CCCAGG
Exchange Review

CryptoCompare

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About

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.

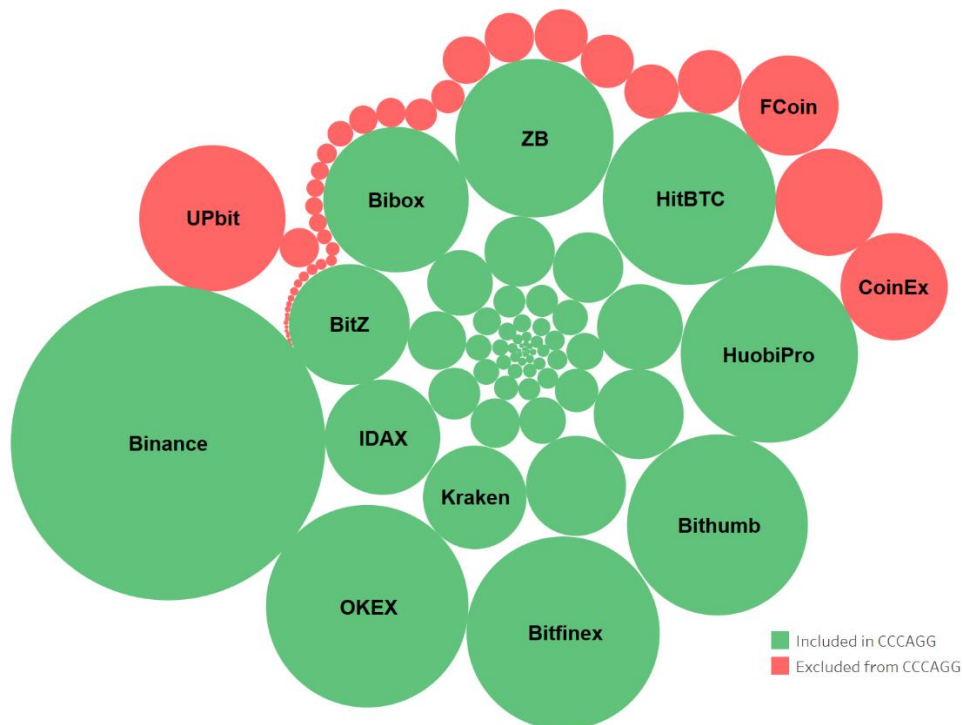**Figure 1 – Current CCCAGG Constituent Exchanges, Sized by 24H Volume**

Table of Contents

Table of Figures

Table of Tables

Executive Summary

Major Exchange News in October

Bitstamp was acquired by Belgium-based Investment Firm NXMH for ~400 million USD according to reports. Cryptoassets on Gemini are now fully insured with Aon. Coinbase adds 0x to its trading platform as well as USDC after announcing its collaboration with Circle on the CENTRE Consortium. Korean exchange Bithumb starts a new DEX, while Huobi and OKEX list stablecoins GUSD, TUSD, PAX and USDC. Chainalysis will help Binance comply with anti-money laundering (AML) regulations around the globe, and Coinfloor becomes the first exchange to obtain a Gibraltar license.

Exchange Market Segmentation

Spot volumes constitute less than three quarters of total market volumes on average (less than 7 billion USD) compared to futures volumes (3.2 billion USD). BitMex and BitflyerFX average more than one quarter of total volumes while traditional exchanges such as CME and CBOE constitute just under 1%.

Within total spot volumes, exchanges with taker fees represent approximately 90% of the exchange spot market volumes, while transaction-fee based and no-fee exchanges represent the remaining 10%.

Exchanges that offer fiat to crypto pairs constitute just under a quarter of spot market volumes on average (~2 billion USD) while exchanges that offer only crypto to crypto pairs constitute approximately three quarters (~4.7 billion USD). In terms of exchange count however, approximately half of all exchanges offer fiat to crypto pairs.

Transaction-Fee Mining Volumes

The top trans-fee mining exchange by average 24h volume was EXX (160 million USD), followed by Coinex (114 million USD) and Coinbene (113 million USD). The total average 24h-volume produced by trans-fee mining associated exchanges on CryptoCompare totals just over 550 million USD. This constitutes approximately 10% of total exchange volume over the last 30 days.

Decentralized Exchanges

The total average 24h-volume produced by the top 5 decentralized exchanges on CryptoCompare totals just under 2.4 million USD. This constitutes just 0.4% of total exchange volume. The top 3 on CryptoCompare by 24h volume include Waves Dex, IDEX and Dex.

Volume, Pairs and Coins

Binance remains the top exchange in terms of 24h volume with an average of 977 million USD. This is followed by OKEX (405 million USD) and Bitfinex (368 million USD). Yobit offers the highest number of pairs at 7,032, followed by Cryptopia (4,321) and CCEX (2,140).

Bitcoin to Fiat Volumes

The US Dollar represented half of BTC fiat trading on average over the past 30 days, followed by JPY (21%) and KRW (16%). Bitcoin trading to Korean Won (KRW) increased sharply after the 7th of October. The pair previously represented a tenth of bitcoin trading among the top 5 fiats on average.

Between the 7th and 15th of October it represented a third on average, a 230% increase stemming from Korean exchange Bithumb's spike in trading volumes.

Country Analysis

Maltese-registered exchanges produce the highest total daily volume at just under 1.4 billion USD, followed by those based legally in South-Korea (~840 million USD) and Hong Kong (~560 million USD). Among the top 10 volume-producing countries, the highest number of large exchanges (with significant volume) are based legally in the USA (8), the UK (8) and Hong Kong (7). Binance and OKEX represent the vast majority of Malta's volumes, while Bithumb and Upbit dominate in South Korea.

Trade Data Analysis

CoinEx, a well-known trans-fee mining exchange, has a significantly higher trade frequency and lower trade size than other exchanges in the top 25. This may point to algorithmic trading, given its almost 176 thousand trades a day at an average trade size of 125 USD. In contrast, Bithumb and HuobiPro had an average trade size of just under 3,000 and 1,500 USD respectively and significantly lower trades per day (12-18 thousand).

Web User Analysis

IDAX and CoinBene appear to have lower average daily visitors compared to similarly sized exchanges by daily volume. Binance has the highest average daily visitor count, in line with its high trading volumes. Meanwhile, exchanges such as Coinbase, Cex.io and Bittrex have significantly greater numbers of daily visitors than other exchanges with similar daily volumes. ZB and EXX attract significantly lower daily visitors than similarly-sized exchanges.

Order Book Analysis

ItBit, Kraken and Bitstamp have relatively more stable markets compared to exchanges such as CoinEx, ZB and Coinbene. These exchanges appear significantly less stable given their relatively low average order book depth values over the specified period of analysis.

Exchange Security

Out of the top 100 exchanges by 24h volume, only 86% have both a public privacy policy and a terms & conditions page. A third of top exchanges store the vast majority of users' funds in cold wallets. Exchanges itBit, Coinfloor, Bitfinex and Coinbase are among those that store the highest proportion of users' funds offline. As a proportion of the top 100 exchanges, 11% have been hacked in the past.

KYC

Just under half of top exchanges impose strict KYC requirements, while more than a quarter do not require KYC.

Summary of Changes to CCCAGG

What Happened in October?	New exchanges added to CryptoCompare (17):	BYTEX, 3XBIT, Cobinhood, Switcheo, Bitkub, Everbloom, HPX, Exrates, Coinsbit, NDAX, DigiFinex, BitShares, Coinmate, IncoreX, EtherMium, Nuex, BlackTurtle
	Exchanges shut down (ceased trading completely): (0)	None
	Exchanges Removed from CCCAGG (2):	Coinroom, WEX
	August Exchanges to be Assessed Following Minimum Monitoring Period (7):	P2PB2B, CoinTiger, StocksExchange, BCEX, IQFinex, iCoinbay, Liqnet
Result of Current Review:	New exchanges to be Included in CCCAGG (1):	iCoinBay
	Existing exchanges to be included in CCCAGG (0):	None
	Exchanges to be Removed from CCCAGG (0):	None
Implementation Date	2nd November 2018	

Total Exchange Volumes and Market Segmentation

This section aims to provide a macro view of the cryptocurrency exchange market as a whole. An area of interest is the proportion of spot trading vs futures trading historically. We will also assess the relative proportion of exchange volumes that represent exchanges that charge fees, as well as those that implement models with no-fees or trans-fee mining. Finally, we will take a look at exchange volumes that represent crypto-crypto exchanges versus those that represent fiat-crypto exchanges.

Figure 2 – Historical Spot vs Futures Volumes[1]
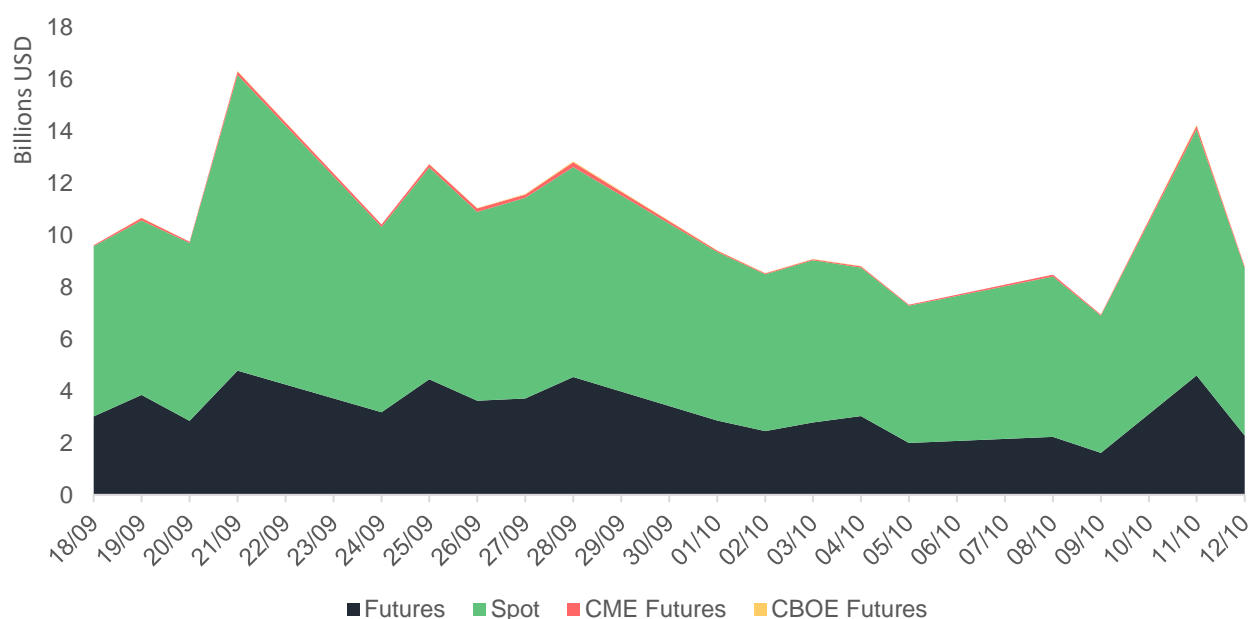
Spot volumes constitute three quarters of total market volumes on average.

Total spot volume averaged less than 7 billion USD, while futures volume averaged over 3.2 billion USD over the period of analysis.

Futures exchanges such as BitMex (XBT to USD perpetual futures) and BitflyerFX (BTC to JPY futures) average just under a quarter of total cryptocurrency market volumes. Traditional exchanges such as CME and CBOE trading bitcoin futures, only constitute a very small proportion of the total market at just under 1% on average.

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[1] Note: current constituent exchanges for futures volumes include BitMex and BitFlyerFX. Total volumes are converted to USD for comparison.

Figure 3 – Historical BTC to USD Futures Volumes

CME Futures   CBOE Futures   Bitmex Perpetual Futures
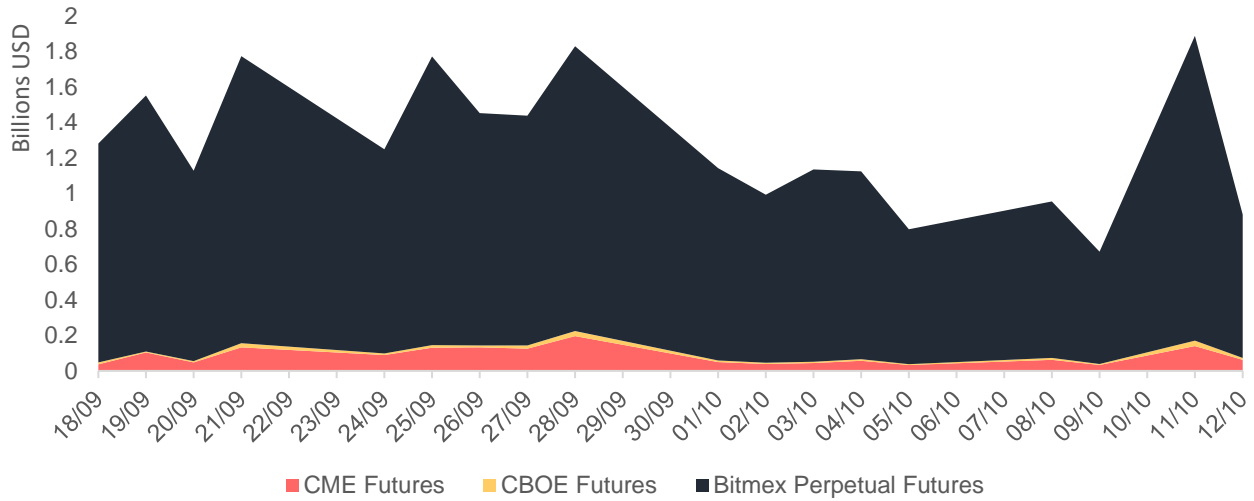
Bitmex's Perpetual Bitcoin to USD Futures volumes continue to dominate the Bitcoin to USD futures market.

When compared to CME's and CBOE's futures volumes, Bitmex has represented an average of just over 90% of the market over the last month.

Figure 4 – Historical Spot Volumes Segmented by Predominant Fee Type[2]
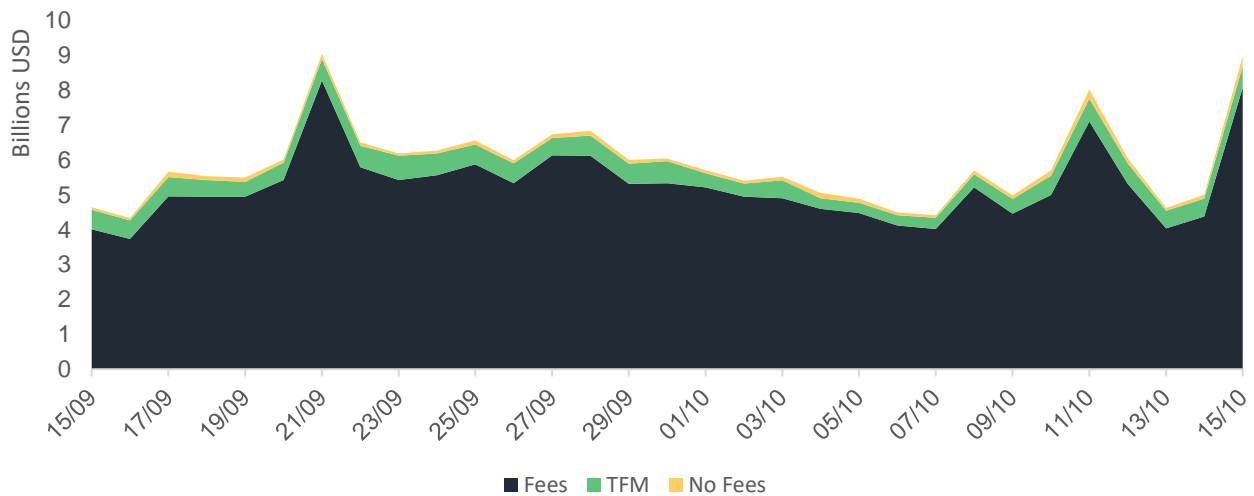
Fees   TFM   No Fees

Exchanges with taker fees represent approximately 90% of the exchange spot market volumes.

On the other hand, exchanges that implement transaction-fee mining represent just over 9% of the total spot market, while those that offer no-fee spot trading represent just under 1% of the market.

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[2] TFM = Trans-Fee Mining

Figure 5 – Historical Crypto to Crypto versus Fiat to Crypto Exchange Spot Volumes
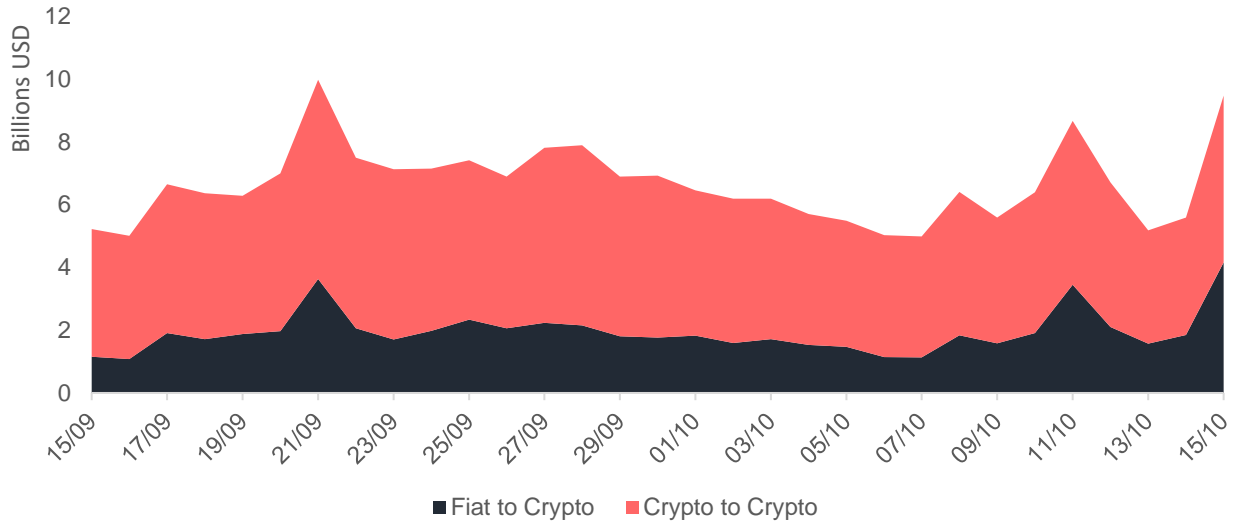
Exchanges that offer fiat to crypto pairs constitute just under a quarter of spot market volumes on average.

Figure 6 – Adjusted Historical Spot Volumes
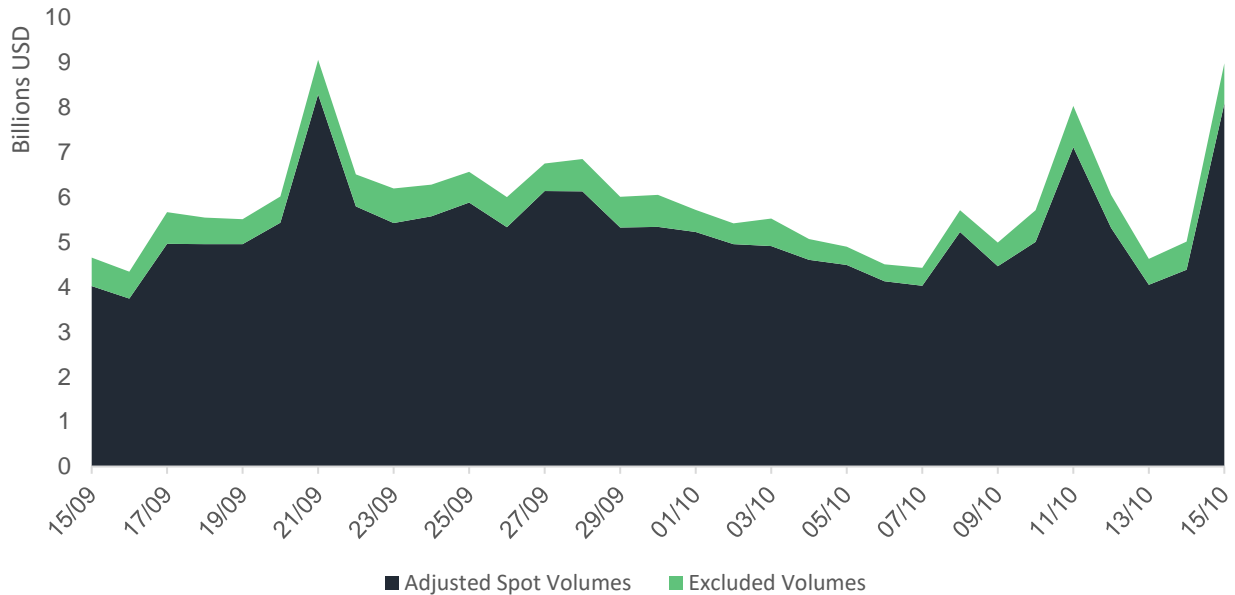
The cryptocurrency exchange market trades an average of 5.26 billion USD in adjusted volumes over the period of analysis.

Adjusted spot volumes exclude all exchanges that operate trans-fee mining or no-fee trading models.

Figure 7 – Historical BTC to Fiat Spot Volumes – Top 5 Fiat Currencies[3]
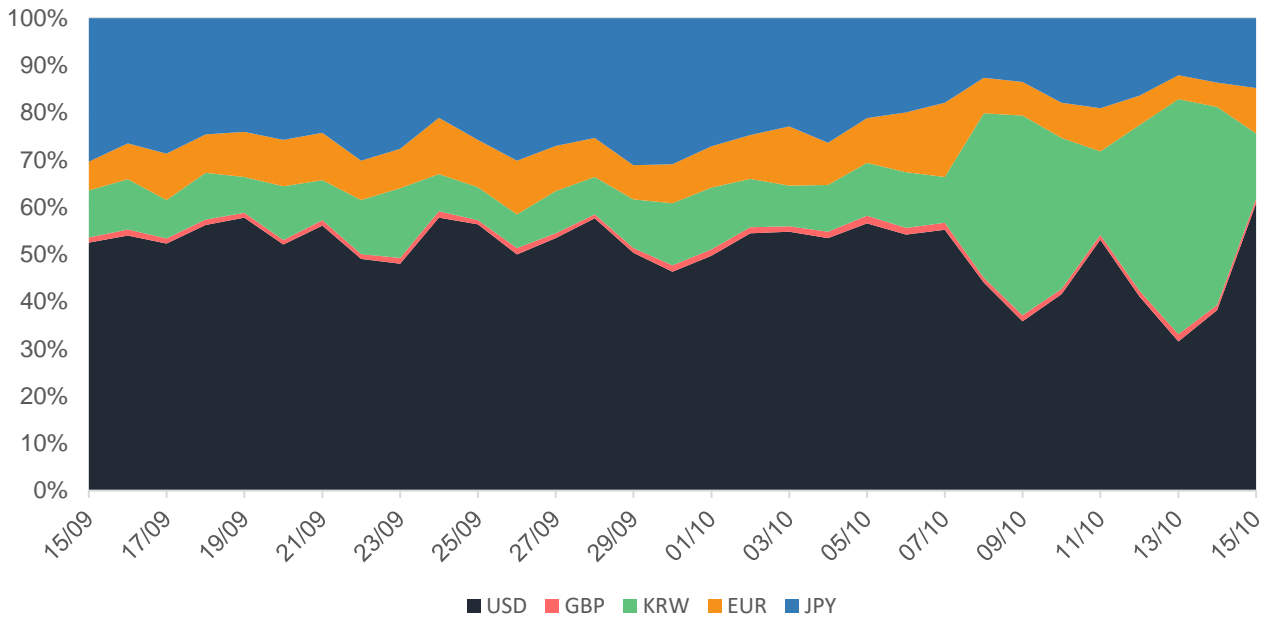
Bitcoin trading to Korean Wan (KRW) increased sharply from the 7th of October.

BTC to KRW previously represented a tenth of bitcoin trading among the top 5 fiats on average. Between the 7th and 15th of October it represented a third on average, a 230% increase. This increase stems from Korean exchange Bithumb's spike in volumes. (see Volume Analysis Figure 9)

Figure 8 – Proportion BTC Trading to Various Fiat Currencies
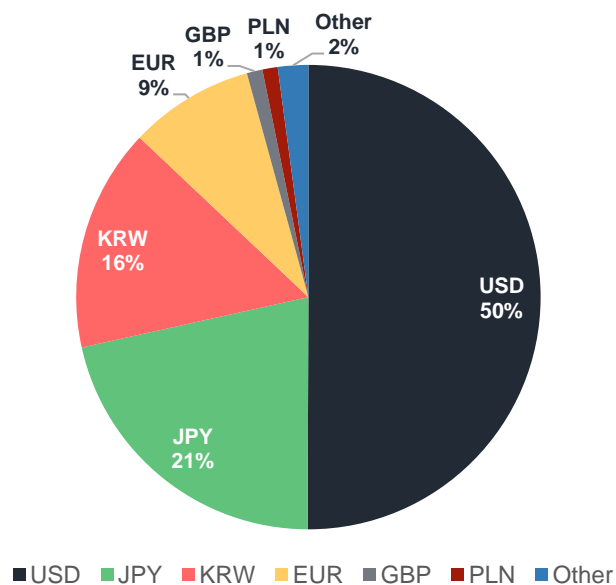
The US Dollar represented half of BTC fiat trading on average over the past 30 days, followed by JPY (21%) and KRW (16%).

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[3] All USD volumes are exclusive of USDT

Summary of Volumes, Coins and Pairs

Table 1 – Top Exchanges by Average 24H Volume[4] in USD

EXCHANGE	24HVOLUME(USD)	COINS	PAIRS
Binance	977,475,687	160	408
OKEX	405,011,631	171	511
Bitfinex	368,468,885	96	281
Bithumb	323,190,656	13	13
HuobiPro	310,207,875	128	293
HitBTC	295,220,002	427	889
ZB	247,580,383	58	167
Upbit	210,974,974	132	261
Bibox	208,928,875	87	210

Table 2 – Top Exchanges by Number of Pairs

EXCHANGE	24HVOLUME(USD)	COINS	PAIRS
Yobit	27,663,971	1,180	7032
Cryptopia	3,465,813	785	4321
CCEX	97,554	628	2140
EtherDelta	214,424	2,058	2059
HitBTC	295,220,002	427	889
TradeSatoshi	84,037	200	840
Bittrex	49,056,308	514	637
Livecoin	12,510,885	249	595
WavesDEX	918,546	163	592
IDEX	698,271	563	563
OKEX	405,011,631	171	511
Kucoin	10,052,461	189	450
Binance	977,475,687	160	408
Gateio	48,834,919	172	358
Zecoex	1,351,187	119	342

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[4] Volumes represent a 30-day average between the 15th of September and the 15th of October

Volume Analysis

Figure 9 – Historical 24h Volume – Top 8 Exchanges
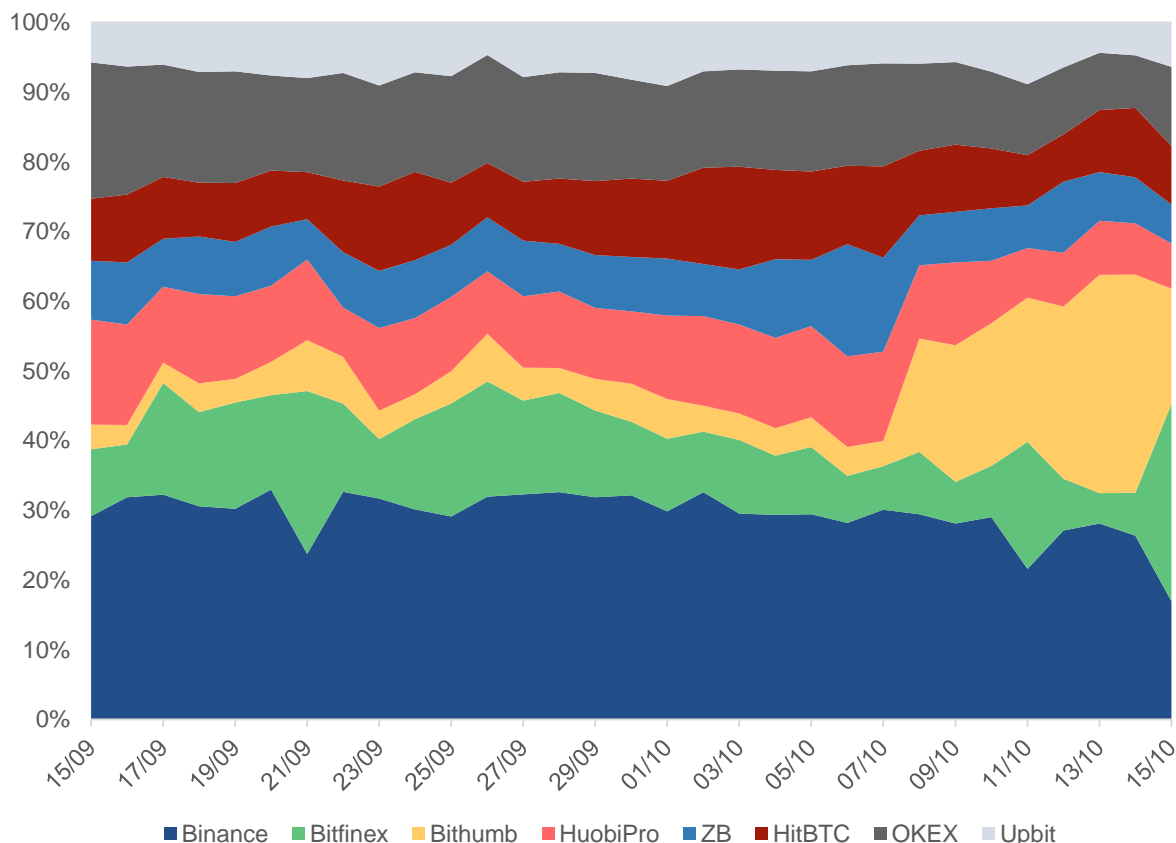
The top exchange by 24h spot trading volume was Binance with an average of just under 980 million USD.

By average 24h volumes, Binance was followed by OKEX and Bitfinex with volumes of 405 million and 368 million respectively.

Bithumb saw a 356% spike in trading volumes from an average of 140 million USD to an average of 640 million USD after the 7th of October. This follows after Singapore-based BK Global Consortium bought a controlling share in the exchange.

Bitfinex saw a spike in volumes towards the 15th of October as the Bitcoin premium on Bitfinex vs Coinbase reached an all-time high of 11.28% according to CrypoGlobe.

Figure 10 – Month on Month Average 24H Trading Volume - Top Exchanges
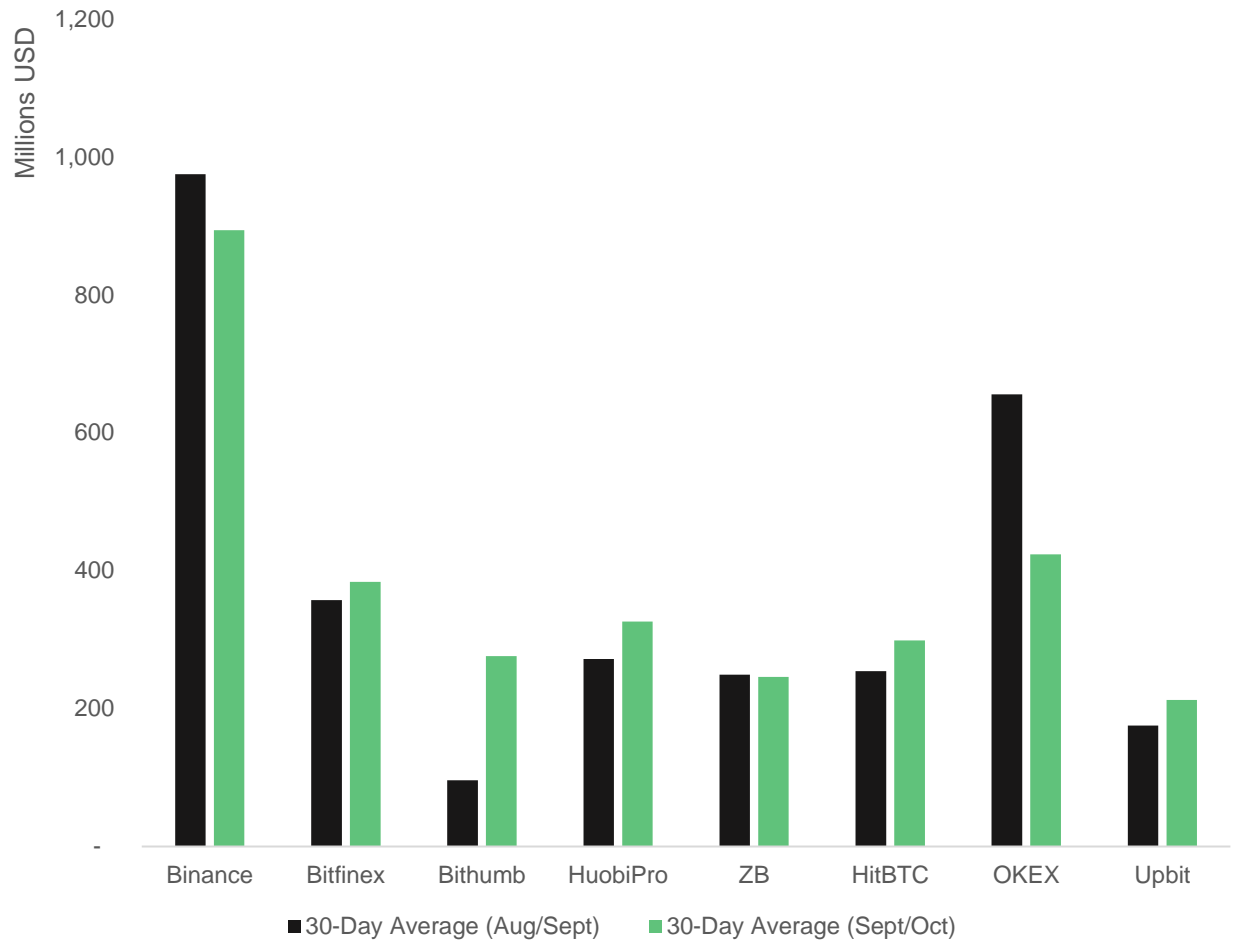
Average Bithumb volumes increased 187%, while those for Binance and OKEX dropped by 8% and 35% respectively.

Korean exchange Bithumb saw a significant increase in average trading volumes from 96 million USD between August/September to 276 million between September/October. Meanwhile, Binance's volumes over the same time period dropped from 974 million USD to 893 million USD. Finally, the 2nd largest exchange by 24h volumes, OKEX, saw trading volumes drop 655 million USD to 423 million USD.

Country Analysis

Exchanges maintain operations in a variety of countries, in order to serve the wider global community of cryptocurrency traders. They often change legal jurisdiction[5] to avoid regulation in countries that might restrict their abilities to conduct business as they wish. The following country analysis aims to highlight the top 10 legal jurisdictions by the total 24h volume produced by the top exchanges legally based in each jurisdiction.

Figure 11 – Top 10 Exchange Legal Jurisdictions – 24h Volume[6] vs Exchange Count
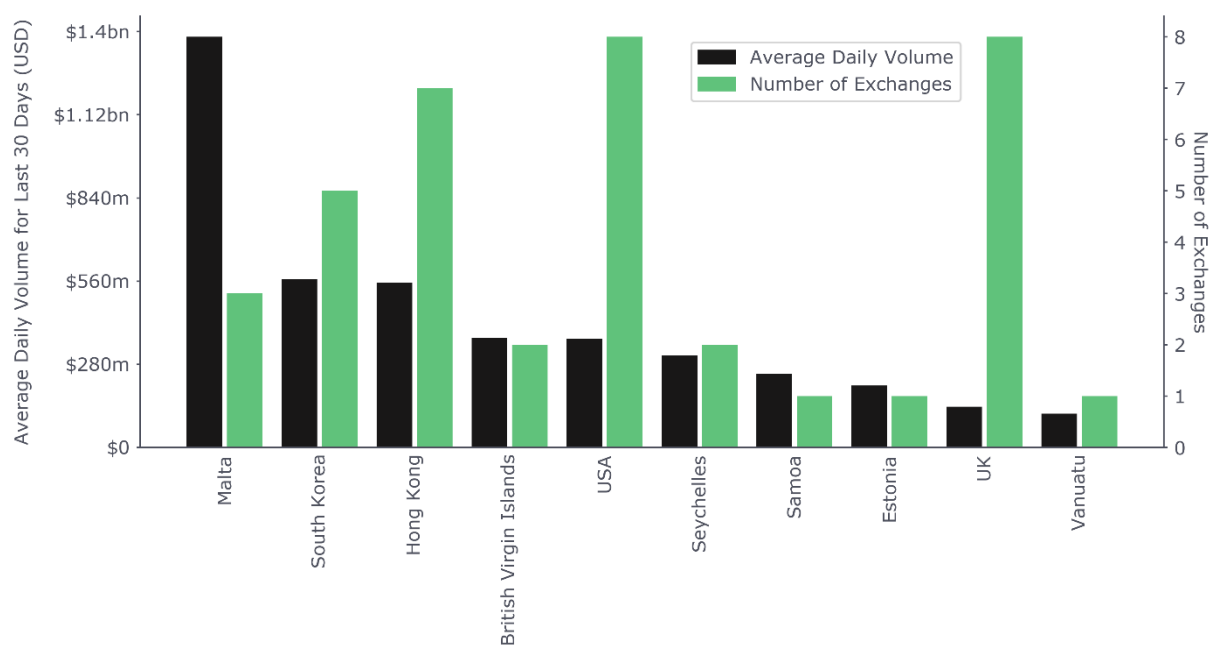
Maltese-based exchanges produced the highest total daily volumes, while the highest quantity of top exchanges are based in the USA and the UK

Maltese exchanges produce the highest total daily volume at just under 1.4 billion USD, followed by those based legally in South-Korea (~840 million USD) and Hong Kong (~560 million USD). Among the top 10 volume-producing countries, the highest number of exchanges (with significant volume) are based legally in the USA (8), the UK (8) and Hong Kong (7).

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[5] Legal jurisdiction is determined based on any available public information on an exchange's main website. This is also cross-checked with the relevant company registry in each country for consistency.
[6] 24h Volume represents and average exchanges volumes between 15th September and 15th October

Figure 12 – Top 10 Exchange Legal Jurisdictions - Constituent Exchanges by Impact on Volume
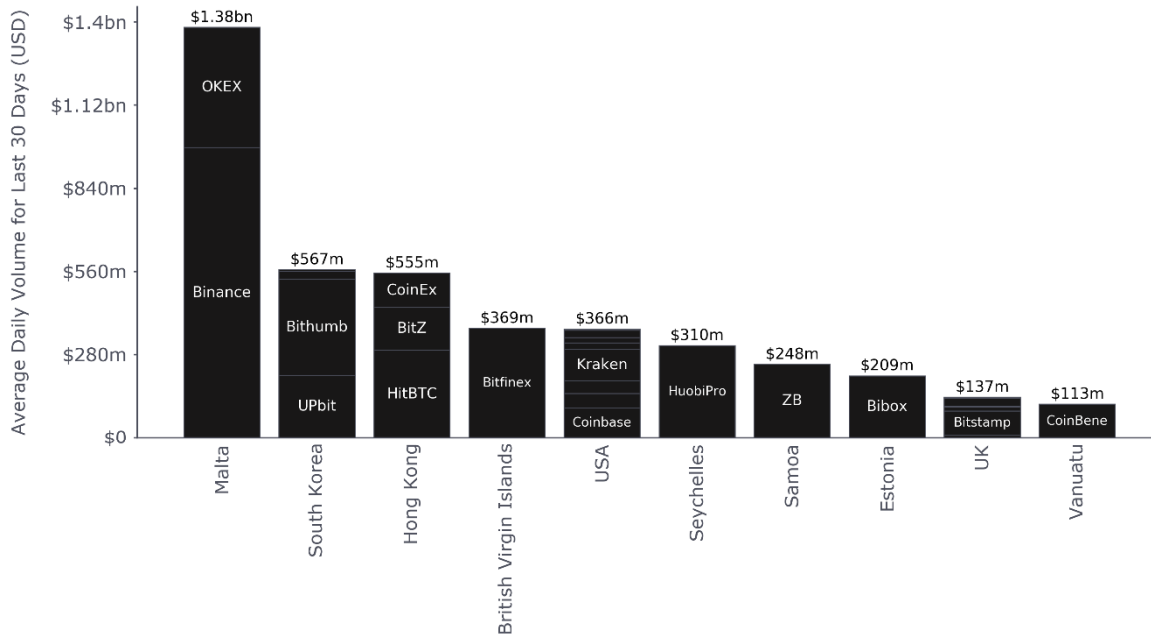
Binance and OKEX represent the vast majority of Malta's volumes, while Bithumb and Upbit dominate in South Korea

Figure 13 – Top 10 Exchange Legal Jurisdictions – Constituent Exchanges and Count
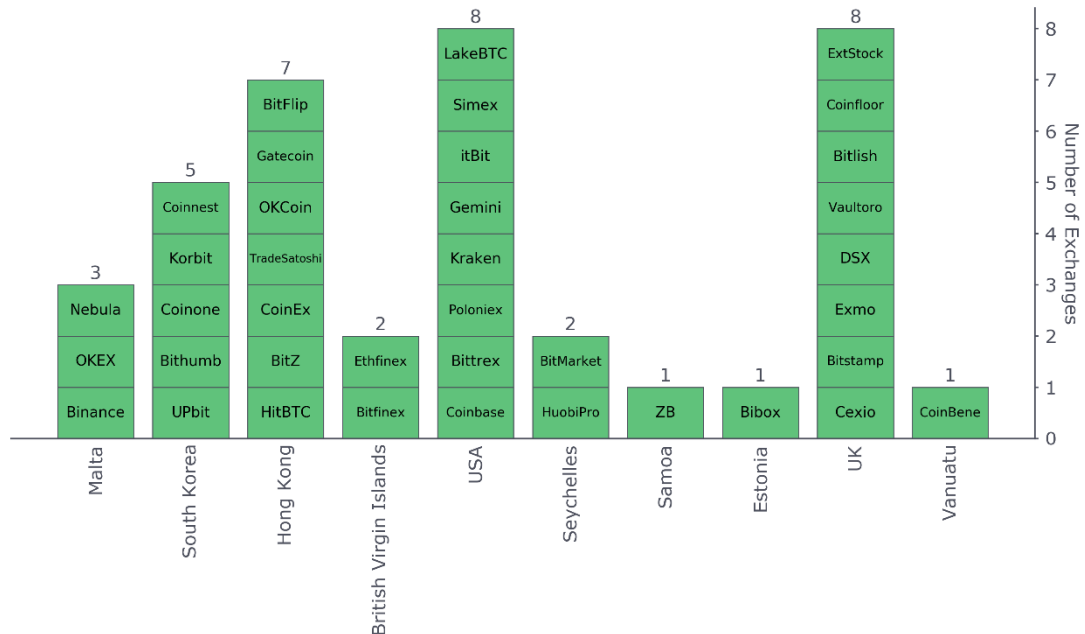
Well-known USA-based exchanges include Coinbase, Poloniex, and itBit, while those in South Korea include Upbit, Bithumb and Coinone.

Hong Kong exchanges include HitBTC, CoinEx and Bit-Z, while those in more remote jurisdictions include HuobiPro in the Seychelles, ZB in Samoa and Coinbene in Vanuatu.

Pair Offering Analysis

The following analysis aims to highlight both the total volumes produced by crypto-crypto vs fiat-crypto exchanges as well as the total number of exchanges that fall within each category.

Figure 14 – Crypto to Crypto vs Fiat to Crypto – Average 24H Volume and Exchange Count
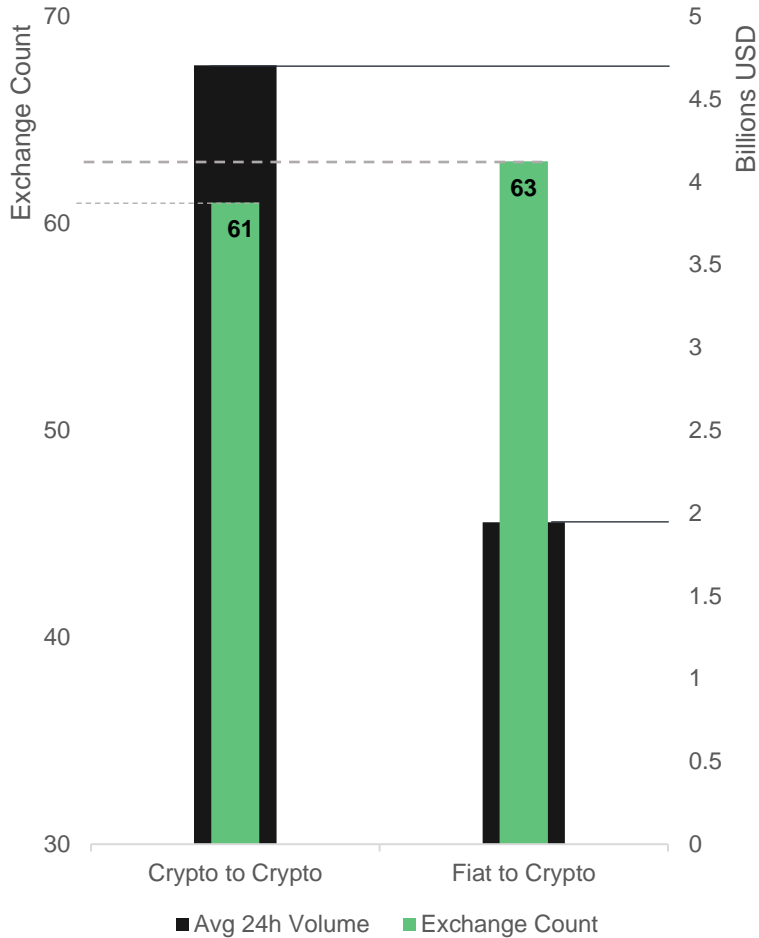
On average, exchanges that offer only crypto-crypto pairs constitute approximately three quarters of the total spot trading market (~4.7 billion USD)

Those that that offer fiat-crypto pairs constitute only a quarter of the total exchange market (~2 billion USD) on average. In terms of exchange count, approximately half of all exchanges offer crypto-crypto.

Trade Data Analysis

This analysis aims to shed light on the trading characteristics of given exchange. It helps to answer whether an exchange's volumes might be the product of consistently large trades, or the product of many small trades which may suggest the use of algorithmic trading or bots.

Figure 15 – Average 24H Trade Frequency vs Average Trade Size[7] - Top 25 Exchanges
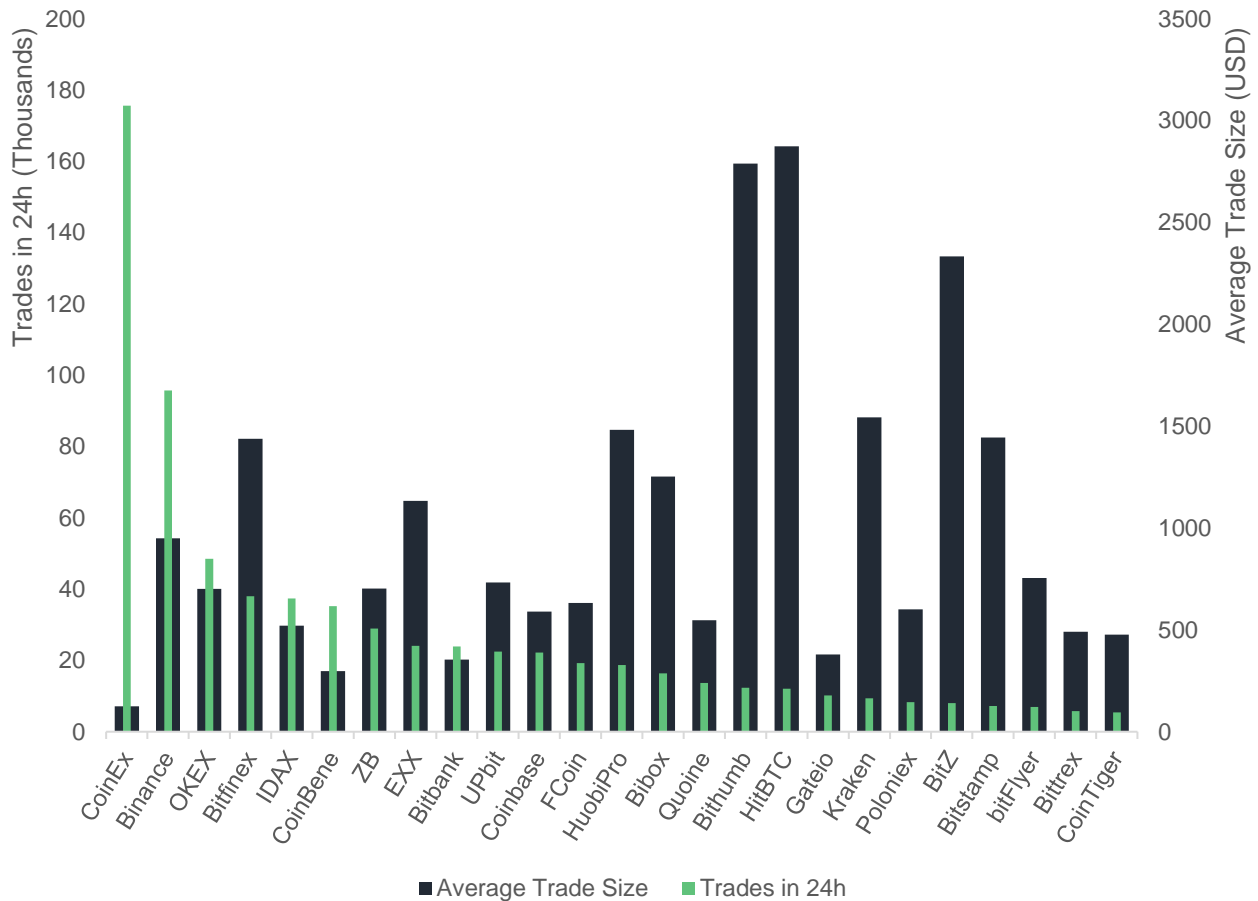
CoinEx, a well-known trans-fee mining exchange, has a significantly higher trade frequency and lower trade size than other exchanges in the top 25.

This may point to algorithmic trading, given its almost 176 thousand daily trades at an average trade size of 125 USD. In contrast, Bithumb and HuobiPro had an average trade size of just under 3,000 and 1,500 USD respectively.

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[7] Represents the average trade size for the top 5 pairs of each exchange

Table 3 – Average 24H Trade Frequency vs Average Trade Size - Top Exchanges

	EXCHANGE	AVG 24H VOLUME (MILLIONS)	AVERAGE TRADE SIZE (USD)	TRADES IN 24H (THOUSANDS)
1	Binance	977.5	950	95.7
2	OKEX	405.0	701	48.5
3	Bitfinex	368.5	1,438	38.0
4	Bithumb	323.2	2,788	12.4
5	HuobiPro	310.2	1,483	18.7
6	HitBTC	295.2	2,873	12.1
7	ZB	247.6	702	29.0
8	UPbit	211.0	732	22.5
9	Bibox	208.9	1,253	16.4
10	EXX	159.9	1,134	24.1
11	BitZ	143.9	2,333	8.0
12	IDAX	131.5	520	37.4
13	CoinEx	113.6	125	175.6
14	CoinBene	113.2	298	35.2

Web Traffic Analysis[8]

This analysis examines the web traffic stats of the top exchanges within CryptoCompare's total pool of exchanges. It is based on similar studies that have attempted to make a connection between the number of unique web users per domain and the subsequent 24h trading volume for that specific domain. This analysis assumes that the more unique visitors an exchange attracts, the higher its trading volume. For further information on the methodology behind this analysis, please see Appendix A - Web Traffic Analysis Methodology.

Figure 16 – Average Daily Visitors versus 24H Volume – Alexa Rankings Above 100,000
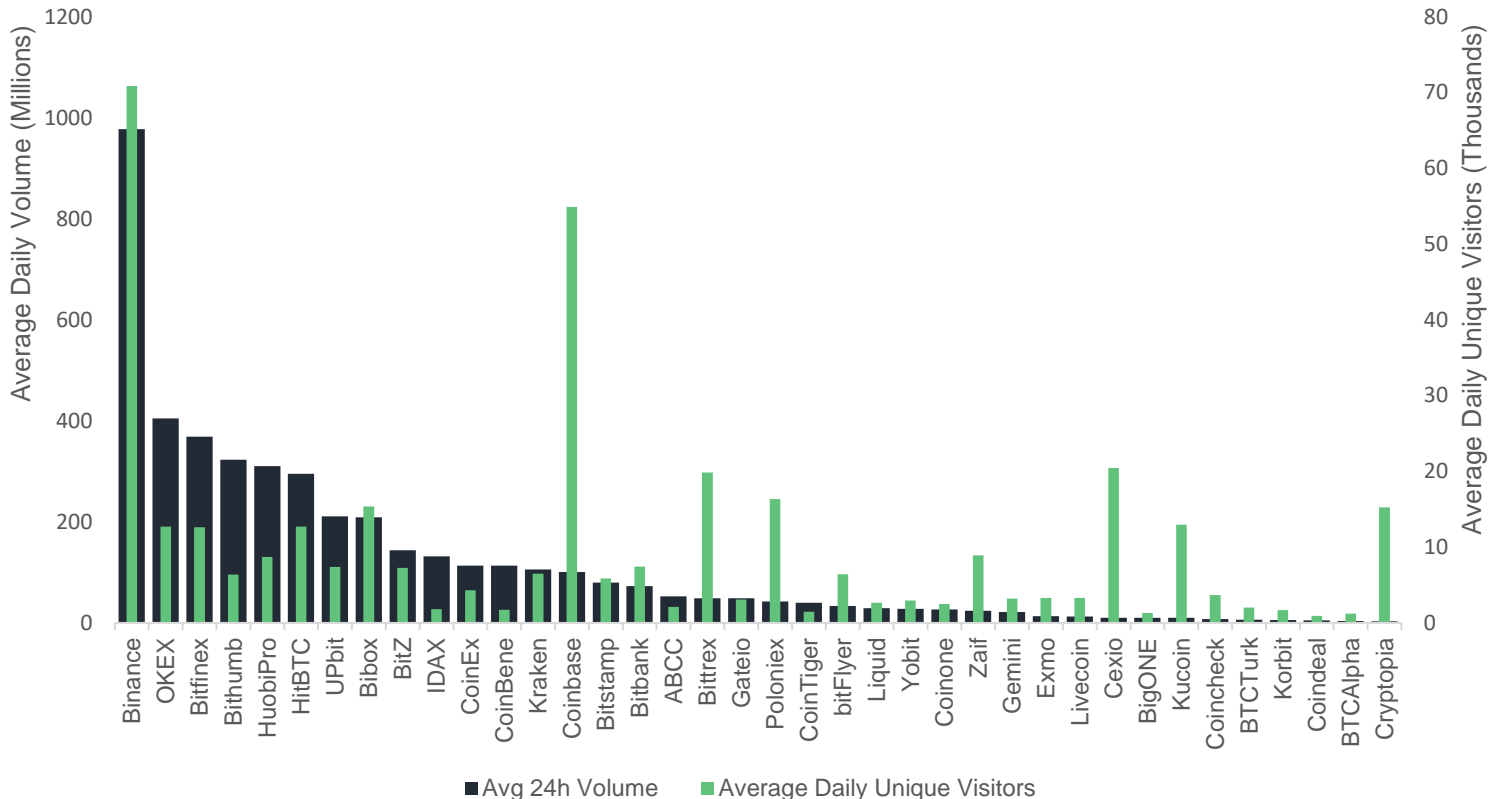
IDAX and CoinBene appear to have lower average daily visitors compared to similarly sized exchanges by daily volume.

The figure above represents the top exchanges by volume that have an Alexa ranking above 100,000. The reason for this is that according to Alexa, any ranking below this may not be statistically significant.

What we can see that exchanges such as IDAX and CoinBene have lower Average Daily Unique Visitor numbers than other exchanges with similar volumes such as Kraken, Bitstamp, and CoinEx.

Binance has the highest average daily visitor count, in line with its high trading volumes. Meanwhile, exchanges such as Coinbase, Cex.io and Bittrex have significantly greater numbers of daily visitors than other exchanges with similar daily volumes. In Coinbase's case, this can be attributed to the exchange's reputation and age.

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[8] Note: web statistics in the following analysis are only an estimation based on Alexa data.

Figure 17 – Average Daily Visitors versus 24H Volume - All Alexa Rankings
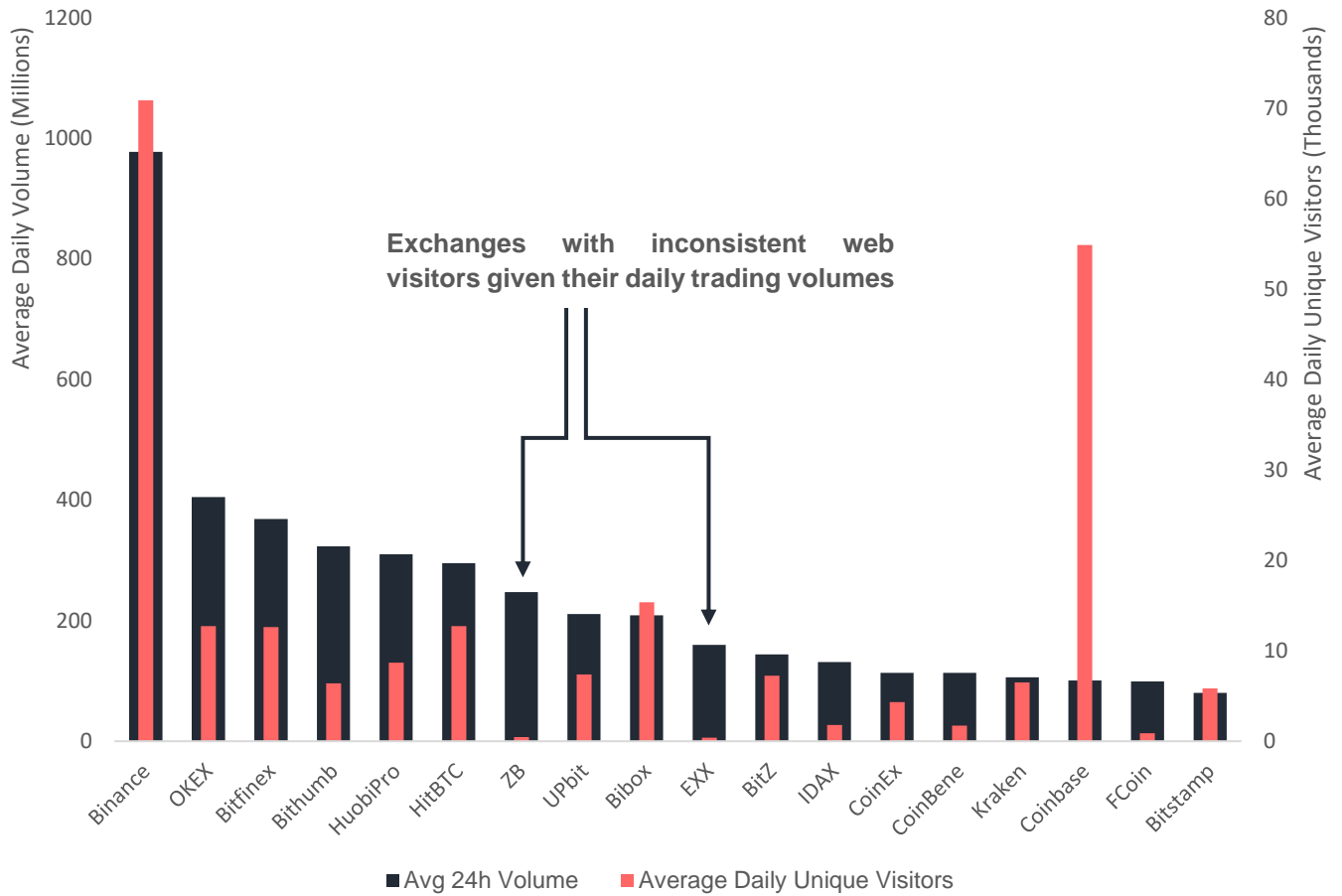
ZB and EXX attract significantly lower daily visitors than similarly-sized exchanges.

The above figure represents the top 20 exchanges by 24h volume regardless of whether their Alexa rankings are below 100,000. Noticeably, unique visitor counts for exchanges **ZB** and **EXX** are significantly lower than other exchanges within a similar 24h volume band.

These exchanges maintain average daily trading volumes of 248 million and 160 million USD respectively. Despite this, their daily unique visitor counts amount to no more than 700 visitors per day.

Although there is a chance that these web statistics may present errors given Alexa rankings below 100,000, in the interests of mitigating any potential risks, these exchanges will be flagged until clarification is provided.

Order Book Analysis

The following order book analysis investigates the relative stability of various cryptocurrency exchanges based on snapshots of the average order book depth for the top markets on each exchange in 10-minute intervals over a period of 10 days[9]. In the context of this analysis, average depth down is defined as the cumulative volume required (in USD) to reduce the price of a given market by 10%. This is compared to the average daily volume for the top 5 pairs. The result of this analysis is that we are able estimate the relative stability of a given exchange based on the ratio of depth down to average daily pair volume. For a more detailed explanation of the methodology for this analysis, please see Appendix A – A3 Order Book Methodology.

Figure 18 – Average Order Book Depth Down vs Average Daily Exchange Pair Volume[10]
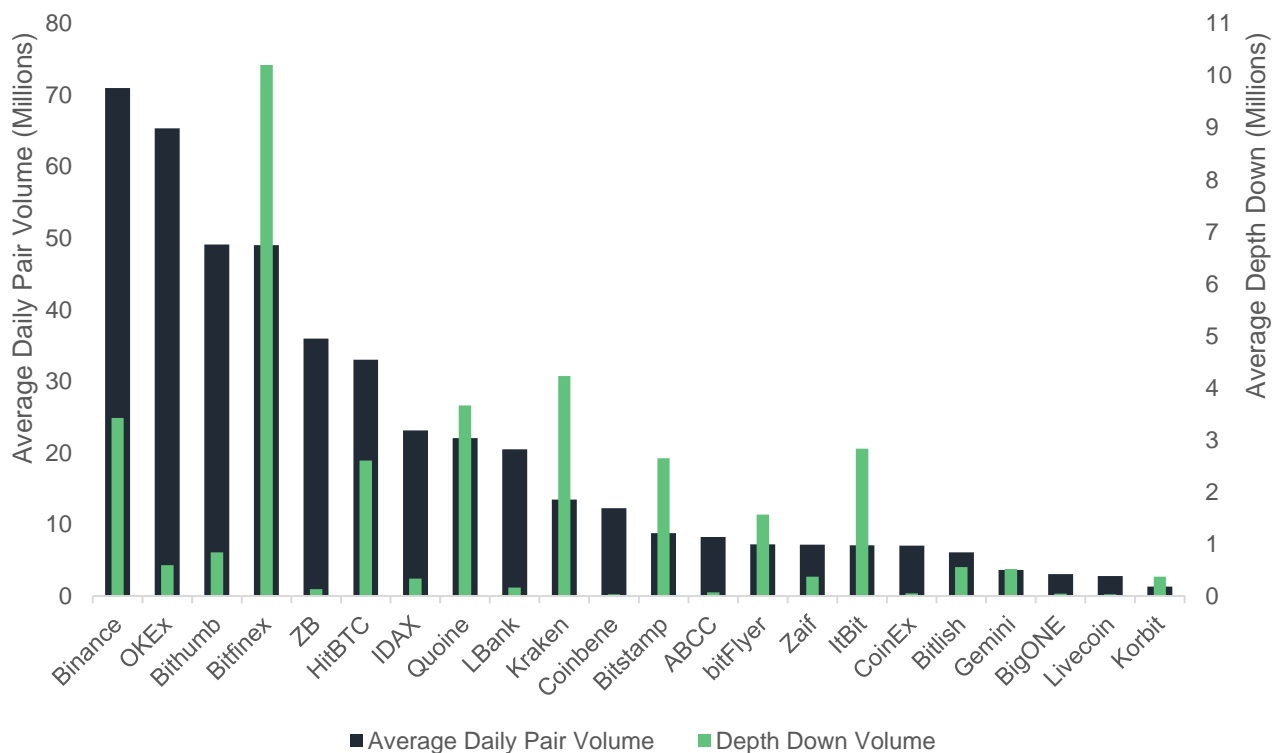
In relative terms, CoinBene, ZB and CoinEx have the thinnest markets.

Despite relatively large average volumes per top pair (~12 million USD), CoinBene's average order book cumulative depth down (order book buy side) totals only 33 thousand USD. In other words, to move the price 10% downwards, a trader would need to sell 33 thousand USD worth of currency.

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[9] 1st October to 10th October 2018
[10] Exchanges were selected on the basis of order book API availability and 24h volume. Average pair volume represents the average daily volume for the top 5 pairs of each exchange.

In contrast, Kraken which has similar average daily pair volumes (~13.5 million USD), has an average order book cumulative depth of 4.2 million USD. This is almost 130 times larger than that of CoinBene's and therefore suggests a much more stable exchange.

Figure 19 – Average Depth Down to Average 24H Pair Volume Ratio[11]
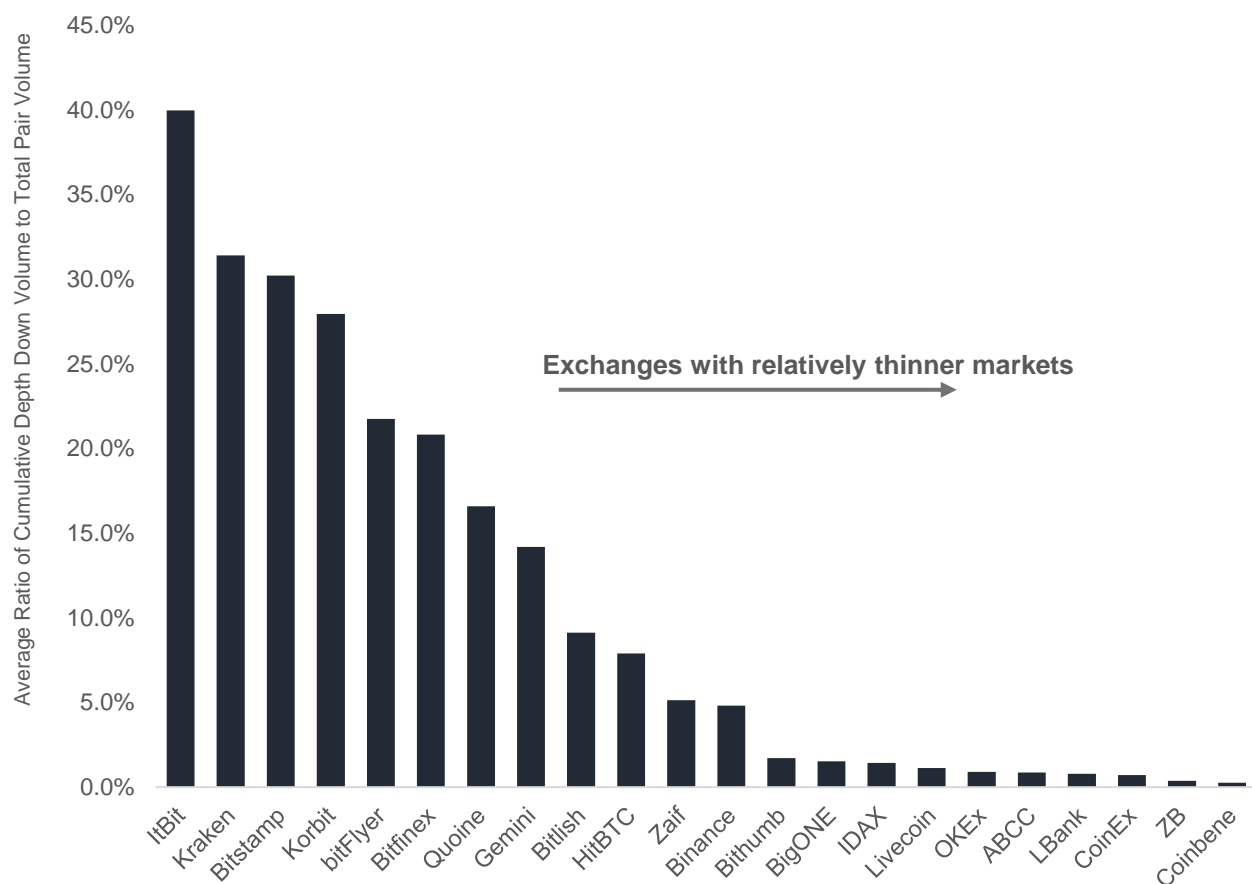
ItBit, Kraken and Bitstamp have relatively more stable markets compared to exchanges such as CoinEx, ZB and Coinbene.

In the case of ZB for instance, its depth to volume ratio was just 0.4%. I.e. in order to move the price down 10%, a trader would only need to sell 0.4% of average daily pair volume. These ratios are similarly low in the case of CoinEx (0.7%) and CoinBene (0.3%).

Meanwhile other exchanges such as Bitstamp and ItBit, had ratios of 30% and 40% respectively. This is a factor of 100 times greater than those of CoinBene's for instance.

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[11] Please note that 24h volume in this analysis represents the average 24h volume per pair. For full clarification, please see Appendix A – Order Book Analysis Methodology

Transaction-Fee Mining Exchanges

Figure 20 – Average 24H Trans-Fee Mining Volumes
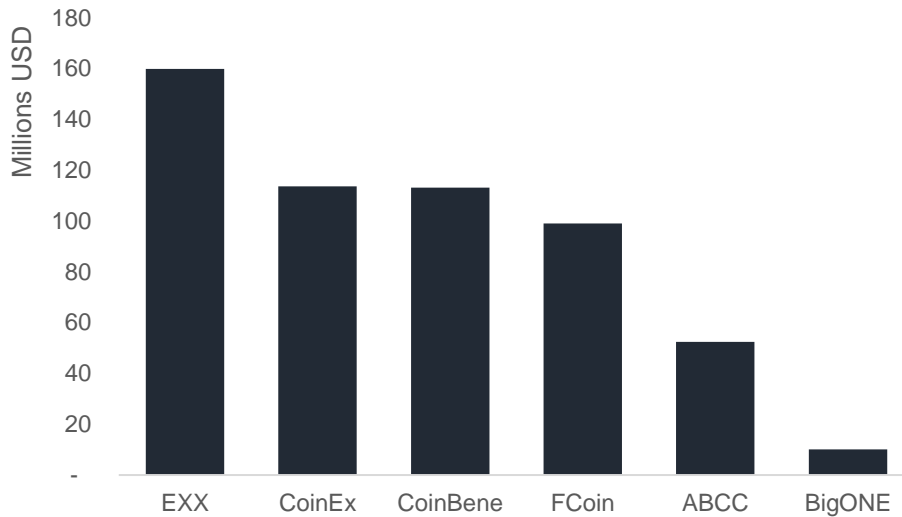
The total average 24h-volume produced by trans-fee mining associated exchanges on CryptoCompare totals more than 550 million USD. This constitutes approximately 10% of total exchange volume over the last 30 days.

Decentralized Exchanges

Figure 21 – Average 24H DEX Volumes
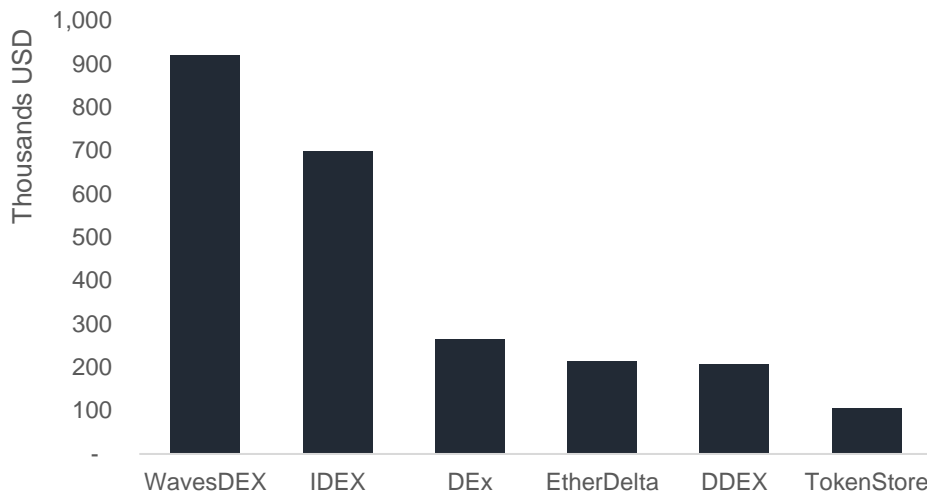
The total average 24h-volume produced by the top 5 decentralized exchanges on CryptoCompare totals just less than 2.4 million USD. This constitutes just 0.4% of total exchange volume.

Security Analysis – Top 100 Exchanges by 24H Volume

This security analysis aims to evaluate a pool of the top 100 exchanges by 24h volume considering the proportion of exchanges with both a public privacy and a terms & conditions page. In addition, we analyse the proportion of exchanges that have been hacked in the past as well as the publicly stated proportion of cold wallet vs hot wallet storage for users' funds. In theory, the higher the amount of funds stored in "cold storage" (i.e. offline), the less exposed the funds held by a centralized exchange will be to hackers.

Figure 22 – Proportion of Exchanges with both a Public T&C and Privacy Policy Page

■ Yes ■ No
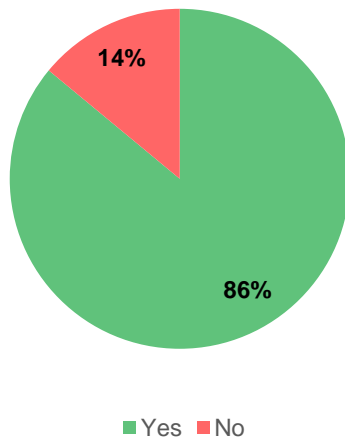
Out of the top 100 exchanges by 24h volume, only 86% have both a public privacy policy and terms & conditions page.

Figure 23 – Proportion of Users' Funds Held by Exchanges in Cold Storage[12]

■ Vast Majority ■ Majority ■ Some ■ Unstated
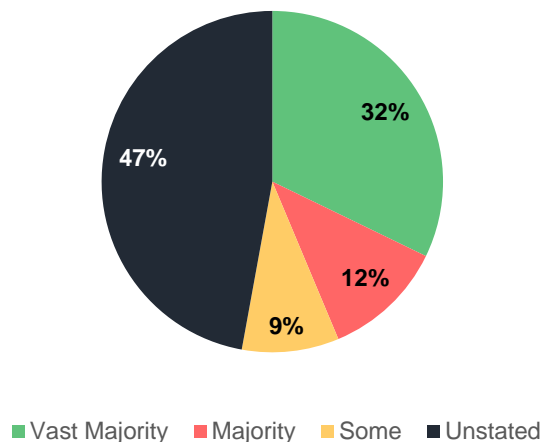
A third of top exchanges store the vast majority[13] of users' funds in cold wallets.

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[12] Based on what has been publicly stated by exchanges
[13] Here, the "vast majority" is assumed to be greater than 90%, while the "majority" is assumed to be greater than 50%, and "some" is assumed to be less than 50%.

Figure 24 - Proportion of Users' Funds in Cold Storage by Exchange
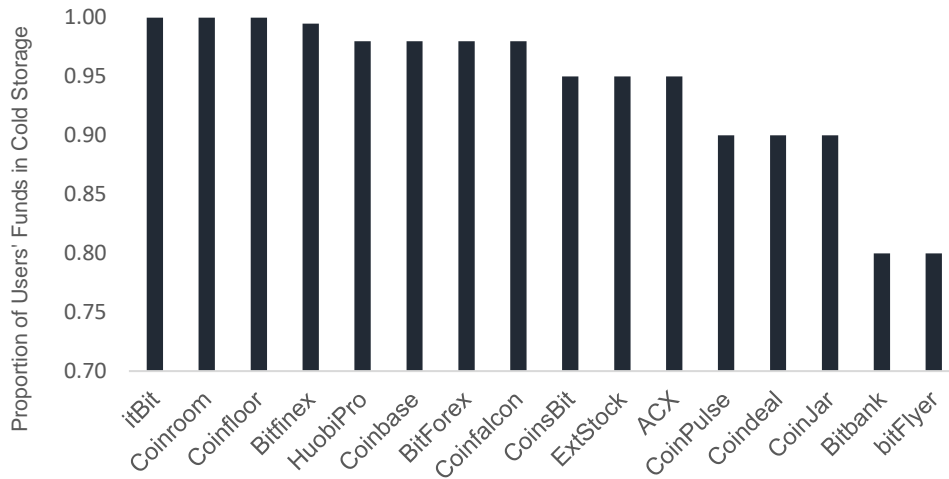
Exchanges itBit, Coinfloor, Bitfinex and Coinbase are among those that store the highest proportion of users' funds offline.

Figure 25 – Proportion of Exchanges Hacked in the Past

11%

89%

■ Yes ■ No
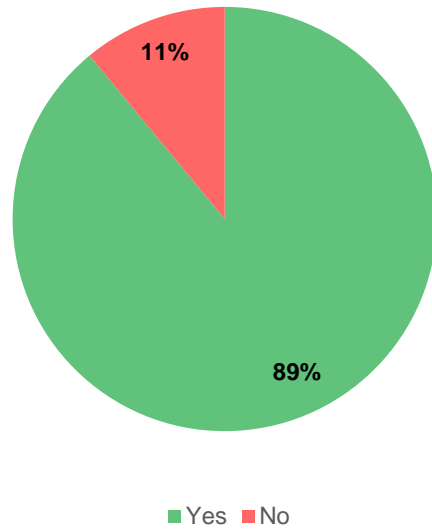
11% of top exchanges have been hacked in the past

Figure 26 – KYC Requirements Among the Top 100 Exchanges
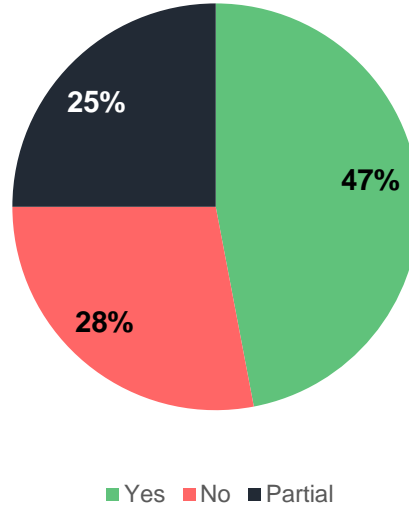
Just under half of top exchanges impose strict KYC requirements, while more than a quarter do not require KYC.

Those that impose partial requirements (25%) require KYC verification in order to conduct certain activities such as to withdraw fiat, to trade fiat pairs, or to increase maximum trading amounts.

Top October Exchange News and Developments

Summary of Top Exchange News Stories

EXCHANGE	STORY	ARTICLE LINK	DATE
Poloniex	Poloniex to remove margin trading and lending products by the end of the year	Poloniex	3 Oct
Gemini	Crypto Assets on Gemini Are Now Insured	Blokt	4 Oct
Coinbase	Coinbase Adds 0x to Trading Platform	CoinDesk	11 Oct
Bithumb	Korean Exchange Bithumb starts new DEX	CryptoGlobe	15 Oct
Huobi, OKEX	Huobi and OKEX list stablecoins GUSD, TUSD, PAX and USDC	XBT.net	17 Oct
Binance	Chainalysis to help Binance comply with anti-money laundering (AML) regulations around the globe	CryptoGlobe	17 Oct
Coinfloor	Coinfloor Becomes First Exchange to Get Gibraltar License	CryptoGlobe	17 Oct
Kraken	Tether Floods into Kraken Exchange, Where Crypto Traders Can Get Dollars	CoinDesk	19 Oct
Coinbase	Coinbase and Circle announce co-founded venture, the CENTRE Consortium	CryptoGlobe	23 Oct
Coinbase	Coinbase to list Circle's USDC stablecoin	CryptoGlobe	23 Oct
Bitstamp	Bitstamp Acquired by Belgium-based Investment Firm NXMH	Reuters	29 Oct

Top Exchange Market Developments

Business Development

Bitstamp was acquired by Belgium-based Investment Firm NXMH in an all cash deal. The deal was reportedly signed on the 25th of October according to Reuters, and announced publicly on the 29th of October. NXMH is a European subsidiary of South Korea-based NXC which invests in digital technologies. NXC also owns Korbit, a South Korean exchange.

On October 23rd, Coinbase and Circle announced a new co-founded venture, the CENTRE Consortium, which will aim to "[establish] a standard for fiat on the internet and [provide] a governance framework and network for the global, mainstream adoption of fiat stablecoins", according to Circle's official blog post.

Vertex Ventures, a diverse group of venture capital funds focused on IT and health care, has reportedly invested in digital asset exchange Binance. According to Bloomberg, the investment will be directed toward launching a Singapore-based fiat-to-cryptocurrency exchange.

A 38% stake in Bithumb worth 400 billion KRW (353 million USD) will be sold to the BK Global Consortium, a blockchain investment company established by BK Global. BK Global is a Singapore-based medical surgery group.

Stablecoins

Exchanges have shown increasing interest in stablecoins, with Gemini publishing a report titled: "Stablecoins: Understanding Counterparty Risk". Interest for stablecoins has spiked after Tether (USDT) dramatically lost its $1 peg earlier in the month. According to CryptoGlobe the Bitcoin premium on Bitfinex vs Coinbase reached an all-time high of 11.28% on October 15th. A Bitfinex-linked wallet has now sent approximately 630 million USDT tokens to an address identified as "Tether treasury."

Some analysts claim that Tether may be buying back USDT tokens at a discount to redeem them for 1 USD. Many exchanges have reacted by listing numerous stablecoins; Huobi and OKex both listed GUSD, TUSD, PAX and USDC. From these four stablecoins Huobi has launched an 'all-in-one program' called HUSD. Furthermore, Coinbase has announced it will list Circle's USDC stablecoin as part of their CENTRE Consortium, allowing users to switch between stablecoins using HUSD.

Regulation and Compliance

Coinbase announced that "Coinbase Custody had obtained a license under New York State Banking Law to operate as an independent Qualified Custodian". They also announced that "Coinbase Custody will operate as a Limited Purpose Trust Company chartered by the New York Department of Financial Services (NYDFS)."

On Wednesday 3rd October, Gemini exchange announced that it had successfully obtained insurance for funds held in custody. This comes with their collaboration with Aon, the global professional services company. Gemini's addition of digital assets insurance coverage follows the company's already active FDIC (Federal Deposit Insurance Corporation) insured fiat currency deposits.

Blockchain analysis software provider Chainalysis announced that it was going to use its compliance software suite to help Binance comply with anti-money laundering (AML) regulations around the globe.

Coinfloor is set to become formally regulated in Gibraltar as part of the jurisdiction's new blockchain-specific rules for fintech companies. As part of the process, Coinfloor was required to prove that it maintains adequate custody, cybersecurity, anti-money laundering, and know-your-customer procedures.

Nineteen new companies have reportedly received provisional licenses to operate digital asset exchanges in the Philippines by The Cagayan Economic Zone Authority (CEZA), a Philippine-government owned and controlled corporation.

The U.S.-based crypto-asset exchange, Poloniex, will be removing products pertaining to margin trading and lending on their platform by the end of the year.

Exchange Performance

Bitstamp has recently seen a bot "go wild" on the platform, causing significant price swings on several trading pairs and flash crashing litecoin (LTC) on the LTC/EUR pair.

YoBit, a Russia-based cryptocurrency exchange, has recently announced that it is set to pump "one random coin" using 1 bitcoin every 1-2 minutes, a move that could help illiquid coins on its platform surge. YoBit is currently excluded from CCCAGG pricing calculations.

Bitfinex announced the "Honey Framework" toolkit, "an Algorithmic Order Library for creating custom, complex order types for the Bitfinex platform." This new feature will provide greater functionality for high-frequency and high-volume traders alike.

Gemini and Omniex have cross-connected in Equinix's low-latency NY5 data centre, which "caters to large financial institutions and electronic trading ecosystems." The partnership's goal, according to the press release, is to "deliver the connectivity, features and high-performance trading experience institutional investors need," that has reportedly been lacking from the cryptocurrency ecosystem.

Listing and Delisting

Certain exchanges still exhibit a huge influence over cryptoasset prices when listing or delisting markets. According to The Block, Binance listing announcements provide a median return of 29% in the first week. They also found that Binance and Coinbase tend to have the most dominant impacts on market price; for instance, 0X surged 33% after listing on Coinbase and Decred jumped 20% after listing on Binance. Conversely, Bytecoin was delisted from Binance, causing a 15% drop in price.

Decentralised Exchanges

Korean exchange Bithumb has launched its own decentralized digital asset exchange (DEX). Furthermore, a new EOS DEX, NewDEX, has recently surpassed the top 5 Ethereum DEX's combined daily volume according to data from DappRadar. Despite the market downturn, volumes on Bisq DEX have been growing, particularly on their Monero markets.

CCCAGG Exchange Analysis

CCCAGG Exchange Pricing Analysis

Changes to Existing Exchanges within the CCCAGG prior to this review:

Coinroom and WEX were removed due to significant and recurring pricing deviations.

New Exchanges to be Evaluated for CCCAGG Inclusion

The following exchanges represent those added to CryptoCompare in September and have since generated enough data such that they can be assessed for inclusion into the CCCAGG in November.

EXCHANGE	ABSOLUTE % PRICE DIFFERENCE VS CCCAGG	ESTIMATED UNIQUE WEB USERS PER DAY	AVERAGE 24H VOLUME	PAIRS	COINS
P2PB2B	4.07%	105	3,962,248	31	13
COINTIGER	1.86%	1467	40,113,856	80	46
STOCKSEXCHANGE	1.26%	1781	1,875,658	114	73
BCEX	0.28%	No Data	55,243,479	91	75
IQFINEX	0.10%	174	3,158,790	24	14
ICOINBAY	0.04%	265	1,019,704	19	10
LIQNET	0.02%	63	355,250	5	5

Trade Data Assessment of New Exchanges

A visual inspection of the trades on the new exchanges is now carried out. Snapshot data cannot capture volatility, so these trade graphs allow the characteristic trading to be assessed in light of its effect on the CCCAGG. Graphs were produced of all trades vs the CCCAGG for the top 5 trading pairs for each new exchange over the last month.

BCEX
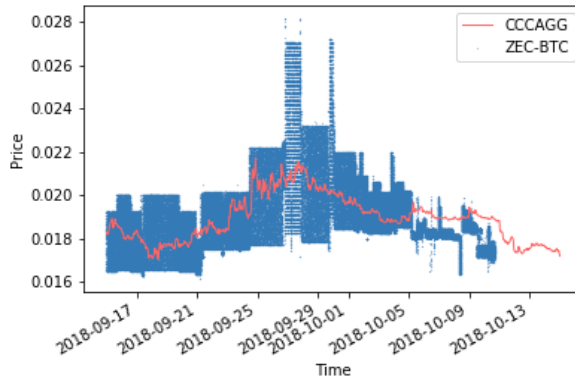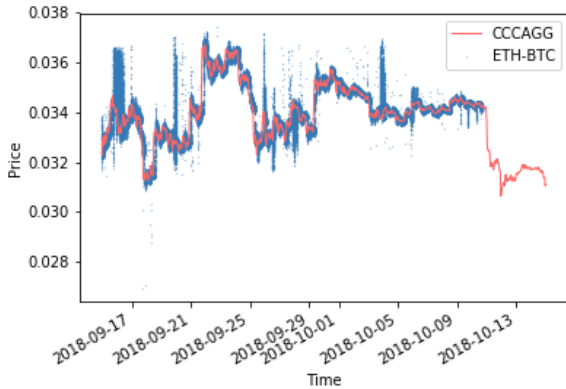
BCEX displays high volatility on both of the pairs that it trades. Buying of large amounts of the order book is visible, suggesting a very thin market. The price on this exchange will accordingly not reflect the price of the cryptocurrency well, so it will not be included.

CoinTiger
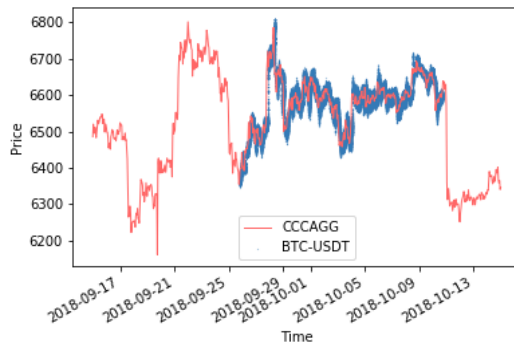
Top trading pairs on CoinTiger display agreement with the CCCAGG, but due to anomalous volumes further monitoring will be carried out before considering inclusion into the CCCAGG.

iCoinBay
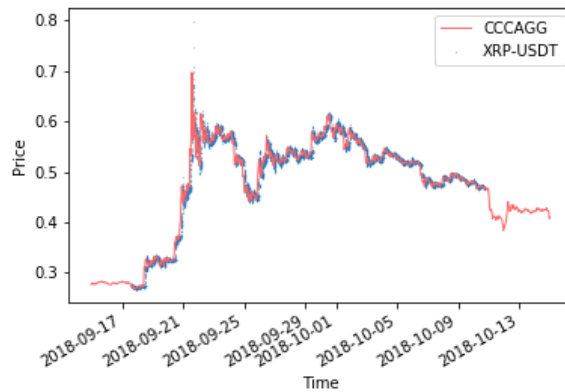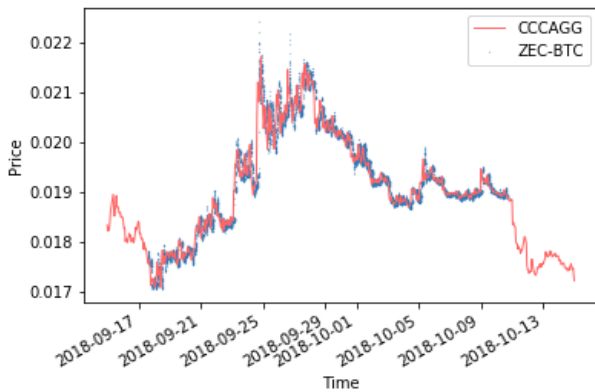
Pairs on ICoinBay show agreement with the CCCAGG. This exchange is a possible inclusion to the CCCAGG.

Iqfinex
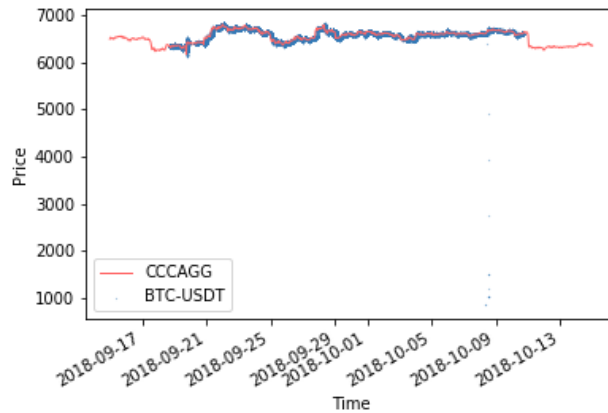
A flash crash on the largest trading pair elicits a longer period of assessment before consideration for inclusion into the CCCAGG.

Liqnet
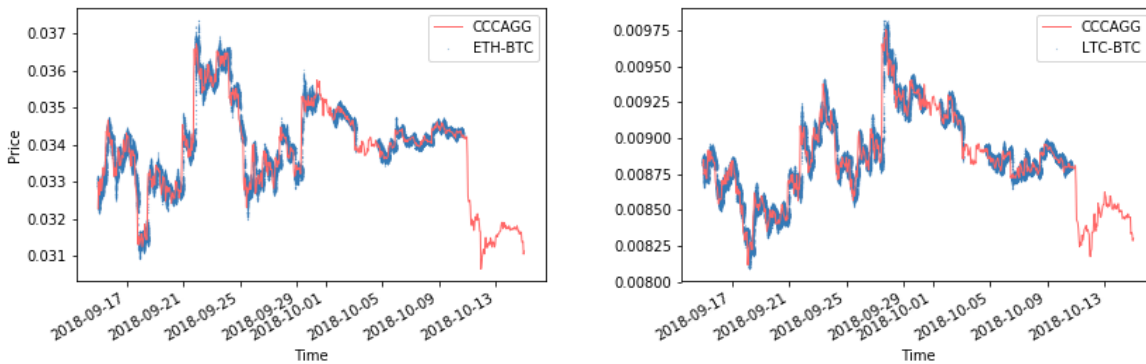
Pairs on Liqnet show agreement with the CCCAGG. However, large amounts of API downtime can be observed. The quality of the exchange API will be monitored and the exchange will be considered for inclusion in the event of an improvement in API provision.

P2PB2B

Poor agreement with the CCCAGG gives grounds to exclude P2PB2B.

StocksExchange
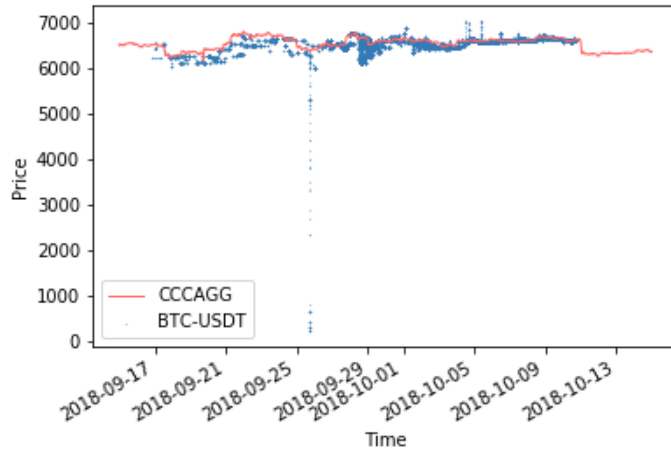
StocksExchange displays some unusual trading activity and a flash crash. The exchange will not be included due to trading behaviour.

Changes to CCCAGG Exchange List Following Review

Exchange Pricing Additions to CCCAGG from Existing Exchanges (0)

No new additions from existing exchanges

Exchange Additions to CCCAGG from New Exchanges Added in September (1)

iCoinBay

Exchange Exclusions from Current CCCAGG (2)

WEX (pricing), Coinroom (all data)

Existing Exchanges with Limited Trading Activity (0)

None

New Exchanges Pending Further Data and Review (17):

BYTEX, 3XBIT, Cobinhood, Switcheo, Bitkub, Everbloom, HPX, Exrates, Coinsbit, NDAX, DigiFinex, BitShares, Coinmate, IncoreX, EtherMium, Nuex, BlackTurtle

Example Assessment of BTC to USD and Future Exchange Methodology Additions

This section provides a quantitative analysis of trade data received from exchanges. The purpose is to provide an understanding of what the exchange trading ecosystem looks like, and to allow for selection of exchanges that best represent the price of a cryptocurrency.

In order to make comparisons across exchanges, an estimate of the trading price of the cryptocurrency needs to be ascertained. For the BTC-USD pair, all trades over a 30-day period were collated and plotted. In this time period, there were around 6.5 million unique trades. The trades are plotted such that colour indicates the density of points in the area.

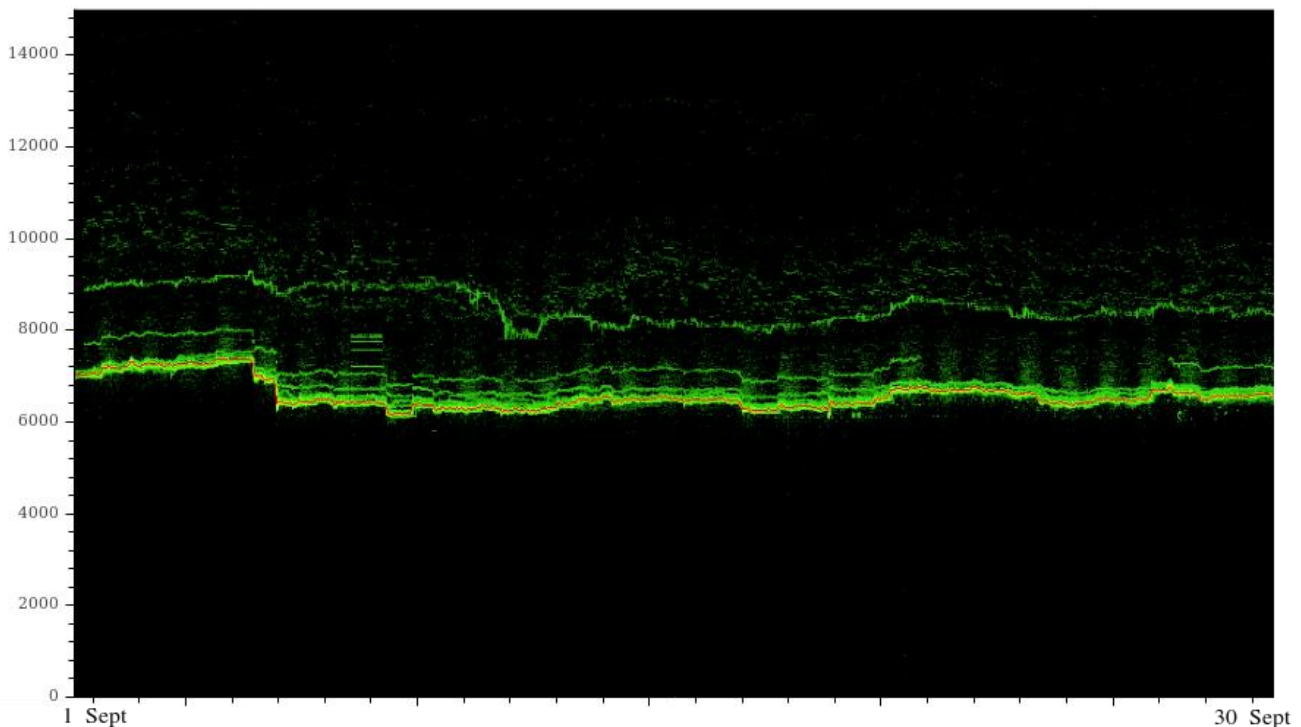**Figure 27 – All BTC to USD trades over 30 days**

This graph represents the entire ecosystem of the price of BTC-USD trading over a 30-day period. This is now used to generate a representative price for BTC. The median was selected to calculate a trading price for the cryptocurrency. The motivating factor behind this measure being used was the large number of outliers in the trade data set. To keep the computation tractable, trades were grouped into 1-hour long time bins, and the median for each of these bins was computed.

For the purposes of this investigation, volume weighting was not used. This was due to high volume buying up of order books being observed when looking at individual exchange trade data. It was hypothesised that the arithmetic median would better reflect the mid-price of the order books of the exchanges, as the majority of trades take place at the mid-price. The median should therefore reflect the price that the average trade was carried out at.

The 1-hour median line was then plotted on the trade data, and a visual inspection of a section of the above graph shows that the line follows the highest trade density, which is indicative that it is a good estimate of the trading price of the cryptocurrency.

Figure 28 - BTC to USD trades over 30 days with hourly median price line
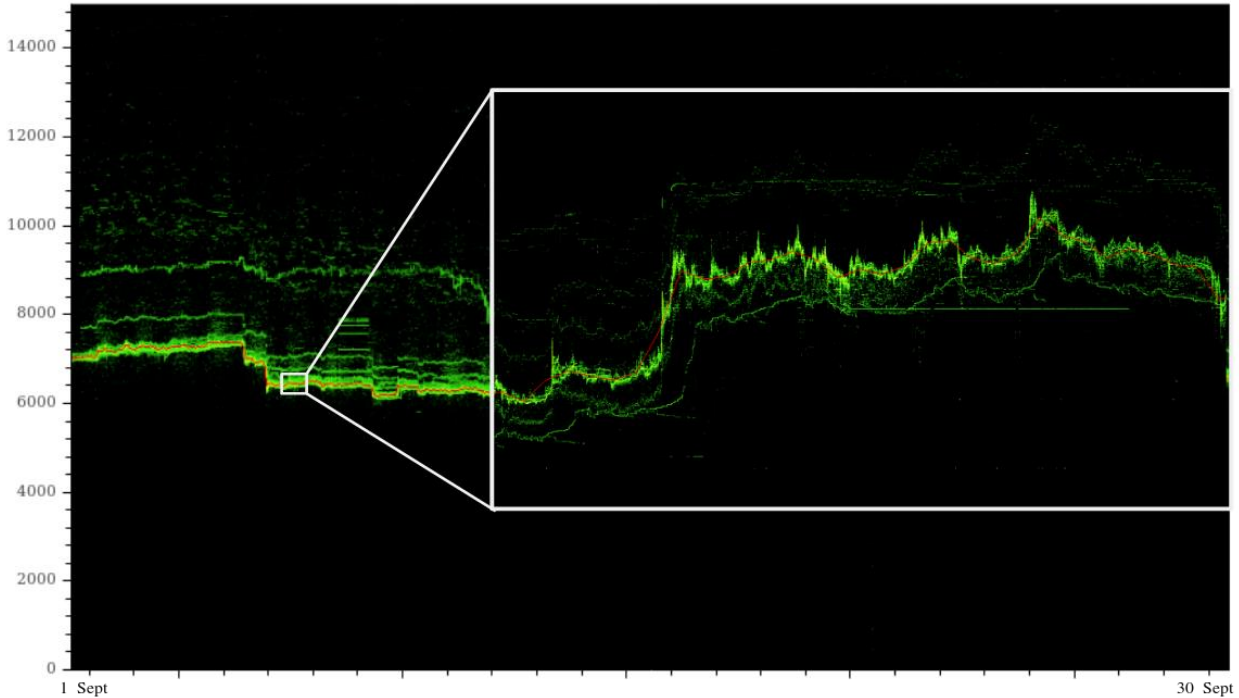
CryptoCompare's CCCAGG is an aggregation of trade prices, and aims to reflect the current trading price of an asset. It is possible to validate the CCCAGG price by comparing it to the median trade price. It can be seen that there is agreement between the two measures, suggesting that the CCCAGG is accurately capturing the trading price.

Figure 29 - CCCAGG Price vs Median Trade Price for BTC to USD
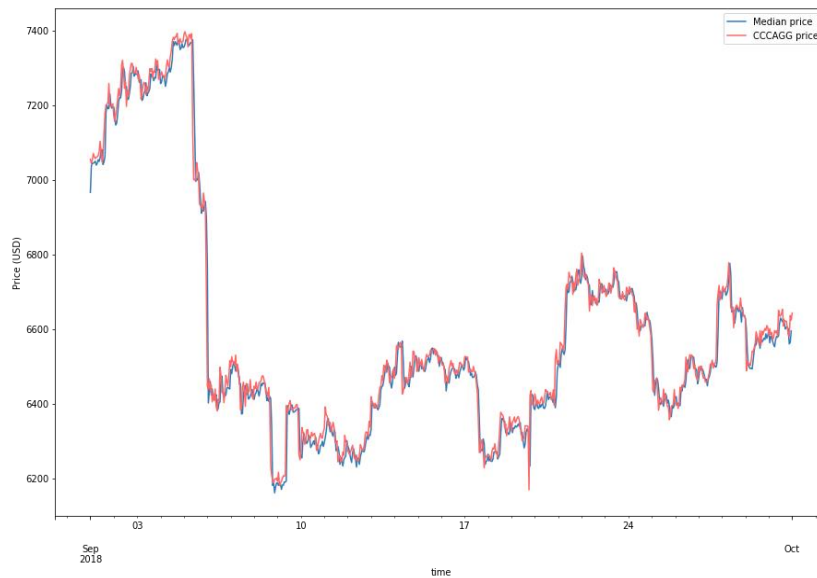
APPENDIX A – Research Methodologies

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. Nonetheless, regardless of the incentives or risks to those trading on the platform, it is beyond the scope of CryptoCompare's work to judge whether trading volume is legitimate or not. For this reason, transaction-fee mining volume is included within the CCCAGG in the current policy, but excluded from the average price calculation, as these exchanges pose the risk of runaway or market crash. This policy will be reviewed and improved for the next exchange review when more in-depth analysis has been conducted.

Futures Trading

Despite the significant volumes witnessed for bitcoin futures trading on platforms such as BitflyerFX 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. For this reason, the base model for our web traffic analysis has only included exchange domains ranked at least 100,000 or higher on average.

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 4,208,571,287[14] 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 calculated by dividing Total Page Views by average Page Views per user. Formulas are as follows:

*Total Page Views = Page Views per Million * Total Web Users*

*Total Unique Visitors = Page Views per Million * Total Web Users / 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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[14] https://www.internetworldstats.com/stats.htm

A3 Order Book Analysis Methodology

Purpose

The main purpose of the order book analysis is to investigate the relative stability of various cryptocurrency exchanges on the basis of how much volume (bought or sold) it would require to move the price of a given market by 10%. In other words, how much USD at the current market price would result in slippage of 10% across the top pairs of various exchanges? Markets on exchanges that are less stable or more at risk of manipulation, are those for which prices can be moved with less USD.

Data Collection

Order book snapshots were queried from each exchange's order book API endpoint for its top 5 trading pairs, in 10-minute intervals over a period of approximately two weeks (1st October to 15th October). Together with each snapshot, the best bid, best ask, 24h volume and latest price was also collected, as well as a price conversion to USD such that all markets are comparable.

Definitions

Order Book Depth: In the context of this analysis, "order book depth" is defined as the cumulative volume in USD at each side of the order book such that the price moves 10%.

Depth Down: The sale of volume in USD required to move the price of a given market down 10%. In other words, this represents the cumulative sum of bids (in USD) that would result in slippage of 10% downwards.

Depth Up: The amount of volume in USD required to move the price of a given market up 10%. This represents the cumulative sum of asks (in USD) that would result in slippage of 10% upwards.

Slippage: The percentage change in market price after a given market order is placed.

24h Pair Volume: The 24h volume (in USD) for a given pair on a given exchange.

Average Depth Down to Average 24h Pair Volume Ratio: Represents the relative stability of a given exchange as a ratio of average depth down (for the top 5 pairs), over the average 24h pair volume (for the same top 5 pairs) of each exchange. In other words, what percentage of daily volume on average for a given market would be required to move the price 10% downwards.

Calculation Methodology:

For each exchange, an average depth down value over a period of one month in 10-minute intervals, was calculated for each of its top 5 pairs. An average of the average depth down across each pair was then calculated to produce an overall depth down figure for each exchange across this time period. The same was done for average 24h pair volume across each of the top 5 pairs.

Limitations:

It must be understood that although the top 5 markets of each exchange capture the majority of volume on top exchanges, not all markets are equivalent. That is, the BTC to USD market might behave very differently to the BTC to ETH market. An average across the top 5 pairs may distort the particularities of a specific market. Nonetheless for the purpose of obtaining a broad view of how an exchange behaves, averaging the top 5 markets is deemed perfectly acceptable for this analysis.

Another limitation here is that top exchanges often trade significantly more than 5 pairs. Binance or HitBTC for instance offer hundreds of markets; assessing only the top 5 pairs does not capture the full picture, while for Coinbase it may be far more representative.

Finally, given that markets often change within a matter of seconds, snapshots of ten-minute intervals often lose important information in between these intervals. For future analysis, a deeper analysis into the behavior of exchange markets by the second will need to be conducted to capture this behavior.