CCCAGG Exchange Review

CryptoCompare

November 2018

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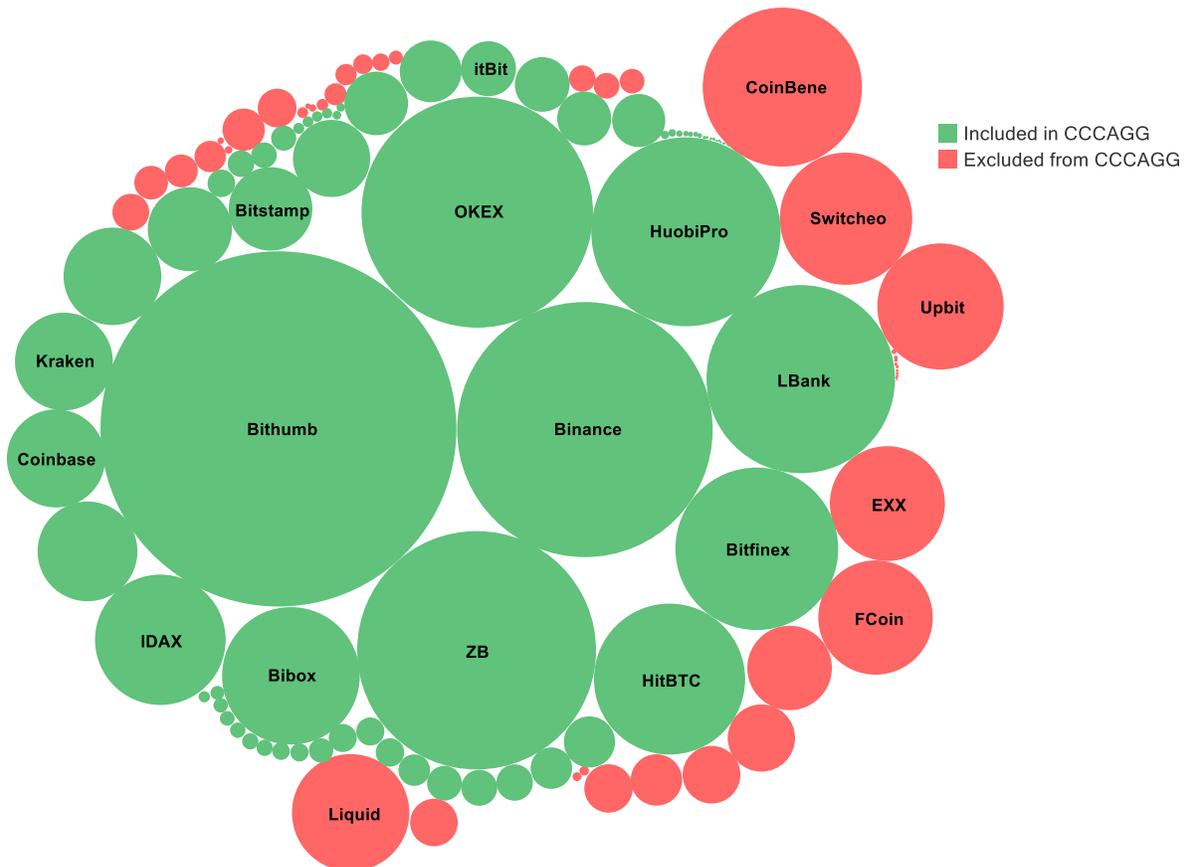Published by CryptoCompare

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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

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Executive Summary

Major Exchange News in November

Bithumb partners with SeriesOne to launch a US-based securities token exchange • Bitstamp announced a partnership with Cinnober, a leading provider of trading and clearing technology • The SEC brings charges against the founder of decentralized exchange EtherDelta for operating an unregistered national securities exchange • BitMEX launches a VC division, "BitMEX Ventures" • HuobiPro to open an office in Russia • South Korean crypto exchange Zeniex closes amidst crackdowns • Canada's courts to take custody of QuadrigaCX's frozen funds • OKEx changes settlement date of BCH futures causing outrage • Coinone and Upbit go offline after an Amazon Web Services (AWS) network failure • Exchange ErisX raises 27.5 million USD from investors including Fidelity Investments and Nasdaq Ventures.

Exchange Market Segmentation

From October to November, spot volumes constituted three quarters of total market volumes on average (7.3 billion USD) compared to futures volumes (2.3 billion USD). Average futures volumes[1] decreased 28% since last month on average, while average spot volumes increased by 5%.

BitMex (XBT to USD futures) and BitflyerFX (BTC to JPY futures) volumes averaged just under a quarter of total cryptocurrency market volumes, while traditional exchanges such as CME and CBOE trading bitcoin futures constituted less than 0.25% of the total market combined.

Exchanges with taker fees represented just under 89% (~6.6 billion USD) of daily exchange spot market volumes. Exchanges that implement transaction-fee mining represent just over 8% (~619 million USD) of the total spot market, while those that offer no-fee spot trading represent just over 2% of the market.

Exchanges that offer fiat to crypto pairs constitute a third of daily spot market volumes on average. Fiat to crypto exchange volumes averaged 2.73 billion USD while those that offer only crypto to crypto pairs averaged 4.54 billion USD. In terms of exchange count, more exchanges offer fiat to crypto pairs (57%) than those that offer only crypto to crypto pairs (43%).

Transaction-Fee Mining Volumes

The total average 24h-volume produced by the major trans-fee mining exchanges on CryptoCompare totaled 619 million USD. This constitutes more than 8% of total exchange volume over the last 30 days. Volumes for CoinBene and Fcoin increased 129% and 31% respectively since last month. Those of EXX, CoinEx and BigONE decreased by 61%, 44%, and 1% respectively.

Decentralized Exchanges

The total average 24h-volume produced by the top 5 decentralized exchanges on CryptoCompare totaled just over than 2.6 million USD. This constitutes just over 0.4% of total exchange volume.

Volume, Pairs and Coins

Bithumb overtook Binance as the top exchange in terms of 24h volume with an average of 1.24 billion USD. Binance (641 million USD) and ZB (560 million USD) traded the second and third highest volumes respectively. Yobit continues to offer the highest number of pairs at 7,032, followed by Cryptopia (4,321) and CCEX (2,140).

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[1] Bitmex perpetual futures and BitflyerFX futures

Bitcoin to Fiat Volumes

Bitcoin trading to Korean Won (KRW) dominated BTC to fiat spot volumes from the 7th of October to the 11th of November, representing 50% of all volumes on average. This is a 400% increase compared to those seen between the 15th of September to the 7th of October, where KRW represented a tenth of Bitcoin trading to fiat. From the 11th of November, trading then dropped off considerably. These volumes originate from Korean exchange Bithumb.

Bithumb's Promotional Events

An analysis into Bithumb's BTC to KRW volumes show that the exchange's trading volumes appear to follow from their "Super Airdrop Festival" (1, 2, and 3) and "Special Gift" promotional events.

Country Analysis

South Korean-registered exchanges produced the highest total daily volumes (1.4 billion USD) overtaking Maltese-registered exchanges (1.2 billion USD), while the highest quantity of top exchanges (relatively high volume) are registered legally in Hong Kong (10) and Singapore (11).

Web User Analysis

Bithumb, ZB, CoinBene, EXX and FCoin attract significantly lower daily visitors than similarly-sized exchanges. Meanwhile, Bithumb, Coinbene and CoinTiger volumes increased significantly since last month, while their daily visitors decreased. A volume increase on an exchange, combined with a decrease in visitors may point towards incentive programs such as competitions, trans-fee mining, rebate programs or similar.

Order Book Analysis

Bitfinex, HitBTC, Kraken are among those that have the most stable markets assessed by cumulative depth down, while Neraex, Exrates and Cryptagio have the thinnest markets. These exchanges appear significantly less stable given their relatively low average order book depth values over the specified period of analysis. Bitforex and Coinbene have both thin markets combined with relatively high volumes.

Exchange Security

Out of the top 130 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 130 exchanges, 11% have been hacked in the past.

KYC

Less than half of top exchanges impose strict KYC requirements, while just under a third do not impose KYC requirements.

Summary of Changes to CCCAGG

What Happened in November?	New exchanges added to CryptoCompare (2):	Catex, Exenium
	Exchanges shut down (ceased trading completely): (0)	None
	Exchanges Removed from CCCAGG (0):	None
	October Exchanges to be Assessed Following Minimum Monitoring Period (10):	Switcheo, Everbloom, Coinsbit, NDAX, DigiFinex, BitShares, Coinmate, IncoreX, EtherMium, BlackTurtle
Result of Current Review:	New exchanges to be Included in CCCAGG (1):	Coinmate
	Existing exchanges to be included in CCCAGG (0):	None
	Exchanges to be Removed from CCCAGG (1):	Bithumb
Implementation Date	6th December 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[2]
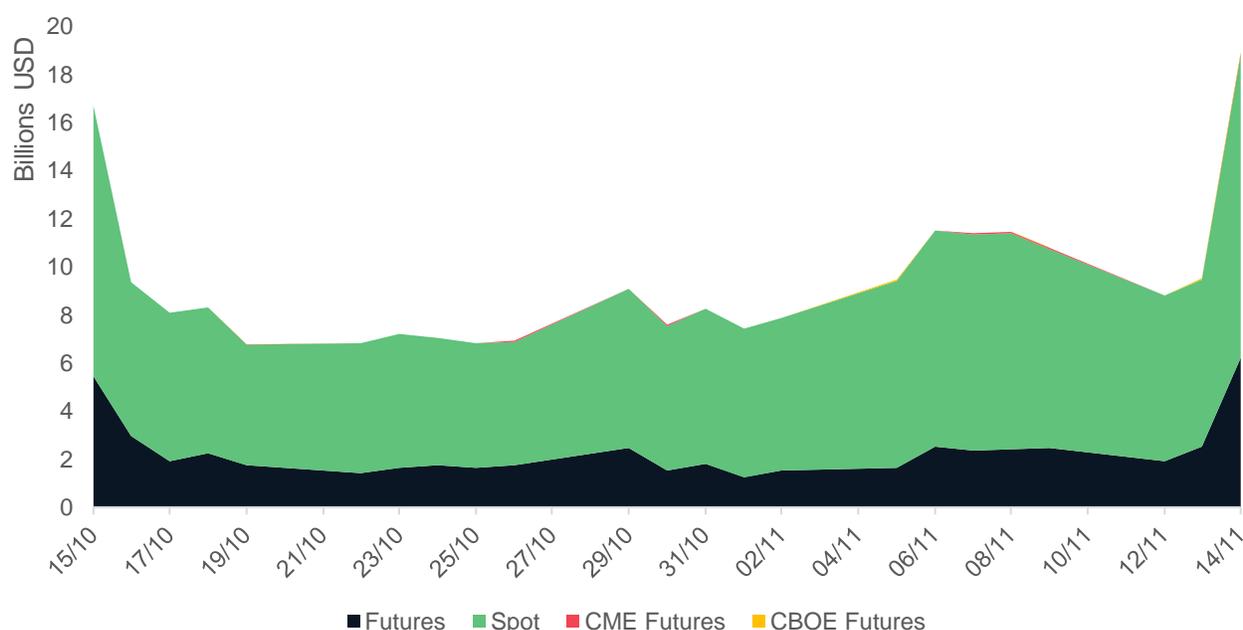
From October to November, spot volumes constituted three quarters of total market volumes on average.

Total spot volume averaged less than 7.3 billion USD, while futures volume averaged over 2.3 billion USD over the period of analysis.

BitMex (XBT to USD perpetual futures) and BitflyerFX (BTC to JPY futures) volumes averaged just under a quarter of total cryptocurrency market volumes, while traditional exchanges such as CME and CBOE trading bitcoin futures, constituted less than 0.25% of the total market combined.

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[2] Note: current constituent exchanges for futures volumes include BitMex (perpetual only BTC to USD) and BitFlyerFX. Total volumes are converted to USD for comparison.

Figure 3 – Average Historical Spot vs Futures Volumes
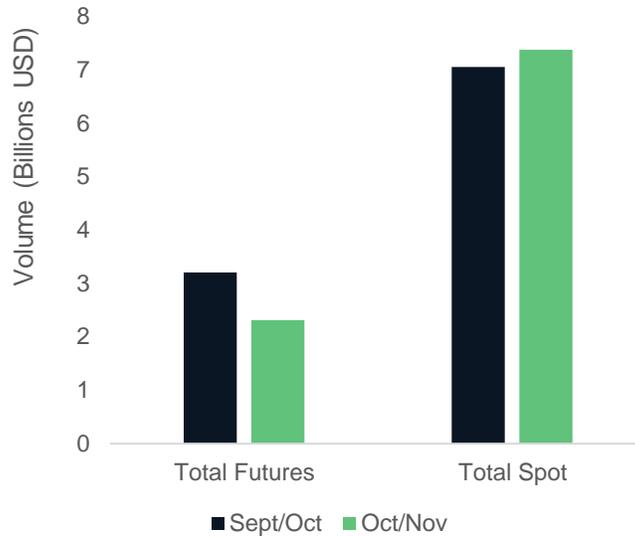
Average futures volumes decreased 28%[3] since last month on average, while average spot volumes increased 5%.

Figure 4 – Historical BTC to USD Futures Volumes
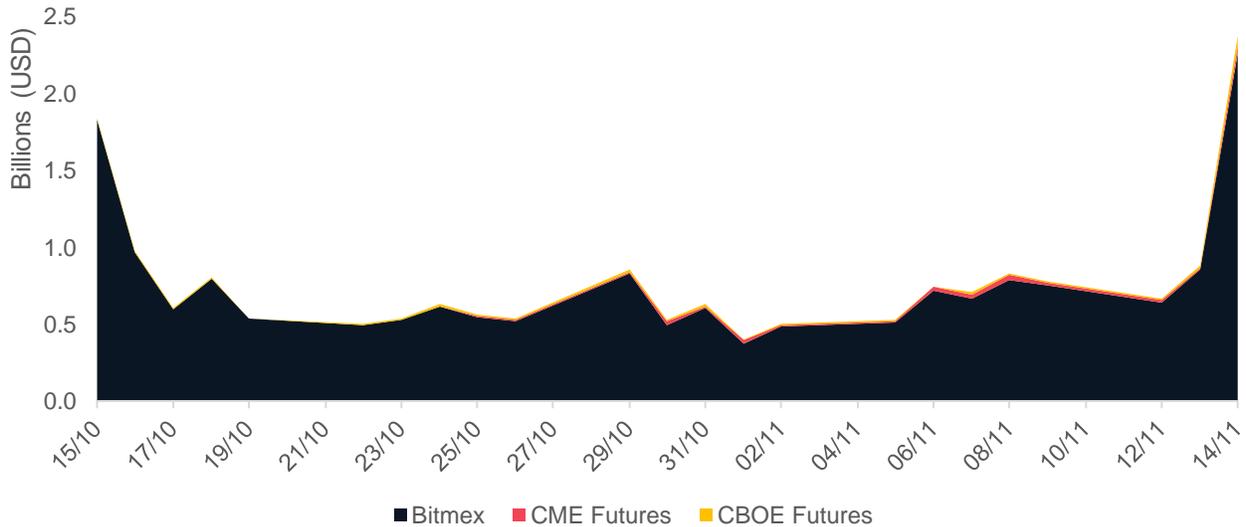
Bitmex's Perpetual Bitcoin to USD Futures volumes continue to dominate the Bitcoin to USD futures market.

When compared to CME's and CBOE's futures volumes, Bitmex represented an average of just over 96% of the market over the last month.

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[3] Only Bitmex perpetual BTC futures and bitFlyerFX BTC futures volumes

Figure 5 – Historical Spot Volumes Segmented by Predominant Fee Type[4]
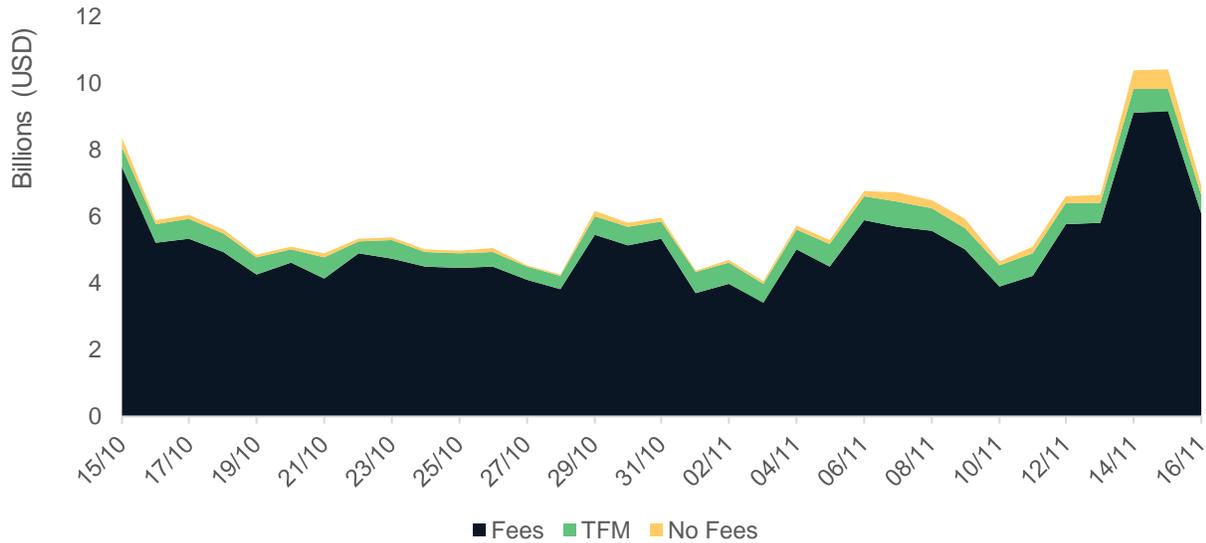
Exchanges with taker fees represent just under 89% (6.6 billion USD) of exchange spot market volumes.

On the other hand, exchanges that implement transaction-fee mining represent just over 8% of the total spot market, while those that offer no-fee spot trading represent just over 2% of the market.

Figure 6 – Historical Crypto to Crypto versus Fiat to Crypto Exchange Spot Volumes
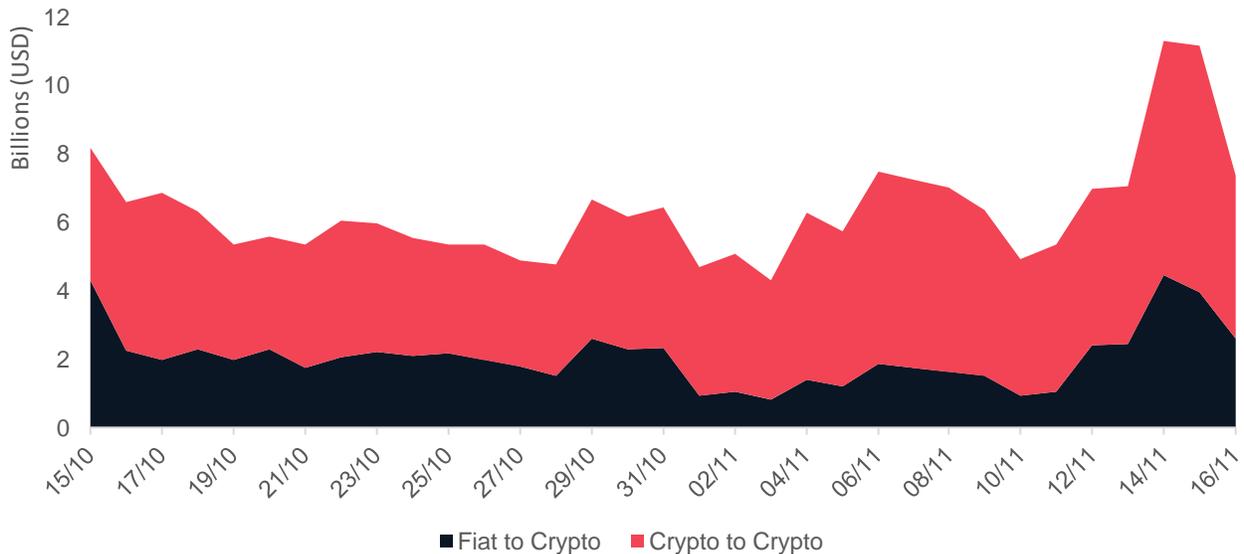
Exchanges that offer fiat to crypto pairs constitute a third of spot market volumes on average.

Fiat to crypto exchange volumes averaged 2.73 billion USD while those that offer only crypto to crypto pairs averaged 4.54 billion USD.

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[4] TFM = Trans-Fee Mining

Figure 7 – Historical BTC to Fiat Spot Volumes – Top 5 Fiat Currencies[5]
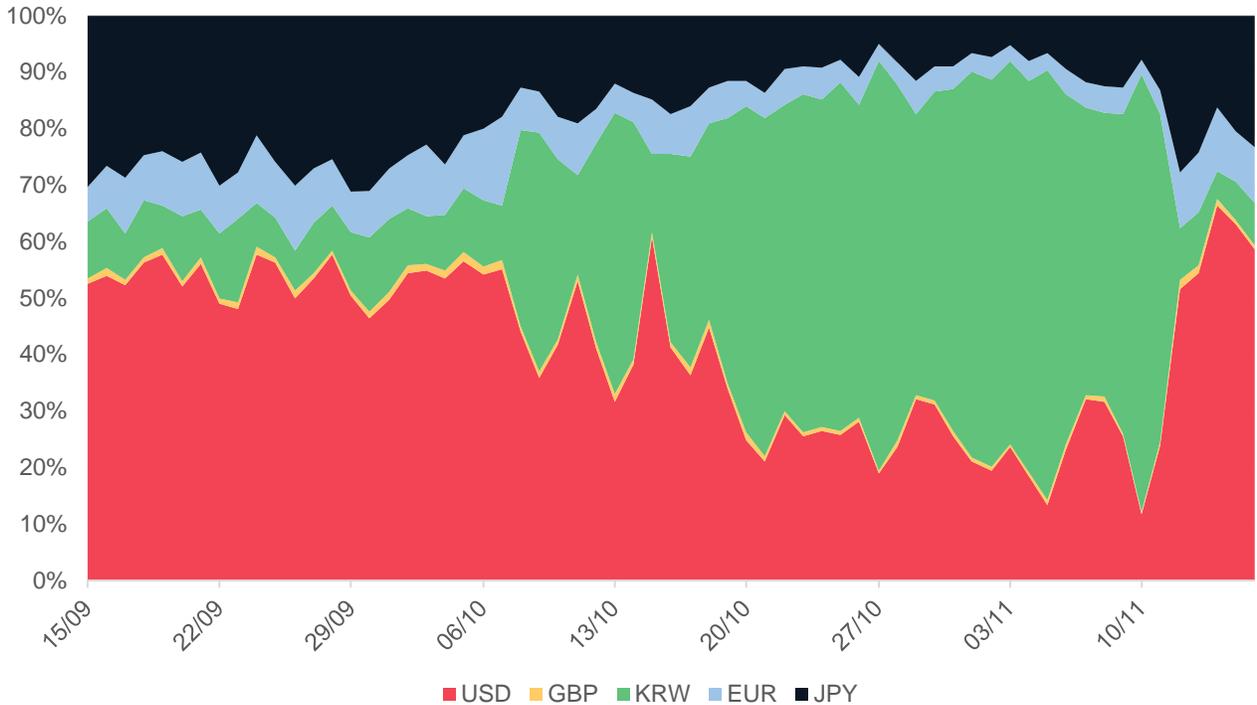
Bitcoin trading to Korean Wan (KRW) dominated spot BTC to Fiat spot volumes from the 7th of October. It then dropped off considerably from the 11th of November.

From the 15th of September to the 7th of October, BTC to KRW represented a tenth of bitcoin trading among the top 5 fiats on average. Between the 7th of October and the 11th of November, it represented 50% on average, a 400% increase. This increase stems from Korean exchange Bithumb's spike in volumes. (see Volume Analysis Figure 10)

[5] All USD volumes are exclusive of USDT

Figure 8 – Proportion BTC Trading to Various Fiat Currencies
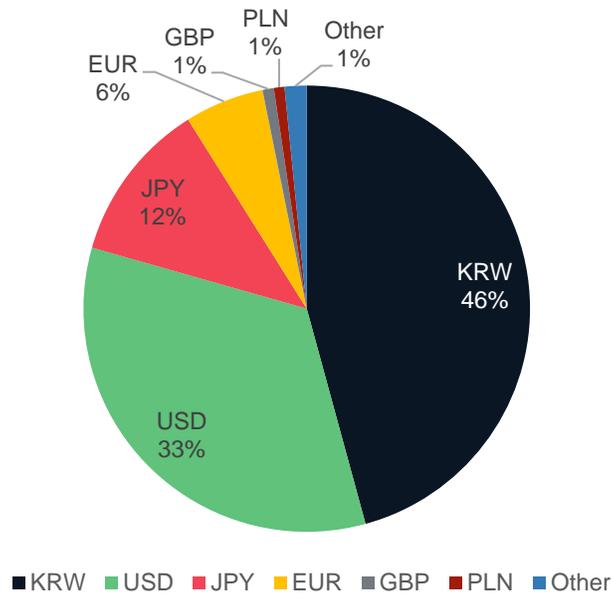
The Korean Won represented just under half of BTC fiat trading on average over the past 30 days, followed by USD (33%) and JPY (12%).

Figure 9 - BTC to Fiat Volumes - Month on Month
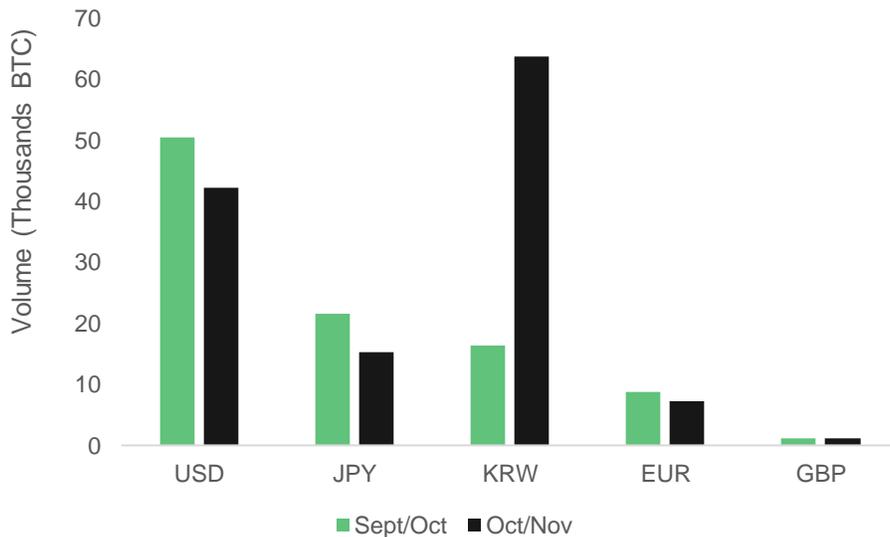
BTC trading into Korean Won increased 288% overall since last month, while trading into USD and JPY dropped 16% and 30% respectively.

The increase in BTC trading to Korean Won stems from Bithumb's increase in trading volumes (see Figure 10)

Summary of Volumes, Coins and Pairs

Table 1 – Top Exchanges by Average 24H Volume[6] in USD

	AVERAGE DAILY UNIQUE VISITORS[7]	AVG 24H VOLUME (USD)	COINS	PAIRS
BITHUMB	5,264	1,242,522,223	45	45
BINANCE	67,235	640,749,352	165	418
ZB	930	559,559,480	58	166
OKEX	9,864	525,479,124	175	520
HUOBIPRO	6,976	351,341,256	129	294
LBANK	5,003	348,446,408	86	123
BITFINEX	11,212	260,044,557	102	292
COINBENE	1,646	248,806,353	173	204
HITBTC	11,060	224,260,985	431	904
BIBOX	15,777	185,989,157	86	209
IDAX	1,924	167,339,415	57	98
UPBIT	6,996	156,620,953	132	261
LIQUID	3,889	135,069,968	88	236
EXX	183	129,798,957	45	101
FCOIN	838	128,558,208	66	84

Table 2 – Top Exchanges by Number of Pairs

	AVERAGE DAILY UNIQUE VISITORS[8]	AVG 24H VOLUME (USD)	COINS	PAIRS
YOBIT	2,317	25,677,374	1180	7030
CRYPTOPIA	12,886	2,587,489	785	4323
CCEX	717	78,686	628	2140
ETHERDELTA	1,019	215,937	2057	2058
TRADESATOSHI	2,708	93,713	224	927
HITBTC	11,060	225,684,579	431	904
BITTREX	18,184	39,526,338	514	637
LIVECOIN	2,079	12,662,732	249	595
WAVESDEX	2,140	1,079,317	163	592
IDEX	2,193	775,934	572	572
OKEX	9,864	536,990,226	175	520
KUCOIN	14,864	7,601,881	193	461
BINANCE	67,235	641,247,708	165	418
GATEIO	3,037	29,939,044	175	363
POLONIEX	13,033	38,481,971	183	259

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[6] Volumes represent a 30-day average between the 15th of October and the 15th of November
[7] Calculated from Alexa data
[8] Calculated from Alexa data

Volume Analysis

Figure 10 – Historical 24h Volume – Top 10 Exchanges
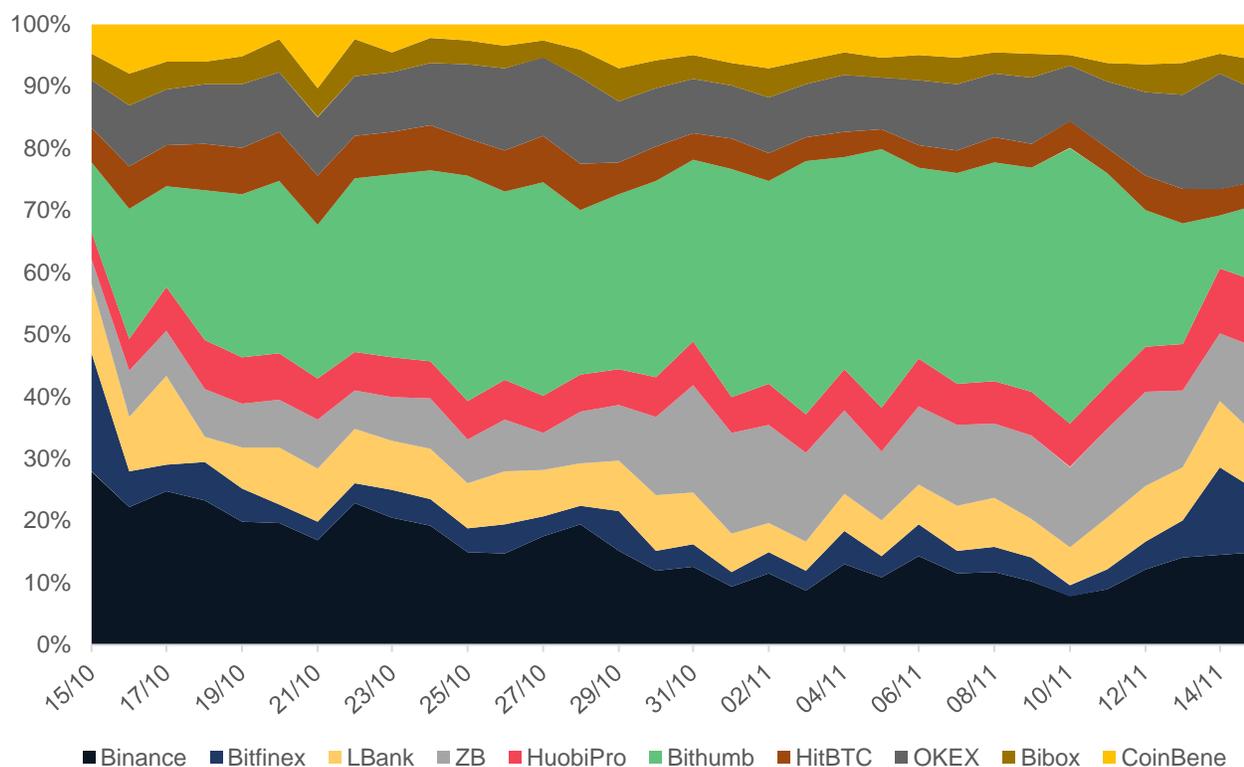
The top exchange by 24h spot trading volume was Bithumb with an average of over 1.24 billion USD.

By average 24h volumes, Bithumb was followed by Binance and ZB with volumes of 641 million USD and 560 million USD respectively.

Bithumb saw a 284% increase in volumes from the previous average of 323 million USD for the Sept/Oct period. This increase in volumes follows after Singapore-based BK Global Consortium bought a controlling share in the exchange in recent months, and later implemented a series of airdrop competitions, raffles, rebates, and other programs designed to incentivize non-Korean users to sign up to the exchange and trade in exchange for rewards.

They have also implemented a potential form of trans-fee mining for certain users, where trading beyond a specific volume is rewarded in the form of "Bithumb Cash" at a later date.

Figure 11 – Month on Month Average 24H Trading Volume - Top Exchanges
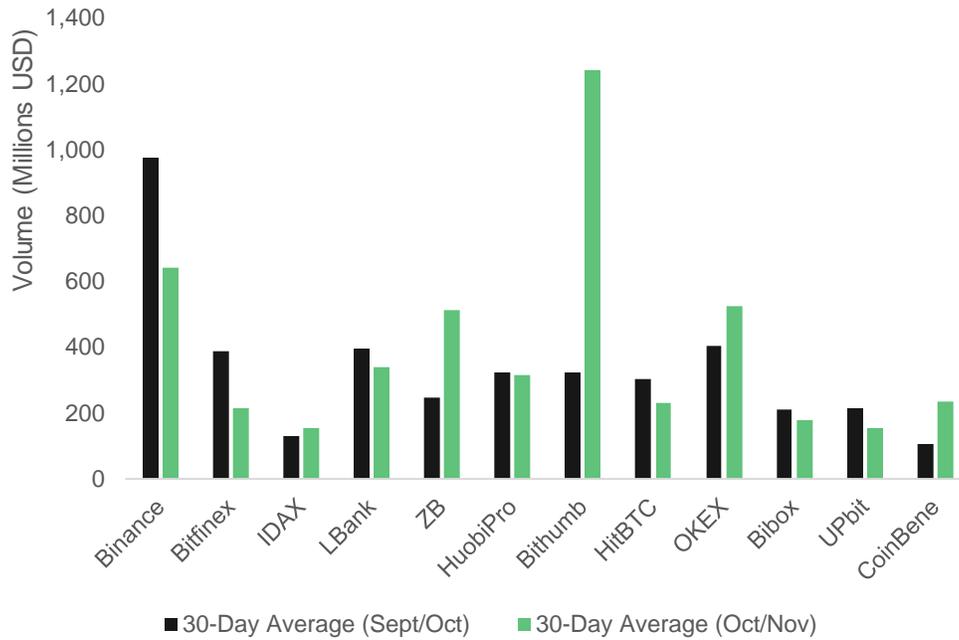
Average Bithumb and OKEx volumes increased 284% and 30% respectively since last month, while those for Binance dropped by 34%.

Figure 12 – Bithumb BTC to KRW Historical Hourly Volumes and Promotional Events
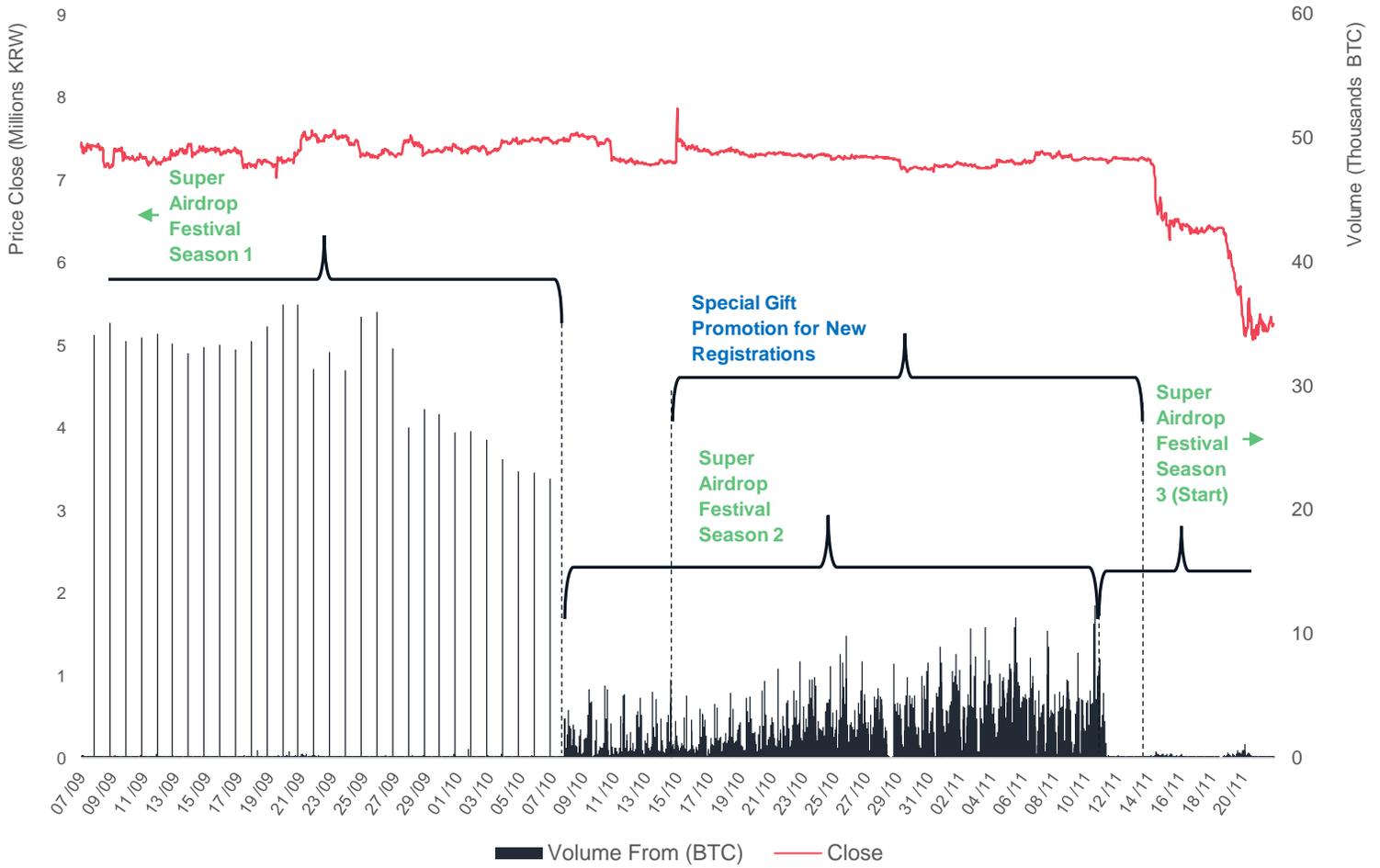
Bithumb's BTC to KRW trading volumes appear to follow from their "Super Airdrop Festival" and "Special Gift" promotional events.

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[9] 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 13 – Top 10 Exchange Legal Jurisdictions – 24h Volume[10] vs Exchange Count
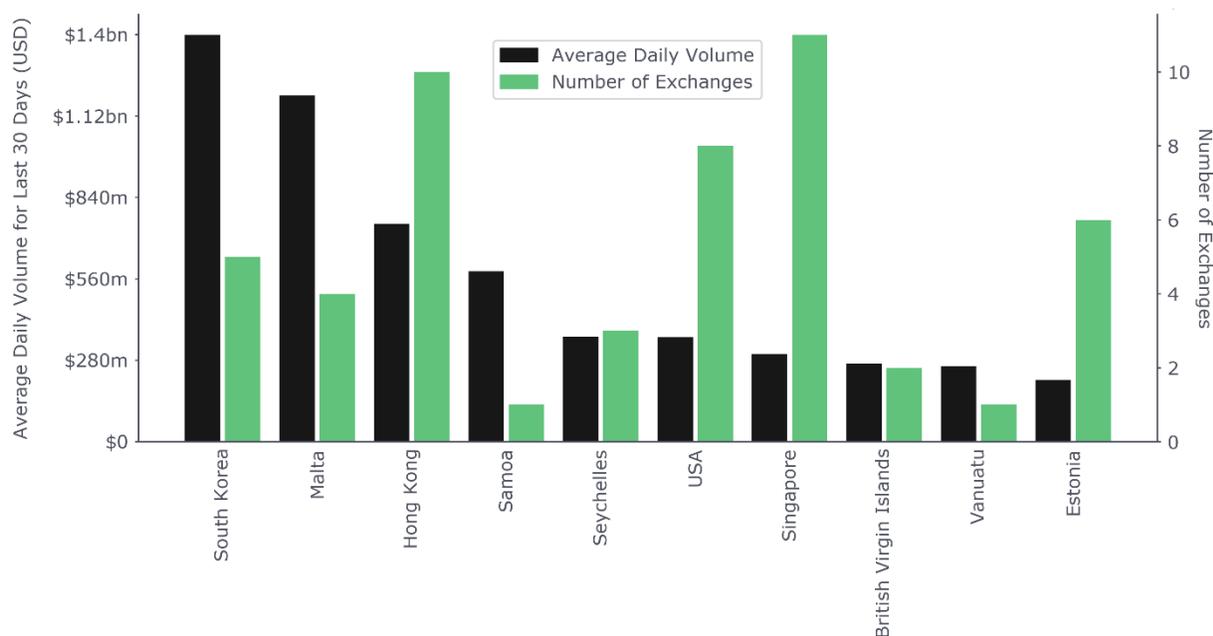
South Korean-registered exchanges produced the highest total daily volumes overtaking Maltese-registered exchanges, while the highest quantity of top exchanges are based in Hong Kong and Singapore.

South Korean-registered exchanges produce the highest total daily volume at just under 1.4 billion USD, followed by those based legally in Malta (~1.2 billion USD) and Hong Kong (~750 million USD). Among the top 10 volume-producing countries, the highest number of exchanges (with significant volume) are based legally in the Hong Kong (10), Singapore (11) and the USA (8).

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[9] 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.
[10] 24h Volume represents and average exchanges volumes between 15th October and 15th November

Figure 14 – Top 10 Exchange Legal Jurisdictions - Constituent Exchanges by Impact on Volume
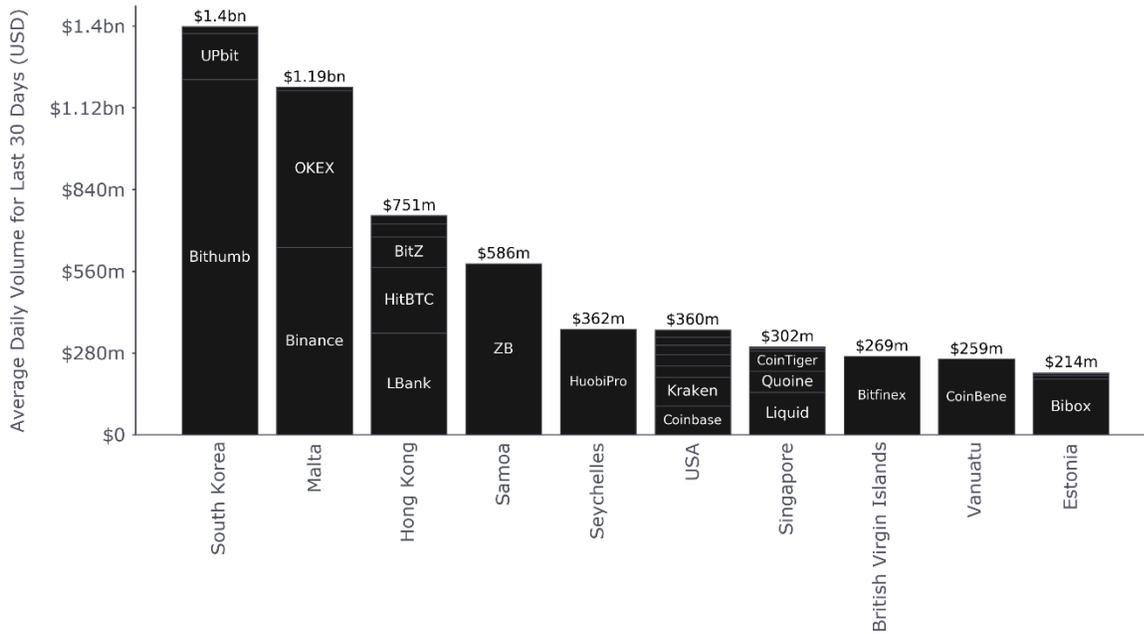
Bithumb and Upbit represent the vast majority of South Korea's volumes, while Binance and OKEx maintain dominance in Malta.

Figure 15 – Top 10 Exchange Legal Jurisdictions – Constituent Exchanges and Count
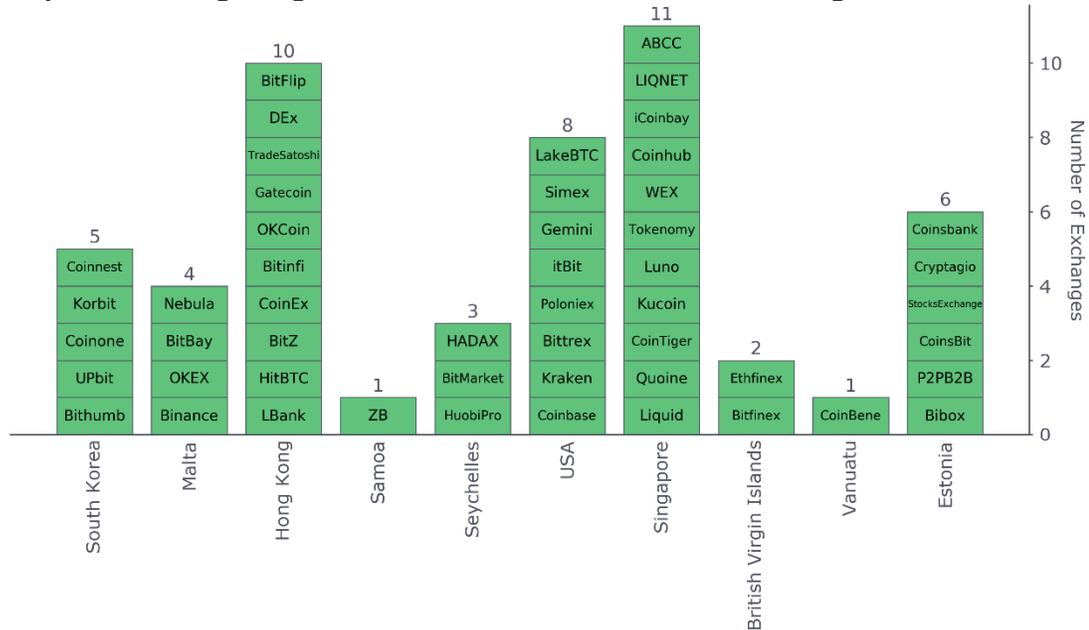
Well-known USA-based exchanges include Coinbase, Kraken, and Gemini, while those in South Korea include Upbit, Bithumb and Coinone.

Hong Kong-registered exchanges include HitBTC, LBank and Bit-Z, while those in Singapore include Liquid, CoinTiger and Luno.

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 16 – Crypto to Crypto vs Fiat to Crypto – Average 24H Volume and Exchange Count
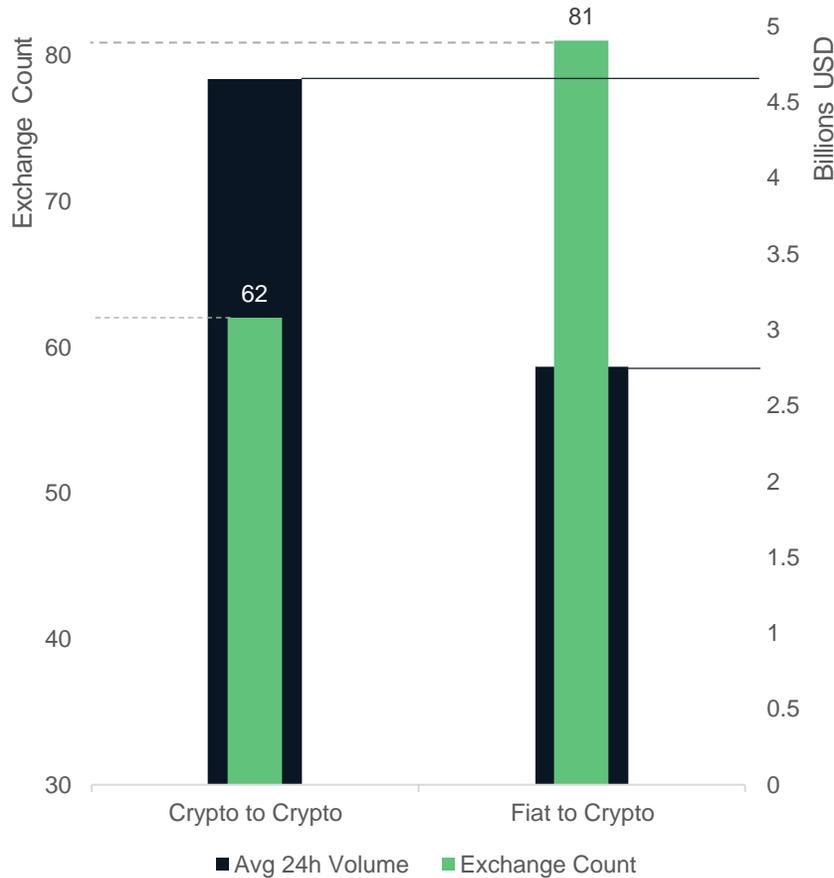
On average, exchanges that offer only crypto-crypto pairs constitute approximately two thirds of the total spot trading market (~4.54 billion USD)

Those that offer fiat-crypto pairs constitute one third of the total exchange market (~2.73 billion USD) on average. In terms of exchange count for our given sample (143 exchanges), more exchanges offer fiat to crypto pairs (57%) vs those that offer only crypto to crypto pairs (43%).

Web Traffic Analysis[11]

This analysis examines the web traffic stats of the top exchanges within CryptoCompare's total pool of exchanges. 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 17 – Average Daily Visitors versus 24H Volume – Alexa Rankings Above 100,000
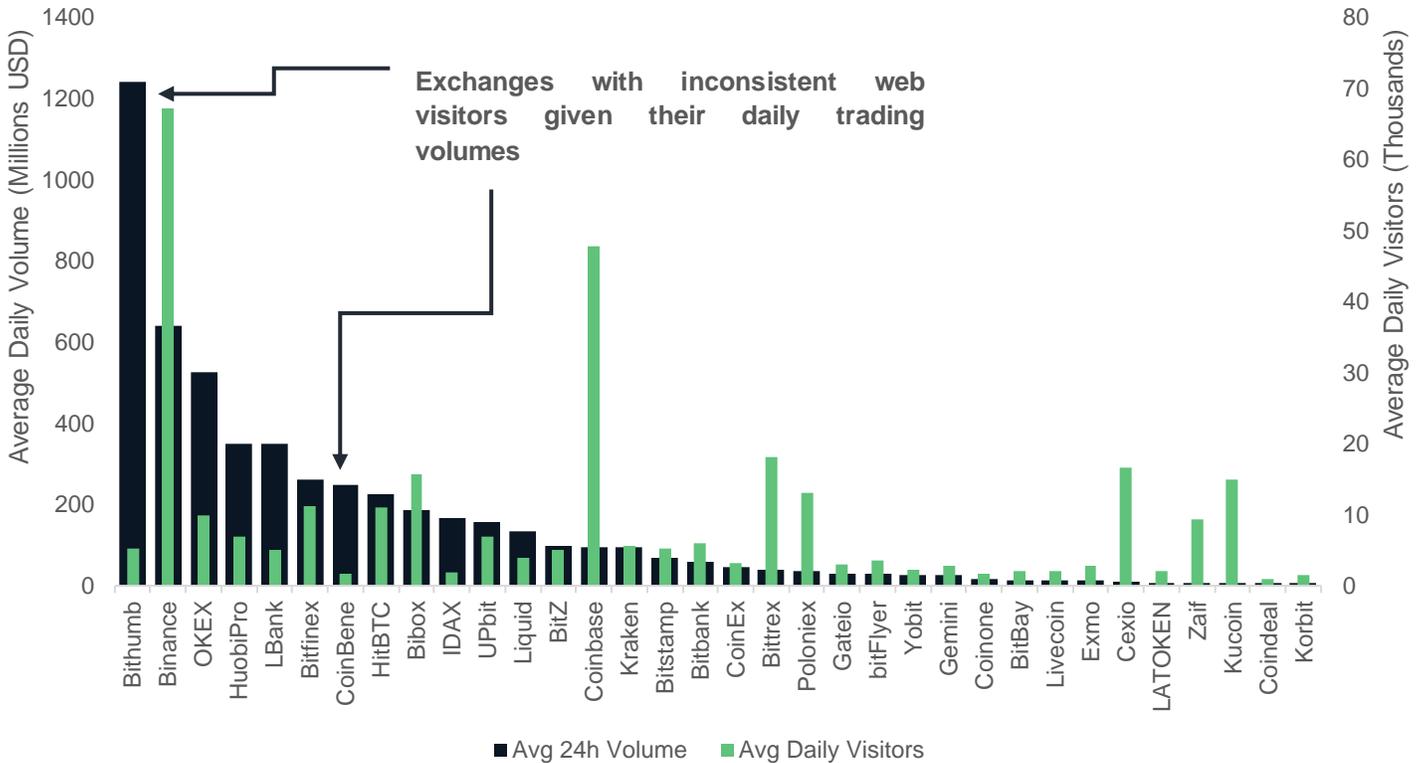
Bithumb and CoinBene appear to have lower average daily visitors compared to similarly sized exchanges (only Alexa ranks under 100,000) by daily volume

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

As with last month's Exchange Review, CoinBene has lower Average Daily Unique Visitor numbers than other exchanges with similar volumes (such as Upbit, Bibix, and BitZ). Bithumb's daily visitor counts are similar to those of HuobiPro, LBank, BitZ, and yet the exchange has traded at least triple their volumes on average.

Binance maintains the highest average daily visitor count in line with its high trading volumes, followed by exchanges Coinbase, Bittrex and Cex.io.

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[11] Note: web statistics are estimated based on Alexa data.

Figure 18 – Average Daily Visitors versus 24H Volume - All Alexa Rankings
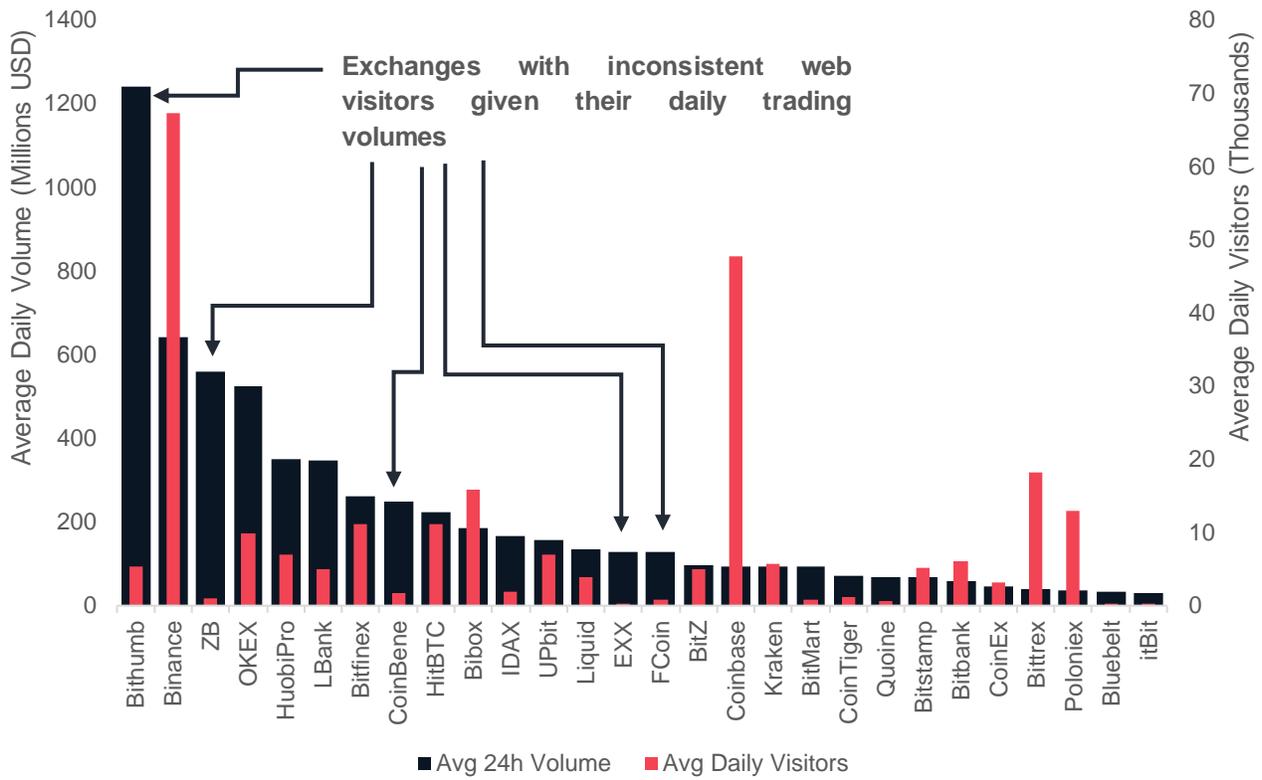
Bithumb, ZB, CoinBene, EXX and FCoin attract significantly lower daily visitors than similarly-sized exchanges (including those ranked below 100,000 on Alexa).

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

These exchanges maintained average daily trading volumes of 260 million, 127 million and 130 million USD respectively. Despite this, their daily unique visitor counts amount to no more than 1600 visitors per day (Coinbene). These exchanges currently implement trans-fee mining structures, which may account for the large volumes, and relatively fewer unique visitors.

ZB and Bithumb also account for significant volumes relative to their unique daily visitor count, with average volumes amounting to 560 million USD and 1.24 billion USD respectively. Despite trading the highest volumes among other exchanges, they only attract 5,264 (Bithumb) and 930 (ZB) daily visitors on average.

Figure 19 - Change in Avg 24h Volume vs Avg Unique Visitors
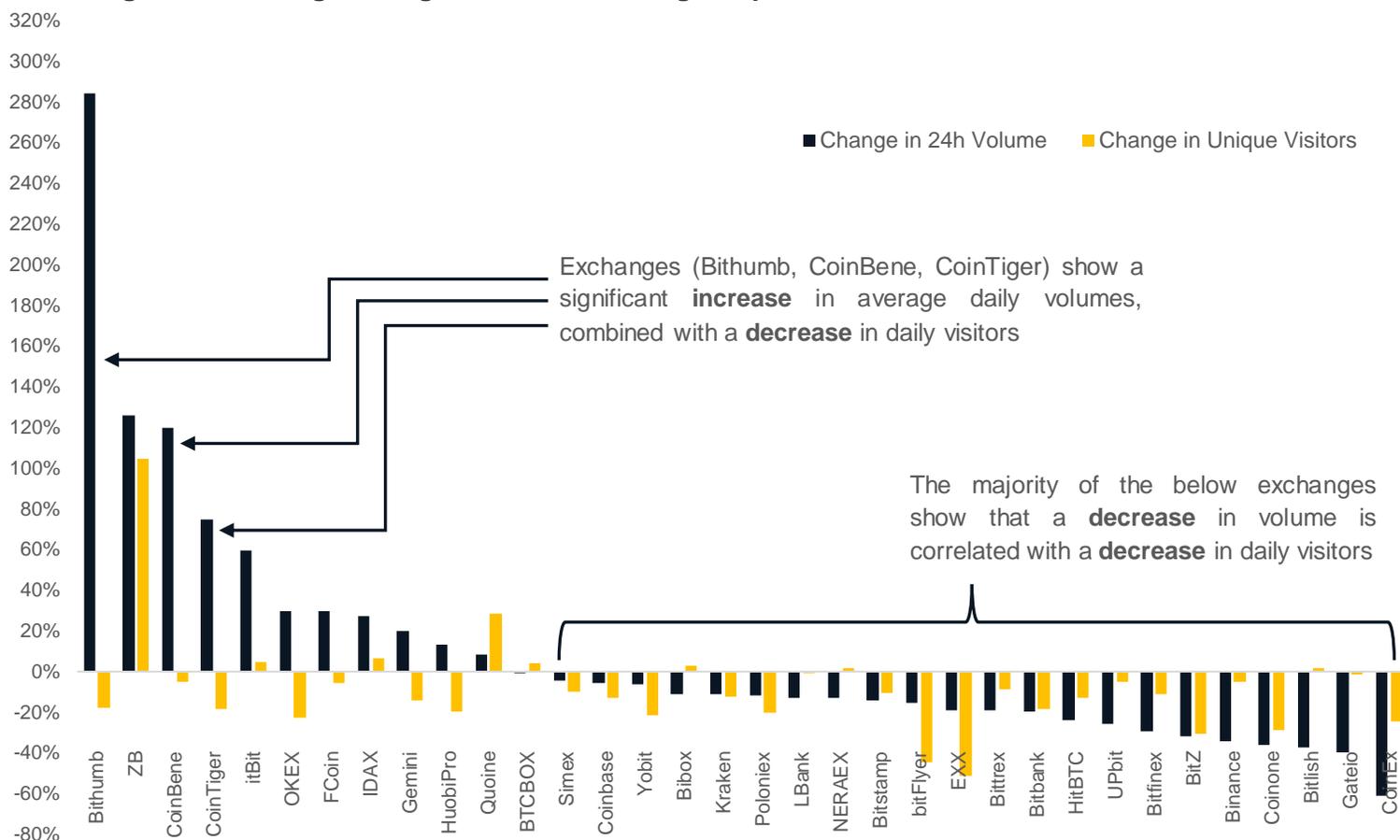
Bithumb, Coinbene and CoinTiger volumes increased significantly since last month, while their daily visitors decreased.

Bithumb's average 24h volume increased by over 284% from 323 million USD (Sept/Oct) to 1.24 billion USD (Oct/Nov) while the exchange's unique daily visitors decreased by almost 20%.

This pattern is similar for exchanges CoinBene and CoinTiger. On the other hand, the majority of exchanges in the above chart appear to produce less volume the fewer daily visitors they attract.

A volume increase on an exchange, combined with a decrease in visitors may point towards incentive programs such as competitions, trans-fee mining, rebate programs or similar.

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 13 days[12]. 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. For a more detailed explanation of the methodology for this analysis, please see Appendix A – A3 Order Book Methodology.

Figure 20 – Average Order Book Depth Down vs Average Daily Exchange Pair Volume[13]
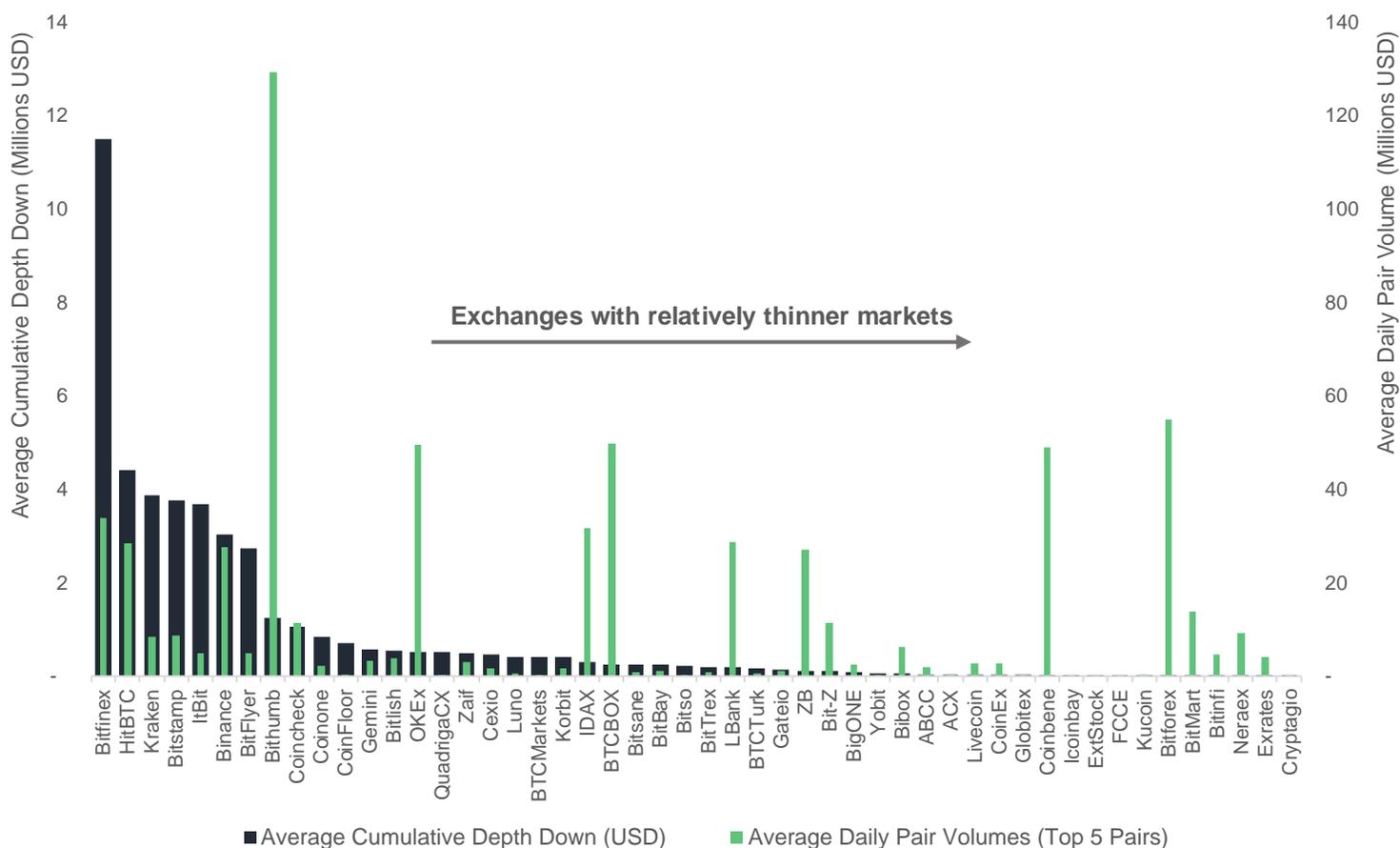
Bitfinex, HitBTC, Kraken are among those that have the most stable markets assessed by cumulative depth down, while Neraex, Exrates and Cryptagio have the thinnest markets.

In the current analysis, Bitfinex, HitBTC and Kraken had average cumulative market depths of 11.5 million USD, 4.4 million USD and 3.9 million USD respectively. I.e. in Bitfinex's case, in order to move the price downwards by 10%, a trader would have to sell 11.5 million USD worth of currency.

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[12] 7st November to 20th November 2018

[13] 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.

If we compare this to the average cumulative depths of exchanges with the thinnest markets, our analysis shows that in order to move market prices downwards by 10% on Neraex, Exrates and Cryptagio a trader would only have to sell 2,525 USD, 891 USD and 603 USD respectively. This is no more than 0.02% of that required on Bitfinex.

Figure 21 - Average Order Book Cumulative Depth Down to Daily Pair Volume Ratio

Legend: ■ Average Daily Pair Volumes (Top 5 Pairs) ■ Average Cumulative Depth Down to Daily Pair Volume
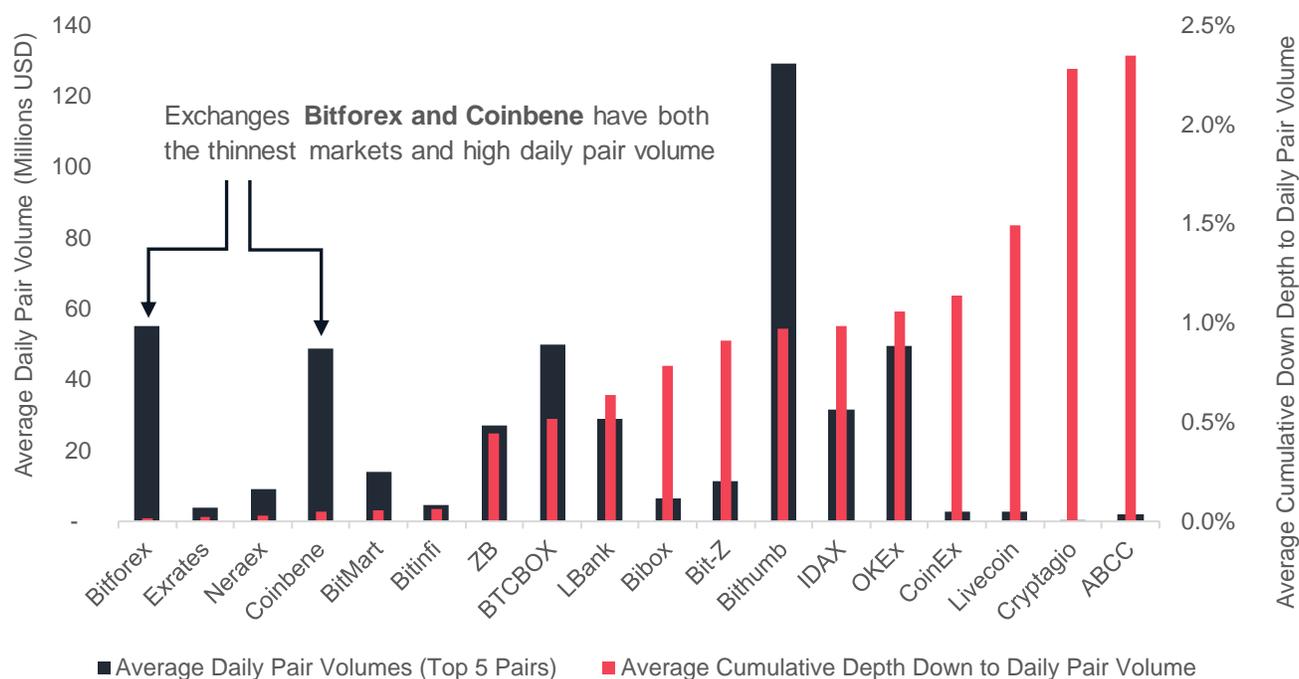
Bitforex and Coinbene have both thin markets combined with relatively high volumes.

In order to shift market prices by 10% on Bitforex or CoinBene, a trader would need to sell 0.02% and 0.05% of daily pair volume on each exchange respectively. Here, despite low average cumulative orderbook depth on both these exchanges (9.2 thousand USD and 24.2 thousand USD respectively), they both trade relatively high average daily pair volumes (55 million USD and 49 million USD respectively).

As a comparison, in order to move the price 10% downwards on Kraken or Bitstamp, a trader would need to sell 46% (3.9 million USD) or 43% (3.8 million USD) of average daily pair volume on each exchange respectively.

Bitforex and Coinbene are both trans-fee mining exchanges and are currently excluded from the CCCAGG exchange pool.

Transaction-Fee Mining Exchanges

Figure 22 – Average 24H Trans-Fee Mining Volumes
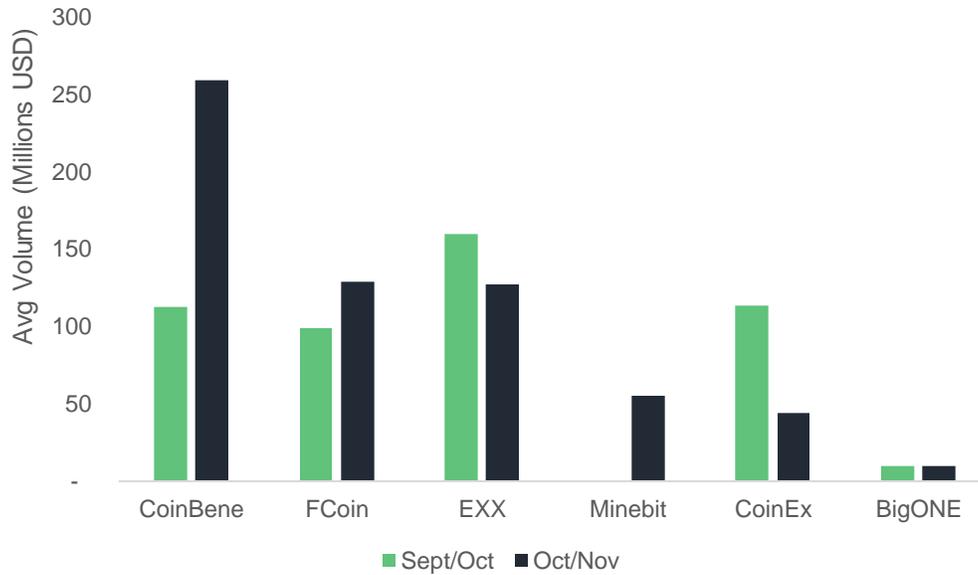
The total average 24h-volume produced by the major trans-fee mining exchanges on CryptoCompare totals more than 619 million USD. This constitutes approximately 8% of total exchange volume over the last 30 days. Volumes for CoinBene and FCoin increased 129% and 31% respectively since last month. Those of EXX, CoinEx and BigONE decreased by 61%, 44%, and 1% respectively.

Decentralized Exchanges

Figure 23 – Average 24H DEX Volumes
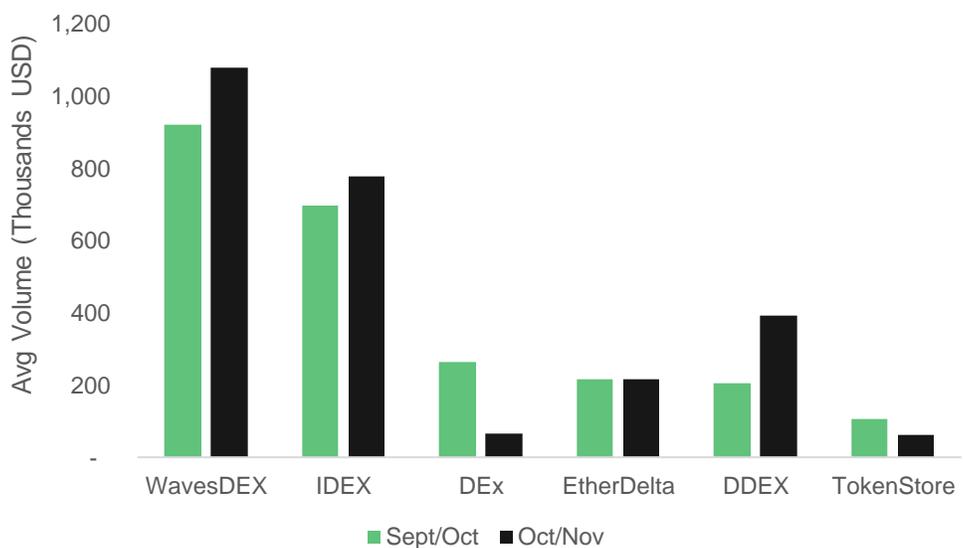
The total average 24h-volume produced by the top 5 decentralized exchanges[14] on CryptoCompare totaled just over than 2.6 million USD. This constitutes just over 0.4% of total exchange volume.

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[14] More DEXs to be incorporated in CryptoCompare in the future

Security Analysis – Top 130 Exchanges by 24H Volume

This security analysis aims to evaluate a pool of the top 130 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 24 – Proportion of Exchanges with both a Public T&C and Privacy Policy Page

■ Yes ■ No
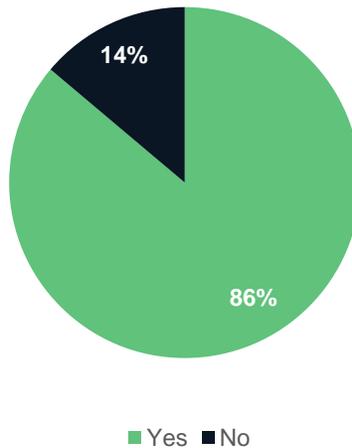
Out of the top 130 exchanges by 24h volume, only 86% have both a public privacy policy and terms & conditions page.

Figure 25 – Proportion of Users' Funds Held by Exchanges in Cold Storage[15]

■ Vast Majority ■ Majority ■ Some ■ Unstated
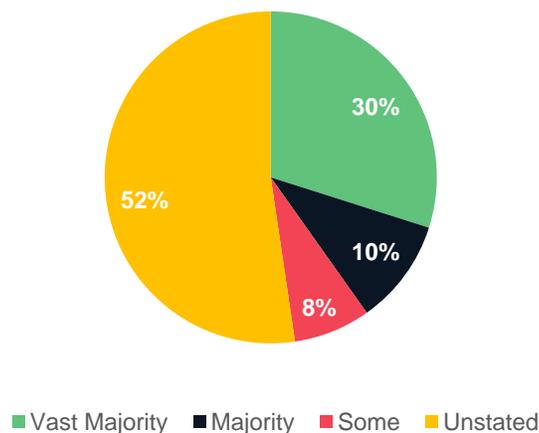
A third of top exchanges store the vast majority[16] of users' funds in cold wallets.

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[15] Based on what has been publicly stated by exchanges
[16] 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 26 - Proportion of Users' Funds in Cold Storage by Exchange
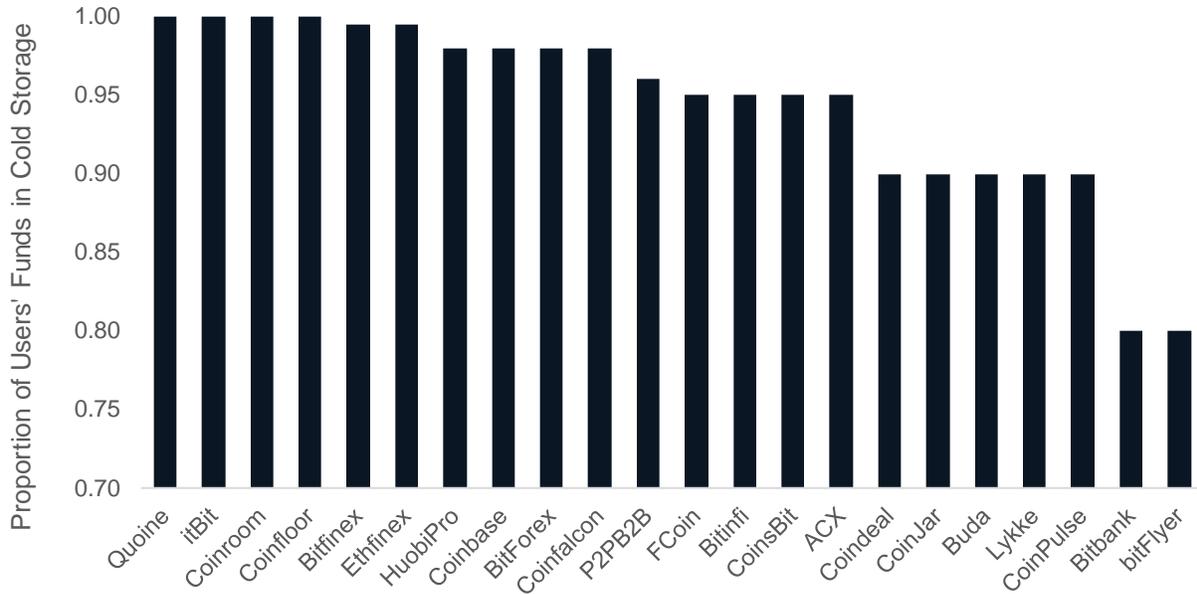
Exchanges itBit, Coinfloor, Bitfinex and Coinbase are among those that store the highest proportion of users' funds offline.

Figure 27 – Proportion of Exchanges Hacked in the Past

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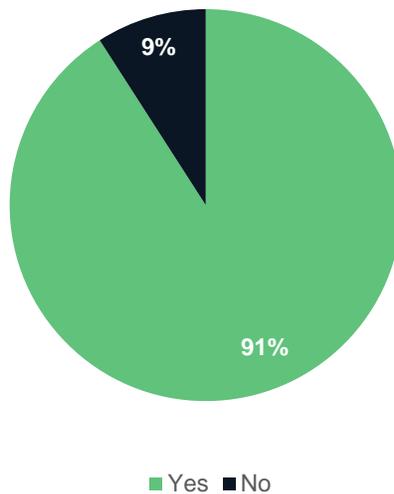
11% of top exchanges have been hacked in the past

Figure 28 – KYC Requirements Among the Top 130 Exchanges

■ Yes ■ No ■ Partial
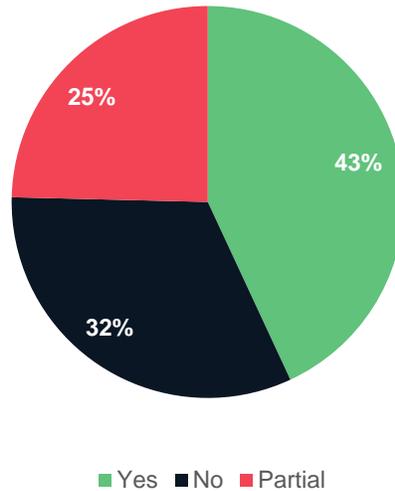
Just under half of top exchanges impose strict KYC requirements, while just under a third do not require KYC.

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 November Exchange News and Developments

Summary of Top Exchange News Stories

EXCHANGE	STORY	ARTICLE LINK	DATE
Bithumb	Bithumb Partners with SeriesOne to Launch US-based Securities Token Exchange	CryptoGlobe	1st Nov
Bitstamp	Bitstamp announced that it had partnered with Cinnober, a leading provider of trading and clearing technology	CryptoGlobe	5th Nov
EtherDelta	SEC Brings Charges Against Founder of Decentralized Exchange EtherDelta for Operating an Unregistered National Securities Exchange	CryptoGlobe	8th Nov
BitMex	BitMEX Launches VC Division, "BitMEX Ventures," Mirroring Coinbase, Huobi and Binance	The Block	9th Nov
HuobiPro	HuobiPro to Open Office in Russia	Business Telegraph	9th Nov
Zeniex	South Korean Crypto Exchange Zeniex Closes Amidst Crackdowns	CoinTelegraph	12th Nov
QuadrigaCX	Canada's Courts to Take Custody of Crypto Exchange QuadrigaCX's Frozen Funds	Bitcoin.com	15th Nov
Binance	Binance opens USDC Deposits & Supports USDC/BTC, USDC/BNB Trading Pairs	CoinTelegraph	16th Nov
OKEx	OKEx Changes Settlement Date of BCH Futures Causing Outrage	Medium	19th Nov
Binance	Financial Data Firm, Refinitiv, to Provide Automated KYC Services for Binance	CryptoGlobe	22nd Nov
Coinone, Upbit	Coinone and Upbit Go Offline after Amazon Web Services (AWS) Network Failure	CryptoGlobe	22nd Nov
Coincheck	Japanese Crypto Exchange Coincheck Resumes Trading in XRP and FCT	CCN	26th Nov
OKEx	OKEx Launches New Lending Portal, Offering Interest on User's Cryptocurrencies	CryptoGlobe	26th Nov
ErisX	Exchange ErisX raises 27.5 million USD from investors including Fidelity Investments and Nasdaq Ventures.	Reuters	4th Dec

Top Exchange Market Developments – November 2018

1st November

[Seoul-based Bithumb Partners with an American Fintech Company to Launch US-based Securities Token Exchange](#). Bithumb, has [reportedly](#) signed an agreement with SeriesOne in order to launch a securities token exchange. According to Yonhap News, the deal was finalized on November 1st and involves leveraging SeriesOne's expertise and experience in crowdfunding to help Bithumb "ramp up efforts to develop into a global financial firm."

[Hong Kong SFC Explores Opt-in 'Sandbox' Amid Struggles to Regulate Cryptoassets](#). In an effort to regulate the seemingly unregulatable, Ashley Alder, CEO of the Hong Kong Securities and Futures Commission (SFC), announced new and "creative" guidelines for cryptoasset fund managers and exchanges operating in the territory, during an [address](#).

[Brazilian Cryptocurrency Exchange Wins Back Bank Accounts in Court Case](#). Bitcoin Max, a Brazilian cryptocurrency exchange, has just regained access to its banking accounts after being shut down earlier this year. Bitcoin Max previously banked with Santander and Banco do Brasil, who re-opened Bitcoin Max's accounts after [prosecution threatened them with fines](#).

[Seoul District Court Says Bank's Treatment of Crypto Exchange Was Not Fair](#). Nonghyup Bank decided to end a banking partnership with Coinis, which meant the exchange was unable to process withdrawals and deposits, according to reporting by [ZDNet](#) Korea. The outlet said the bank decided to terminate the relationship by citing cryptocurrency anti-money laundering guidelines by South Korea's Financial Services Commission (FSC). The District Court said the decision by Nonghyup Bank was not fair and concluded it was illegal to suspend services based on FSC guidelines.

2nd November

[Binance Uganda Gains a Massive 40,000 Sign Ups in Opening Week](#)

[Basic Attention Token (BAT) Surges Over 19% After Getting Listed on Coinbase Pro](#)

4th November

[Brazilian Tax Officials Propose New Crypto Exchange Regulations](#). Brazilian tax authorities have published new crypto exchange proposals earlier this week for traders in a bid to crack down on tax evasion and money laundering. The [published proposals](#) from the Department of Federal Revenue of Brasil (RFB) talk about ensuring that crypto exchanges and traders submit identification and monthly financial performance reports.

[Hodl Hodl Launches First Ever OTC Platform Offering Non-Custodial Services to BTC Traders](#). Peer-to-peer digital asset exchange, Hodl Hodl, which does not hold customers' funds, has [announced](#) the launch of an over-the-counter (OTC) trading desk. The new crypto exchange has been developed and deployed through a partnership with a European Union (EU) licensed brokerage firm, Tenbagger.

5th November

[Crypto Exchange Bitstamp: Our New Matching Engine Will Be Up to 1,250 Times Faster](). On 5th November 2018, Bitstamp announced that it had partnered with Cinnober, a leading provider of trading and clearing technology, in order to replace its in-house developed matching engine with Cinnober's "TRADExpress Trading System". The customized software "will be hosted and operated by Bitstamp."

7th November

[Lykke & Nxchange to Launch New Tokenized Securities Exchange](). Lykke, a Switzerland-based developer of a blockchain-enabled "global marketplace for the free exchange of financial assets", and Nxchange, a "regulated market / multilateral trading facility-licensed" Dutch securities exchange platform, have partnered to launch a Europe-based regulated tokenized securities exchange. According to the [press release](), the partnership will involve Lykke becoming an equity shareholder in Nxchange.

[Group-IB & CryptoIns to Offer Insurance to Crypto Exchange Users](). Group-IB, an international company that specializes in preventing cyber-attacks, and a Swiss insurance broker ASPIS SA that owns [CryptoIns project](), have developed the world's first scoring model for assessing cryptocurrency exchanges cybersecurity, allowing the exchanges' clients to insure their assets. According to CryptoIns analysts, the crypto assets insurance market is expected to reach $7 billion by 2023.

8th November

[SEC Brings Charges Against Founder of Decentralized Exchange EtherDelta for Operating an Unregistered National Securities Exchange](). On Thursday (8 November 2018), the U.S. Securities and Exchange Commission (SEC) [announced]() that it had settled charges against Zachary Coburn, the founder of decentralized exchange EtherDelta. What is significant about this enforcement action is that it is the first one ever based on "findings that such a platform operated as an unregistered national securities exchange."

9th November

[Cobinhood Adds Four Stablecoins to Their Exchange](). Gemini Dollar (GUSD), MakerDao (DAI), Paxos Standard Token (PAX) and TrueUSD (TUSD) were added.

[BitMEX Launches VC Division, "BitMEX Ventures," Mirroring Coinbase, Huobi and Binance](). Led by Kumar Dandapani, a former partner at the quant research firm Nth-Degree Analytics, BitMEX joins Huobi, Coinbase, and Binance in the group of exchanges diving into VC.

[Singapore-based Crypto Exchange, Huobi, to Open Office, Support Center in Russia]()

10th November

[Additional Bribery Case Found for Tether's New Bank, Deltec](). Breaker Magazine recently reported that Deltec has been named in two global bribery cases. A previous Bahamian news report claims that Deltec is under investigation by the U.S. government for reportedly receiving $12M in bribes from a Venezuelan official. Days later, Breaker also found that former Brazilian official Paulo Vieria de Souza, under investigation for the Odebrecht corporate bribery scheme, was possibly moving money through Deltec Bank & Trust.

12th November

South Korean Crypto Exchange Zeniex Closes Amidst Crackdowns. In an official statement from Zeniex on Friday (Nov 9), the South Korean exchange announced that they will be terminating their services soon as they lose their battle with Korean authorities.

13th November

BitMEX CEO Arthur Hayes Says 'We Don't Trade Against Customers'. Responding to a variety of allegations put forth in a blog post published on October 22nd, Arthur Hayes said BitMEX does not give anyone special access, does not engage in trading against customers, and makes no money when trades are liquidated.

LocalBitcoins Volume in Venezuela is Going "To the Moon". LocalBitcoins (a P2P OTC exchange) is seeing record volumes in Venezuela ($7.5 million / week). Argentina, Venezula, Peru, Columbia, Chile and Mexico make up almost 20% of global LocalBitcoin volume - an all-time high. In contrast, these six Latin American nations comprise only 0.126% of global bitcoin spot volume according to data from CryptoCompare.

15th November

Binance Will Open USDC Deposits & Support USDC/BTC, USDC/BNB Trading Pairs Starting Nov 16th

0x-Based OpenRelay Self-Regulates, Builds Token 'Blacklist' After SEC Charges Against EtherDelta. In the wake of this announcement, OpenRelay founder Austin Roberts, whose company develops and operates the 0x-powered OpenRelay order book software suite, has issued a statement broadcasting his and the company's adherence to the SEC's strictures.

Canada's Courts to Take Custody of Crypto Exchange QuadrigaCX's Frozen Funds. The Ontario Superior Court of Justice has reportedly moved towards taking custody of a large amount of funds that belong to digital asset exchange, QuadrigaCX. Court documents show that the Canadian Imperial Bank of Commerce (CIBC) has frozen accounts holding the large sum of assets - which include $69,000 USD and $25.7 million CAD (appr. $19.4 million USD).

BitGo Adds Gemini Dollar (GUSD)

19th November

OKEx Changes Settlement Date of BCH Futures Causing Outrage

20th November

Bakkt Postpones the launch of their Bitcoin USD futures Contract from 12/12/18 to 24/1/18

VanEck Subsidiary MVIS Reveals the Three OTC Exchanges Behind the Bitcoin ETF Index

21st November

[World's First Multi-Asset Crypto Index ETP to Launches in Switzerland](). Amun AG, a Swiss company based in Switzerland's famous Crypto Valley, launched the world's first multi-asset cryptocurrency index exchange-traded product (ETP) on the SIX Swiss Exchange, Switzerland's main stock exchange. Amun AG, the issuer of the "Amen Crypto Basket ETP (ticker: HODL), is a fully-owned subsidiary of London-based Amun Technologies Limited. The index was constructed by MVIS.

22nd November

[Financial Data Firm, Refinitiv, to Provide Automated KYC Services for Binance]()

[Coinone and Upbit Go Offline after Amazon Web Services (AWS) Network Failure]()

26th November

[Japanese Crypto Exchange Coincheck Resumes Trading in XRP and FCT]()

[Binance Rebrands Tether Markets As Stablecoin Market (USD□)](). The blog post reads: "Binance has renamed the USDT Market (USDT) to now be a combined Stablecoin Market (USD□). This is to support more trading pairs with different stablecoins offered as a base pair. We will make a further announcement soon on the exact pairs to be initially moved or added to this market. Please note that USD□ is not a new stablecoin: it is the symbol of Binance's new stablecoin market."

[OKEx Launches New Lending Portal, Offering Interest on User's Cryptocurrencies](). OKEx has launched the private beta release of their new lending product, OK PiggyBank. Lending allows users to lend their cryptocurrencies to the exchange so that margin traders can borrow their assets to trade with. In exchange, the users receive interest income on the cryptocurrencies they deposit into lending.

4th December

[Exchange ErisX raises 27.5 million USD from investors including Fidelity Investments and Nasdaq Ventures.](). According to Reuters, ErisX says it will offer investors the ability to trade the cryptocurrencies bitcoin, litecoin and ether on spot and futures markets starting next year, subject to regulatory approval.

CCCAGG Exchange Analysis

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

New Exchanges to be Evaluated for CCCAGG Inclusion

Table 3 - Basic Overview of New Exchanges

	ESTIMATED DAILY VISITORS	AVG 24H VOLUME (USD)	COINS	PAIRS	PRODUCT TYPE	EXCHANGE PAIR CAPABILITIES
ETHERMIUM	-	API Errors	403	403	Spot	Crypto to Crypto
DIGIFINEX	-	176,621,723	35	55	Spot	Crypto to Crypto
SWITCHEO	181	41,192,236	27	78	Spot	Crypto to Crypto
COINSBIT	81	6,403,714	10	27	Spot	Fiat to Crypto
INCOREX	-	944,836	7	20	Spot	Crypto to Crypto
COINMATE	-	496,460	3	8	Spot	Fiat to Crypto
NDAX	-	19,176	6	6	Spot	Fiat to Crypto
BITSHARES	-	386	4	6	Spot	Crypto to Crypto
EVERBLOOM	-	13	1	1	Spot	Crypto to Crypto
BLACKTURTLE	-	3	2	3	Spot	Crypto to Crypto

Pair by Pair Analysis

The following analysis of new exchanges is an overview of each exchange based on an analysis of hourly OHLCV data for each pair on every exchange. For each pair, metrics such as volatility, liquidity, pricing ranges, the nature of volumes and the degree to which volume is reactive to pricing movements are taken into account. Finally, a volume weighted average of each of these stats is calculated to evaluate an exchange as a whole.

Table 4 - Volume Weighted Analysis of New Exchanges

	ILLIQUID PAIRS*	PRICE SPIKES	ZERO VOLUME PAIRS	VW % DIFFERENCE VOLATILITY VS CCCAGG	VW % HIGH LOW RANGE	VW % CLOSE PRICE DIFFERENCE VS CCCAGG	VW CORRELATION (VOLATILITY TO VOLUME)	VW STD VOLUME	VW STD VOLUME (CCCAGG)	VW VOLATILITY	VW TRADING PROPORTION
ETHERMIUM	341	2	17	API Errors	API Errors	0%	0.28	220%	135%	2.28%	68%
DIGIFINEX	4	0	0	8%	1%	0%	0.20	59%	72%	0.45%	87%
SWITCHEO	72	0	6	8%	1%	0%	0.05	219%	313%	0.87%	86%
COINSBIT	0	0	0	-1%	1%	2%	0.13	25%	135%	0.49%	91%
INCOREX	1	0	0	104%	1%	0%	0.39	41%	156%	0.64%	69%
COINMATE	4	0	0	-27%	0%	-2%	0.51	239%	138%	0.24%	96%
NDAX	6	0	0	-	-	-	-	-	-	-	-
BITSHARES	6	0	2	-	-	-	-	-	-	-	-
EVERBLOOM	1	0	0	-	-	-	-	-	-	-	-
BLACKTURTLE	3	0	0	-	-	-	-	-	-	-	-

*Less than 50% of total hours with trades for entire period of analysis

Table 5 – Results of the Current Review for New Exchanges

	CCCAGG PRICING TREATMENT	NOTES
ETHERMIUM	EXCLUDE	Significant API errors/outliers noted for a number of high-volume pairs during the period of analysis. The exchange has a high number of illiquid/zero-volume pairs, combined with relatively high volatility on average. Further monitoring is necessary before inclusion.
DIGIFINEX	EXCLUDE	The exchange has significant trading volumes with high liquidity for most pairs. It's trading pairs are 8% more volatile than the equivalent CCCAGG pairs. It has relatively low average volatility at 0.45%. The correlation coefficient for volume to volatility is 0.2. I.e. volume fluctuations are somewhat correlated to movements in price. However, more assessment required before adding to CCCAGG pricing.
SWITCHEO	EXCLUDE	Significant trading volumes. This exchange has a high number of illiquid pairs. Liquid pairs are 8% more volatile than equivalent CCCAGG pairs on average. The correlation coefficient for volume to volatility is 0.05 - volume is unreactive to volatility – this may indicate other trading incentives or bots that inflate volumes. Further assessment required.
COINSBIT	EXCLUDE	Significant trading volume, good liquidity and low overall volatility on average. The correlation coefficient for volume to volatility is 0.13 - volume is unreactive to volatility – this may indicate other trading incentives or bots that inflate volumes. This is also further highlighted by its low standard deviation in volumes (25%) relative to the equivalent CCCAGG pairs (135%). Further assessment required.
INCOREX	EXCLUDE	Sufficient volumes, however pairs show double the volatility of equivalent CCCAGG pairs. In addition, we can see that there is a low standard deviation of volume (41%) on average compared to that of equivalent CCCAGG pairs (156%). This may indicate inflated volumes by bots or other incentives. Further assessment required.
COINMATE	INCLUDE	Shows sufficient daily volume, less volatility vs the equivalent CCCAGG pairs, high liquidity, and relatively high correlation of volume to volatility. This suggests that users are reactive to price movements. Will be added to CCCAGG.
NDAX	EXCLUDE	Insufficient volume/pricing data
BITSHARES	EXCLUDE	Insufficient volume/pricing data
EVERBLOOM	EXCLUDE	Insufficient volume/pricing data
BLACKTURTLE	EXCLUDE	Insufficient volume/pricing data

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 October (1)

Coinmate

Exchange Exclusions from Current CCCAGG (1)

Bithumb – this exchange has shown over the last couple months to engage in several incentive programs designed to boost trading volumes. The significant variation in volumes as we have seen between the various incentive schemes poses a risk to exchange pairs that contribute to CCCAGG pricing. Given that CCCAGG is weighted by volume, it is in the best interests of CCCAGG pricing stability to exclude Bithumb volumes from CCCAGG until it is deemed safer to include the exchange at a later date following a review.

Existing Exchanges with No Volume (0)

None

New Exchanges Pending Further Data and Review after Addition in November (2):

Exenium, Catex

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[17] 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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[17] 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.