De-Coding Crypto

Enigma Weekly

18th June 2020

ENIGMA SECURITIES

Written by Joseph Edwards, Head of Research at Enigma Securities.

Our Market View

May you live in interesting times. Finally some volatility this week, but we are still left waiting to break out or break down to a large extent; we did quickly fall through $9600 hours the last weekly, but received significant support in the $9000-$9100 range, and have mostly been grinding against the top of the new range since. Our outlook as it stands does still remain bearish; all attempts upwards so far have failed to even give the illusion of seriously challenging that $9600 resistance level, and despite our relatively lofty position right now, we hence tend to see price being more likely to next reach back down all the way to $8600 than going to $10,300 and beyond.

Alts picture is similarly in the balance. Most alts pulled back slightly this week against both USD and BTC, including general outperformers like XTZ and LINK; ADA is the one notable exception, albeit not by much. As is typically the case, expect further movement upon stronger confirmation from BTC.

Please direct all enquiries about this week's research to jedwards@enigma-securities.io.

Major

Ticker	Price	7D	1M	6M	12M	Cap
BTC	9447.19	-3.49%	-2.54%	25.69%	-7.70%	173.9B
ETH	233.315	-4.93%	9.87%	76.15%	-21.25%	25.99B
XRP	0.191924	-4.60%	-5.84%	-2.63%	-56.95%	8.49B
BCH	239.616	-5.68%	-2.57%	21.79%	-45.73%	4.42B
LTC	44.0424	-4.75%	-2.04%	4.92%	-68.34%	2.87B
EOS	2.5676	-6.01%	-2.50%	1.01%	-63.70%	2.40B

Selected

Ticker	Price	7D	1M	6M	12M	Cap
ADA	0.0826731	0.38%	52.08%	140.00%	-8.07%	2.38B
XTZ	2.64816	-7.52%	-4.37%	80.33%	126.80%	1.94B
LINK	4.18534	-4.34%	8.15%	116.90%	80.08%	1.47B

Difficulty and network processing power: recent trends

Coindesk, 16th June, 2020:

> Bitcoin has just posted its biggest mining difficulty increase in nearly 2.5 years. At around 17:00 UTC on Tuesday, the network adjusted its difficulty level – a measure of how hard it is for miners to compete for block rewards on the blockchain – to 15.78 trillion. The 14.95% rise is the biggest difficulty jump since January 2018, which saw a larger spike on the back of the 2017 crypto market bull run, data compiled by BTC.com shows.

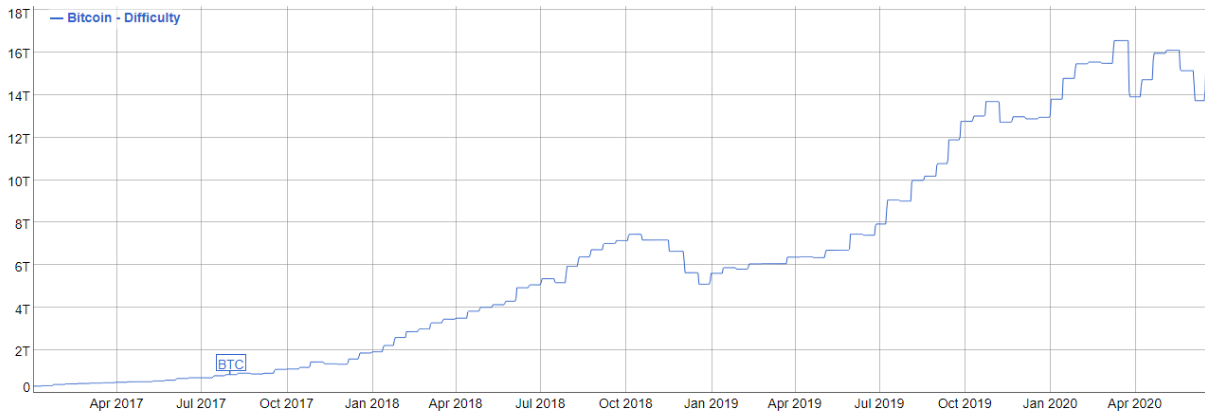
…and the world holds its breath. Topics relating in one form or another to BTC mining tend to be one of our most common research topics, for very good reason: it has tended to be an effective augur of overall confidence within the core of the crypto industry, given that while miners are not necessarily the most aggressively mobile market participants (due to the nature of their business), they are as a group among the most well-connected, and have an extremely significant influence on control of issuance and supply.

Given Tuesday's difficulty increase, and the fact that in general we are now a few updates out from the halving (more on why that's significant later), it now seems as good a time as any to revisit mining dynamics, with the question – and implications – of difficulty chief among them.

To start with, let's very briefly recap what difficulty is (and why it matters). In short, difficulty is essentially a proxy for the total processing power on the Bitcoin network. To give a slightly longer explanation, it's the mechanism by which the network keeps block times and therefore issuance consistent over long periods (i.e. one new block every 10 minutes), and is automatically updated every 2016 blocks (approximately 14 days) based on how much quicker or slower than expected the aforementioned 2016 blocks in aggregate were.

There are slightly more granular ways to measure network processing power ('hash rate'), but difficulty tends to be accepted as the best reference point; there's enough natural variance in speed block-to-block that any reasonable measurement generally needs to take a moving average over a relatively long period anyway (7 days or more). An ascending difficulty means more processing power coming into the network, a descending difficulty means machines being switched off or removed.

We have written on recent difficulty trends extensively in the past, but the short version with regards to a brief contemporary history is as follows:



Credit: BitInfoCharts.

1. Difficulty is typically steadily in the ascendancy as a rule outside of major shocks, and ticked upwards with very little disruption throughout 2019 (even as price descended from peak levels in the latter half of the year).

2. That growth did eventually flatten out for an extended period over November and December (and preceded the Q4 downturn as a whole).

3. We did then start seeing renewed upwards movement again, albeit at a lower rate of growth, in January, but have been up and down significantly since.

So, onto 2020 specifically. These are all the difficulty adjustments that we have seen so far in 2020:

Date	Difficulty	Change	Hash rate (EH/s)
01/01/20	13.80T	6.57%	98.7
14/01/20	14.78T	7.08%	105.8
28/01/20	15.47T	4.67%	110.7
11/02/20	15.55T	0.52%	111.2
25/02/20	15.49T	-0.38%	110.9
09/03/20	16.55T	6.88%	118.4
26/03/20	13.91T	-15.95%	99.6
08/04/20	14.72T	5.77%	105.2
21/04/20	15.96T	8.45%	114.1
05/05/20	16.10T	0.92%	115.3
20/05/20	15.14T	-6.00%	108.2
04/06/20	13.73T	-9.29%	98.3
16/06/20	**15.78T**	**14.95%**	**113.0**

As of May 4th, we were at almost the same difficulty level - and hence, the same processing power - on the network as we had at the start of the year. The reason for this was that, after seeing very little in the way of periods of contraction over the course of the last two years, we have seen three major downwards adjustment this year.

Why? The simple answer is that in both cases, it was a question of marginal unprofitability. The drop in March was after BTC's descent from $7800 to $3900 in a matter of hours (and, while its detour did not in the end last long, we did spend some time in the $4000-$6000 area); the drops in May were both results of the halving 'hangover'. While miners are by their nature Bitcoin bulls to some extent, it is far from uncommon practice to liquidate part or all of inventory immediately upon mining, and hence when mining becomes short-term unprofitable on certain rigs, said rigs are usually taken out of active duty in short order.

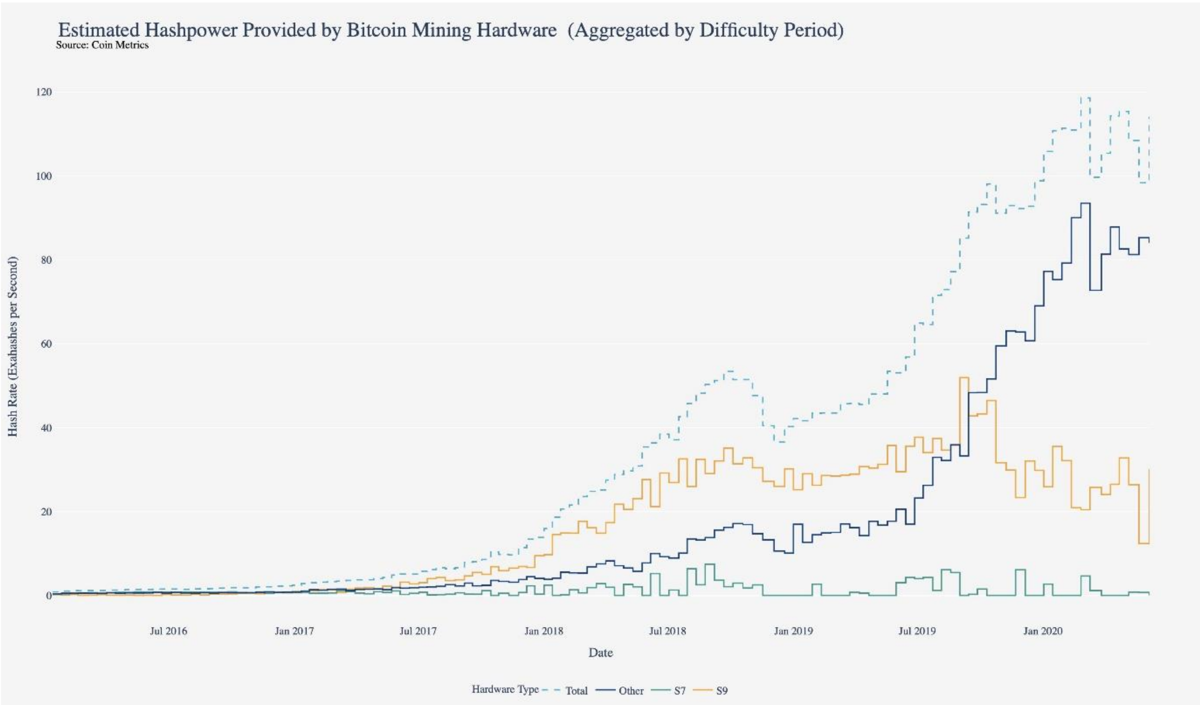
While March represented a temporary lapse into unprofitability for said rigs, May was more permanent; our post-halving issue on May 13th explains this in detail, but to put it simply, projections had previous-era hardware (as exemplified by the Antminer S9 series, by far the most common brand in the 2016-2019 period) lapsing into unprofitability on all but the most cost-efficient energy setups:

	01/03		01/04		01/05		12/05	
	$/day	%	$/day	%	$/day	%	$/day	%
$0.01/KWh	$1.45	81%	$1.03	76%	$1.56	83%	$0.54	62%
$0.02/KWh	$1.12	63%	$0.70	51%	$1.23	65%	$0.21	24%
$0.03/KWh	$0.79	44%	$0.37	27%	$0.90	48%	-$0.12	-14%
$0.04/KWh	$0.46	26%	$0.04	3%	$0.57	30%	-$0.45	-52%
$0.05/KWh	$0.13	7%	-$0.29	-21%	$0.24	13%	-$0.78	-90%
$0.06/KWh	-$0.20	-11%	-$0.62	-46%	-$0.09	-5%	-$1.11	-128%
$0.07/KWh	-$0.53	-30%	-$0.95	-70%	-$0.42	-22%	-$1.44	-166%
$0.08/KWh	-$0.86	-48%	-$1.28	-94%	-$0.75	-40%	-$1.77	-203%
$0.09/KWh	-$1.19	-67%	-$1.61	-118%	-$1.08	-57%	-$2.10	-241%

Data via ASICMinervalue. Figures for the Antminer S19 14Th, released May 2018. See Enigma Weekly May 13th for further details.

Hence, the drop-off in May was actively expected; while there were going to be industrial-scale setups where they were still cost-efficient on either a temporary or permanent basis (especially those based around hydroelectric sources), it was going to become essentially impossible for them to operate on any scale outside of those, and hence most would become obsolete. An aggregate drawdown in the 15-20% rate just from the absence from those sources makes perfect sense.

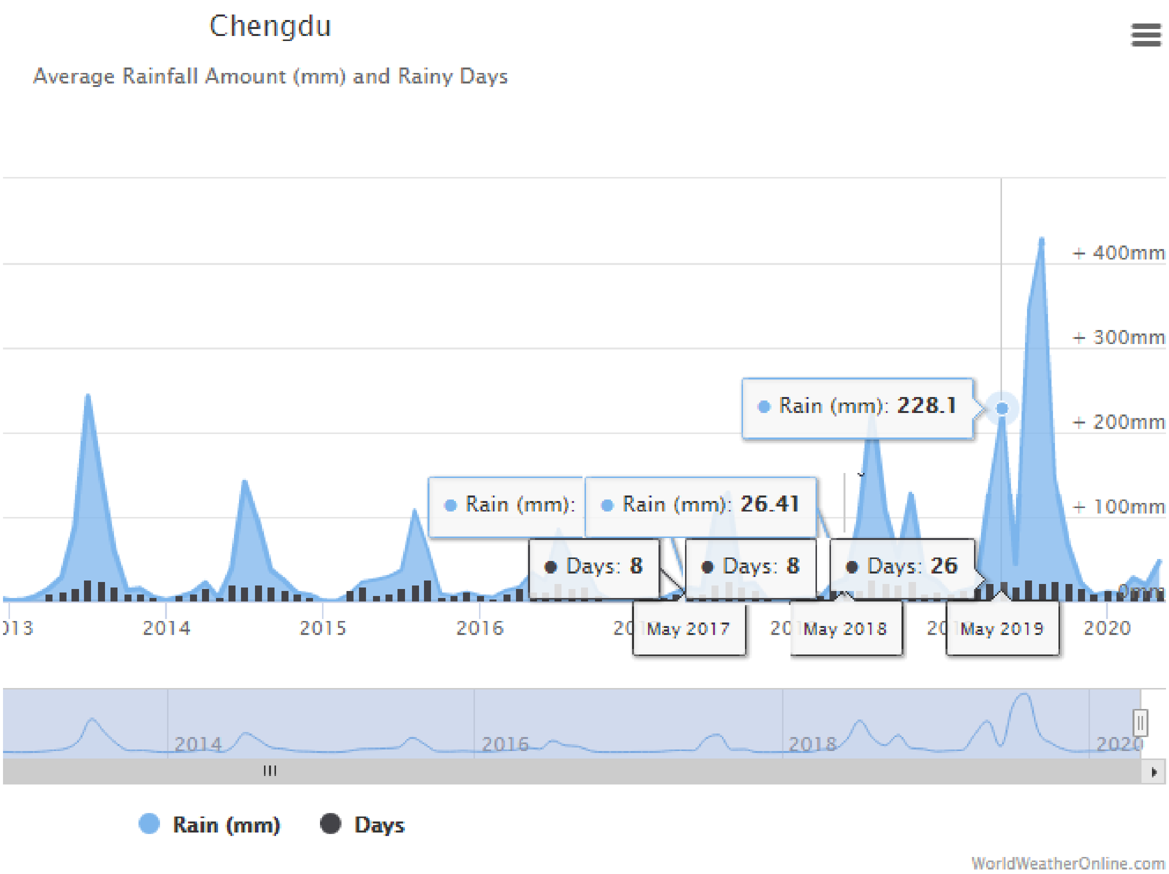
While longer-term growth and recovery is to be expected, the sudden surge this month was not. However, there does appear to be a relatively simple explanation for it, as illustrated in the following graph from Coinmetrics:



Credit: Coinmetrics

The appreciation in hash rate over the last couple of weeks can, in fact, be traced in its entirety to the return of S9s to the network; processing power from other cards is estimated to have actually declined slightly.

Why? As mentioned, hydroelectric surpluses in particular have a tendency to drive energy prices down dramatically, and 'rainy season' is approaching in in several Chinese provinces that tend to be hubs for BTC mining; for instance, looking at Chengdu:



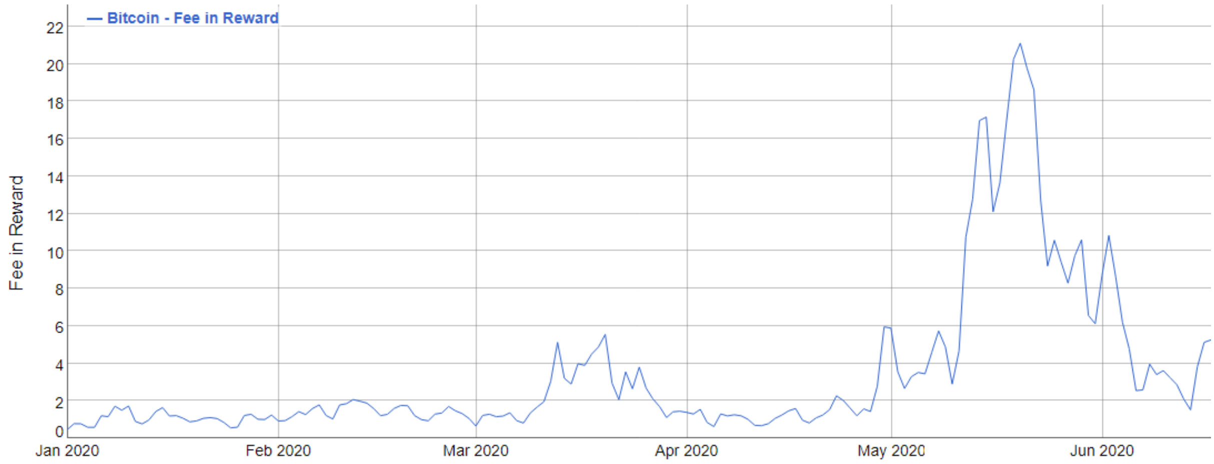
Credit: WorldWeatherOnline.com

Hence, even though we have not seen any significant price appreciation since May, S9s in some setups are lapsing back into profit in said setups, albeit not dramatically.

There are a few implications here as a result. First: there is a good chance that difficulty ends up being far more variable in both directions than we're used to over the course of the next couple of months, and hence probably should be read into less closely as a general augur of health than it's perhaps been able to in the past. While it's always been an existent concern, the reality is that this is the first time in a long while where such active management of these rigs has been an ongoing matter for major miners (arguably since the dawn of the ASIC mining era itself), which is part of the reason why we have seen little downwards variance previously.

Second: where this is a contributor to both BTC and the mining industry, it is probably a bearish one. If S9s are coming back online while we're not seeing newer rigs (which are of course far more efficient on a marginal basis than S9s), it strongly suggests that uptake on new generation rigs in the last few months have been below expectations, and hence that forecasts are, to put it politely, not wildly optimistic with regards to short-term price level on the part of miners (a group that, again, is fundamentally bullish to some degree on BTC, and has historically tended to pursue operational growth to the point that it has been to their own expense due to the levels and ways in which leverage for said operations have been pursued).

Ultimately, mining is a zero-sum game. Maximum issuance is hard-coded, and while that issuance can increase in USD terms (or by any other value measure), it cannot increase substantially in BTC terms. Transaction fees are variable, but while they briefly spiked post-halving, still represent a minimal portion of block rewards:



Credit: BitInfoCharts.

Hence, mining revenues across the industry as a whole only increase when price increases; for once, it is a bet that miners have not been willing to make, as also reflected in the struggles of mining hardware developers such as Canaan:

CredIt: Tradingview.

There are clearly other factors at play here, such as the disruption to electronics manufacturing supply chains brought about by the coronavirus situation. Still, this is an area of concern, and will need to be monitored closely over coming weeks.

Until next week – thank you for reading.

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ABOUT US

Enigma Securities is a leading, regulated liquidity provider, offering its clients bespoke liquidity solutions through the use of a proprietary electronic trading platform and API access.

The firm was founded in 2017 as a subsidiary of Makor Partners Limited (UK), amid growing institutional demand for digital asset trading. Looking to seize the new, exciting opportunities presented by cryptocurrencies and blockchain technology, Enigma became one of the first regulated brokerage firms to set up banking relationships and custody solutions to meet institutional standards.

Since its launch, the firm has expanded its capabilities to the broader Fintech arena, leading innovation while working to bridge the gap between the traditional financial services industry and cryptocurrency markets.