came up with a solution: Bitcoin.

In its original iteration, Bitcoin was meant to be a substitute to traditional currencies, one that worked in a decentralized manner and gave the control over the data to the community instead of leaving a corporation in charge of the information. This, along with scandals related to mishandling of user data from big companies like Facebook and the release of Ethereum, a more user-friendly alternative to Bitcoin, motivated developers and enthusiasts to take the leap and enter the landscape of blockchain and cryptocurrency, some as investors, others are active users, and others as miners, which became the backbone of the blockchain networks we know today.

II. The Concept of Halving

The miners we just mentioned perform, arguably, the most important task in the whole lifecycle of Bitcoin: they are the ones responsible of solving an extremely complex mathematical problem that is related to the encryption of each block, so the network can keep storing transactions, and they must spend great amounts of computing and time, which translates to high costs in energy to do it. For this reason, Bitcoin offers a certain

amount of BTC as a reward to the user that first reaches the solution.

What makes for an interesting market dynamic is that, contrary to what happens with fiat currency, there is a fixed cap as to how many Bitcoin will ever be generated (21 million, to be precise). This is done to avoid problems like inflation and to keep the interest of the userbase in the currency, as there is more of a limited supply as time goes by. However, with each new block that is added, and each reward given to a miner, we draw closer to that upper cap, which is why Nakamoto proposed the idea of "halving".

As its name states, the "halving" is an event that cuts the rewards given to miners in half and it is set to occur each time 210,000 new blocks are added to the chain[1]. There has already been two halvings, one in November of 2012 and the other in July of 2016, and the math says there will be exactly 32 halving events before every available Bitcoin is given away and set in circulation. At this point, transaction fees are set to maintain the entire tokenomics of the network, so rewards will no longer be needed.

As you might have guessed, we are a few months away of a new halving taking place, so it is more important now than ever to consider what might be the consequences of the event on the cryptocurrency market, by comparing and extrapolating the effects of the two previous halvings to the state of the market in its time and taking into account how the panorama has changed in this last 4 years.

III. Consequences

III.a. BTC mining dynamics

The most directly affected part of the Bitcoin environment are obviously the miners, since they are the ones whose rewards will be halved. An event like this would make anyone think of leaving the landscape altogether, since the big efforts to mine a block become less and less worthy with time. But what would it mean for the chain if a big part of the miners decided to leave the race in a sudden manner? To understand that, we first need to talk about *hashrate*.

The *hashrate* is defined as the number of SHA-256 computational operations performed per second for cryptocurrency mining[2]. With a larger number of miners, this number goes up, meaning that the network itself is faster and more secure (as malicious users have less time to execute an attack). If a large number of miners choose to leave at anu given time, the network would bottleneck for a while, as users start to leave for faster chains, and then malicious users would have an easier time taking over big portions of the network.

However, historical data has shown us that halving events do not generate this kind of reaction[3]. Back in 2012, when the first halving took place, Bitcoin's hashrate took a small dip from December 2012 and to mid-February 2013. After that, both the hashrate and mining profitability went upwards. This means that, after the dust is

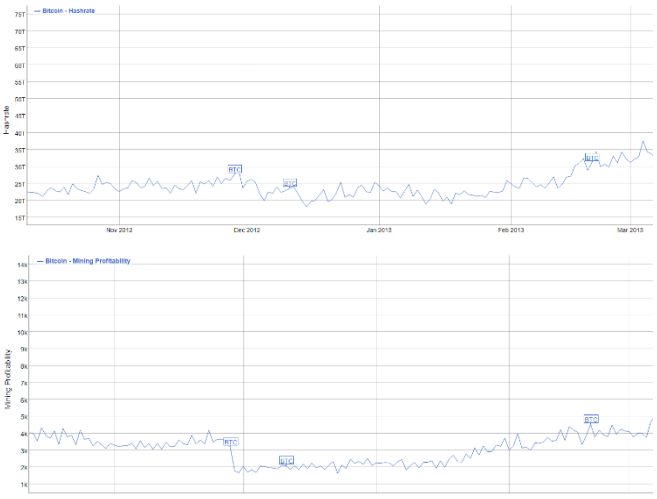

Figure 1a: Bitcoin hashrate (above) and mining profitability (below) during and after the first halving event (November 2012).

settled, halving is beneficial to both the miners and the network itself (See Figure 1a).

A similar phenomenon happened during Bitcoin's second halving (Figure 1b), but the positive effects where only seen after a longer period of time. Hashrate kept increasing at a steady rate, but mining profitability did not recover until almost an entire year past the halving date. If this tendency is maintained for the next event, we might see a long-term reduction of mining profitability,

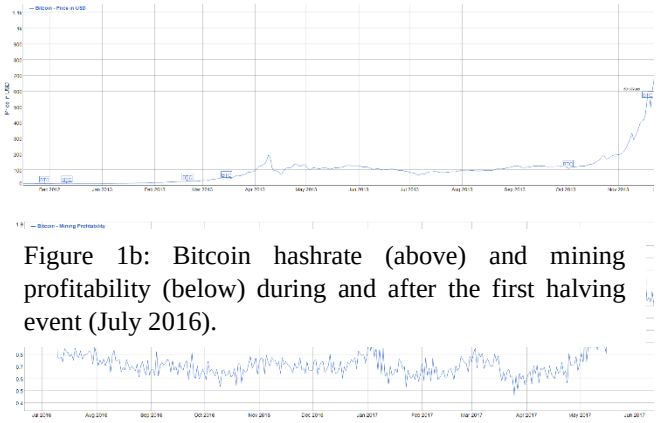

Figure 1b: Bitcoin hashrate (above) and mining profitability (below) during and after the first halving event (July 2016).

III.b. Price, supply and demand

As mining efforts and networks capacities vary, the market dynamics of the currency will undoubtedly move along with them. As we explained before, Bitcoin is a limited asset, so a reduction in the rate it is released to the public will have great effects in the demand and, subsequently, the price of the currency in the time following the halving.

Following the first halving, Bitcoin experienced growths in its price per token (doubling from $12 to $24 by mid-February 2013, eventually reaching ten times its value after a year[3]), market capitalization and average transaction fees, meaning that holding tokens and hosting transactions became more profitable when the supply rate was reduced.

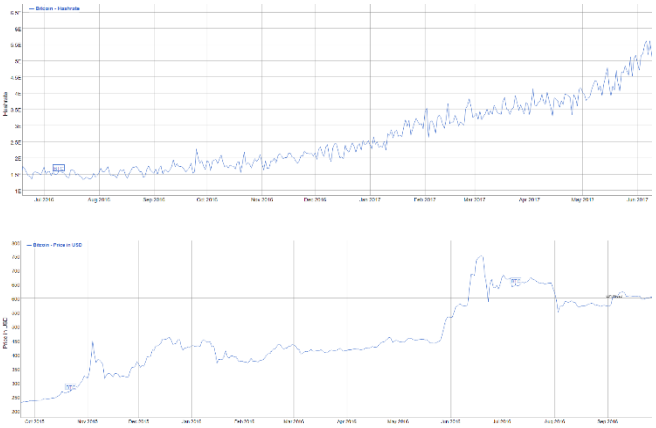

Figure 2: Bitcoin price in USD for a year following the 2012 (above) and 2016 halvings (below). Note the difference in time between the largest peak after each event takes place.

And, as it happened with the hashrate, the same effects were recreated after the second halving, only in a slower manner, with the prices, the market capitalization and transaction fees rising in a period of six months compared to the three-month rally of the first event.

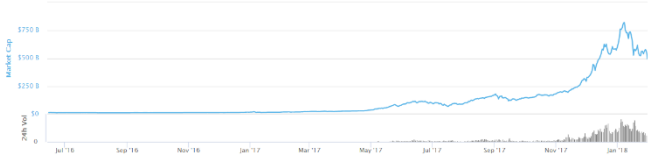

Figure 3: Global cryptocurrency market capitalization following the halving event of 2016. Notice the great climb that took place nearly a year and a half after the event (taken from coinmarketcap.com/charts)

Using the available data, one could predict that, in the long term, Bitcoin ends up increasing ten times in price due to each halving event, but the time it takes to reach that point increases considerable with each halving that occurs. Some analysts believe that the 2020 halving will only show its true effects until 2021, when BTC is expected to reach the $100,000 mark. Others, like Kraken's CEO, Jesse Powell, believe that the way the market has "re-structured" itself since the last

halving might even make BTC surpass said mark by a long shot, even reaching the $1 million line[4].

III.c. Altcoins and small markets

An important question to ask is how a supply cutting in the market's largest currency (representing 63.1% of the market at the time of writing[5]) will affect the rest of the big names and the appearance and survival of smaller projects.

Kiril Nikolaev, an analyst for cryptocurrency portal CCN with over 5 years of experience, argues that the overall market capitalization for altcoins is also benefitted from the halving of BTC[5].

He explains that, after the first halving, the altcoin market capitalization rose from $45 million to $2.02 billion in six months. For the second halving, the same metric went from $1.74 billion in December 2016 to $555.91 billion in a year.

Despite the fact that other happenings took place in said periods of time that helped with the rising of the market, but there is a direct correlation between the reactions of BTC to the halving and the way the market fared after the event. If the tendency is followed, as we have discussed previously, the market might experience a huge increase in value from the moment of halving up until the end of 2021, and some smaller projects make take advantage of this to launch their cryptocurrency in a landscape full of eager investors and thrilled enthusiasts looking for alternative opportunities.

III.d. Bitcoin and cryptocurrency integration

The increase in profitability from using Bitcoin and other cryptocurrencies in more transactions will raise the attention of potential new users, which has the potential to translate into a increase in clientele for a huge variety of businesses.

The efforts for implementing blockchain and cryptocurrency have increased in the last few years, as upstarting projects are willing to launch their platforms with useful utility tokens to be offered to their users, and big names in different economic sectors also launching efforts to release tokens, wallets and exchanges.

One of the greatest examples of the latter scenario is JP Morgan, the multinational banking giant that launched their own cryptocurrency for digital institution-to-institution payments back in February 2019 (with private users entering a test phase in June of the same year). On the other hand, Facebook, which attempted to launch a cryptocurrency and wallet service by partnering with other big brands in the areas of financial services, marketing, e-shopping, streaming, transportation and capital raising, experienced a big amount of backlash to their Libra initiative due to their previous controversy regarding mishandling and selling their users' data to third-party buyers, which ended up in certain partners dropping out of the initiative, starting with PayPal and later being joined by the likes of Visa, Mastercard and eBay.

A report by Shanhong Liu for Statista showed that the worldwide spending on blockchain solutions for the first half of 2019 was approximately of $2.7 billion dollars[7], with the financial sector holding the highest spot in the distribution of blockchain market value. An expected increase in the global market capitalization of cryptocurrency might increase these numbers beyond the expected $11.7 billion for 2022, and the effects of halving might help towards the breaking of said mark in a very positive way.

VI. Conclusion

The occurrence of a halving in Bitcoin is an event that has defined the way both cryptocurrency and blockchain are received and accepted in the subsequent years, and the one we are expecting for the following months will not be too different from what we have seen in previous occasions, with the difference of the relatively positive image blockchain has amassed in the four years that have passed since the last halving. The response from miners, investors, enthusiasts, traders and analysts will be crucial if we expect the market to strive past the first obstacles after it happens, but the community seems to be ready to embrace this event with open arms and looking forward to progressing.

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