



EXCHANGE REVIEW

MARCH 2019



Abstract

CryptoCompare's Exchange Review aims to capture the key developments within the cryptocurrency exchange market, as well as any changes to the constituent exchanges that make up CryptoCompare's CCCAGG price indices. Our review focuses on analyses that relate to exchange volumes, and includes an analysis of the highest volume producing jurisdictions, as well as market segmentation by exchange fee model.

We also evaluate how spot volumes vs futures volumes have developed historically to date, including both crypto exchange (BitMEX and Bitflyer Lightning) and traditional exchange (CBOE and CME) futures volumes. Finally, we conduct an analysis of bitcoin trading into various fiat currencies and stablecoins, as well as an overview of how exchange web traffic has changed over the previous few months.

We provide an additional overview of top crypto exchange rankings by spot trading volume, as well as a focus on how volumes have developed historically for the top trans-fee mining and decentralised exchanges.

CryptoCompare's Exchange Review is conducted on a monthly basis and caters to both the crypto-enthusiast interested in a broad overview of the crypto exchange market, as well as investors, analysts and regulators interested in more specific analyses.

For questions related to our research or any potential requests, feel free to contact our research department at research@cryptocompare.com

For those interested in accessing CryptoCompare's data for their own purposes, whether it be cryptocurrency trade data, order book data, blockchain data, social data or historical data across thousands of cryptocurrencies and 200+ exchanges, please take a look at CryptoCompare's API here: <https://min-api.cryptocompare.com>

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Executive Summary

Macro Analysis and Market Segmentation

- 1 **Country Analysis** - Malta-registered exchanges represented the majority of trading volume, followed by those legally registered in Hong Kong and South Korea. Monthly trading volume from Malta-registered exchanges increased 56% since February, while that of Hong Kong and South Korea-registered exchanges increased 54% and 21% respectively.
- 2 **Predominant Fee Type** - Exchanges that charge taker fees represented 84% of total exchange volume in March, while those that implement trans-fee mining (TFM) represented 14%. Fee-charging exchanges traded a total of 272 billion USD in March, while those that implement TFM traded 51.3 billion USD. The remaining volume represented trading by exchanges that charge predominantly no trading fees, at 1.7 billion USD.
- 3 **Derivatives Trading** - OKEx traded the highest average daily derivatives volume in March (swaps and futures) at 1.5 billion USD, followed by Bitflyer Lighting (XBTJPY perpetual futures) at 1.14 billion USD and BitMEX (XBTUSD perpetual futures) at 645 million USD. Exchanges Deribit (73.6 million USD) and CryptoFacilities (26.1 million USD), still represent only a small proportion of the wider market.

Institutional Products - Regulated bitcoin derivatives product volumes are still dominated by CME. This is followed by Grayscale's GBTC product traded on the OTC (over the counter) markets, and CBOE's bitcoin futures. CME's bitcoin futures product volumes decreased from 98.9 million USD to 70.5 million USD (-29%) in March. Meanwhile, CBOE's bitcoin futures volume decreased from 5.6 million USD to 4.7 million USD (15.9%) as they have chosen to cease listing additional bitcoin futures products in the near future.
- 4 **Fiat Capabilities** - March saw a sharp increase in volume from crypto to crypto exchanges. Trading volume from exchanges that offer only crypto pairs increased by 70% (to 267 billion USD) since February, while those that offer fiat pairs decreased 8% to 58 billion USD. Following this increase in crypto to crypto trading volume, crypto to crypto exchanges represented 82% of total spot volume in March, up from 71% in February.
- 5 **Web Traffic** - In contrast to recent months, total exchange web traffic increased 32% in March, in conjunction with a total spot volume increase of 47.5%.
- 6 **Bitcoin to Fiat Volumes** - Bitcoin to USD trading comprised 46% of the total Bitcoin to fiat volume, similar to February. BTC/JPY represented a 20% share of Bitcoin to fiat trading in March, down from 30% in February, whereas Bitcoin to KRW trading increased its market share to approximately 10%. In absolute terms BTC to USD volumes continued to decrease, from 1.24 million BTC in February to 0.92 million BTC in March (-26.2%). Bitcoin trading into JPY experienced a sharp 47% decrease in volume from 0.9 million BTC to 0.48 million BTC. Meanwhile, BTC trading into KRW increased by 41%, from 0.15 million BTC in February to 0.21 million in March. USD, JPY, EUR and KRW made up 95% of total trading from Bitcoin into fiat currencies.
- 7 **Bitcoin to Stablecoin Volumes** - BTC trading into USDT totalled 8.9 million BTC in March, an increase of 43% since the previous month. In March, it represented 81.7% of total BTC volume (traded into fiat or stablecoin), while last month the pair represented 70%. Meanwhile, BTC trading into other fiat currencies has generally decreased, except for the KRW which increased 41% to 0.21 million BTC. USDT continues to be the most popular stablecoin for trading with Bitcoin, followed by PAX, USDC and TUSD.

Exchange Volumes

1. **Top Crypto to Crypto Exchange Volumes** - The top 15 crypto to crypto exchanges all experienced a surge in monthly volume in March with an average increase of 66%. OKEx was the largest exchange by monthly volume at 31.2 billion USD (up 85%), followed by ZB and Binance at 27.3 billion (up 51%) and 24.7 billion (up 30%) USD respectively.
2. **Top Fiat to Crypto Exchange Volumes** - Bithumb was the top exchange by total volume in March at 32 billion USD, followed by Upbit and Bitfinex. While crypto to crypto exchanges saw a surge in volume, top exchanges that offer fiat pairs experienced a general decrease in volume, except for South Korean exchanges Bithumb and Upbit. Bithumb's total monthly trading volume in March increased by 21% to 32 billion USD. Meanwhile, Upbit traded a total of 7.2 billion USD (up 26%), followed by Bitfinex at 3.1 billion USD (down 28%). Coinbase, Kraken, Liquid and Bitstamp all experienced a decrease in volumes in March.
3. **Trans-Fee Mining Exchanges** - All the top TFM exchanges saw a sharp increase in volumes in March. CoinBene was the largest TFM exchange, followed by ZBG and FCoin. CoinBene traded 17.8 billion USD in total volume in March, up 56% since February. ZBG traded 11.6 billion USD and FCoin traded 9.3 billion USD, up 37% and 128% respectively since February. CoinBene, ZBG and FCoin represent 76% of volume among the top 8 TFM exchanges.
4. **Decentralised Exchanges** - Ethereum was the largest DEX in March, followed by OpenLedger and WavesDEX. Ethereum traded 336 million USD in monthly volume in March, up 42% since February. OpenLedger volumes increased by 17% in March, to 31.4 million USD. WavesDEX saw a sharp 55% decrease in volume, from 69 million USD in February to 31 million USD in March. DEXs represented only a small fraction of global spot exchange volume (0.14%), trading a monthly total of 447 million USD in March.

March Exchange News

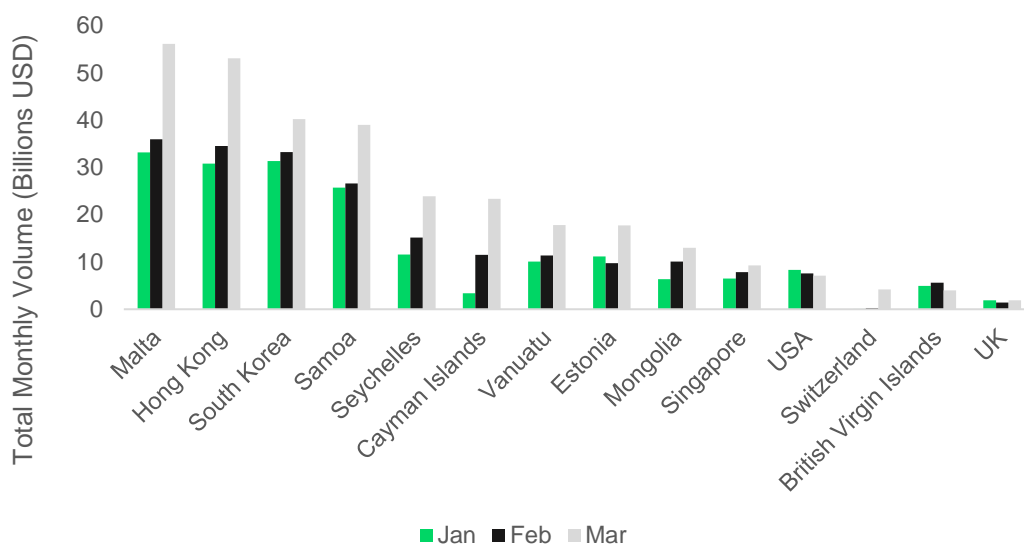
EXCHANGE	STORY	
Switcheo	Switcheo Decentralized Exchange Announces OTC Trading Desk	03-Mar-19
Coinbase	Anti-Coinbase Sentiment Grows Amid Data Selling Revelations	04-Mar-19
WEX	PwC Report Links Crypto Exchange WEX to Iranian Ransomware Operators	06-Mar-19
Huobi Global	Huobi's Over-the-Counter (OTC) Trading Desk Adds XRP	06-Mar-19
QuadrigaCX	QuadrigaCX Co-Founder Reportedly Took Large Positions on BitMEX	07-Mar-19
Huobi Global	Huobi's Derivatives Markets Platform Surpasses \$50 Billion 'Cumulative Volume'	08-Mar-19
Coinbase	Coinbase Pro Lists Stellar Lumen (XLM) Six Days Before IBM Announcement	14-Mar-19
OKEx	\$2.4 Billion: OKEx's Crypto Derivatives Market Sets Global Daily Trading Volume Record	14-Mar-19
Bithumb	Crypto Exchange Bithumb to Reduce Staff By Up to 50%	18-Mar-19
Cryptopia	Cryptopia Exchange Resumes Crypto Trading Amid Banking Issues	20-Mar-19
DragonEx	Singapore-based exchange DragonEx says it has been hacked for an undisclosed amount in a number of cryptocurrencies.	26-Mar-19
Kraken	Kraken Ramps Up Security With Enforced 2FA and Dedicated Lab	28-Mar-19
Bithumb	Crypto Exchange Bithumb Hacked for \$13 Million in Suspected Insider Job	30-Mar-19

Macro Analysis and Market Segmentation

This section aims to provide a macro view of the global cryptocurrency exchange market, with a focus on analyses that relate to exchange volumes. This will include an analysis of the highest volume producing jurisdictions, as well as market segmentation by exchange fee model. We also evaluate how spot volumes vs futures volumes have developed historically to date, including both crypto exchange (BitMEX and Bitflyer Lighting) and traditional exchange (CBOE and CME) futures volumes. Finally, we conduct an analysis of bitcoin trading into various fiats and stablecoins, as well as an overview of how exchange web traffic has changed over the previous few months.

1 Country Analysis

Figure 1 - Historical Monthly Trading Volume by Jurisdiction



Monthly trading volume from Malta-registered exchanges increased 56% since February, while that of Hong Kong and South Korea-registered exchanges increased 54% and 21% respectively.

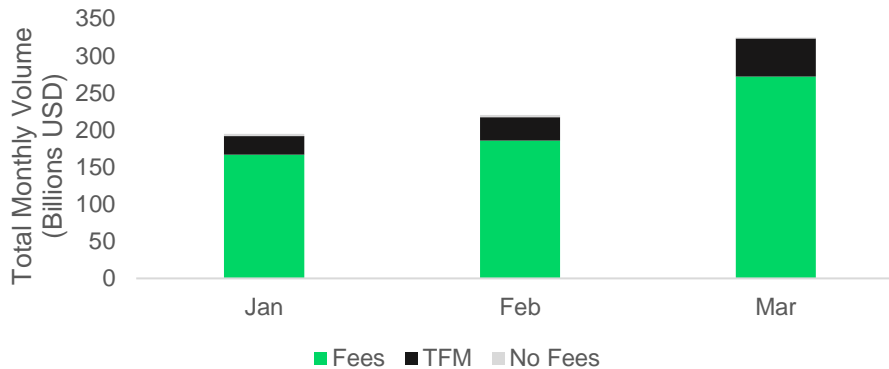
Malta-registered exchanges represented the majority of trading volume in March (56.1 billion USD) as in previous months, followed closely by those legally registered in Hong Kong (53.1 billion USD) and South Korea (40.2 billion USD).

Maltese volumes are dominated by Binance and OKEEx, while trading volumes in Hong Kong are dispersed among a far greater number of exchanges that include: LBank, HitBTC and BitZ.

South Korean exchange volume is driven by exchanges Bithumb and Upbit.

2 Segmentation by Fee-Type

Figure 2 - Total Monthly Trading Volume by Predominant Fee Type

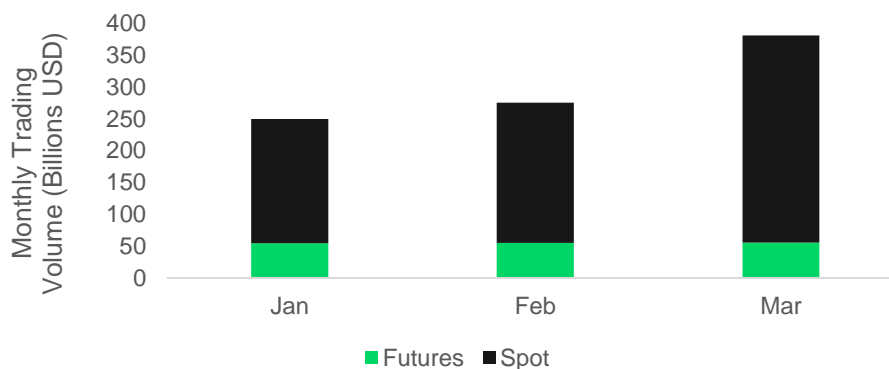


Exchanges that charge taker fees represented 84% of total exchange volume in March, while those that implement trans-fee mining (TFM) represented 14%.

Fee-charging exchanges traded a total of 272 billion USD in March, while those that implement TFM traded 51.3 billion USD. The remaining volume represented trading by exchanges that charge predominantly no trading fees, at 1.7 billion USD.

3 Segmentation by Product Type

Figure 3 - Spot vs Futures Monthly Trading Volume



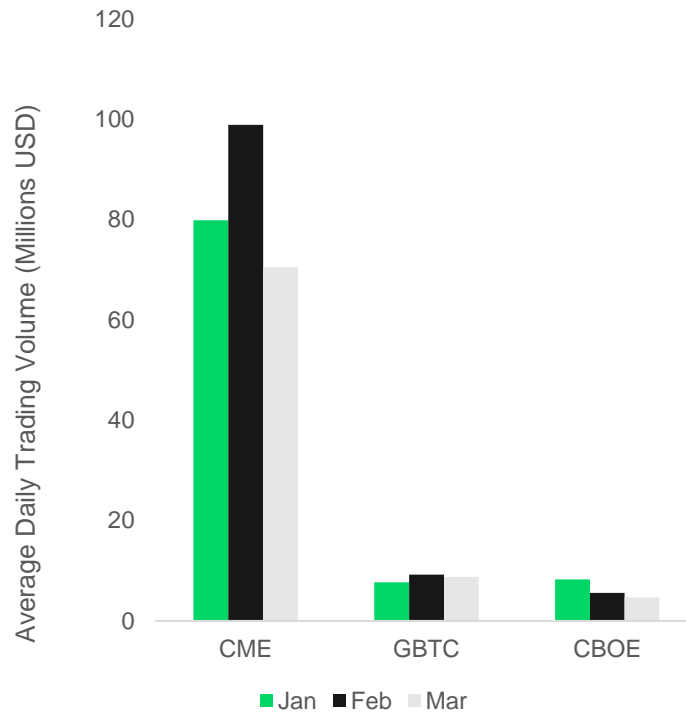
Total futures trading volume¹ from exchanges bitFlyer Lightning (BTC-FX/JPY) and BitMEX (XBT/USD) totalled 55.4 billion USD in March, while volume from spot exchanges totalled 325 billion USD.

Spot volumes increased 13%, from 195 billion USD in January to 220 billion USD in February. Meanwhile, futures volumes from bitFlyer Lightning and BitMEX combined remained similar to the previous month.

¹ Note, this excludes volumes from OKEx, HuobiPro, CryptoFacilities and Deribit, which will be represented in future reviews following further data collection.

4 Bitcoin Derivatives Trading: Institutional Products (CME, CBOE, Grayscale BTC Trust)

Figure 4 - Average Daily Bitcoin Derivatives Volumes

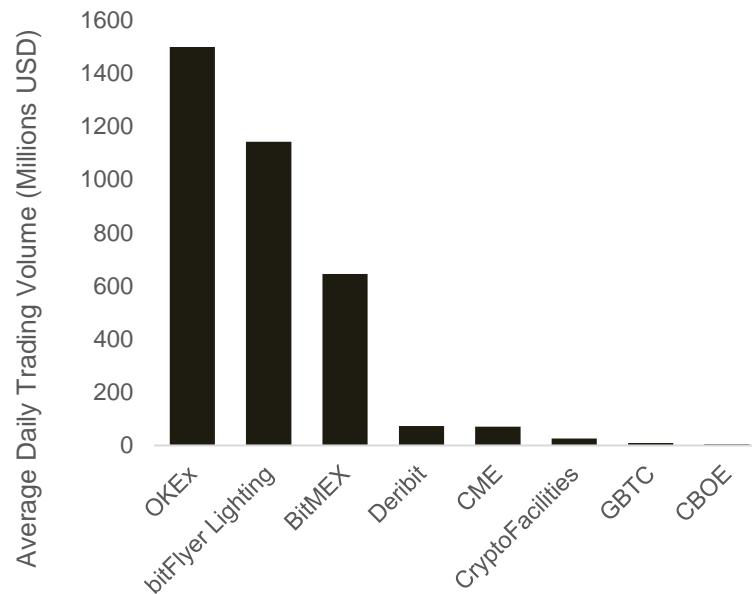


Regulated bitcoin derivatives product volumes are still dominated by CME. This is followed by Grayscale's GBTC product, and CBOE's bitcoin futures. The average trading volume of regulated Bitcoin futures products decreased in March.

CME's bitcoin futures product volumes decreased from 98.9 million USD to 70.5 million USD (-29%) in March. Meanwhile, CBOE's bitcoin futures volume decreased from 5.6 million USD to 4.7 million USD (15.9%) as they have chosen to cease listing additional bitcoin futures products in the near future.

Grayscale's bitcoin trust product (GBTC), which is traded on the OTC markets also decreased in terms of average trading volume in March to 8.76 million USD.

Figure 5 - Daily Average Derivatives Volumes (March 2019)



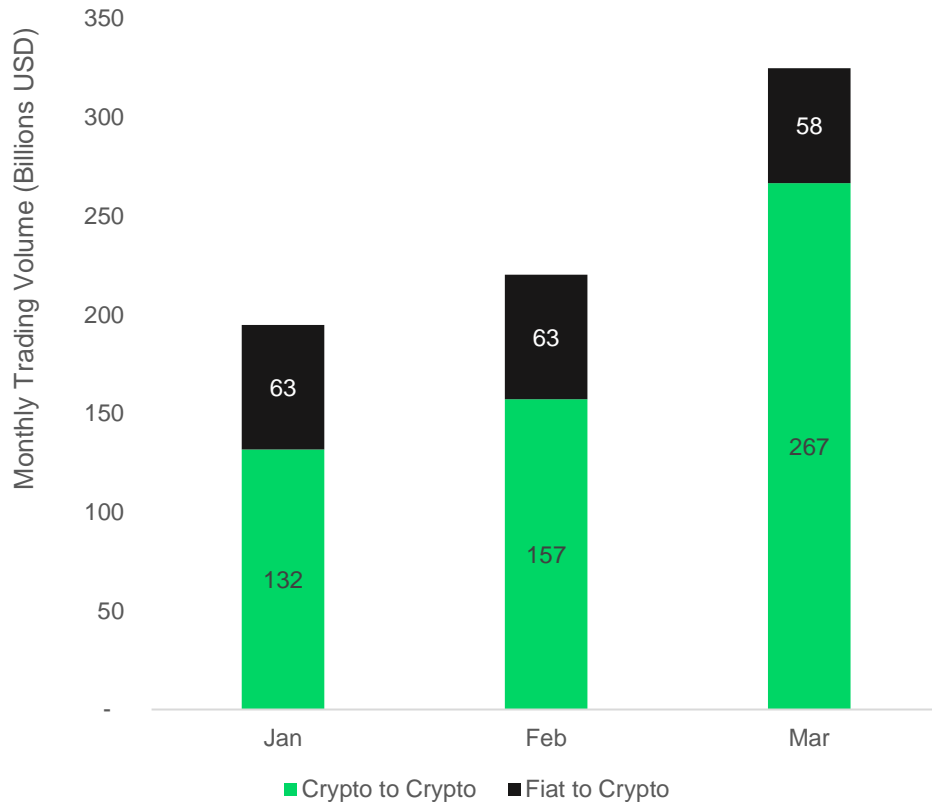
OKEx* traded the highest average daily derivatives volume in March (swaps and futures) at 1.5 billion USD, followed by Bitflyer Lighting (XBTJPY perpetual futures) at 1.14 billion USD and BitMEX (XBTUSD perpetual futures) at 645 million USD.

Exchanges Deribit* (73.6 million USD), CME (70.5 million USD) and CryptoFacilities* (26.1 million USD), still represent only a small proportion of this derivatives volume sample.

**Based on snapshot estimates that aggregate all derivatives products.*

5 Segmentation by Fiat Pair Trading Capability

Figure 6 - Monthly Total Volume: Crypto to Crypto vs Fiat to Crypto Exchanges

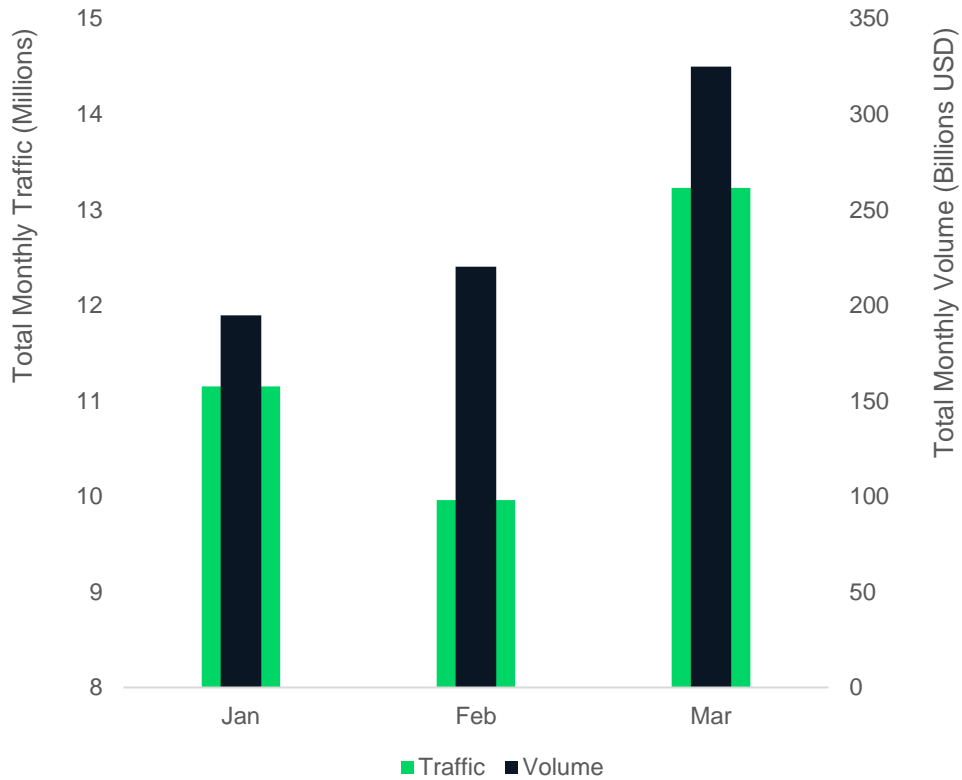


March saw a sharp increase in volume from crypto to crypto exchanges. Trading volume from exchanges that offer only crypto pairs increased by 70% (to 267 billion USD) since February, while those that offer fiat pairs decreased 8% to 58 billion USD.

Following this increase in crypto to crypto trading volume, it represented 82% of total spot volume in March, up from from 71% in February.

6 Macro Web Traffic Statistics

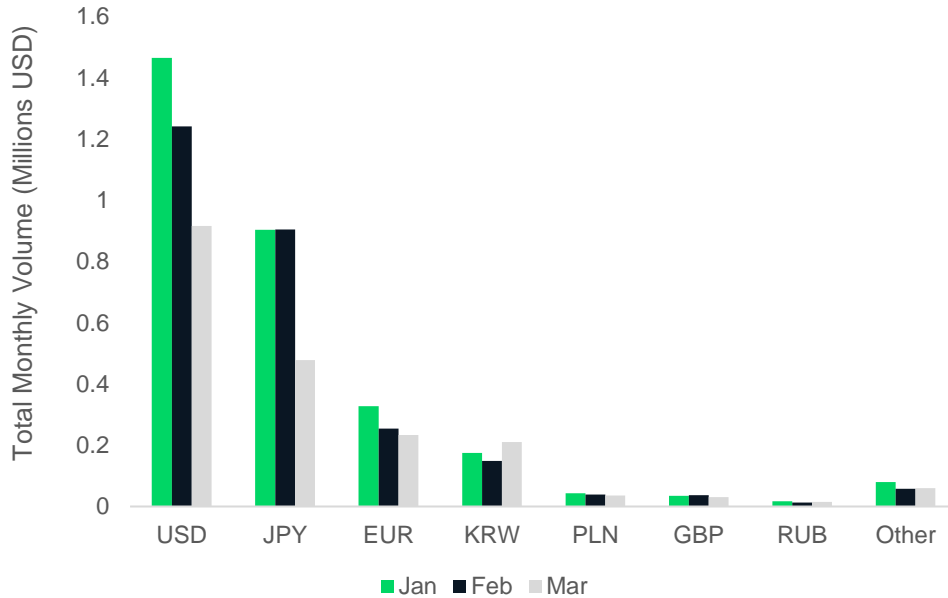
Figure 7 - Historical Monthly Exchange Market Web Traffic vs Volume



In contrast to recent months, total exchange web traffic increased 32% in March, in conjunction with a total spot volume increase of 47.5%.

7 Bitcoin to Fiat Volumes

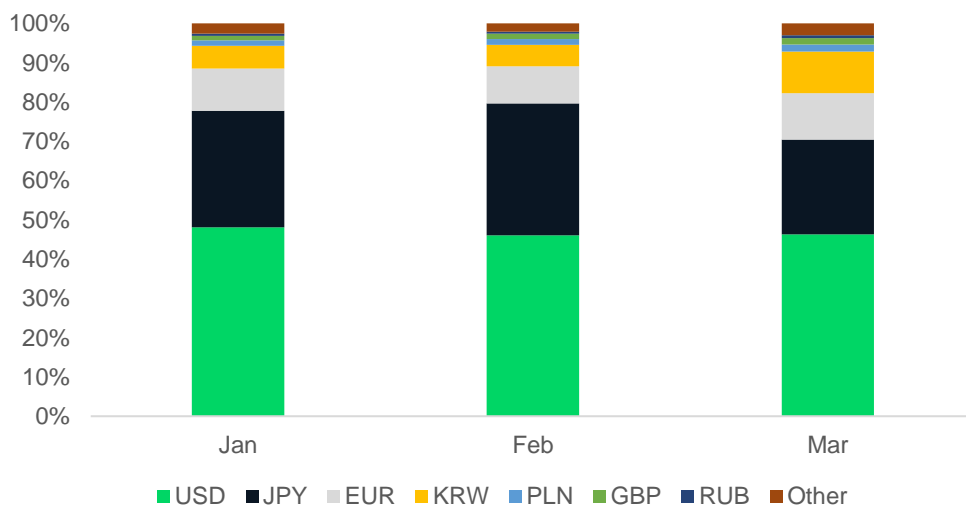
Figure 8 - Historical Monthly Bitcoin Trading Volume into Fiat



In March, 46% of all Bitcoin trading into fiat was made up of the US Dollar, similar to February. However, BTC to USD volumes continued to decrease, from 1.24 million BTC in February to 0.92 million BTC in March (-26.2%).

Bitcoin trading into JPY formed 24% of Bitcoin into fiat in March, and experienced a sharp 47% decrease in volume from 0.9 million BTC to 0.48 million BTC. Meanwhile, BTC trading into KRW increased by 41%, from 0.15 million BTC in February to 0.21 million in March.

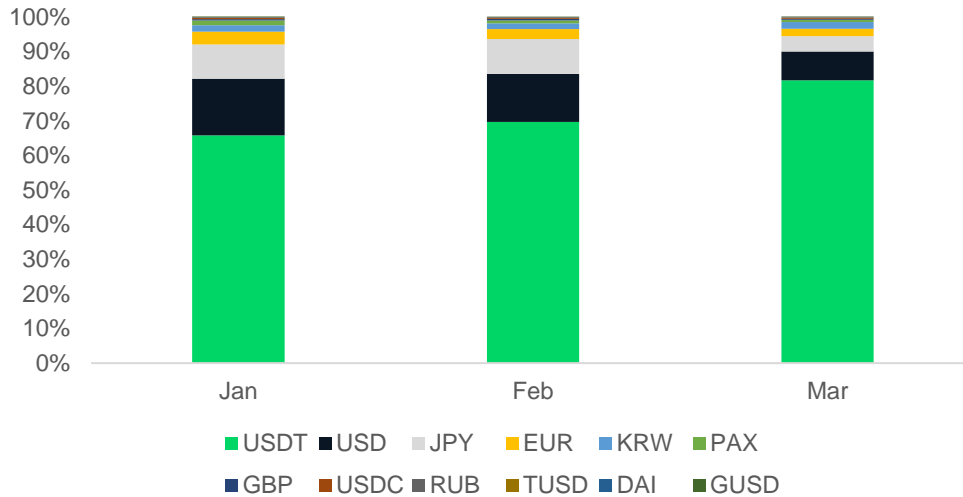
Figure 9 - Monthly Proportion of Total Monthly Bitcoin Trading into Fiat



In March, USD, JPY, EUR and KRW made up 95% of total trading from Bitcoin into fiat.

8 Bitcoin to Stablecoin Volumes

Figure 10 - Proportion of Total Monthly Bitcoin trading into Fiat or Stablecoins



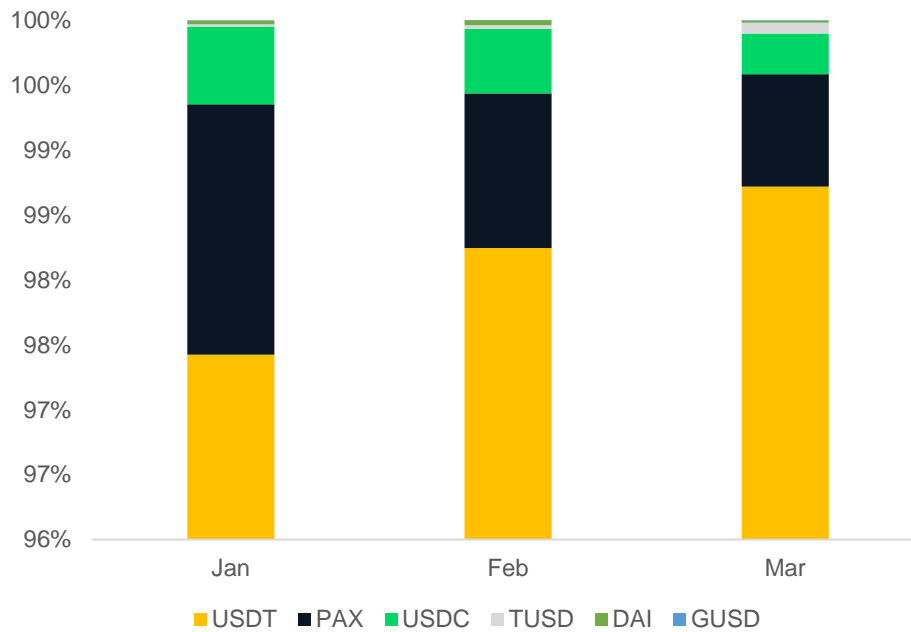
In March, BTC trading into USDT represented 81.7% of total volume (traded into fiat or stablecoin), totalling 8.9 million BTC. Last month, the BTC to USDT pair represented 70%.

Figure 11 - Historical Monthly Bitcoin Trading into Fiat or Stablecoins



BTC trading into USDT totalled 8.9 million BTC in March, an increase in 43% since the previous month. Meanwhile, BTC trading into other fiat currencies has generally decreased, except for the KRW which increased 41% to 0.21 million BTC in total monthly volume.

Figure 12 - Proportion of BTC Trading into Top Stablecoins



USDT continues to be the most popular stablecoin for trading with Bitcoin, followed by PAX, USDC and TUSD

USDT represents 98.7% of the total Bitcoin trading into these four coins.

Exchange Volume Rankings

Table 1 - Top 10 Crypto to Crypto Exchanges by Average Daily Volume in March

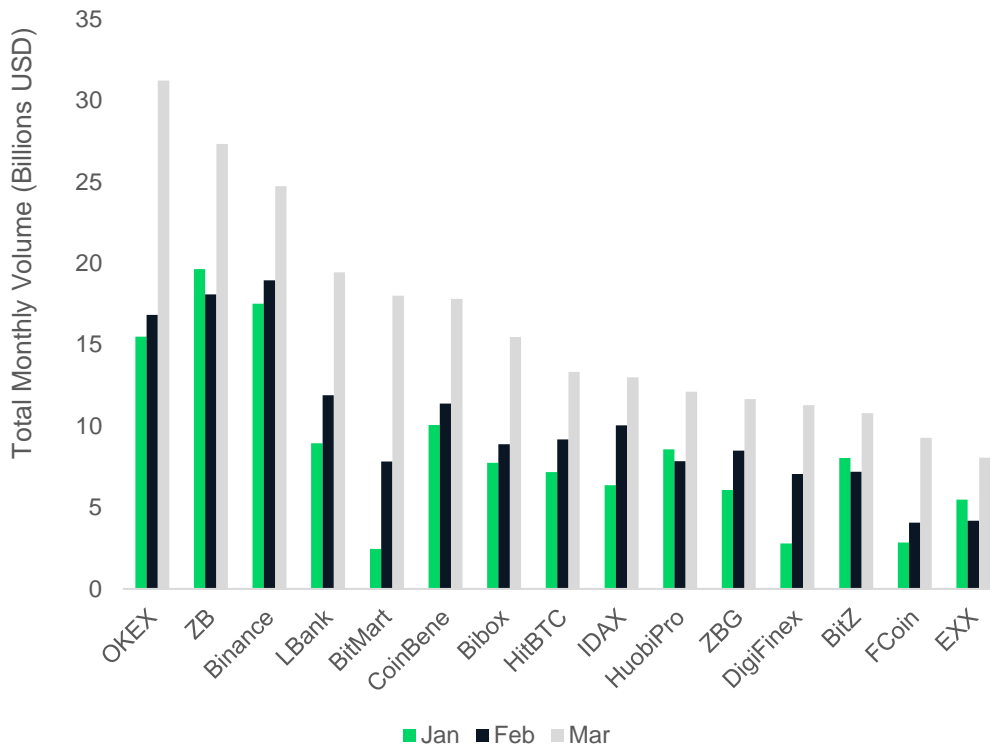
	AVG DAILY VOLUME (USD)	TOTAL MONTHLY VOLUME (USD)	PAIRS	COINS	LEGAL JURISDICTION
OKEX	1,006,979,796	31,216,373,688	593	201	Malta
ZB	881,410,616	27,323,729,099	173	61	Samoa
Binance	797,501,051	24,722,532,575	500	173	Malta
LBank	626,804,631	19,430,943,557	136	93	Hong Kong
BitMart	580,728,189	18,002,573,856	124	64	Cayman Islands
CoinBene	574,724,977	17,816,474,292	253	213	Vanuatu
Bibox	498,771,724	15,461,923,431	239	98	Estonia
HitBTC	429,617,822	13,318,152,489	1033	484	Hong Kong
IDAX	418,966,200	12,987,952,191	183	103	Mongolia
HuobiPro	390,566,313	12,107,555,690	333	145	Seychelles

Table 2 - Top 10 Fiat to Crypto Exchanges by Average Daily Volume in March

	AVG DAILY VOLUME (USD)	TOTAL MONTHLY VOLUME (USD)	PAIRS	COINS	DOMINANT FIAT CURRENCY	LEGAL JURISDICTION
Bithumb	1,047,328,344	32,467,178,668	77	77	KRW	South Korea
Upbit	233,332,181	7,233,297,606	347	187	KRW	South Korea
Bitfinex	100,958,669	3,129,718,731	333	120	USD	BVI
Coinbase	61,189,719	1,896,881,281	43	17	USD	USA
Kraken	55,184,093	1,710,706,870	98	26	USD	USA
Liquid	49,215,868	1,525,691,909	305	101	USD	Singapore
Simex	42,381,658	1,313,831,409	26	17	USD	USA
Bitstamp	38,592,080	1,196,354,495	18	7	USD	Luxembourg
STEX	37,193,653	1,153,003,244	200	130	USD	Estonia
Coinsbit	34,250,877	1,061,777,183	27	10	USD	Estonia

1 Top Exchanges by Total Monthly Volume

Figure 13 - Historical Monthly Volume - Top Crypto to Crypto Exchanges

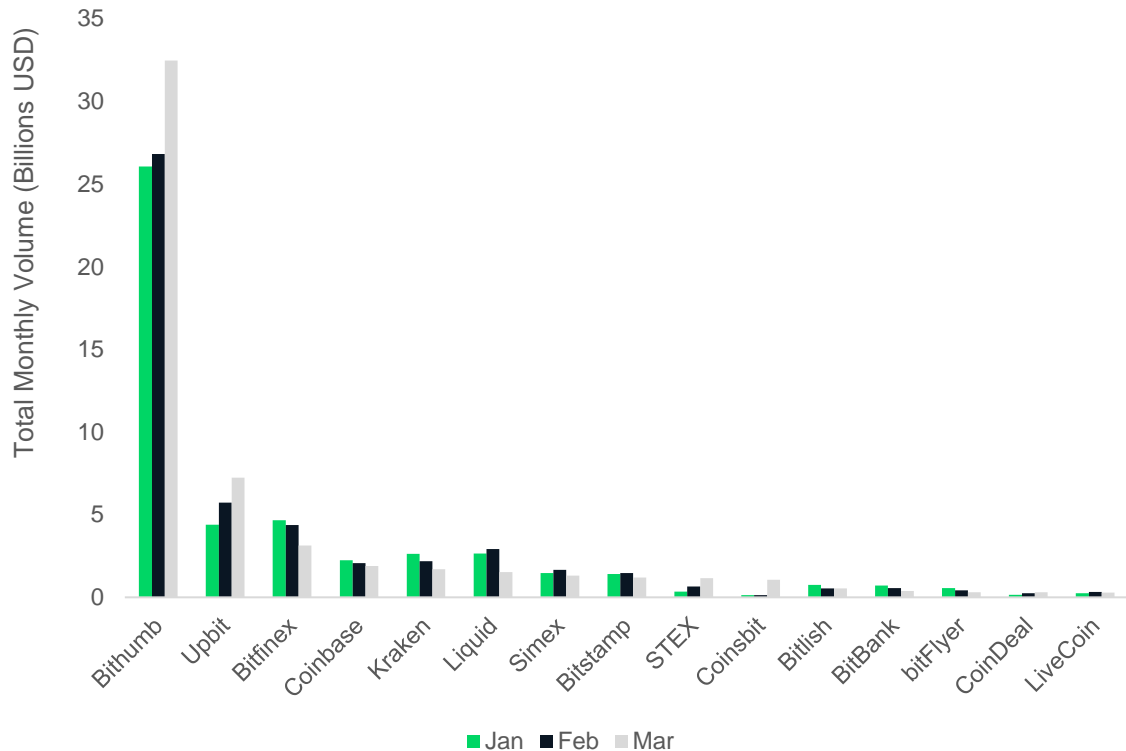


The top 15 crypto to crypto exchanges all experienced a surge in monthly volume in March with an average increase of 66%. OKEx was the largest exchange by monthly volume at 31.2 billion USD (up 85%), followed by ZB and Binance at 27.3 billion (up 51%) and 24.7 billion (up 30%) USD respectively.

Exchanges that experienced the highest increases in monthly volume since the previous month include BitMart and FCoin. Their volumes increased to 18 billion USD (up 130%) and 9.2 billion USD (128%) respectively.

2 Top Fiat to Crypto Exchanges by Total Monthly Volume

Figure 14 - Historical Monthly Volume - Top Fiat to Crypto Exchanges



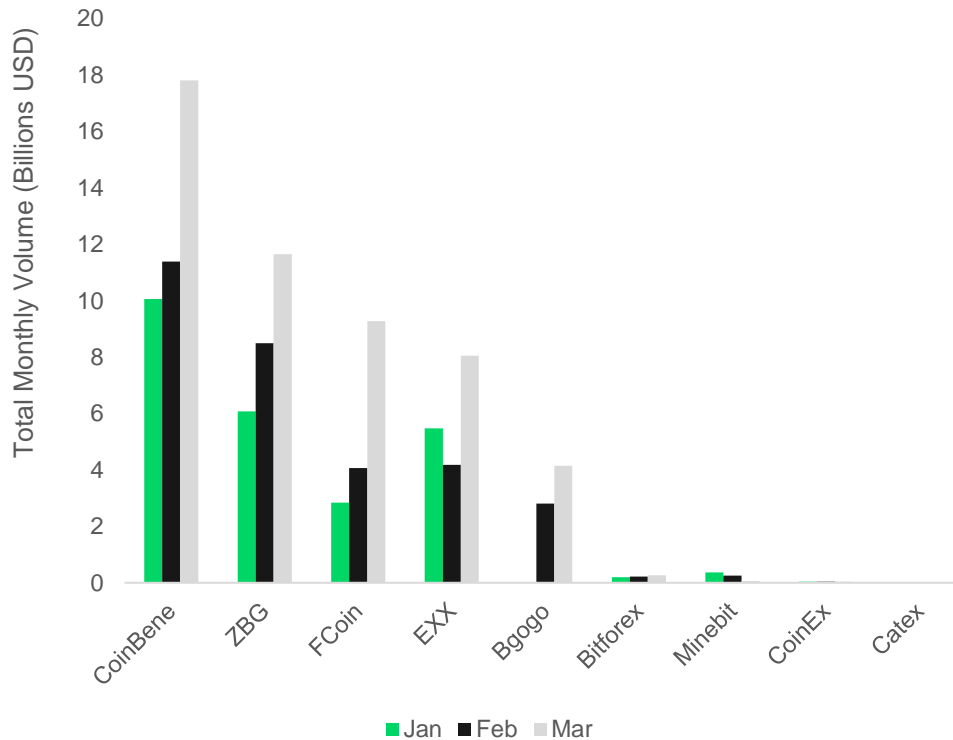
Bithumb was the top exchange by total volume in March at 32 billion USD, followed by Upbit and Bitfinex. While crypto to crypto exchanges saw a surge in volume, top exchanges that offer fiat pairs experienced a general decrease in volume, except for South Korean exchanges Bithumb and Upbit.

Bithumb's total monthly trading volume in March increased by 21% to 32 billion USD. Meanwhile, Upbit traded a total of 7.2 billion USD (up 26%), followed by Bitfinex at 3.1 billion USD (down 28%).

Coinbase, Kraken, Liquid and Bitstamp all experienced a decrease in volumes in March.

3 Transaction Fee Mining Exchange Volume

Figure 15 - Historical Monthly Volume - Top Transaction-Fee Mining Exchanges



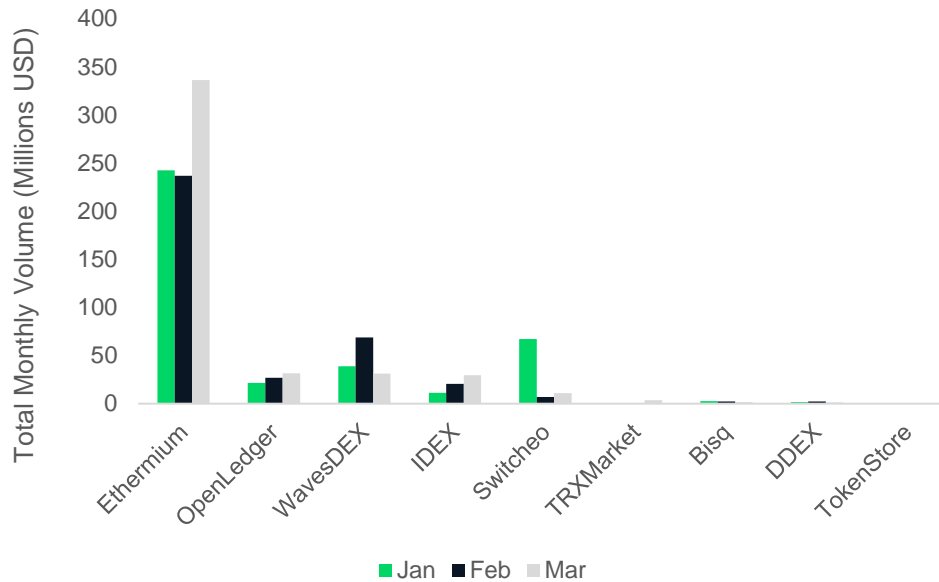
All the top TFM² exchanges experienced a sharp increase in volumes in March. CoinBene was the largest TFM exchange, followed by ZBG and FCoin.

CoinBene traded 17.8 billion USD in total volume in March, up 56% since February. ZBG traded 11.6 billion USD and FCoin traded 9.3 billion USD, up 37% and 128% since February respectively. CoinBene, ZBG and FCoin represent 76% of volume among the top 8 TFM exchanges.

² Trans-Fee-Mining or TFM, is a fee model in which trading fees on an exchange are rebated to the user in the form of an exchange token with certain features. It is often used as an incentive scheme to drive trading volumes.

4 Decentralised Exchange Volume

Figure 16 - Historical Monthly Volume - Top Decentralised Exchanges



Ethermium was the largest DEX in March, followed by OpenLedger and WavesDEX.

Ethermium traded 336 million USD in monthly volume in March, up 42% since February.

OpenLedger volumes increased by 17% in March, to 31.4 million USD. WavesDEX saw a sharp 55% decrease in volume in March, from 69 million USD in February to 31 million USD.

DEXs represent only a small fraction of global spot exchange volume (0.14%), trading a monthly total of 447 million USD in March.

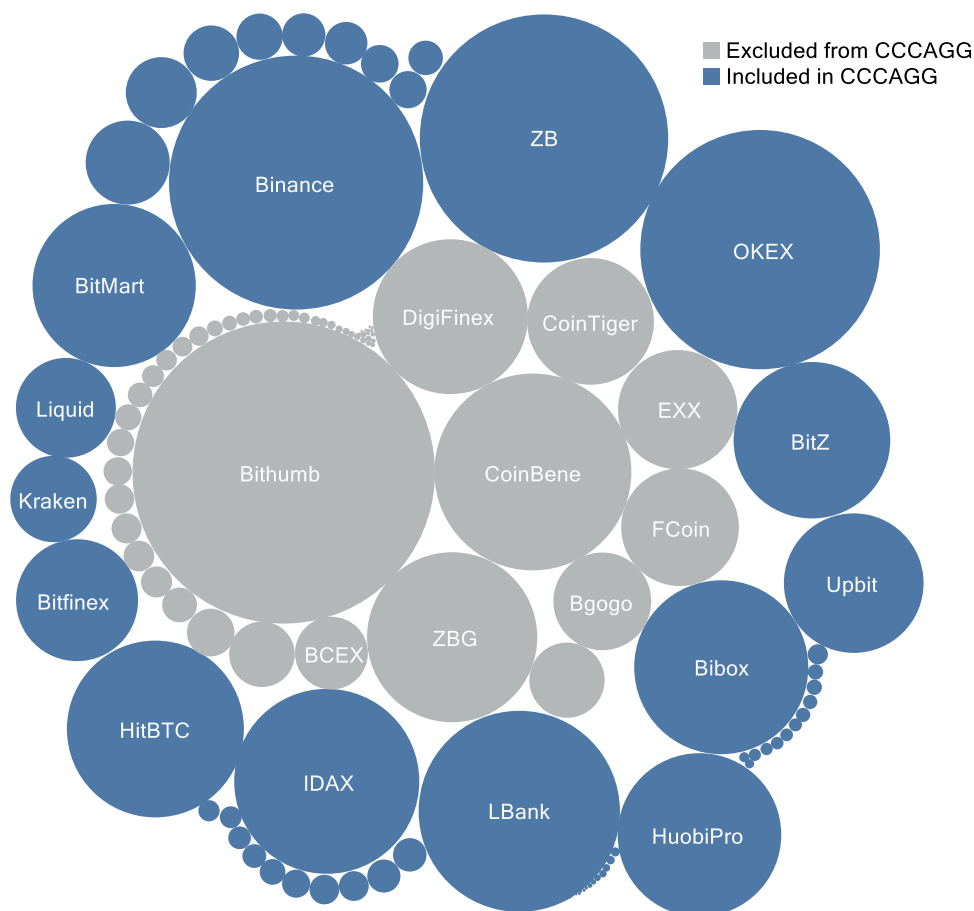
CCCAGG Exchange Review

CryptoCompare's Aggregate Pricing Index (the CCCAGG) is used to calculate the best price estimation of cryptocurrency pairs traded across exchanges. It aggregates transactional data from more than 70 exchanges using a 24-hour volume weighted average for every cryptocurrency pair.

However, this data might not always be consistent across exchanges due to events such as hackings, broken APIs, low liquidity levels, transaction fees, market manipulation and so on. It is important that the data used to calculate pricings originate from reliable exchange sources.

CryptoCompare's Monthly Exchange Review serves as a means of evaluating the integrity of exchange data used to calculate CCCAGG pricing across all pairs. Exchanges that have met the minimum data integrity standard will then be added to the pool of CCCAGG exchanges. Constituent CCCAGG exchanges are reviewed and amended each month to ensure that the most representative and reliable market data is used in CCCAGG pair pricing calculations.

Figure 17 - March CCCAGG Constituent Exchanges



1 Assessment of New CryptoCompare Exchanges

This section will evaluate exchanges added to CryptoCompare in February and have since generated data throughout February and March such that they can be assessed for inclusion into the CCCAGG in April.

New exchanges to be assessed: **Xena**

Xena

- High liquidity, trading an average of at least 3.8 million USD for all top pairs.
- Hourly pricing deviations within 0.5% of CCCAGG price for the relevant markets.
- Trading volume is far less correlated to price volatility than the equivalent CCCAGG pairs.
- Higher price volatility than equivalent CCCAGG pairs
- Will not be included in CCCAGG pricing aggregations at this time.

2 Summary of Changes to CCCAGG

What Happened in March?	New exchanges added to CryptoCompare (2):	TRXMarket, AliExchange
	Exchanges shut down (ceased trading completely): (0)	None
	Exchanges Removed from CCCAGG (0):	None
	February Exchanges Assessed Following Minimum Monitoring Period (1):	Xena
Result of Current Review:	New exchanges to be Included in CCCAGG (0):	None
	Existing exchanges to be included in CCCAGG (0):	None
	Exchanges to be Removed from CCCAGG (0):	None
Implementation Date	No Change	

Appendix A - Methodologies

A1 General CCCAGG Inclusion/Exclusion Methodology

This review is conducted on a monthly basis in order to maintain a minimum exchange standard among constituent CCCAGG exchanges. Given the growing number of cryptocurrency exchanges, as well as those that close due to regulation, bankruptcy and so on, it is necessary to evaluate whether prices and volumes are representative of the market so that investors and fund managers using the CCCAGG indices can be assured that they receive the most accurate information for their purposes.

We are not in the business of policing cryptocurrency exchanges, but aim to set a guideline based on how the majority of cryptocurrency exchanges operate. These majority figures are used as a standard with which to assess whether an exchange is operating in line with most of its industry. Having said this, the industry is constantly evolving and often times one cryptocurrency exchange might not reflect the patterns demonstrated by the majority, for reasons that might relate to innovation, an alternative business model etc. In these cases, CryptoCompare attempts to use its best judgement with preference towards a hands-off approach so that industry developments are accurately reflected. Over time, our guiding standards with which to assess cryptocurrency exchanges will also develop in line with the industry to produce the most representative group of CCCAGG exchanges.

Data Processing Procedure

CryptoCompare currently assesses exchanges on the basis of 24-hour volume and pricing data. Every exchange within the CCC database is assessed in this review, with additional exchanges being added or excluded on a monthly basis for a variety of reasons. The 24-hour volume and price of every live trading pair from every exchange is recorded. Each pair volume is compared to the total market volume for that specific pairing and assigned a market share ranking. Pricing for each pair is compared to that of the CCCAGG pair, and a percentage price difference is calculated. Finally, a volume weighted % price difference per pairing is calculated to produce a figure for how close the overall exchange pricing differences are to that of the CCCAGG.

% Price Difference vs CCCAGG

As a general guideline, CryptoCompare assumes that exchanges with an overall percentage pricing difference of under 10% is within acceptable boundaries. The reasons for pricing differences across exchanges may be related to a number of factors that include exchange fees, jurisdiction, tax considerations among a series of other factors. It is however, the first indicator of acceptability within the CCCAGG exchange list.

Assessment Period

For new exchanges added to the platform, CryptoCompare assigns a period of time in which to gather data on the exchange before adding it directly to the CCCAGG calculations. Up to the next monthly exchange review, as long as there is adequate positive volume and pricing data, the exchange will be assessed in the same way as all the existing exchanges and added to the CCCAGG if guidelines are met.

Dead Exchanges

Frequently, exchanges will stop trading for a variety of reasons that include bankruptcy, hackings, regulatory reasons and so on. Contingent upon sufficient market data being provided (usually one month), if an exchange has minimal to no trading volume, it will be excluded from the CCCAGG and will be assigned an inactive status.

Market Share for Specific Pairs

There are many cases in which significant pricing differences occur relative to the CCCAGG for a number of pairs that only trade on very few exchanges. The reason for this often points to a lack of liquidity for specific pairs or perhaps a decentralized exchange. If this is the case, then there is usually an exception to the 10% pricing guideline vs CCCAGG pricing. Providing that a specific pair on an exchange represents at least 20% of the market volume or ranks at least third for market share, and prices are within a reasonable boundary, this pair would be deemed acceptable. In addition, for certain pairs that are unique to a small number of exchanges, pricing will vary considerably the lower the liquidity of the pair in question. In this case, more flexibility is given to pricing differences on low liquidity pairs.

Current CryptoCompare Policy Towards Zero-Fee and TFM Exchanges

Zero-fee exchanges as well as transaction-fee mining exchanges present a problem when it comes to assessing whether trading volume as well as pricing are legitimate due to the well-known criticisms of exchanges engaged in these practices. When it comes to zero-fee exchanges, traders are able to trade freely without fees regardless of how many trades are made; hence, volumes might become inflated. In a similar fashion, transaction fee mining exchanges rebate 100% of transaction fees in the form of their own exchange tokens. This might give traders an incentive to trade more to receive more tokens which often have valuable features such as voting rights on the platform or a dividend. Both of the above can effectively lead to wash trading. For this reason, transaction-fee mining trading data is excluded from CCCAGG pricing calculations in the current policy. This policy will be reviewed and improved for when more in-depth analysis has been conducted.

Futures Trading

Despite the significant volumes witnessed for bitcoin futures trading on platforms such as Bitflyer Lighting and BitMEX, these volumes represent futures trading volume, and not spot trading volumes. For this reason, they are excluded from CCCAGG calculations.

A2 Web Traffic Analysis Methodology

All web traffic statistics were collected using Alexa's web traffic API endpoint. This served as the best way to obtain the most broad and accurate set of statistics across all the exchanges that CryptoCompare evaluates.

Alexa Methodology

For the purpose of our web traffic analysis, Alexa's historical Traffic Ranks, as well as Pageviews have been used over a one-month period. Alexa computes traffic ranks by analysing the Web usage of millions of Alexa Toolbar users. The information is then manipulated, computed and normalised to correct biases that may occur in their data.

Definitions:

Alexa Traffic Rank: determined on the basis on the combined measure of Unique Visitors (reach) and Pageviews (page views).

Unique Visitors: An estimate of the number of unique Alexa users who visit a site on a given day. Alexa expresses this as a ratio of users per million - that is, if a random sample of one million global internet users were taken, then x % of those users would visit a given site.

Pageviews: Pageviews are the total number of Alexa Toolbar user URL requests for a site on a given day. Multiple requests for the same URL on the same data by the same user are counted as a single Pageview. This is expressed as a ratio of pageviews per million users.

Page Views per User: Represents the average number of unique pages viewed per user per day for a given site.

Important Data Considerations

It should be noted that Alexa's Traffic Ranks are for domains only (www.domain.com), and therefore subdomains (www.subdomain.domain.com) or subpages (www.domain.com/subpage) are counted within the same domain name.

There are limits to the accuracy of Alexa data for sites with relatively low traffic. According to Alexa, for sites with rankings below 100,000, data may not be statistically meaningful due to the lack of data from these sources.

In addition, traffic data is only based on a set of Alexa users, and therefore only a subset of the global internet population.

Exchange Web Traffic Analysis Methodology

For the purpose of our web traffic analysis, Alexa's daily historical Traffic Ranks, Pageview stats and Unique Users have been used over a one-month period.

Methodology

Data was collected via Alexa's Web Traffic API endpoint for a period of one month. Daily Domain Traffic stats for every active exchange on CryptoCompare was collected for a one-month period.

As discussed, Alexa provides proportional measures of Unique Visitors and Page Views in the form of "reach" per million users and "page views" per million users respectively. This was collected via their web API.

In order to obtain an estimate of visitors, an estimate of total web users was obtained from "internetworldstats.com". According to internetworldstats.com, as of June 30th 2018, there were a total of 4,208,571,287³ global internet users.

This was then multiplied by the associated Alexa metric per million figures to obtain an estimate of Unique users and Total Page views. A figure for unique page visitors was

³ <https://www.internetworldstats.com/stats.htm>

calculated by dividing Total Page Views by average Page Views per user. Formulas are as follows:

$$\text{Total Page Views} = \text{Page Views per million} * \text{Total Web Users}$$

$$\text{Total Unique Visitors} = \text{Page Views per million} * \text{Total Web Users} / \text{Average Page Views per User}$$

Given the oscillatory nature of web traffic stats, a one-month average of each stat was produced to obtain a more representative traffic value for each exchange. This is then combined with the average 24h volume for each exchange over the given period to initiate our analysis.

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