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CRYPTO ASSET MARKET COVERAGE INITIATION: MARKET COMPOSITION
JULY 27, 2018

In this report, we will provide a further overview of the composition of the cryptoasset space today. This will include not only common applications of the various networks, but also: metrics used to gauge network activity, codebase development activity, price performance, and a legal jurisdictional overview.

This is part three of a five-piece series initiating coverage on the cryptoasset market. Our prior note published on July 11, 2018 focused on the creation of cryptoasset networks, and our initial note covered their technical underpinnings.

Overview

Continuing our coverage initiation, in this note we will explore Network Creation through the following topics:

- Common Application Baskets of Cryptoassets
- Network Activity Statistics
- Codebase Development Metrics
- Price Performance
- Legal Jurisdictional Overview from Emma Channing, Founder, CEO and General Counsel and Tim Pusnik Jausovec, Head of Institutional Business Development

Key Takeaways

- **Economic activity share of total network volume of BTC is nearly double that of XRP and BCH**
- **Speculative share of volume has increased,** which we attribute to trading growth outpacing economic activity
- **Besides BTC and ETH, most networks aren't utilizing anywhere near their max throughput** as a result of low demand
- **BTC and XMR have shown better risk-adjusted gains than the S&P500 and GLD,** even after the recent drawdown
- **Transaction sizes have remained steady,** in the face of lagging market price performance
- **Network values have continued to increase in relation to transaction activity,** despite reduced transaction growth
- **Codebase development has continued strongly,** regardless of network price performance

Name	Price	ATH	% from ATH	Days Since ATH
BTC	$7,873	$20,089	(61%)	221
ETH	$463	$1,432	(68%)	194
XRP	$0.45	$3.84	(88%)	203
BCH	$793	$4,330	(82%)	218
EOS	$8.16	$22.89	(64%)	88
LTC	$83.02	$375	(78%)	219

** Refers to Market Capitalization estimate, calculated using 2050 estimated supply using respective network inflation schedules*

Name	Market Cap ($MM)		30D % G/L	90D % G/L	52-Wk % G/L	Launch Year
	Current	2050 Implied*				
BTC	$135,200	$165,196	29%	(15%)	99%	2009
ETH	$46,772	$68,101	7%	(32%)	135%	2015
XRP	$17,642	$44,872	(3%)	(47%)	170%	2013
BCH	$13,692	$16,646	13%	(43%)	100%	2017
EOS	$7,317	$11,920	6%	(56%)	310%	2018
LTC	$4,781	$6,964	6%	(45%)	76%	2011

** Refers to Market Capitalization estimate, calculated using 2050 estimated supply using respective network inflation schedules.*

We will be releasing the following reports in the coming weeks:
Valuation – Fundamental and technical/trend-based.
Custody & Trading – Custodial offerings and trading venues.

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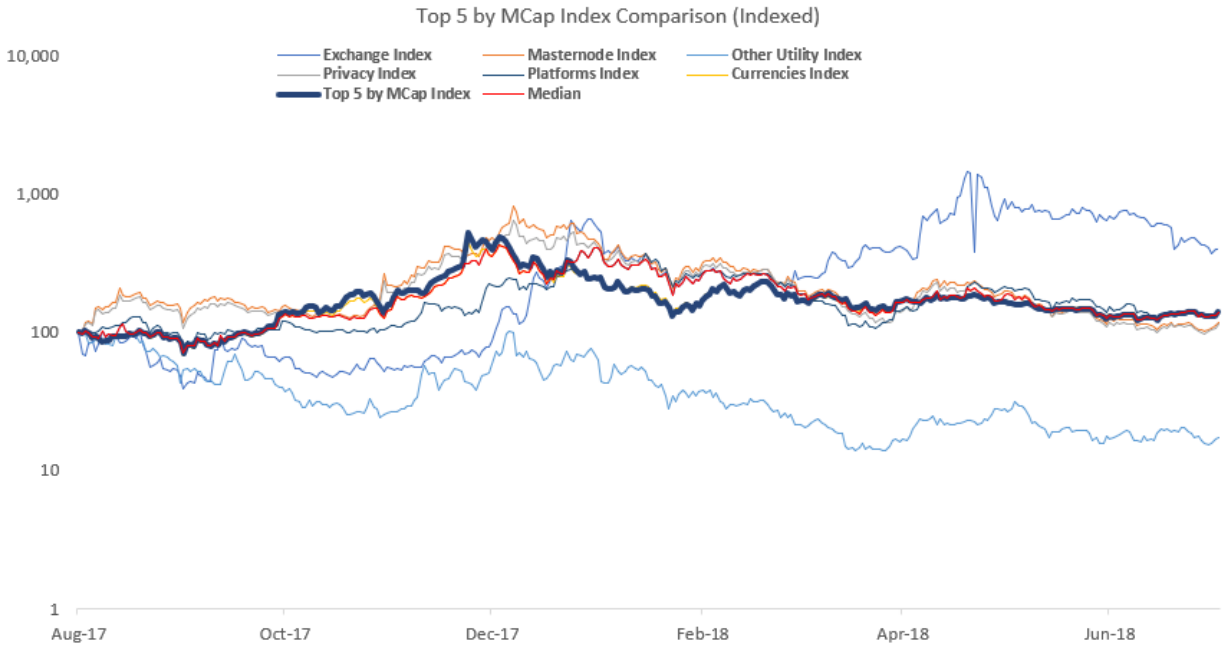
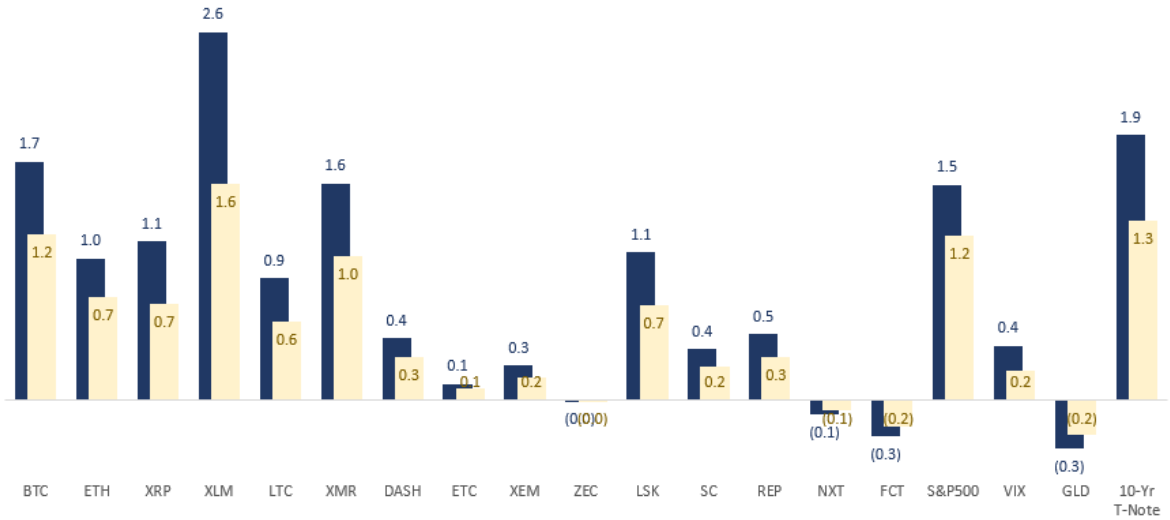
When viewing the cryptoasset space, the largest networks with the largest market capitalization are often perceived to represent overall quality and characteristics of the entire space. Nearly half of the top 20 networks by market cap are legacy platform networks (like ETH) and emerging networks (like EOS), while the remainder is largely currency networks; first movers, like BTC and LTC, and those that artificially increase their supply to give the illusion of a high market cap, like XRP. Attractive performance and relatively attractive liquidity (at least, for an emerging asset class like this that doesn't have regulated exchanges or legal clarity) has drawn attention to the top names.

Key Figure 1: Price Performance Comparison of Top 5 Cryptoassets



Source: Satis Research

Key Figure 2: Sortino, Sharpe Ratio Among Top Cryptos & Traditional Assets

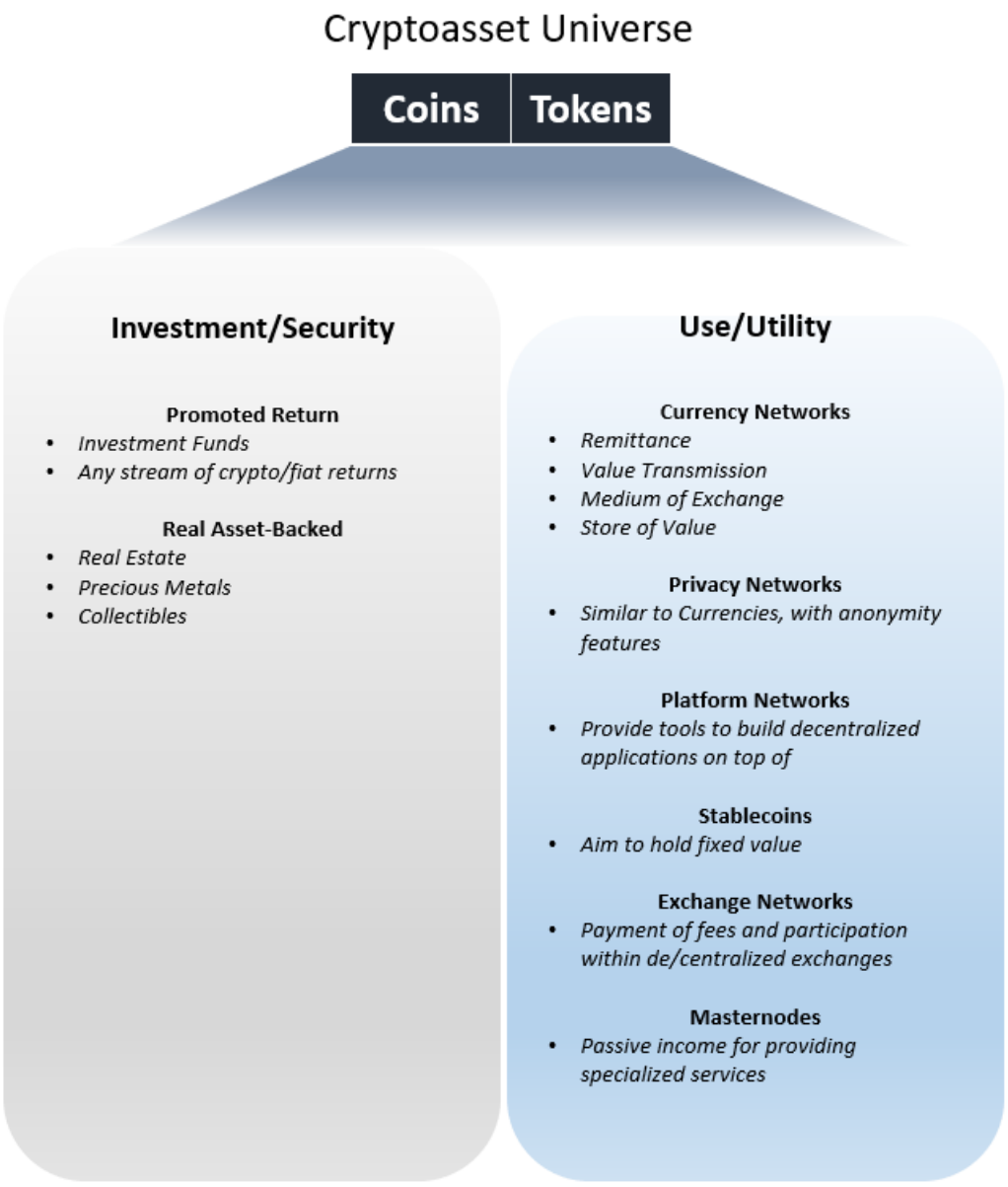


Source: Sifr Data

However, while liquidity may be weighted toward these, there is a broader range of distinct application types within the cryptoasset universe beyond the top 5-10. Of the ~$300B market capitalization of the total cryptocurrency universe, there are several categories that the various networks and smart contracts (tokens) on top of networks can be sorted into. While all of these tokens share a common backbone based upon cryptographic proofs and protocols, they vary vastly in their purposes and abilities.

We have separated the market into a number of buckets, with the most common themes (although not all are mutually exclusive): Currencies, Privacy currencies, Platforms, Stablecoins, Exchange-related, Masternodes, and a bucket for other utility tokens.

Key Figure 3: Themes Among Cryptoassets



Source: Satis Research

Through this report, we will show views of these networks within their baskets through the lenses of several windows:

- **Network operation and statistics**
- **Codebase development activity**
- **Price performance**
- **Legal judgments by jurisdiction**

Below are the terms and metrics we will display and refer to throughout the report, within each respective section of the cryptoasset sector baskets.

Network Operation Statistics

Throughput Utilization – The percentage of a network's theoretical throughput limit being currently used. Calculated as current transactions per second (network transactions divided by 86,400 seconds) divided by the project's stated theoretical throughput in transactions per second.

Speculative Volume – A network's total daily trading volume divided by its market capitalization. Annualized by multiplying days in the trading year, 365, where appropriate.

Economic Volume – A network's total on-chain volume divided by its market capitalization. Annualized by multiplying days in a trading year, 365, where appropriate.

Economic Velocity – A network's estimated transaction volume from economic, on-chain activity multiplied by 365 and divided by its market capitalization. Since many cryptoassets have limited trading history, annualizing them and having them on the same footing made the most sense (rather than using an extended rolling average, in traditional securities with far longer trading history). We used rolling averages where appropriate.

Trading Velocity – A network's estimated exchange trade volume by its market capitalization.

Miner's Revenue – The value of all transaction fees and block rewards to miners as a percentage of either total (speculative + economic) or economic volume of the network.

NVT – The market capitalization of a network divided by the volume of estimated economic, on-chain activity.

Volatility – In the context of our report, measures the variation of stablecoin prices. Calculated as the standard deviation of rolling 30-day daily returns.

Sharpe Ratio – Used to measure risk-adjusted returns of assets. Calculated as the mean of the individual asset returns net of a risk-free rate (our calculations use LIBOR), divided by the standard deviation; excess return divided by risk (or volatility).

Sortino Ratio – Where the Sharpe Ratio penalizes both upside and downside volatility, the Sortino Ratio only penalizes volatility below a specific rate.

Index Weighting – Indices are market capitalization weighted, with no cap on allocations.

Codebase Development Activity

Github Commit - a change that a contributor has made to a file (or set of files).

Github Star - a community user indicated support or interest in a project by bookmarking the project in order to check back in on it at a later time.

Github Watcher - community user who has requested to be notified about Issues and their comments, Pull Requests and their comments, and Comments on any commits.

Adding or removing code - A modification of the programming that makes up the project. A contributor could be adding or removing features, correcting bugs/errors, increasing the efficiency of the code, or making other changes.

Pull Request - a method that allows someone who does not have permission to modify code themselves (for example, a member of the community) to suggest changes to existing code.

Merging a Pull Request - occurs when someone with permission to modify the code accepts a pull request, and the changes made in the pull request are made to the existing code.

Issue - a note that can be added by anyone describing an issue or concern regarding the existing code. Unlike a pull request, an issue typically does not include any suggested changes to code to remedy the issue.

Issue (Closed) - closed by collaborators to indicate that they are aware of the issue and have fixed it, chosen to ignore it, or otherwise don't see the need to keep it open.

Fork - a copy of a code repository. Community users will typically fork a codebase in order to either build their own custom work off of the base of that codebase, or test changes to the codebase before proposing them to a larger group.

Currency Networks

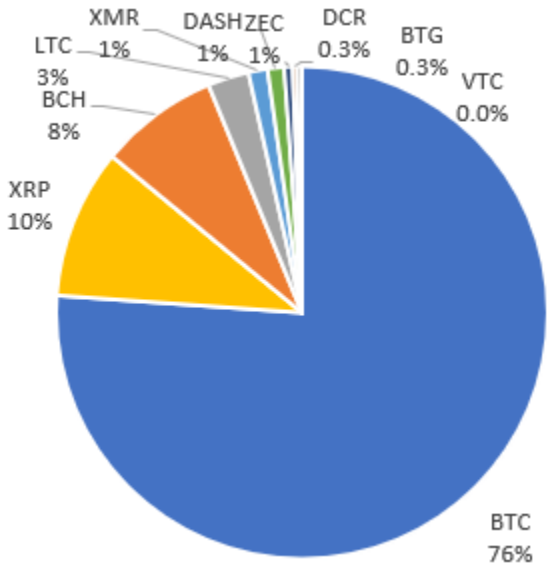
Primarily serving use cases in remittance, transmission of value, and as a medium of exchange within their respective blockchains, currency coins/tokens may lack certain features (such as the ability to create more complicated smart contracts, receive and store metadata, and integrate actions with different networks), though they may also have fewer attack vectors that are inherent to this additional functionality.

Figure 4: Key Currency Sector Statistics

Network	Market Capitalization ($MM)	Annualized Spec. Velocity	Avg. Txn Size ($)	Txns per Sec (Future Est, On-Chain)	Txn Fee Payment	Consensus	*Wealth Concentration (Top 100 Addresses)*	% of Public Nodes
BTC	$140,759	*15x*	$18,953	7	BTC	PoW	19%	9,624
XRP	$18,178	*5x*	$4,780	4,000	XRP	FBA	81%	732
BCH	$14,496	*17x*	$8,869	7	BCH	PoW	25%	2,124
LTC	$5,009	*22x*	$3,896	56	LTC	PoW	45%	261
XMR	$2,331	*5x*	n/a	10,000	XMR	PoW	--	1,691
DASH	$2,006	*25x*	$4,188	10,000	DASH	PoW	15%	4,649
ZEC	$1,010	*44x*	$8,171	4,000	XEM	PoW	--	1,476
BTG	$536	*8x*	$5,285	7	BTG	PoW	30%	171
DCR	$526	*2x*	$5,453	3	DCR	PoW/PoS	39%	259
VTC	$65	*411x*	$188	28	VTC	PoW	52%	421
Median	***$2,169***	***16x***	***$5,285***	***42***			***35%***	***1,104***

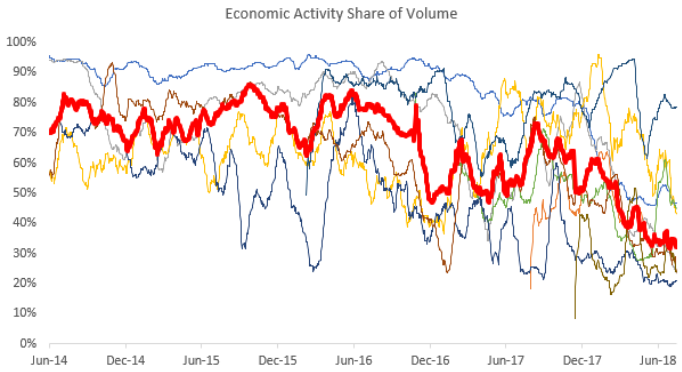
Source: Satis Research

Figure 5: Currency Networks – Weighting



Source: Satis Research

Figure 6: Sector Network Statistics - Economic Activity Share of Volume

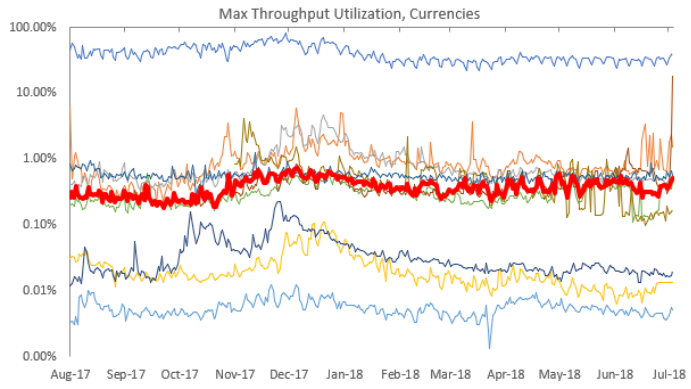


	Start	Finish	Min	Max	Mean	Median
BTC	81%	44%	37%	90%	61%	56%
BCH	49%	20%	16%	88%	45%	43%
LTC	60%	21%	13%	95%	52%	51%
XRP	94%	27%	10%	100%	69%	82%
XMR	--	--	--	--	--	--
ZEC	75%	44%	14%	97%	47%	44%
VTC	21%	14%	4%	96%	28%	26%
DASH	51%	13%	6%	95%	44%	43%
BTG	76%	35%	0%	91%	29%	24%
DCR	84%	81%	25%	99%	82%	85%
Median	75%	27%	13%	95%	47%	44%

Source: Satis Research, Coinmetrics

As a proxy for economic activity, on-chain (recorded on the blockchain) data can be thought of as GDP of a network. When compared to total network volume, a combination of speculative (trading volume, on exchanges) and economic (on-chain activity) volume, DCR (85%) and XRP (82%) have had the highest share of economic activity. Although this may be viewed favorably initially, it is important to remember the restraints and ability for networks to be exposed to economic activity. DCR and XRP have significant differences when it comes to transaction throughput and the ability to allow and generate more economic activity. DCR has far lower throughput (below) than XRP. Additionally, recall our chart on pg. 14 of our last note where we show centralization among networks. XRP's significantly centralized validator network (controlled by just 1 entity, with over 80% of the coin supply held by the top 100 accounts) allows transactions to be settled far quicker than most other peers within its basket. As a result, we believe that the use of XRP for arbitrage trading between exchanges (which would contribute and skew on-chain data) as a result of its centralized network could be reasoning for the difference. We do note that other networks, such as BTC (56%) and LTC (51%) which use more decentralized mining networks backed by much power, have maintained relatively steady economic throughput (despite declining market prices YTD).

Figure 7: Sector Network Statistics - Throughput Utilization (%)

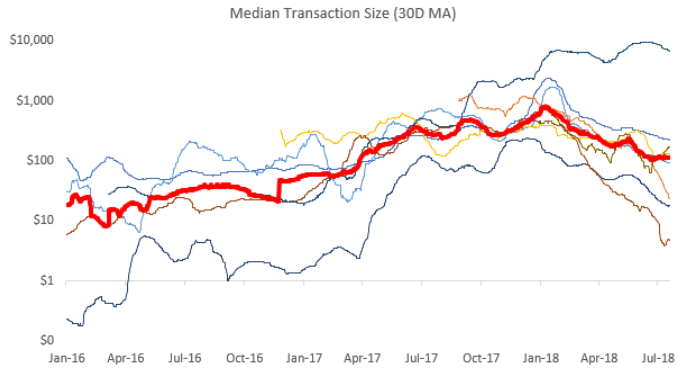


	Start	Finish	Min	Max	Mean	Median
BTC	45%	39%	22%	81%	40%	36%
BCH	6.3%	2.4%	0.2%	6.3%	1.0%	0.8%
LTC	0.4%	0.5%	0.3%	4.7%	0.9%	0.6%
XRP	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%
XMR	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
ZEC	0.2%	0.4%	0.1%	0.7%	0.3%	0.3%
VTC	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%
DASH	0.3%	2.2%	0.2%	2.2%	0.4%	0.3%
BTG	0.9%	0.2%	0.0%	4.2%	0.6%	0.5%
DCR	0.8%	0.7%	0.3%	1.2%	0.6%	0.6%
Median	0.3%	0.5%	0.1%	1.7%	0.5%	0.4%

Source: Satis Research, Coinmetrics

Within the cryptoasset landscape, scaling has been a hot topic (prior report, pg. 7). Above, in Figure 7, we show historic throughput utilization of cryptoasset networks. We define throughput utilization as the actual throughput (measured in transactions per second) of the networks as a percentage of their theoretically maximum capability. Across not only the currency peer group above, but also all of our other peer groups, it has only been BTC (hitting a max of ~80% utilization) and ETH (100% max) that have come anywhere close to hitting their peaks. We look at this from a demand perspective; there is not nearly enough demand yet to even cap out the largest cryptoassets with the most established use cases to date (remittance and value transfer with BTC, and ICO's/DApps with ETH). The problems these networks have faced are actually good, compared to other networks searching for demand in the form of overwhelming transaction requests (which will take time and significant adoption to even face).

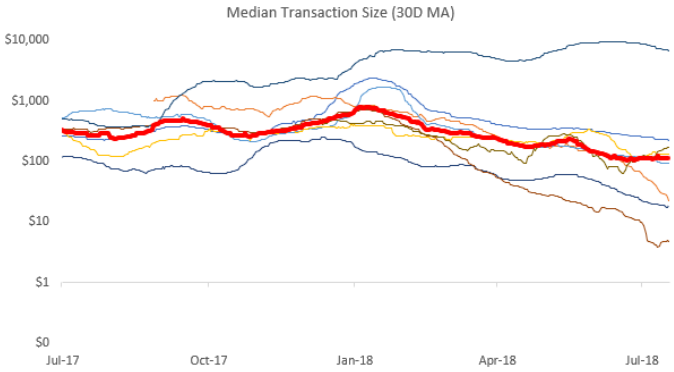
Figure 8: Sector Network Statistics - Median Transaction Size (Smoothed, 18mos)



	Start	Finish	Min	Max	Mean	Median
BTC	$283	$230	$230	$2,441	$618	$367
BCH	$1,032	$26	$26	$1,251	$540	$556
LTC	$593	$93	$93	$1,703	$426	$312
XRP	--	--	--	--	--	--
XMR	--	--	--	--	--	--
ZEC	$154	$136	$115	$402	$265	$263
VTC	$73	$18	$18	$243	$98	$78
DASH	$369	$5	$4	$726	$271	$306
BTG	$459	$175	$62	$480	$241	$193
DCR	$385	$6,933	$380	$9,664	$4,781	$4,949
Median	$377	$115	$77	$989	$349	$309

Source: Satis Research, Coinmetrics

Figure 9: Sector Network Statistics - Median Transaction Size (Smoothed, 12mos)

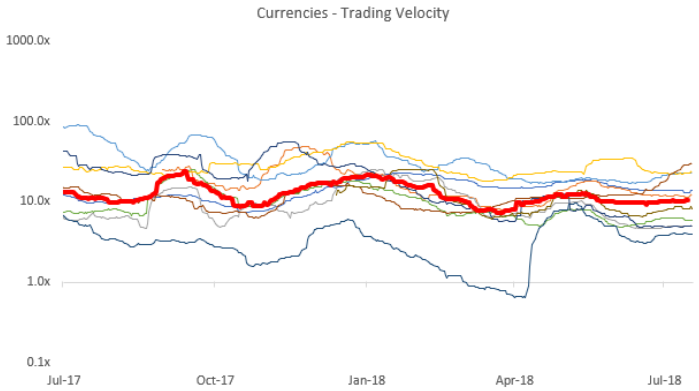


	Start	Finish	Min	Max	Mean	Median
BTC	$283	$230	$230	$2,441	$618	$367
BCH	$1,212	$26	$23	$1,251	$540	$556
LTC	$593	$93	$93	$1,703	$426	$312
XRP	--	--	--	--	--	--
XMR	--	--	--	--	--	--
ZEC	$154	$136	$115	$402	$265	$263
VTC	$73	$18	$18	$243	$98	$78
DASH	$369	$5	$4	$726	$271	$306
BTG	$446	$175	$62	$480	$241	$193
DCR	$385	$6,933	$380	$9,664	$4,781	$4,949
Median	$377	$115	$77	$989	$349	$309

Source: Satis Research, Coinmetrics

Despite waning macro cryptoasset market performance, transaction sizes have remained steady across the major currency peer group. DCR, a network that utilizes a hybrid Proof-of-Stake (owning the coin to vote on the validity of blocks) and Proof-of-Work (using computational power to create the blocks), has held high historic transaction size (median ~$5,000). Beyond that, BCH ($556) and BTC (~$367) hold the highest transaction sizes. BCH does carry the second highest median amount however we would note that it does have far less transactions on its network than BTC. Although the network forked off of BTC last year with the "solution" of creating larger block sizes (to hold more transactions, where BTC was being held back by a capped block size), the network's block sizes continue to be empty and a fraction of the amount of BTC's as a result of low demand for usage.

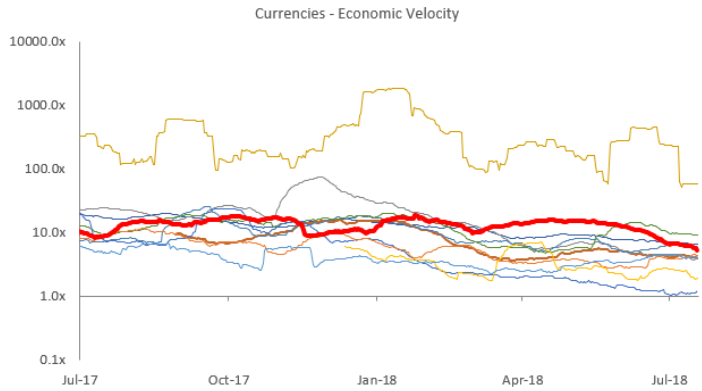
Figure 10: Sector Network Statistics - Trading Velocity



	Start	Finish	Min	Max	Mean	Median
BTC	11x	14x	7x	23x	15x	15x
BCH	26x	12x	8x	50x	17x	15x
LTC	28x	23x	17x	68x	30x	25x
XRP	5x	5x	5x	26x	11x	9x
XMR	7x	6x	5x	26x	11x	9x
ZEC	24x	24x	18x	56x	30x	26x
VTC	22x	5x	5x	56x	19x	14x
DASH	10x	30x	6x	30x	11x	11x
BTG	25x	8x	6x	26x	11x	8x
DCR	3x	4x	1x	10x	3x	3x
Median	16x	10x	6x	28x	13x	12x

Source: Satis Research, Coinmetrics

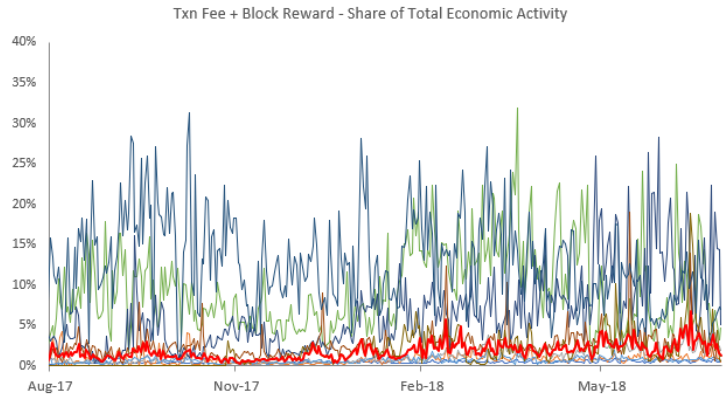
Figure 11: Sector Network Statistics - Economic Activity Velocity



	Start	Finish	Min	Max	Mean	Median
BTC	19x	7x	6x	20x	12x	12x
BCH	10x	4x	4x	16x	8x	7x
LTC	18x	4x	4x	75x	20x	16x
XRP	117x	57x	52x	1844x	414x	241x
XMR	7x	6x	5x	26x	11x	9x
ZEC	13x	9x	5x	20x	13x	14x
VTC	7x	1x	1x	24x	6x	3x
DASH	10x	4x	3x	10x	6x	5x
BTG	4x	2x	2x	7x	3x	3x
DCR	7x	4x	2x	7x	4x	3x
Median	10x	4x	4x	20x	9x	8x

Source: Satis Research, Coinmetrics

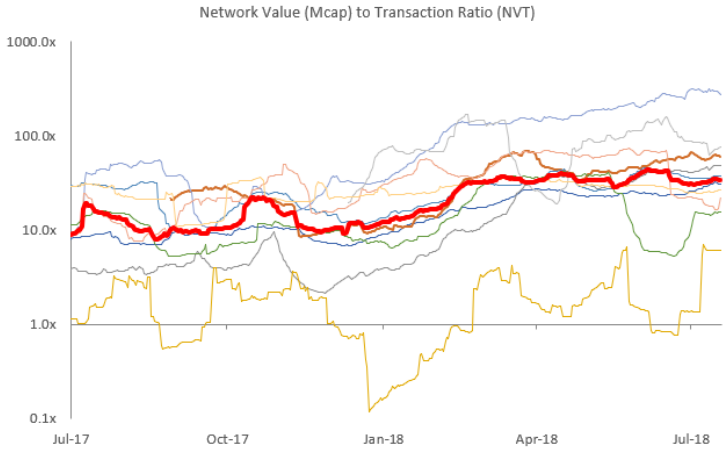
Figure 12: Sector Network Statistics - Miner's Reward (Txn Fees + Block Reward) Share of Total Economic Activity



	Start	Finish	Min	Max	Mean	Median
BTC	0.2%	0.5%	0.2%	1.1%	0.5%	0.4%
BCH	0.4%	1.0%	0.0%	4.2%	0.8%	0.7%
LTC	0.8%	2.3%	0.1%	4.6%	1.2%	0.9%
XRP	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
XMR	1.2%	0.6%	0.1%	2.0%	0.7%	0.7%
ZEC	10.4%	3.3%	1.4%	32.0%	9.4%	8.0%
VTC	6.7%	14.4%	0.3%	28.3%	6.4%	5.2%
DASH	1.2%	1.6%	0.3%	19.0%	2.5%	2.2%
BTG	4.6%	0.8%	0.1%	18.9%	2.4%	1.9%
DCR	13.7%	7.3%	0.7%	31.3%	12.7%	12.4%
Median	1.2%	1.3%	0.2%	11.7%	1.8%	1.4%

Source: Satis Research, Coinmetrics

Figure 13: NVT Ratio

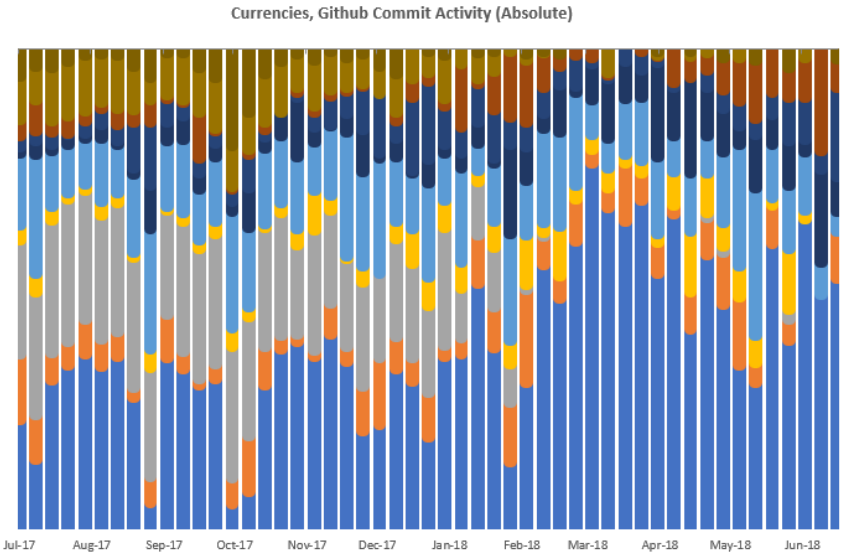


	Start	Finish	Min	Max	Mean	Median
BTC	7x	31x	7x	32x	16x	13x
BCH	21x	61x	8x	69x	32x	28x
LTC	3x	48x	2x	49x	16x	8x
XRP	3x	6x	0x	7x	2x	1x
XMR	32x	37x	9x	46x	25x	25x
ZEC	11x	15x	5x	42x	16x	10x
VTC	51x	289x	10x	315x	108x	78x
DASH	9x	17x	9x	73x	39x	36x
BTG	129x	73x	19x	166x	83x	83x
DCR	21x	26x	11x	36x	26x	27x
Median	16x	34x	8x	47x	25x	26x

Source: Satis Research, Coinmetrics

As shown above, valuation per unit of economic activity has slightly grown YTD, despite the lagging price performance of the market. We attribute this slight increase to the decline in transaction growth for the peer group outpacing the decline in prices in the past six months.

Figure 14: Development Activity

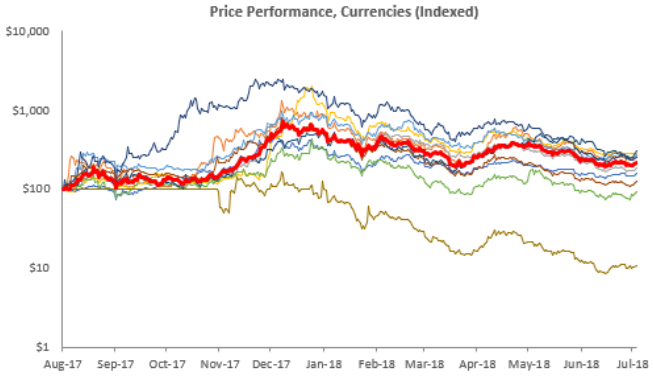


	Start	Finish	Min	Max	Mean	Median
BTC	27	8	8	66	33	31
BCH	10	2	--	16	5	5
LTC	27	--	--	56	16	15
XRP	5	--	--	14	5	4
XMR	28	1	1	55	23	22
ZEC	3	2	1	39	10	8
DASH	6	7	--	43	11	8
DCR	8	3	--	40	9	6
VTC	27	--	--	55	16	15
BTG	19	1	--	49	7	2
Median	15	2	--	46	11	8

Source: Satis Research, Github

Although not necessarily a determinant of quality of code contributions, general activity within the code repository is seen as positive upkeep. Among the peer group, codebase contributions have continued to increase, regardless of suppressed prices across the board.

Figure 15: Price Performance (Indexed)

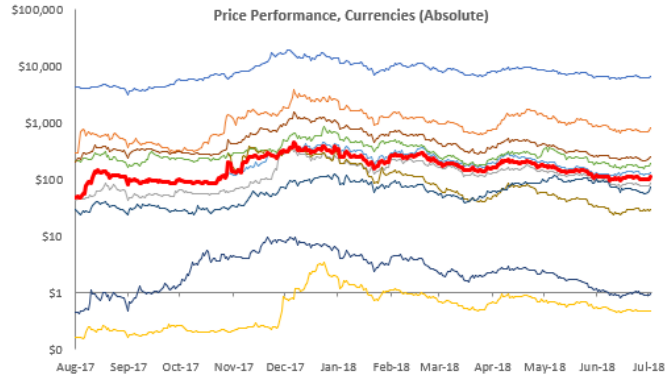


	Start	Finish	Min	Max	Mean	Median
BTC	$97	$156	$73	$450	$195	$181
BCH	$100	$269	$100	$1,311	$376	$336
LTC	$95	$184	$91	$784	$282	$259
XRP	$95	$279	$91	$1,979	$393	$327
XMR	$98	$271	$94	$941	$397	$347
ZEC	$101	$91	$73	$421	$147	$125
VTC	$113	$247	$111	$2,441	$787	$627
DASH	$102	$123	$102	$779	$247	$194
BTG	$100	$11	$8	$162	$61	$56
DCR	$129	$307	$101	$525	$274	$270
Median	$100	$215	$93	$781	$278	$264

Source: Satis Research, Coinmarketcap

Currency performance has improved in the past year, despite the correction YTD. Performance was driven by the weight of BTC (+56%) and BCH (+169%) and offset minimally by ZEC (-~10%) and BTG (-90%).

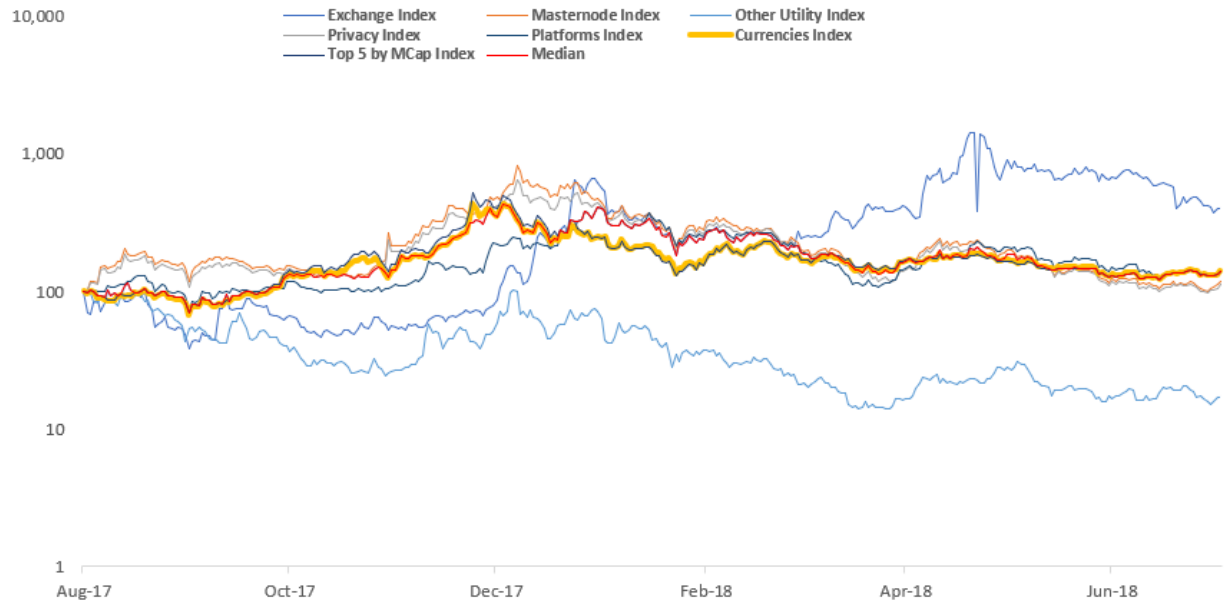
Figure 16: Price Performance (Absolute)



	Start	Finish	Min	Max	Mean	Median
BTC	$4,200	$6,740	$3,166	$19,476	$8,430	$7,845
BCH	$298	$803	$298	$3,909	$1,122	$1,003
LTC	$43	$84	$42	$359	$129	$119
XRP	$0.16	$0.47	$0.15	$3.36	$0.67	$0.56
XMR	$49	$135	$47	$470	$198	$173
ZEC	$212	$191	$154	$884	$309	$263
VTC	$0.44	$0.96	$0.43	$9.46	$3.05	$2.43
DASH	$204	$247	$204	$1,556	$493	$388
BTG	$277	$30	$23	$450	$129	$79
DCR	$30	$72	$23	$122	$64	$63
Median	$126	$110	$44	$460	$164	$146

Source: Satis Research, Coinmarketcap

Figure 17: Price Performance Comparison



Source: Satis Research, Coinmarketcap

Platform Networks

Holding more complex functionality, often with higher levels of scripting and data integration, platform networks aim to allow creation of smart contracts on top of the network. Platform networks allow developers to rely on the base blockchain as their secure, ground level base. Refer to our prior report on Network Creation and Platforms for more detail.

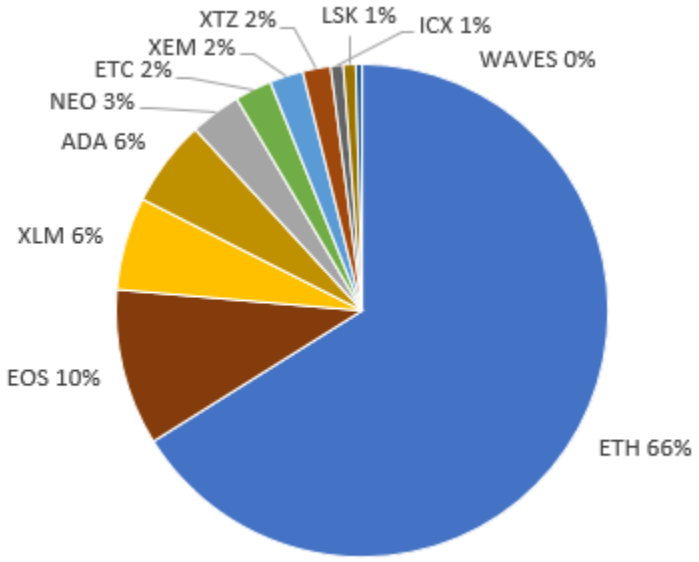
Figure 18: Key Platform Sector Statistics

Network	Market Capitalization ($MM)	Annualized Spec. Velocity	Transactions per Second		# of Tokens Built-On	Year Since Mainnet	Platform Market Share	Consensus	Programing Language	Transaction Fee Payment
			Current	Future (est.)						
ETH	$140,759	15x	15	1,000,000	716	3	86.5%	PoW	Solidity	ETH
WAVES	$315	15x	100	1,000	24	2	2.9%	PoS	Scala	WAVES
NEO	$2,461	30x	400	10,000	19	2	2.3%	dBFT	C#	GAS
XLM	$6,279	11x	1,000	10,000	5	4	0.6%	SCP	C++	XLM
XEM	$1,717	32x	2	1,000	4	3	0.5%	PoI	JAVA	XEM
ETC	$2,006	25x	1	1,000	2	2	0.2%	PoW	Solidity	ETC
LSK	$552	5x	3	100,000	0	2	0.0%	DPoS	JavaScript	LSK
ADA	$5,009	22x	10	250	0	1	0.0%	PoS	Haskell	ADA
EOS	$14,496	17x	3,000	50,000	0	0	0.0%	dPoS	C++	N/A
XTZ	$1,278	1x	40	N/A	0	N/A	0.0%	PoS	Michelson	XTZ
ICX	$595	27x	1,000	9,000	0	0.5	0.0%	dPoS	SCORE	ICX
Median	***$2,006***	***17x***	***29***	***9,000***	***4***	***2***	***0.5%***			

Note: Selected networks listed by market share of all tokens currently trading

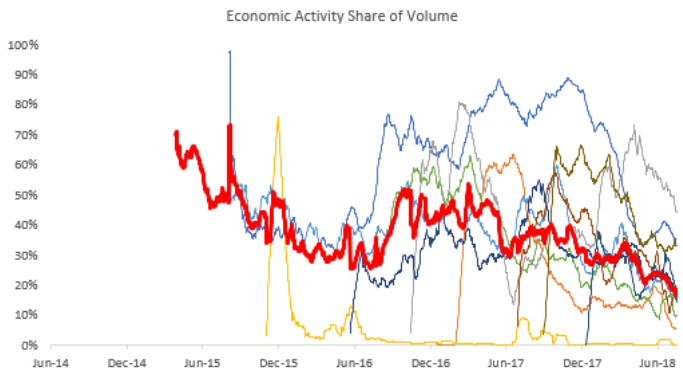
Source: Satis Research

Figure 19: Platform Networks - Weighting



Source: Satis Research

Figure 20: Sector Network Statistics - Economic Activity Share of Volume

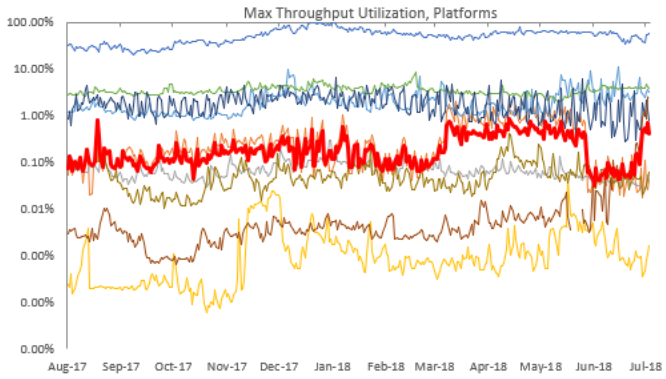


	Start	Finish	Min	Max	Mean	Median
ETH	83%	29%	22%	96%	61%	64%
WAVES	34%	7%	3%	51%	15%	13%
NEO	44%	46%	16%	99%	48%	45%
XLM	0.4%	0.05%	0.01%	54%	1%	0.2%
XEM	27%	20%	8%	97%	31%	26%
ETC	23%	10%	5%	53%	21%	19%
LSK	77%	15%	7%	89%	29%	26%
EOS	39%	10%	0%	91%	34%	33%
ADA	76%	67%	0%	100%	47%	48%
ICX	0%	5%	0%	100%	21%	19%
Median	37%	12%	4%	93%	30%	26%

Source: Satis Research, Coinmetrics

ETH holds the highest economic activity share of volume, as a result of the many deployed applications and ICO's that post transactions to the network's chain and rely on it daily. Despite that, other networks with fragmented second-to-ETH share show higher levels of economic throughput as well; ADA (48%), NEO (45%) and XEM (26%) in particular.

Figure 21: Sector Network Statistics - Throughput Utilization (%)

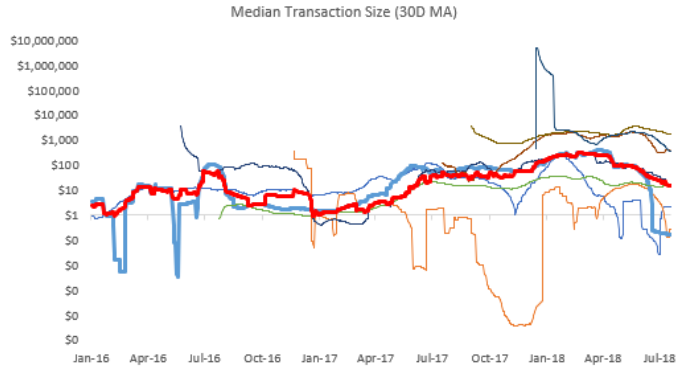


	Start	Finish	Min	Max	Mean	Median
ETH	32%	54%	20%	100%	52%	53%
WAVES	0.1%	0.0%	0.0%	1.9%	0.4%	0.2%
NEO	0.1%	0.1%	0.0%	0.3%	0.1%	0.1%
XLM	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
XEM	1.2%	3.5%	0.8%	10.7%	2.1%	1.6%
ETC	2.8%	4.2%	1.9%	8.4%	3.5%	3.3%
LSK	0.9%	1.3%	0.3%	6.5%	2.0%	1.8%
EOS	0.0%	2.4%	0.0%	2.4%	0.0%	0.0%
ADA	0.0%	0.0%	0.0%	0.8%	0.1%	0.0%
ICX	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Median	0.1%	0.7%	0.0%	2.2%	0.2%	0.1%

Source: Satis Research, Coinmetrics

As stated above previously, ETH remains the only network to have had such a compelling use case (ICO's) that it's the only to have hit its max. Although the ETH network reflected prospective projects from launching on its network as a result of the throughput congestion and slower than expected updates, the challenge other platforms face is not one of increasing throughput but establishing a presence in the Dapp space to draw more demand to them. In the past year, some of the newest ETH-challenging platforms have launched with novel consensus mechanisms and network economics. In the next year while the ETH team is underway developing scaling solutions and other networks attempting to gain adoption through ETH's network congestion, we see further potential impairments to the peer group, notably hesitation on regulatory clarity, leading to a slowing in the ICO market and less demand for ETH (as well as other platforms).

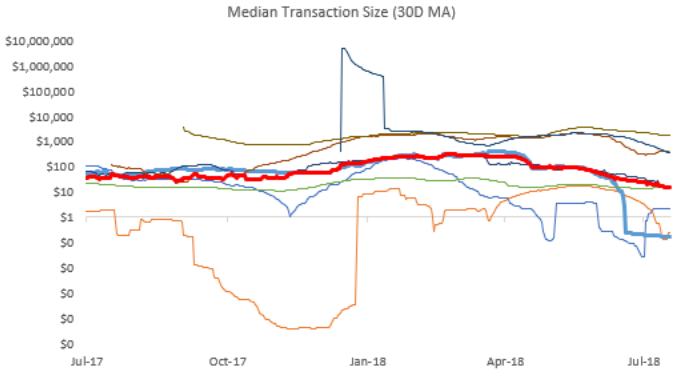
Figure 22: Sector Network Statistics - Median Transaction Size (Smoothed, 18mos)



	Start	Finish	Min	Max	Mean	Median
ETH	$32	$2	$0	$217	$36	$11
WAVES	$1	$0	$0	$18	$5	$2
NEO	--	--	--	--	--	--
XLM	--	--	--	--	--	--
XEM	$73	$3	$3	$401	$133	$81
ETC	$15	$14	$11	$36	$21	$17
LSK	$53	$18	$17	$365	$125	$111
EOS	$54	$406	$22	$2,190	$977	$1,173
ADA	$909	$1,765	$713	$3,870	$1,849	$1,866
ICX	$404	$359	$359	$5,074,999	$184,732	$1,736
Median	$54	$16	$14	$383	$129	$96

Source: Satis Research, Coinmetrics

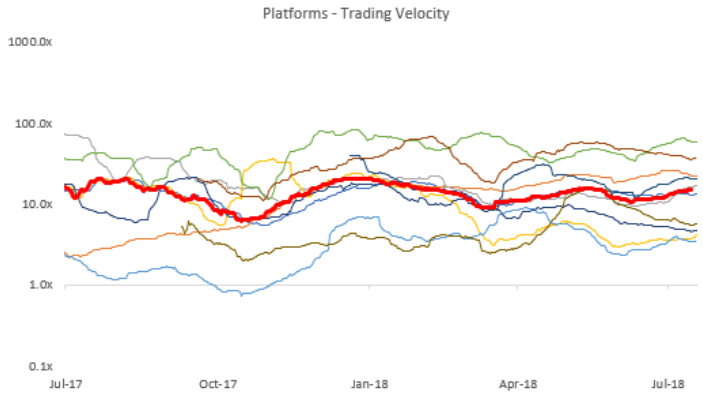
Figure 23: Sector Network Statistics - Median Transaction Size (Smoothed, 12mos)



	Start	Finish	Min	Max	Mean	Median
ETH	$32	$2	$0	$217	$36	$11
WAVES	$1	$0	$0	$18	$5	$2
NEO	--	--	--	--	--	--
XLM	--	--	--	--	--	--
XEM	$73	$3	$3	$401	$133	$81
ETC	$15	$14	$11	$36	$21	$17
LSK	$53	$18	$17	$365	$125	$111
EOS	$54	$406	$22	$2,190	$977	$1,173
ADA	$909	$1,765	$713	$3,870	$1,849	$1,866
ICX	$404	$359	$359	$5,074,999	$184,732	$1,736
Median	$54	$16	$14	$383	$129	$96

Source: Satis Research, Coinmetrics

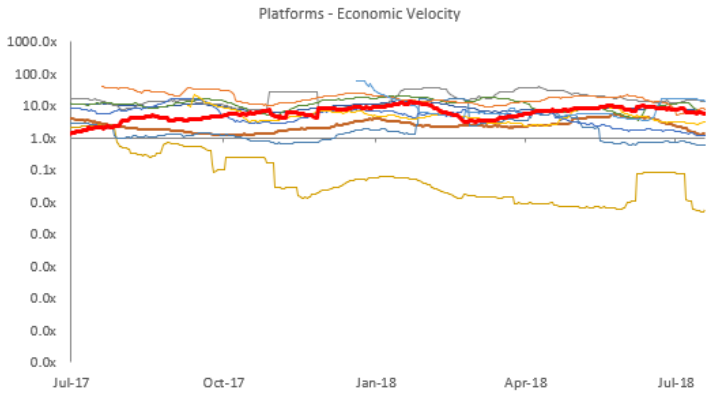
Figure 24: Sector Network Statistics - Trading Velocity



	Start	Finish	Min	Max	Mean	Median
ETH	18x	13x	5x	19x	13x	13x
WAVES	4x	22x	4x	26x	15x	16x
NEO	37x	17x	9x	38x	16x	15x
XLM	16x	4x	3x	36x	12x	10x
XEM	1x	3x	1x	9x	4x	4x
ETC	20x	59x	12x	83x	48x	47x
LSK	6x	5x	5x	21x	10x	9x
EOS	20x	37x	11x	67x	36x	36x
ADA	3x	6x	2x	16x	5x	4x
ICX	40x	20x	8x	40x	19x	18x
Median	17x	15x	5x	31x	14x	14x

Source: Satis Research, Coinmetrics

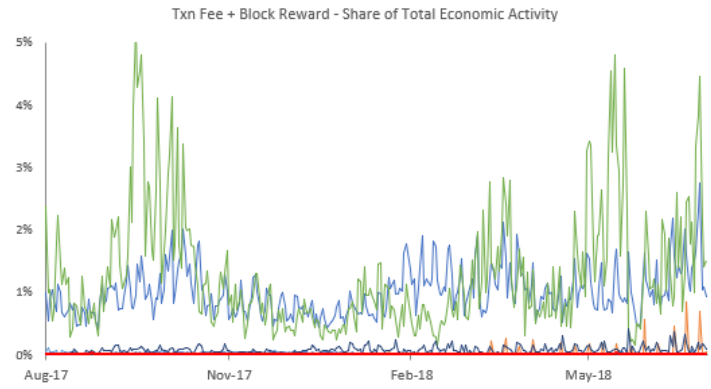
Figure 25: Sector Network Statistics - Economic Activity Velocity



	Start	Finish	Min	Max	Mean	Median
ETH	10x	7x	6x	14x	9x	9x
WAVES	2x	1x	1x	5x	3x	2x
NEO	13x	15x	8x	40x	20x	16x
XLM	0.3x	0.01x	0.01x	0.7x	0.1x	0.03x
XEM	1x	1x	1x	17x	3x	1x
ETC	9x	6x	4x	21x	12x	12x
LSK	9x	1x	1x	18x	6x	5x
EOS	30x	8x	5x	36x	18x	16x
ADA	11x	3x	2x	22x	6x	5x
ICX	64x	15x	4x	64x	10x	6x
Median	9x	5x	3x	19x	7x	6x

Source: Satis Research, Coinmetrics

Figure 26: Sector Network Statistics - Miner's Reward (Txn Fees + Block Reward) Share of Total Economic Activity

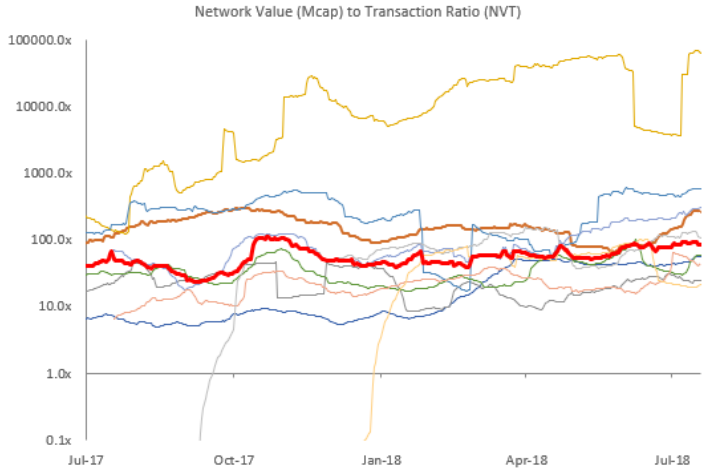


	Start	Finish	Min	Max	Mean	Median
ETH	0.6%	1.1%	0.4%	2.7%	1.0%	0.9%
WAVES	0.0%	0.0%	0.0%	0.8%	0.0%	0.0%
NEO	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
XLM	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
XEM	0.1%	0.0%	0.0%	0.1%	0.0%	0.0%
ETC	1.8%	1.4%	0.1%	5.2%	1.3%	1.0%
LSK	0.0%	0.1%	0.0%	0.4%	0.1%	0.1%
EOS	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
ADA	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
ICX	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Median	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%

Source: Satis Research, Coinmetrics

Since most platforms utilize consensus algorithms that don't use computational power (resulting in a non-existent block reward) and lower adoption overall (less transaction fees to be allocated), the lower economic share of validation activities isn't as surprising.

Figure 27: NVT Ratio

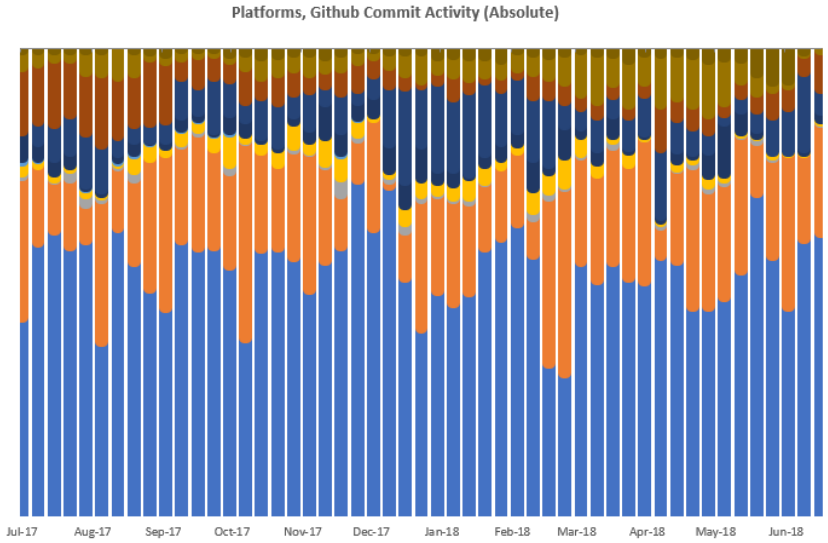


	Start	Finish	Min	Max	Mean	Median
ETH	5x	56x	5x	57x	22x	9x
WAVES	206x	270x	67x	301x	163x	151x
NEO	19x	25x	8x	46x	23x	21x
XLM	1369x	70288x	511x	70288x	19279x	11560x
XEM	303x	589x	17x	607x	284x	275x
ETC	41x	58x	17x	101x	36x	30x
LSK	40x	290x	18x	296x	95x	71x
EOS	12x	41x	10x	66x	23x	22x
ADA	0.1x	112x	37x	153x	76x	75x
ICX	0.1x	20x	0.1x	101x	49x	58x
Median	29x	85x	17x	127x	62x	64x

Source: Satis Research, Coinmetrics

In terms of economic throughput valuation, ETH remains the cheapest while XLM remains the highest. XLM has had quite a few new initiatives built on it that we expect to drive increased network utilization in the next year or so, and we note that this expectation is baked into the inflated ratio. Downside to XLM's expectations of further growth (through partnerships with IBM) could be less or limited usage of the actual coin within the operation of initiatives built around, considering the coin-optional nature of some of the platform's features.

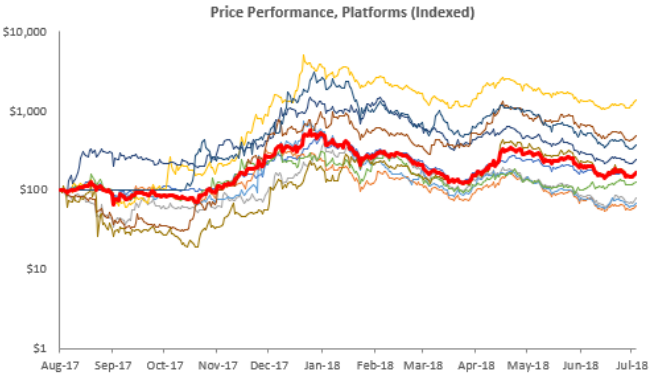
Figure 28: Development Activity



	Start	Finish	Min	Max	Mean	Median
ETH	5	13	4	39	16	16
WAVES	36	53	2	131	50	49
NEO	2	1	--	9	3	2
XLM	7	3	1	43	12	11
XEM	3	--	--	3	0	--
ETC	26	9	--	115	19	15
LSK	--	30	19	238	79	60
ADA	125	84	13	244	80	61
EOS	55	6	6	267	96	94
XTZ	9	--	--	140	33	23
Median	9	11	5	123	26	23

Source: Satis Research, Github

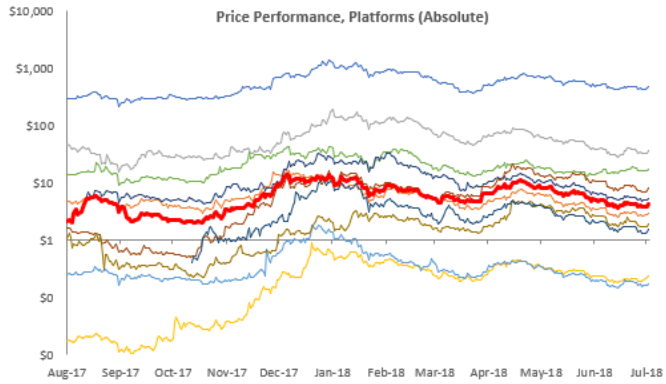
Figure 29: Price Performance (Indexed)



	Start	Finish	Min	Max	Mean	Median
ETH	$97	$160	$72	$466	$191	$168
WAVES	$101	$62	$54	$341	$125	$106
NEO	$99	$78	$33	$396	$129	$105
XLM	$99	$1,352	$61	$5,069	$1,297	$1,286
XEM	$97	$68	$57	$718	$159	$105
ETC	$97	$124	$65	$312	$146	$125
LSK	$95	$238	$88	$1,473	$506	$384
EOS	$99	$486	$30	$1,304	$427	$467
ADA	$91	$162	$19	$429	$145	$137
ICX	$100	$367	$100	$3,001	$678	$522
Median	$98	$161	$59	$592	$175	$152

Source: Satis Research, Coinmarketcap

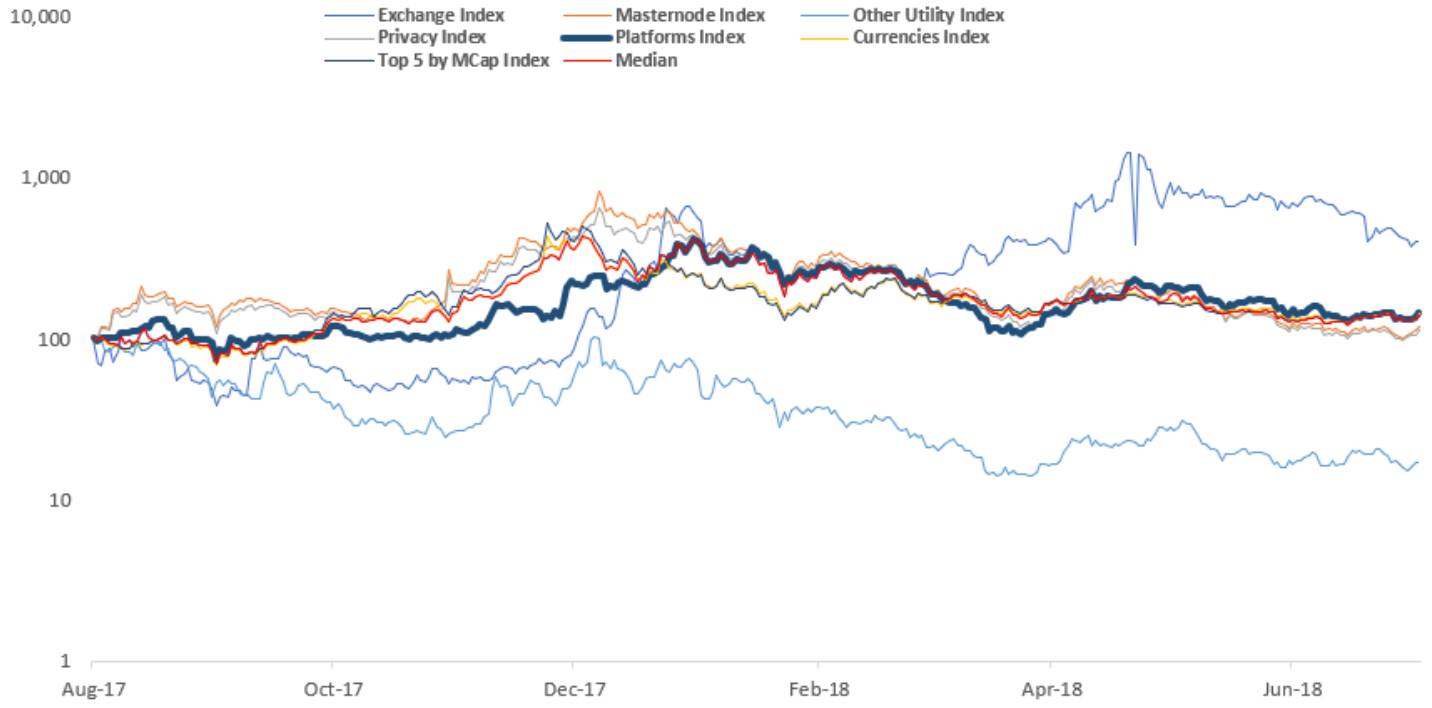
Figure 30: Price Performance (Absolute)



	Start	Finish	Min	Max	Mean	Median
ETH	$290	$480	$215	$1,397	$572	$503
WAVES	$5	$3	$3	$16	$6	$5
NEO	$47	$37	$16	$188	$61	$50
XLM	$0.02	$0.24	$0.01	$0.89	$0.23	$0.23
XEM	$0.2	$0.2	$0.1	$2	$0.4	$0.3
ETC	$14	$17	$9	$44	$20	$18
LSK	$2	$5	$2	$34	$12	$9
EOS	$2	$8	$0.5	$22	$7	$8
ADA	$0.4	$2	$0.2	$5	$2	$2
ICX	$0.4	$2	$0.4	$12	$3	$2
Median	$2	$4	$1	$19	$7	$6

Source: Satis Research, Coinmarketcap

Figure 31: Price Performance Comparison



Source: Satis Research, Coinmarketcap

Privacy Networks

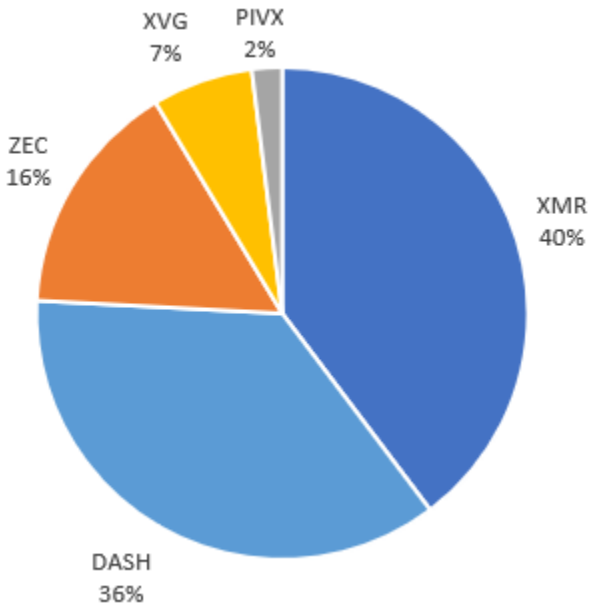
With ultimately the same utility as the currencies mentioned above, such as medium of exchange, privacy currencies aim to add a layer of anonymity to transactions (whether it be opt-in or by default). To a certain extent, privacy currencies are attempting to build what many cryptocurrency enthusiasts originally yearned for Bitcoin to be: a medium of exchange where transactions between users cannot be traced. For normal currency coins, this desire for digital anonymity has largely been abandoned as sophisticated tools and services to trace transactions on the blockchain have become popular and are believed to be used by many government agencies.

Figure 32: Key Privacy Sector Statistics

Network	Market Capitalization ($MM)	Annualized Spec. Velocity	Txns per Sec (Current)	Consensus	Masternode (MN)?	Annual RoI on MN	Anon Protocol
XMR	$2,331	5x	1,000	PoW	No	n/a	Ring CT
DASH	$2,006	25x	28	PoW	Yes	9%	PrivateSend
ZEC	$1,010	44x	27	PoW	No	n/a	zk-SNARK
XVG	$378	12x	100	PoW	No	n/a	Wraith
PIVX	$109	7x	173	PoS	Yes	8%	Zerocoin
Median	***$1,010***	***12x***	***100***			***8%***	

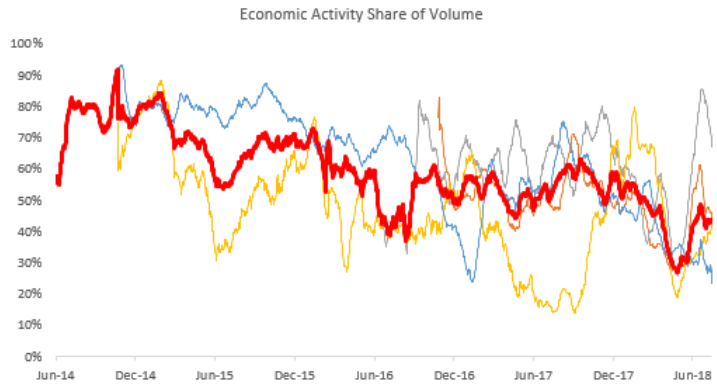
Source: Satis Research

Figure 33: Privacy Networks - Weighting



Source: Satis Research

Figure 34: Sector Network Statistics - Economic Activity Share of Volume

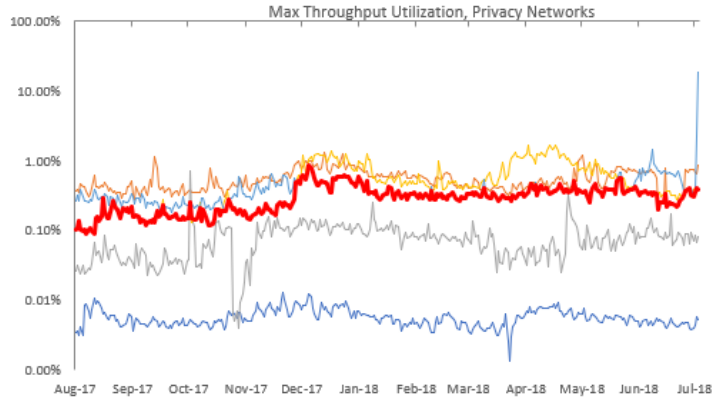


	Start	Finish	Min	Max	Mean	Median
XMR	--	--	--	--	--	--
ZEC	75%	44%	14%	97%	47%	44%
PIVX	46%	47%	11%	99%	58%	59%
XVG	5%	61%	5%	98%	45%	40%
DASH	51%	13%	6%	95%	44%	43%
Median	49%	45%	9%	98%	46%	44%

Source: Satis Research, Coinmetrics

In-line with the previous commentary above, economic activity share has declined as a result of the outpacing of speculation volume share in total. Due to the nature of anonymous cryptoassets, tracking detailed activity (like that of XMR) is difficult to assume and has been left out. Beyond that, activity has remained fairly steady across the names at ~half of total network volume being attributed to economic activity.

Figure 35: Sector Network Statistics - Throughput Utilization (%)

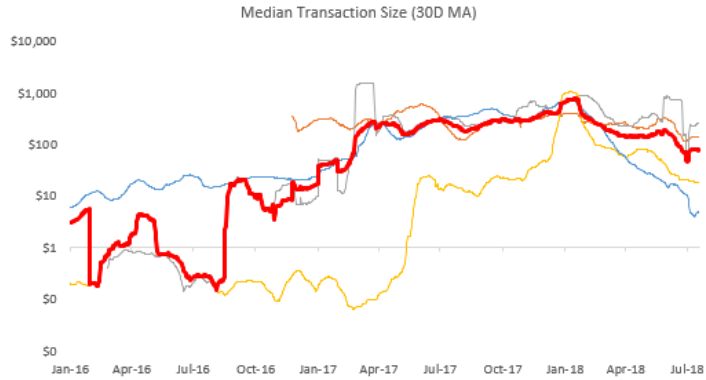


	Start	Finish	Min	Max	Mean	Median
XMR	0.003%	0.006%	0.001%	0.01%	0.006%	0.005%
ZEC	0.4%	0.6%	0.2%	1.3%	0.5%	0.5%
PIVX	0.0%	0.1%	0.0%	0.7%	0.1%	0.1%
XVG	0.1%	0.4%	0.1%	1.7%	0.5%	0.4%
DASH	0.3%	2.2%	0.2%	2.2%	0.4%	0.3%
Median	0.1%	0.4%	0.1%	1.3%	0.4%	0.3%

Source: Satis Research, Coinmetrics

Private currencies hold a set of very attractive qualities, relating to remittance. Not on do they offer the ability to shield details within transactions (which is often a data-intensive burden within transactions), but lack of throughput congestion leaves them uncapped in their potential adoption and usage (considering they already facilitate relatively impressive transaction size and daily throughput). This excess throughput potential is important, considering the ultimate use case of privacy coins; unlike normal cryptoassets, which can be tracked relatively easier, it is far more difficult to track usage of them (particularly XMR) and it becomes more difficult the more the network grows. Most advocates of cryptoassets point to ultimate use cases around capital flight and increased government intervention amid global turmoil; in the event of true global capital flight and government restriction, the means of use will most likely be cryptoassets that use various technology to keep details anonymous. This potential isn't reflected in the low-beta price performance charts, after sitting through a recent bull market driven by retail speculation, but that would most likely change in a macro event where they are needed. We will modify the privacy basket as newer projects enter the space and take different stances on the technology.

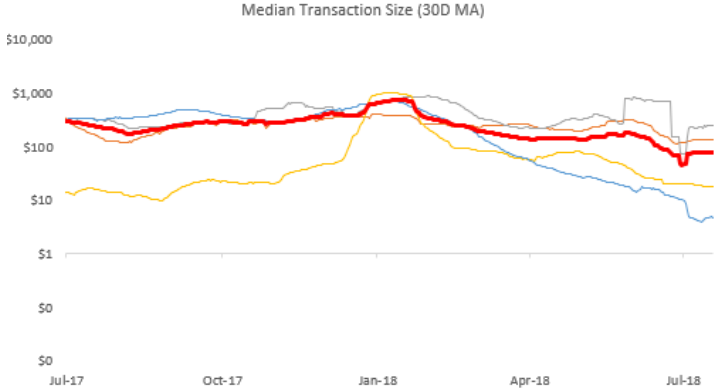
Figure 36: Sector Network Statistics - Median Transaction Size (Smoothed, 18mos)



	Start	Finish	Min	Max	Mean	Median
XMR	--	--	--	--	--	--
ZEC	$154	$136	$115	$402	$265	$263
PIVX	$237	$255	$73	$888	$447	$364
XVG	$12	$18	$10	$1,039	$136	$49
DASH	$369	$14	$14	$726	$271	$306
Median	$195	$77	$43	$807	$268	$285

Source: Satis Research, Coinmetrics

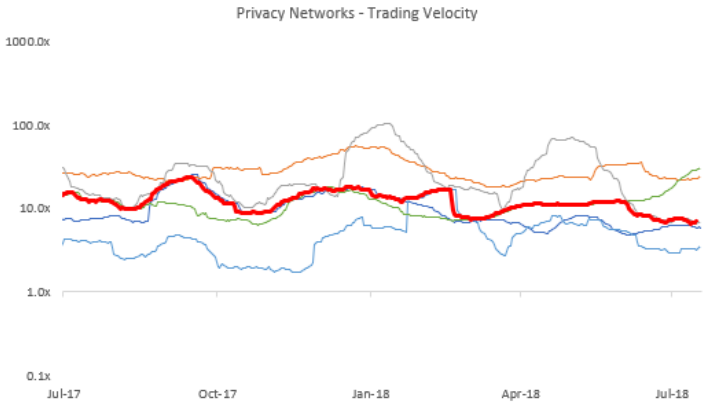
Figure 37: Sector Network Statistics - Median Transaction Size (Smoothed, 12mos)



	Start	Finish	Min	Max	Mean	Median
XMR	--	--	--	--	--	--
ZEC	$154	$136	$115	$402	$265	$263
PIVX	$237	$255	$73	$888	$447	$364
XVG	$12	$18	$10	$1,039	$136	$49
DASH	$369	$14	$14	$726	$271	$306
Median	$195	$77	$43	$807	$268	$285

Source: Satis Research, Coinmetrics

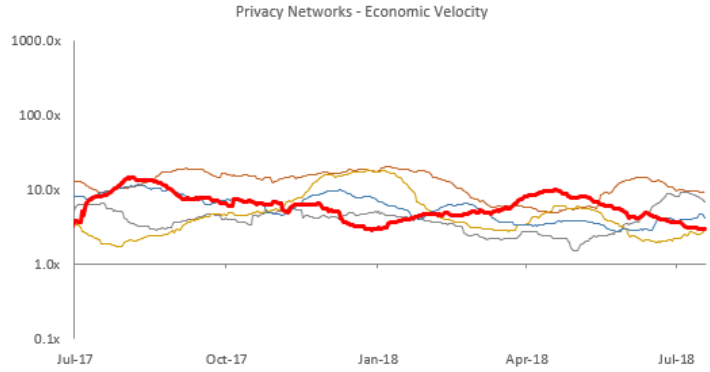
Figure 38: Sector Network Statistics - Trading Velocity



	Start	Finish	Min	Max	Mean	Median
XMR	7x	6x	5x	26x	11x	9x
ZEC	22x	24x	18x	56x	30x	26x
PIVX	3x	3x	2x	17x	5x	5x
XVG	15x	7x	7x	106x	30x	19x
DASH	10x	30x	6x	30x	11x	11x
Median	10x	7x	6x	30x	11x	11x

Source: Satis Research, Coinmetrics

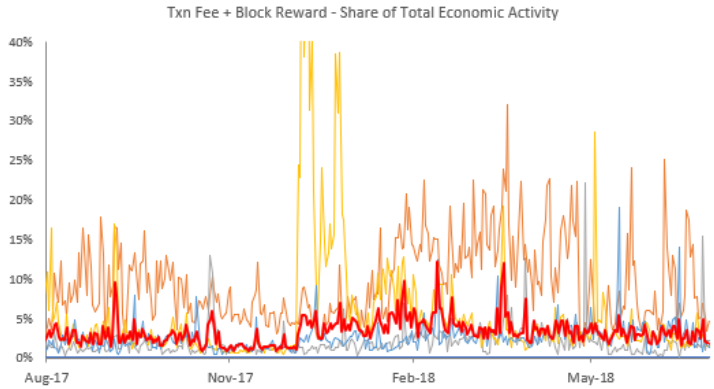
Figure 39: Sector Network Statistics - Economic Activity Velocity



	Start	Finish	Min	Max	Mean	Median
XMR	--	--	--	--	--	--
ZEC	18x	9x	5x	20x	13x	14x
PIVX	3x	7x	1x	9x	4x	4x
XVG	2x	3x	2x	18x	6x	4x
DASH	10x	4x	3x	10x	6x	5x
Median	6x	6x	2x	14x	6x	5x

Source: Satis Research, Coinmetrics

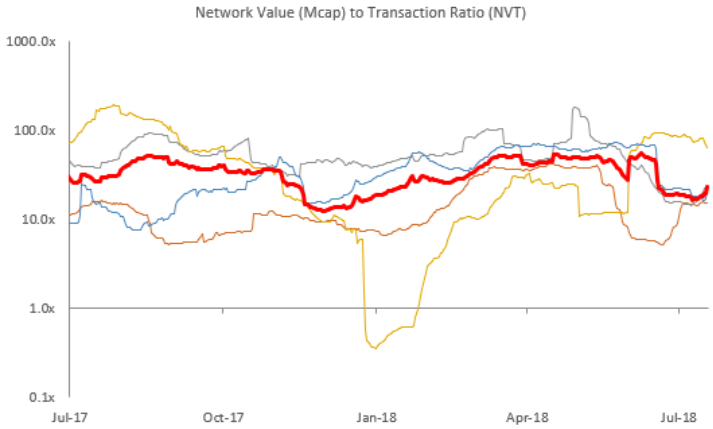
Figure 40: Sector Network Statistics - Miner's Reward (Txn Fees + Block Reward) Share of Total Economic Activity



	Start	Finish	Min	Max	Mean	Median
XMR	--	--	--	--	--	--
ZEC	10.4%	3.3%	1.4%	32.0%	9.4%	8.0%
PIVX	2.1%	2.1%	0.1%	22.0%	1.9%	1.5%
XVG	7.1%	1.5%	0.4%	84.6%	84.6%	84.6%
DASH	1.2%	1.6%	0.3%	19.0%	2.5%	2.2%
Median	4.6%	1.9%	0.4%	27.0%	6.0%	5.1%

Source: Satis Research, Coinmetrics

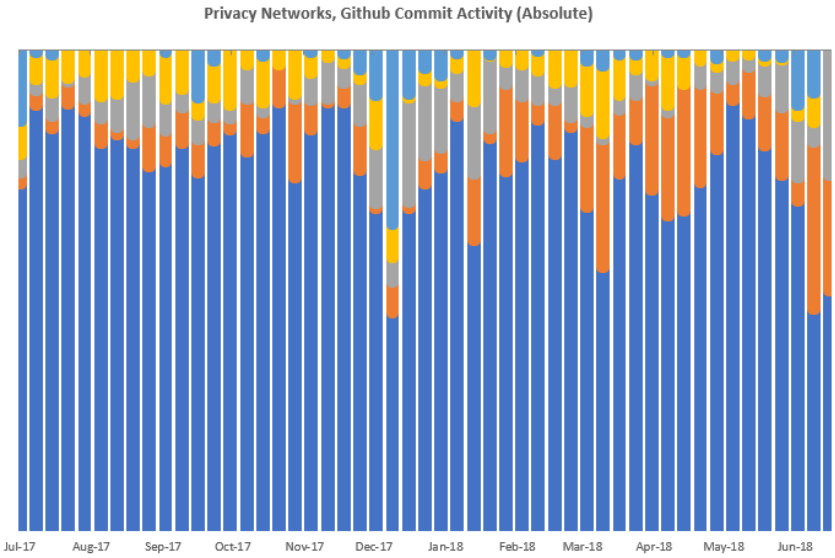
Figure 41: NVT Ratio



	Start	Finish	Min	Max	Mean	Median
XMR	--	--	--	--	--	--
ZEC	5x	15x	5x	42x	16x	10x
PIVX	91x	22x	14x	180x	56x	49x
XVG	130x	69x	0x	131x	35x	23x
DASH	9x	17x	9x	73x	39x	36x
Median	50x	20x	7x	102x	37x	30x

Source: Satis Research, Coinmetrics

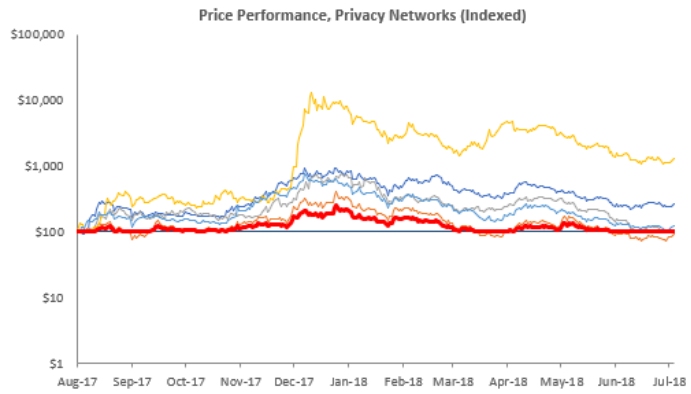
Figure 42: Development Activity



	Start	Finish	Min	Max	Mean	Median
XMR	28	1	1	55	23	22
ZEC	3	2	1	39	10	8
DASH	6	7	--	43	11	8
PIVX	14	--	--	33	12	10
XVG	50	--	--	172	9	1
Median	14	2	--	43	11	8

Source: Satis Research, Github

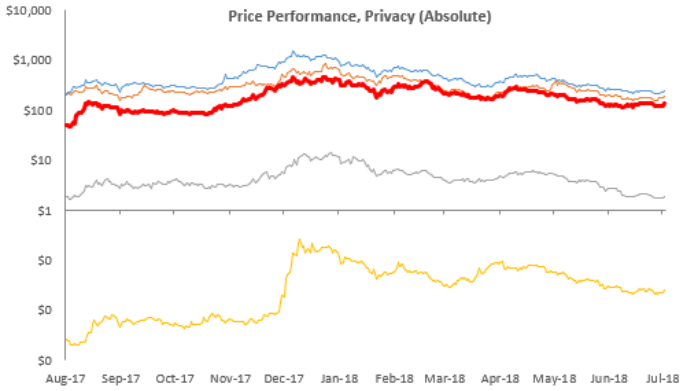
Figure 43: Price Performance (Indexed)



	Start	Finish	Min	Max	Mean	Median
XMR	$98	$271	$94	$941	$397	$347
ZEC	$101	$91	$73	$421	$147	$125
PIVX	$108	$107	$95	$777	$271	$220
XVG	$137	$1,278	$105	$13,271	$2,310	$1,801
DASH	$102	$123	$102	$779	$247	$194
Median	$102	$123	$95	$779	$271	$220

Source: Satis Research, Coinmarketcap

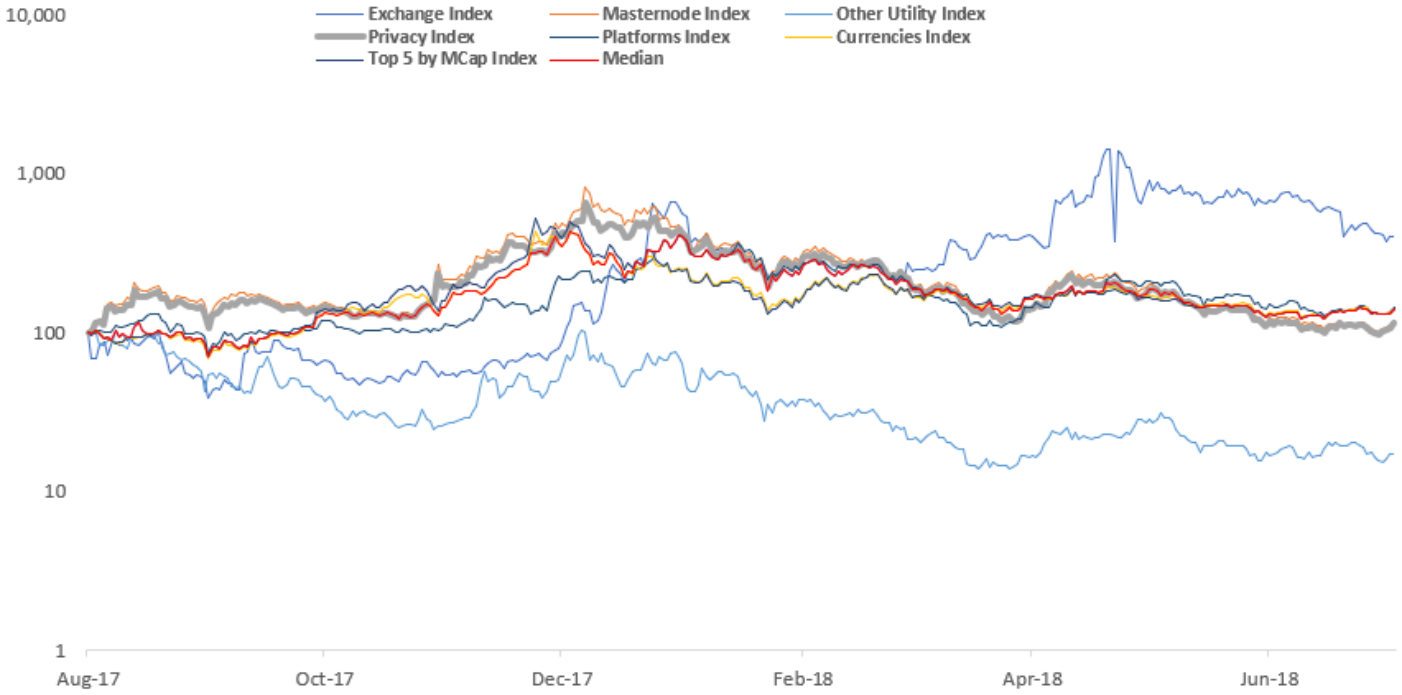
Figure 44: Price Performance (Absolute)



	Start	Finish	Min	Max	Mean	Median
XMR	$49	$135	$47	$470	$198	$173
ZEC	$212	$191	$154	$884	$309	$263
PIVX	$1.9	$1.9	$1.7	$14	$5	$4
XVG	$0.003	$0.02	$0.002	$0.26	$0.04	$0.04
DASH	$204	$247	$204	$1,556	$493	$388
Median	$49	$135	$47	$470	$198	$173

Source: Satis Research, Coinmarketcap

Figure 45: Price Performance Comparison



Source: Satis Research, Coinmarketcap

Masternode Networks

Masternodes are very similar to normal cryptoasset network "full" nodes, which are required to store the entire blockchain on-hand and remain actively connected to the network, although they receive a higher amount of **passive income** in reward for providing additional network services such as:

- Enablement of private transactions
- Facilitation of quicker/instant transactions
- Governance/voting benefits
- Treasury management/budgeting

Along with the additional responsibility and technical services that masternodes provide, they are often entitled to heightened rewards, through an increasing portion of block rewards and/or transaction fees retained (when compared to normal validators). In order to participate as a masternode, users must purchase an amount of coins defined by the network, stake them (prior note, page 16), and remain active.

Figure 46: Key Masternode Sector Statistics

Network	Market Capitalization ($MM)	Annual RoI	MN Cost	# of Nodes	MN Share of Market Cap	*Annualized Spec. Velocity*
DASH	$2,006	7%	$244,160	4,618	56%	*25x*
PIVX	$109	8%	$19,244	1,616	28%	*7x*
SYS	$89	11%	$16,610	1,167	22%	*3x*
XZC	$87	25%	$16,506	3,426	65%	*4x*
SMART	$85	32%	$805	12,898	12%	*11x*
BLOCK	$63	16%	$60,375	466	44%	*1x*
Median	***$88***	***14%***	***$17,927***	***2,521***	***36%***	***6x***

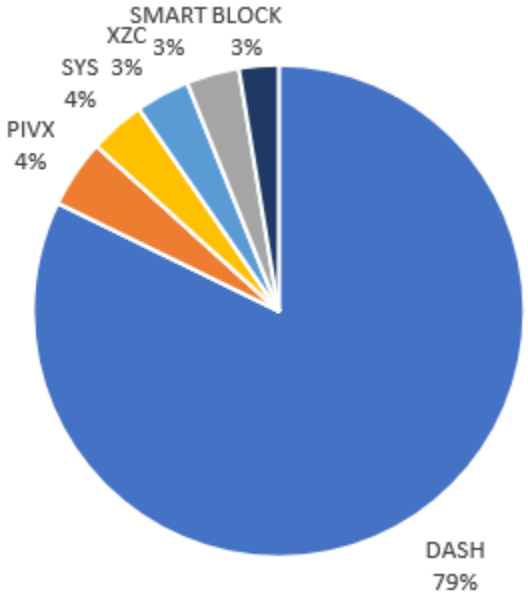
Source: Satis Research

Figure 47: Masternode Market Share

	Total Trading		Market Cap		Annualized Velocity
	#	%	$bn	%	
Masternodes	377	23%	$3	1%	18x
Non-Masternodes	1240	77%	$300	99%	17x
Total	**1,617**	**100%**	**$303**	**100%**	

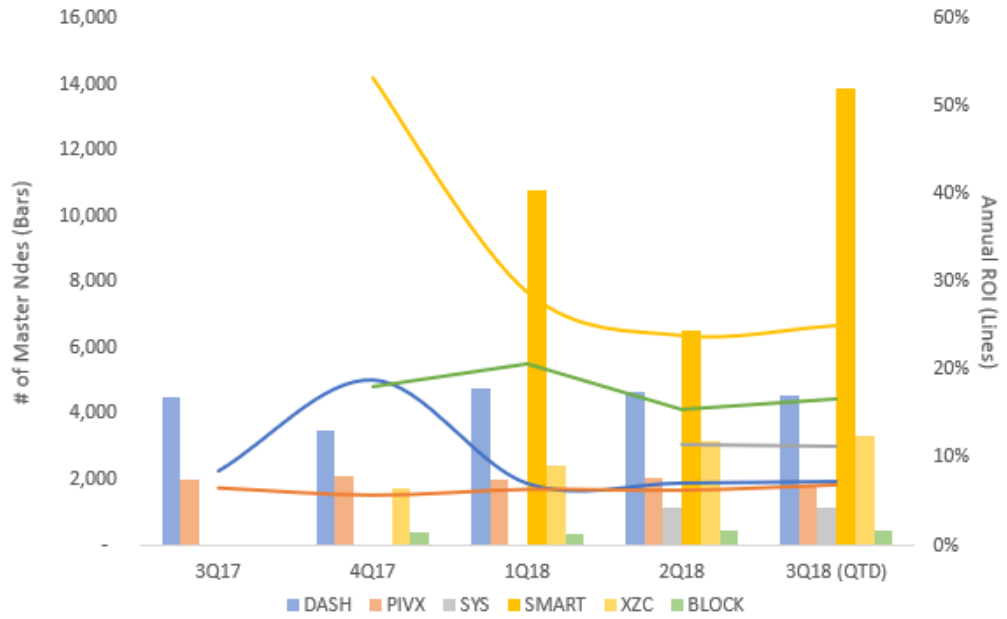
Source: Satis Research, Masternodes.online

Figure 48: Masternode Networks - Weighting



Source: Satis Research

Figure 49: Sector Network Statistics - Masternode ROI



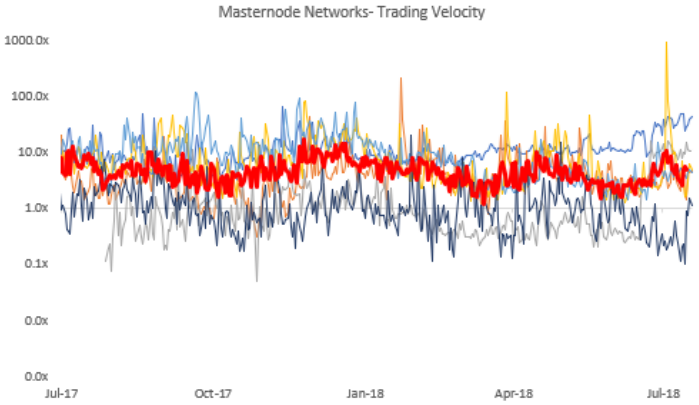
Source: Satis Research, Masternodes.online

Figure 50: Sector Network Statistics - Masternode Cost

	Start	Finish	Min	Max	Mean	Median
DASH	$203,850	$246,730	$203,850	$1,555,590	$492,857	$388,075
PIVX	$19,100	$19,000	$16,900	$137,500	$47,980	$38,900
SMART	$181	$907	$52	$20,400	$1,725	$892
SYS	$10,978	$15,867	$10,383	$96,349	$37,412	$33,628
XZC	$11,340	$16,350	$6,400	$142,030	$37,365	$32,090
BLOCK	$71,850	$55,700	$54,300	$279,800	$118,405	$105,825
Median	$15,220	$17,675	$13,642	$139,765	$42,696	$36,264

Source: Satis Research, Masternodes.online

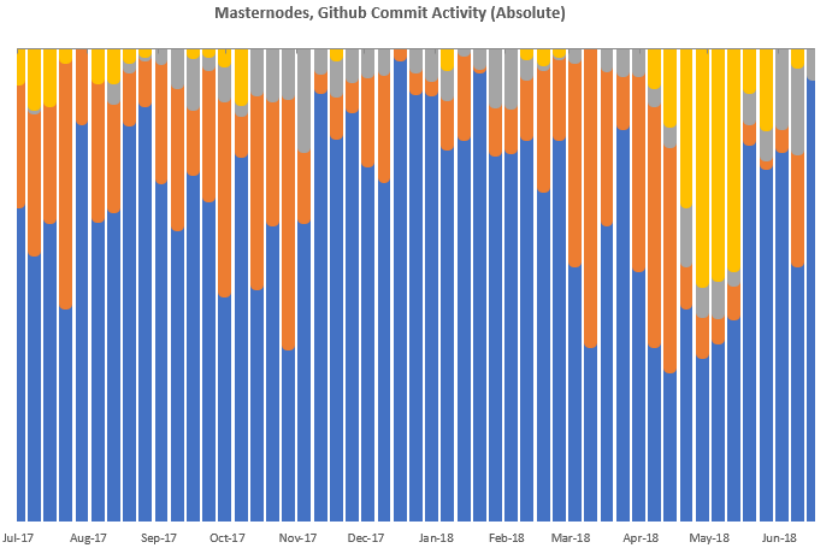
Figure 51: Sector Network Statistics - Trading Velocity



	Start	Finish	Min	Max	Mean	Median
DASH	15x	39x	3x	65x	13x	10x
PIVX	4x	4x	0x	215x	5x	3x
SMART	0x	11x	0x	16x	2x	1x
SYS	2x	6x	1.3x	948x	12x	5x
XZC	10x	5x	1x	119x	12x	7x
BLOCK	1x	2x	0.1x	20x	1x	1x
Median	3x	6x	1x	92x	9x	4x

Source: Satis Research, Coinmarketcap

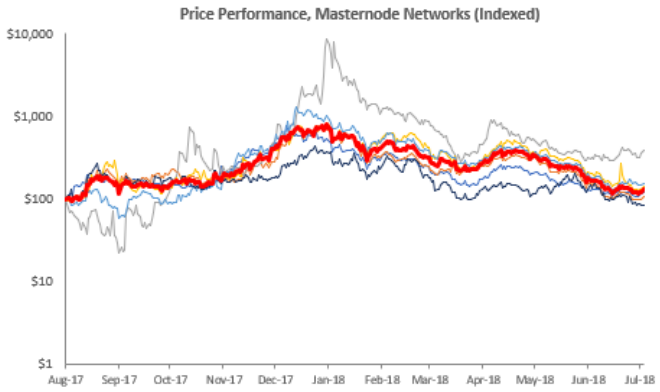
Figure 52: Development Activity



	Start	Finish	Min	Max	Mean	Median
DASH	6	7	1	43	11	8
PIVX	14	--	--	33	12	10
XZC	--	2	--	26	6	4
SYS	7	--	--	106	10	1
Median	7	5	--	38	10	6

Source: Satis Research, Github

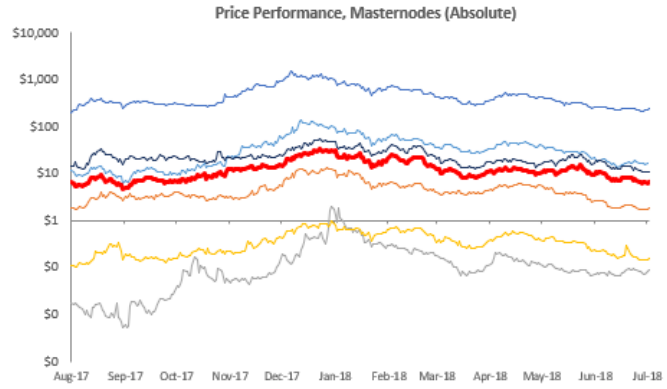
Figure 53: Price Performance (Indexed)



	Start	Finish	Min	Max	Mean	Median
DASH	$102	$123	$102	$779	$247	$194
PIVX	$108	$107	$95	$777	$271	$220
SMART	$78	$391	$23	$8,791	$744	$384
SYS	$97	$141	$92	$855	$332	$298
XZC	$106	$153	$60	$1,326	$349	$300
BLOCK	$111	$86	$84	$432	$183	$164
Median	$104	$141	$92	$855	$332	$298

Source: Satis Research, Coinmarketcap

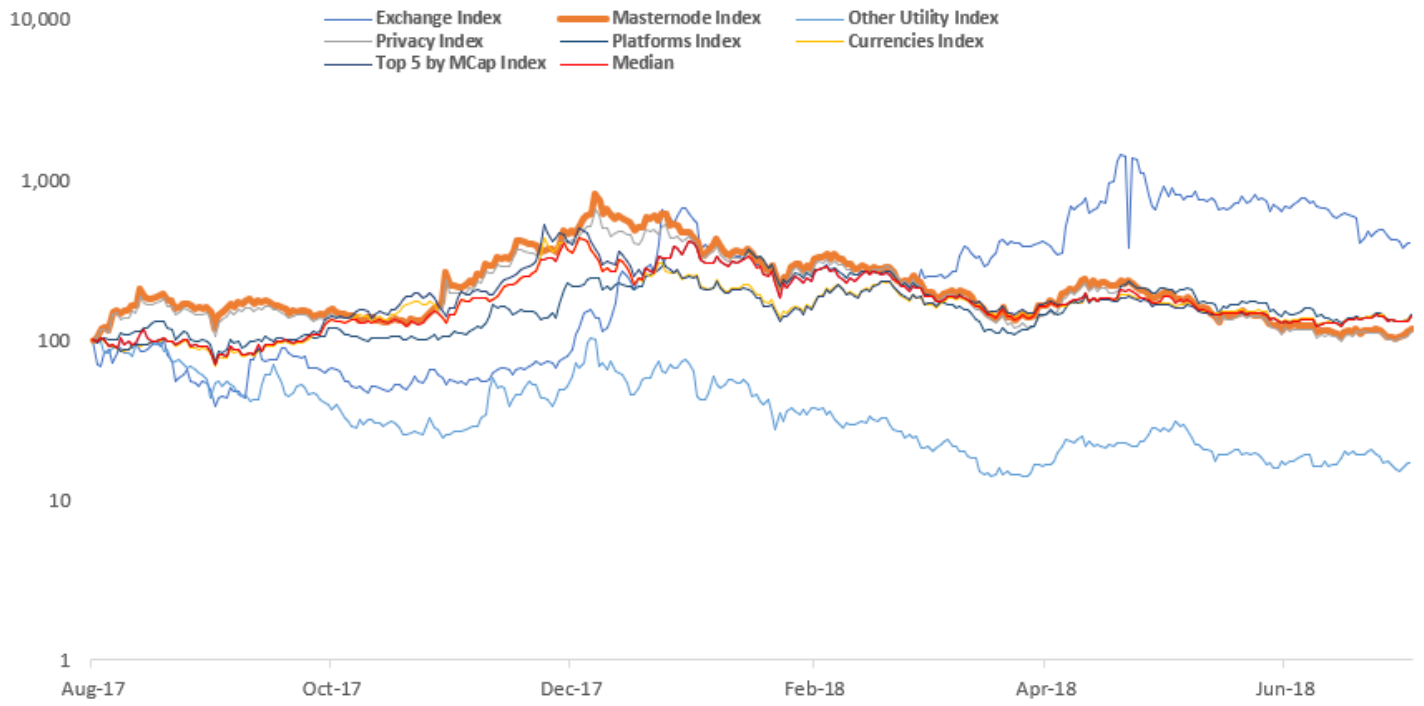
Figure 54: Price Performance (Absolute)



	Start	Finish	Min	Max	Mean	Median
DASH	$204	$247	$204	$1,556	$493	$388
PIVX	$5.2	$1.9	$1.7	$14	$4.8	$3.9
SMART	$0.0	$0.1	$0.0	$2	$0.2	$0.1
SYS	$0.2	$0.2	$0.1	$1	$0.4	$0.3
XZC	$75	$16	$6	$142	$37	$32
BLOCK	$23	$11	$11	$56	$24	$21
Median	$14	$7	$4	$35	$14	$13

Source: Satis Research, Coinmarketcap

Figure 55: Price Performance Comparison



Source: Satis Research, Coinmarketcap

Exchange Networks

Exchange-related cryptoassets allow users/purchasers to share in the success of centralized or decentralized cryptocurrency exchanges. While not all exchanges offer a token, they have become a popular (and often necessary given the crowded market) part of attracting and retaining customers, many of whom have come to expect that the community should share in part of the economic success their use of the platform creates.

Most exchange-token economies revolve around a combination of several dynamics, including:

- the ability to be used within the respective exchange as a discount for fees
- exposure to scarcity, as a result of the exchange purchasing and burning (similar to a share buyback) of tokens with trading profits
- exposure to dividends, as a result of the exchange issuing tokens to holders from trading profits in the form of another token (similar to a share dividend)

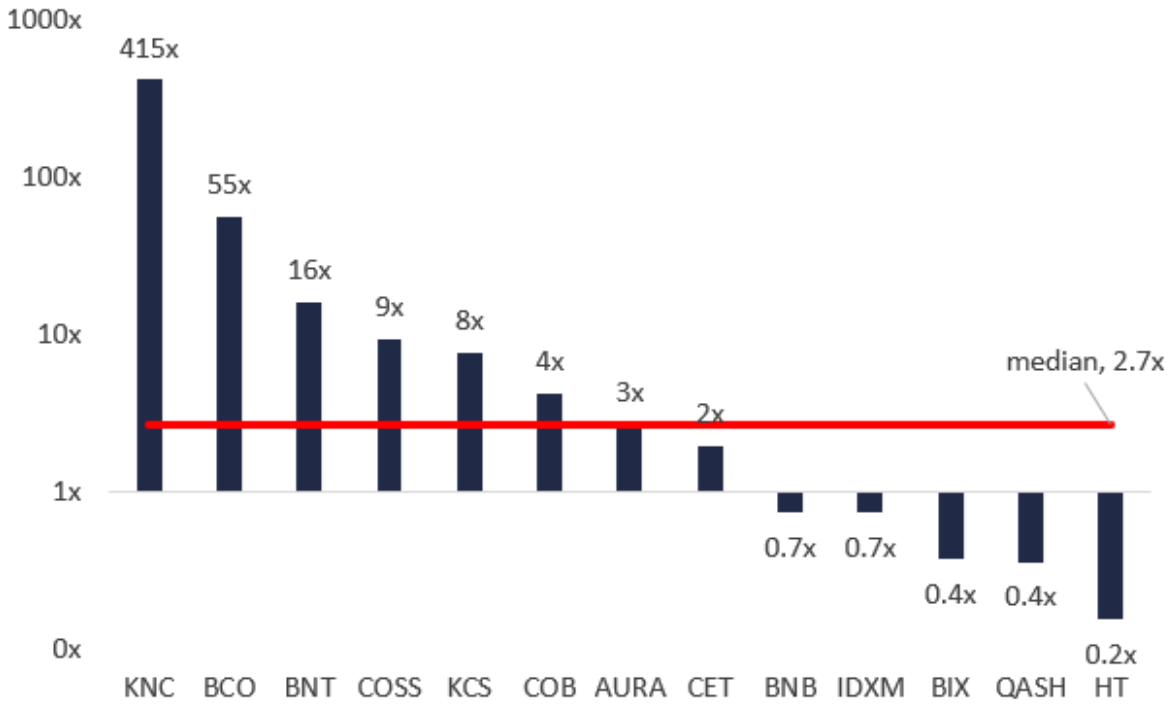
Below is the volume of the underlying token's exchange and the market capitalization of the token itself (e.g. BNB is related to the Binance exchange volume and BNB token market cap, KCS is related to the KuCoin exchange volume and KCS token market cap, etc).

Figure 56: Key Exchange Sector Statistics

Network	Exchange Volume (Daily, $MM)	Market Capitalization ($MM)	Exchange Volume Multiple	Annualized Spec. Velocity
BNB	$1,683	$1,237	**1x**	21x
CET	$461	$892	**2x**	88x
ZRX	n/a	$633	**--**	14x
KCS	$33	$252	**8x**	1x
HT	$1,124	$171	**0x**	76x
KNC	$0	$125	**415x**	15x
BNT	$7	$119	**16x**	23x
QASH	$260	$92	**0x**	5x
BIX	$239	$88	**0x**	308x
BCO	$1	$32	**55x**	0x
AST	n/a	$23	**--**	20x
AURA	$8	$21	**3x**	2x
COB	$4	$17	**4x**	0x
COSS	$1	$10	**9x**	1x
IDXM	$8	$6	**1x**	2x
Median	**$17**	**$92**	**3x**	**14x**

Source: Satis Research

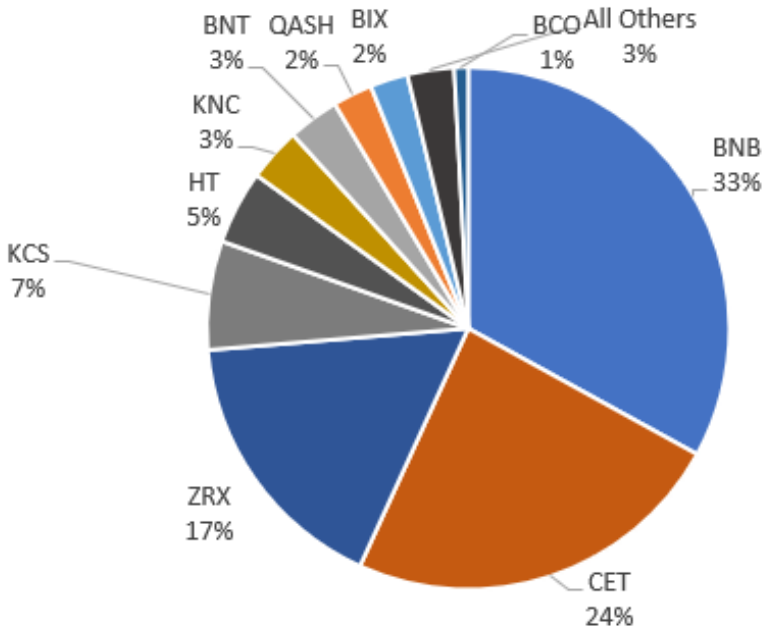
Figure 57: Cryptoasset Market Cap to Related-Exchange Volume Ratio



Source: Satis Research, Coinmarketcap

Above, in Figure 57, we show the premium on exchange-based networks based on their underlying exchange's daily volume. The multiple is calculated by dividing the market capitalization of the exchange-related cryptoasset (for example, BNB at $1.2B) by the underlying exchange's daily volume (for BNB it would be the Binance exchange, at $1.7B), resulting in a multiple of 0.7x.

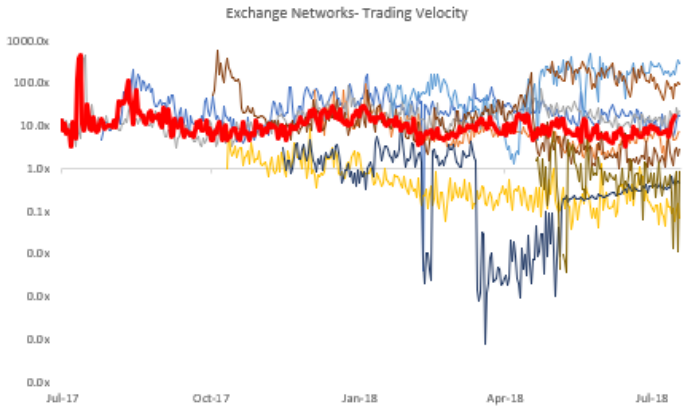
Figure 58: Exchange Networks - Weighting



** "All Others" includes: BCO (1%), AST (1%), COB (0.4%), AURA (0.4%), COSS (0.3%), and IDXM (0.1%)*

Source: Satis Research

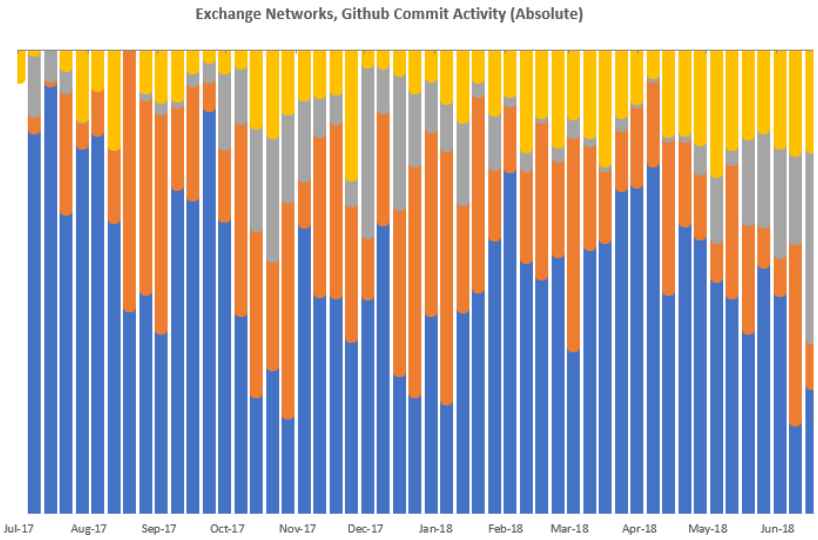
Figure 59: Sector Network Statistics - Trading Velocity



	Start	Finish	Min	Max	Mean	Median
BNB	102x	18x	0.004x	158x	29x	22x
QASH	71x	7x	2x	98x	10x	7x
BNT	15x	19x	3x	90x	17x	14x
BCO	1x	0.2x	0.04x	8x	1x	0x
BIX	68x	349x	1.3x	494x	118x	91x
COB	3x	1x	0.0001x	11x	1x	0x
COSS	54x	2x	1x	559x	24x	10x
HT	213x	101x	41x	314x	152x	144x
IDXM	2x	0.01x	0.004x	8x	1x	1x
AURA	11x	2x	0.001x	15x	2x	1x
ZRX	28x	20x	3x	109x	12x	9x
CET	40x	29x	7x	78x	33x	26x
KCS	4x	3x	0.3x	18x	3x	2x
KNC	23x	15x	3x	209x	18x	14x
AST	18x	15x	3x	385x	31x	21x
Median	23x	15x	1x	98x	17x	10x

Source: Satis Research

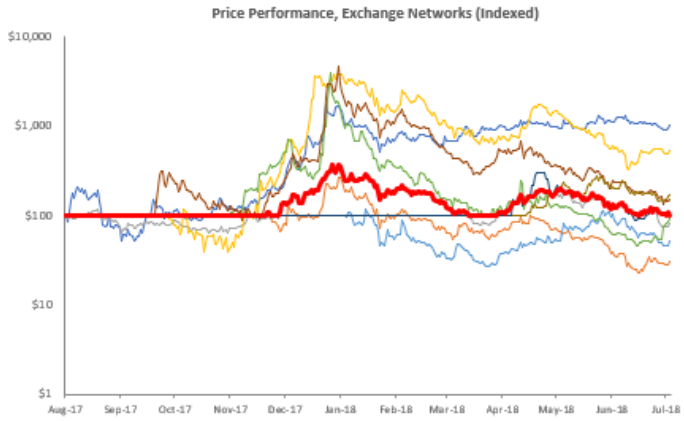
Figure 60: Development Activity



	Start	Finish	Min	Max	Mean	Median
BNT	--	1	1	44	10	7
BCO	--	1	1	88	28	24
KNC	30	32	--	88	28	22
ZRX	16	114	--	223	86	85
Median	23	17	1	88	28	23

Source: Satis Research, Github

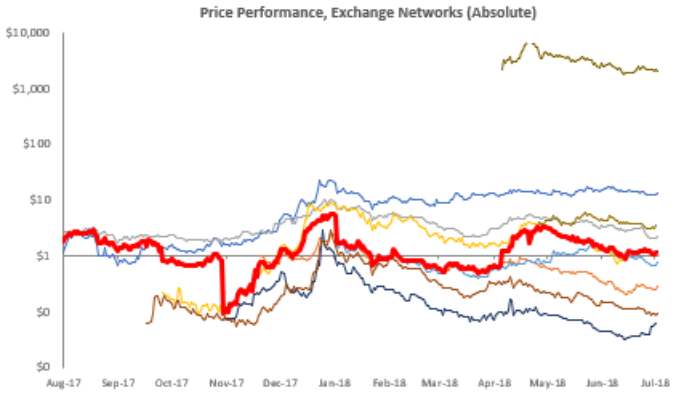
Figure 61: Price Performance (Indexed)



	Start	Finish	Min	Max	Mean	Median
BNB	$100	$1,005	$51	$1,712	$635	$707
QASH	$100	$31	$23	$269	$90	$97
BNT	$100	$82	$62	$363	$133	$113
BCO	$100	$525	$39	$3,855	$901	$630
BIX	$100	$51	$27	$117	$78	$96
COB	$100	$90	$46	$3,999	$249	$117
COSS	$100	$148	$90	$4,571	$490	$291
HT	$100	$166	$100	$276	$120	$100
IDXM	$100	$98	$88	$303	$115	$100
AURA	$100	$234	$86	$631	$183	$100
ZRX	$100	$1,029	$100	$2,121	$676	$581
CET	$100	$75	$57	$100	$99	$100
KCS	$100	$473	$65	$3,123	$466	$379
KNC	$100	$52	$41	$308	$98	$88
AST	$100	$39	$29	$441	$105	$96
Median	$100	$98	$57	$441	$133	$100

Source: Satis Research, Coinmarketcap

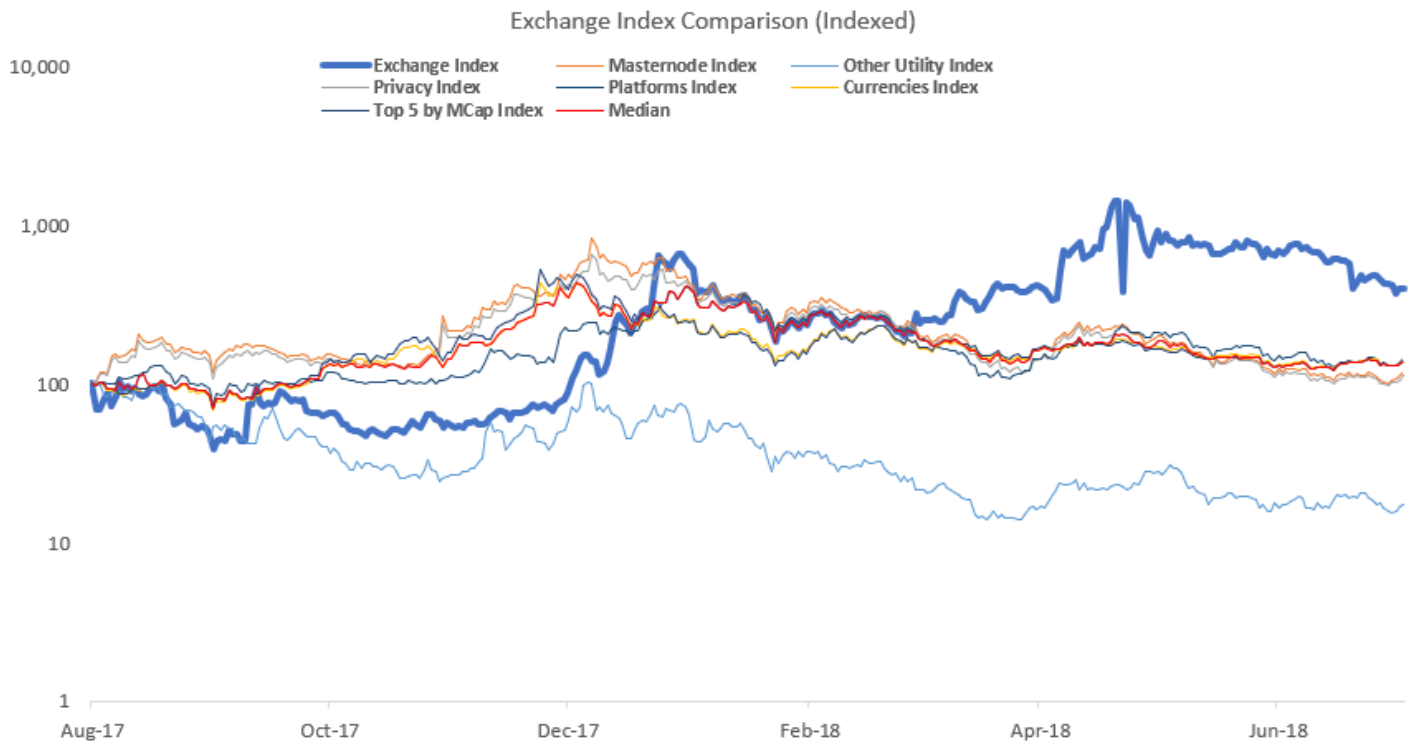
Figure 62: Price Performance (Absolute)



	Start	Finish	Min	Max	Mean	Median
BNB	$1.1	$13	$0.7	$23	$8	$9.4
QASH	$0.91	$0.28	$0.21	$2.46	$0.78	$0.71
BNT	$2.6	$2.3	$1.7	$10	$3.7	$3.1
BCO	$0.2	$1.2	$0.1	$9	$2.4	$1.7
BIX	$1.5	$0.76	$0.4	$1.76	$0.90	$0.82
COB	$0.1	$0.1	$0.03	$3	$0.2	$0.1
COSS	$0.1	$0.1	$0.1	$3	$0.3	$0.2
HT	$2.16	$3.6	$2.16	$6.0	$3.9	$3.8
IDXM	$2,146	$2,036	$1,822	$6,494	$3,204	$3,104
AURA	$0.08	$0.14	$0.07	$0.50	$0.18	$0.17
ZRX	$0.1	$1.2	$0.1	$2	$0.8	$0.6
CET	$0.1	$0.1	$0.1	$0.1	$0.1	$0.1
KCS	$0.7	$3.1	$0.4	$20.6	$3.9	$3.1
KNC	$1.9	$1.0	$0.8	$5.7	$1.8	$1.4
AST	$0.4	$0.2	$0.1	$1.8	$0.4	$0.3
Median	$0.7	$1.0	$0.2	$3	$1	$0.8

Source: Satis Research, Coinmarketcap

Figure 63: Price Performance Comparison



Source: Satis Research, Coinmarketcap

Stablecoin Networks

Unlike a normal cryptocurrency, which has value that fluctuates based on network supply and network/market-based demand, a stablecoin aims to have a fixed price. Stablecoins serve many purposes, including as a hedge against volatility (allowing users to hedge their cryptocurrency risks, without converting their holdings to fiat). Stablecoins attempt to achieve price stability in many different ways, typically pegged to the price of another good(s), with the most common approaches being:

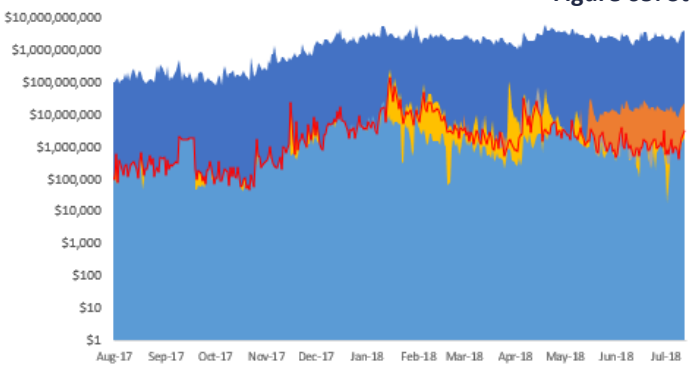
- Off-blockchain, fiat-collateralized pegging
- On-blockchain, crypto-collateralized pegging
- Non-collateralized, seigniorage model

Figure 64: Key Stablecoin Sector Statistics

Network	Market Capitalization ($MM)	Volume (24H, $MM)	Annualized Spec. Velocity	Volatility (30D)	Collateral	Base Chain	Type
USDT	$2,497	$3,378	494x	0.4%	Off-Chain	Omni	IOU
TUSD	$69	$13	68x	0.8%	Off-Chain	ETH	IOU
DAI	$54	$1	3x	1.2%	On-Chain	ETH	Smart-Contract
SBD	$20	$2	45x	6.5%	On-Chain	STEEM	Smart-Contract
BITUSD	$12	$0	14x	3.0%	On-Chain	BTS	Smart-Contract
Median	***$54***	***$2***	***45x***	**1.2%**			

Source: Satis Research

Figure 65: Stablecoin Liquidity

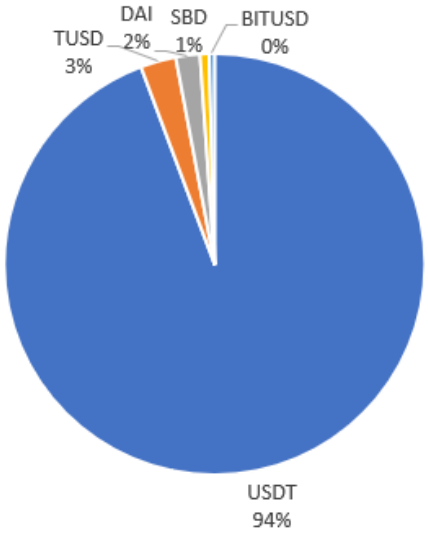


	Start	Finish	Min	Max	Mean	Median
USDT	$121,473	$3,620,500	$85,385	$6,247,250	$1,926,908	$2,134,350
TUSD	$10,644	$17,808	$435	$31,961	$7,811	$3,291
DAI	$325	$773	$108	$80,080	$2,853	$1,124
SBD	$107	$1,841	$27	$286,825	$8,016	$1,438
BitUSD	$195	$1,441	$19	$25,789	$1,927	$948
Median	$325	$1,841	$108	$80,080	$7,811	$1,438

*In thousands

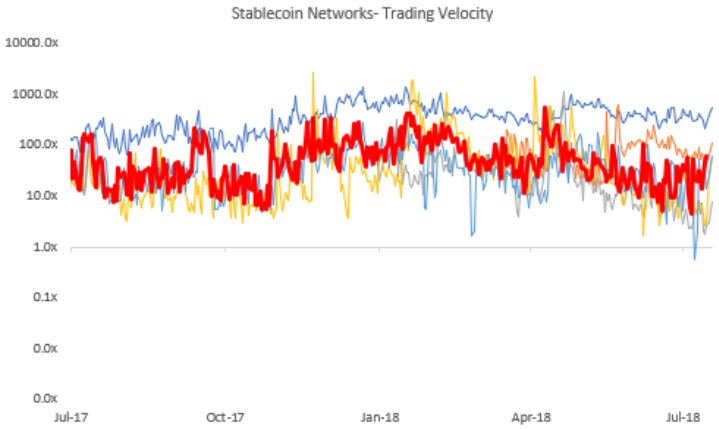
Source: Satis Research, Coinmarketcap

Figure 66: Stablecoin Networks - Weighting



Source: Satis Research

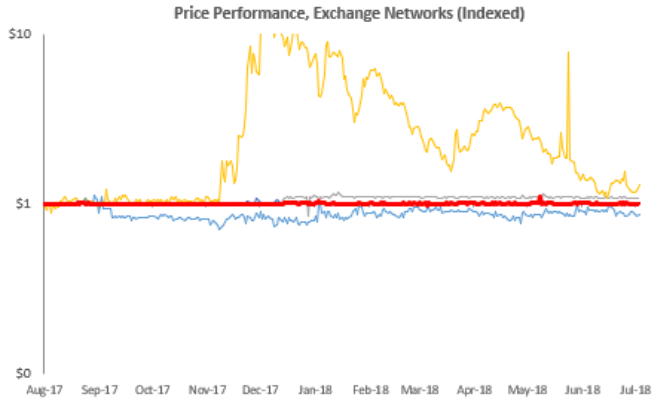
Figure 67: Sector Network Statistics - Trading Velocity



	Start	Finish	Min	Max	Mean	Median
USDT	139x	487x	71x	1396x	413x	372x
TUSD	68x	82x	13x	630x	89x	72x
DAI	47x	5x	2x	1109x	52x	23x
SBD	3x	36x	1.70x	2718x	96x	24x
BitUSD	342x	44x	1x	342x	49x	33x
Median	68x	44x	2x	1109x	89x	33x

Source: Satis Research, Coinmarketcap

Figure 68: Price Performance (Indexed)



	Start	Finish	Min	Max	Mean	Median
USDT	$1.0	$1.0	$1.0	$1.1	$1.0	$1.0
TUSD	$1.0	$1.0	$1.0	$1.1	$1.0	$1.0
DAI	$1.0	$1.1	$0.9	$1.2	$1.1	$1.1
SBD	$0.9	$1.3	$0.9	$14.6	$3.2	$2.0
BitUSD	$1.0	$0.9	$0.7	$1.1	$0.9	$0.9
Median	$1.0	$1.0	$0.9	$1.1	$1.0	$1.0

Source: Satis Research, Coinmarketcap

Figure 69: Stablecoin Volatility

	Start	Finish	Min	Max	Mean	Median
USDT	0.9%	0.4%	0.1%	1.9%	0.7%	0.8%
TUSD	1.4%	0.8%	0.6%	2.3%	1.3%	0.8%
DAI	7.1%	1.2%	0.5%	7.1%	1.6%	1.0%
SBD	15.8%	6.2%	3.1%	60.9%	15.0%	9.5%
BitUSD	2.2%	3.6%	1.4%	8.4%	4.3%	4.1%
Median	2.2%	1.2%	0.6%	7.1%	1.6%	1.0%

Source: Satis Research, Coinmarketcap

Tether (USDT) has had the lowest volatility and highest volume by far but presents the most suspicious collateral-backing model; supposed audits on their fiat currency reserves (which back the USDT units) off-chain, which puts trust back into the hands of a third party. Regardless, most traders hold tether for short periods of time and it does still present appealing liquidity (which is needed when trading between crypto-only exchanges, where fiat takes far longer to transfer from a bank).

Other Utility Networks

Storage networks are an attempt to utilize distributed networks, rather than traditional data centers, for cloud data backup. Given that many internet users (whether individuals or corporations) have significant, underutilized hard drive space available, the cost of data storage can potentially be reduced versus dedicated infrastructure. In these networks, the token is used to pay for storage and to incentivize others to provide storage. Decentralized storage networks have the potential to significantly reduce the cost of storage, while offering similar levels of uptime and reliability compared to current enterprise solutions. While currently in the very early stages, future improvements could significantly impact existing enterprise solutions. Risks that may deter large scale adoption include privacy-law compliance (because files are stored on a distributed network, it may be difficult to prove they have been deleted when needed for compliance reasons), hosting of illegal content, and difficulty of proving deletion of files when you no longer wish to store them.

- **FileCoin (FIL) -** a decentralized storage network, where mining the coin requires storage (rather than computational hashes). Uses the FIL token to pay for file storage, retrieval, and other transactions on the network.

- **Siacoin (SC)** - a decentralized storage network, using a Proof-of-Work blockchain to for consensus and contracts. Uses Siacoin to buy and sell storage.

Compute networks attempt to offer computing power that is not centralized in a data center. Users may rent extra processing power on someone else's computer and pay for that power with the network token. Thus far, most compute networks allow users to complete certain tasks, as they built out additional tools to enable widespread use for other applications - such as providing a backbone for artificial intelligence training, data analytics, biomedical research, DNA research, and other simulations on a massive scale.

- **Golem (GNT)** - a decentralized compute network, currently focused on CGI rendering (but with potential to expand to other applications). Uses GNT to pay for compute power.

- **Sonm (SNM)** - a decentralized compute network, using SNM to pay for compute power.

Gaming/Gambling networks allow users to place bets in online casino type games in a manner where the odds of winning a bet are transparent, with the results verifiable on the blockchain. The games are typically provably fair, and users are no longer forced to simply trust the operators of a centralized online casino, who are often located in foreign countries and shielded from legal and regulatory scrutiny by design.

- **FunFair (FUN)** - a decentralized technology platform for online casinos, using the FUN token. Used to purchase in game casino credits, to pay casino game developers, to finance operations and licensing fees, to pay platform fees (which will be burned for first 2 years).

- **Edgeless (EDG)** - an online, 0% house edge casino (assuming a perfect player). Uses EDG token to place bets in suite of casino games, with 60% percent of proceeds to the house and 40% to the community.

VideoGames/Marketplace networks have become popular as users wish to trade or sell digital goods (including special skins that change their character's appearance, weapons with a unique appearance, or other items that may provide an in-game competitive advantage) they have earned in video games.

- **Worldwide Asset Exchange (WAX)** - a decentralized platform that allows anyone to operate their own virtual marketplace, using the WAX token to list, sell, transact, settle, create and service contracts.

- **Enjin Coin (ENJ)** - a decentralized platform to manage, distribute, and trade virtual goods, with the ENJ coin used to trade for virtual goods, create unique tokens and virtual goods (that can be sold or liquidated for ENJ).

Lending platforms provide solutions for individuals and small businesses to gain working capital in fiat, often by placing their crypto holdings into escrow to serve as collateral for the loan. These solutions appeal to those who wish to hodl (not a typo) their cryptoassets but need capital to pay for expenses (such as taxes, new mining equipment, etc).

- **Salt Lending (SALT)** - a centralized platform to connects borrowers and lenders, with cryptoassets placed as collateral. Uses the SALT token for membership (access to platform), interest payments, and to reduce the interest rate.

- **ETHLend (LEND) -** a decentralized app that allows borrowers and lenders to connect, using the LEND token for discounts and fees as well as for collateral

Prediction Markets allow users to place their bets on the outcome of future events (which could include elections, sporting events, cryptoasset or financial market performance predictions, or otherwise). These markets work by allowing users to buy shares to go long on an outcome, or sell shares to short an outcome, creating a system where strong understanding and research on an issue is financially rewarded.

- **Augur (REP)** - a decentralized prediction market, using the REP token to create events and for those reporting event outcome, with trading of predictions in ETH only.
- **Gnosis (GNO)** - a decentralized prediction market, using the GNO token, which can be staked to generate the OWL token, used for paying platform fees.
- **STOX (STX)-** a decentralized prediction market, using the STX token to create events, pay fees, and interact with the platform.

Interoperability networks are intended to allow separate blockchains to communicate, often with the capability of transferring data and value between dissimilar blockchains.

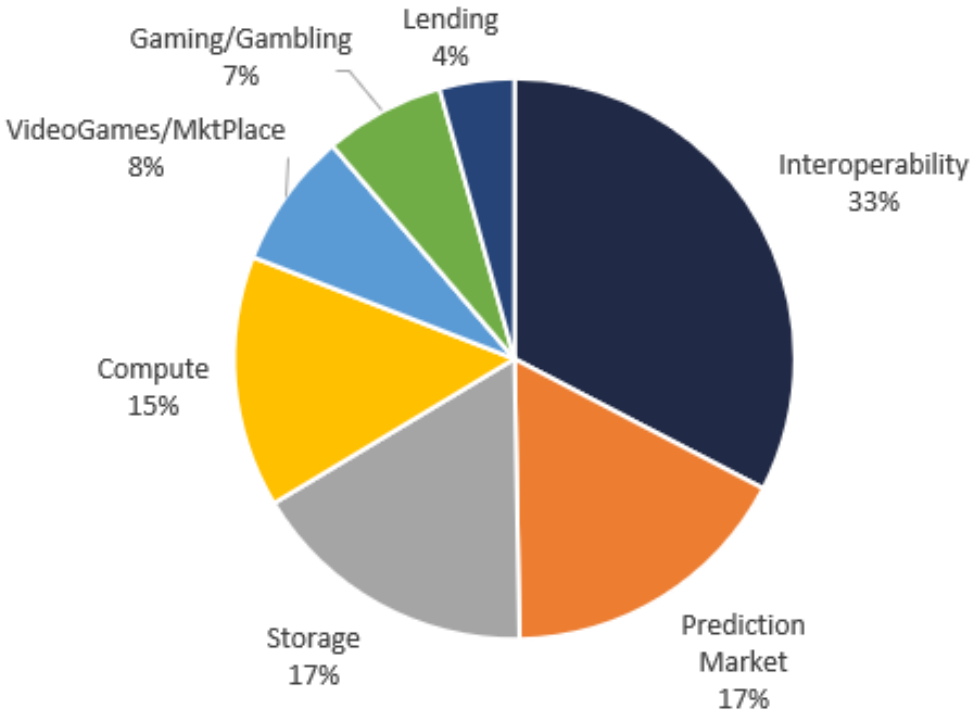
- **Aion Network (AION)** - a decentralized platform for blockchain interoperability, with fees paid in the AION token, and validators/backers rewarded for processing transactions and supporting the network.
- **ICON Network (ICX)** - a decentralized network where anyone can participate and connect to any blockchain, using ICX token for transaction fees.

Figure 70: Key Other Utility Sector Statistics

	Network	Market Capitalization ($MM)	Annualized Spec. Velocity	Base Chain	Description
Storage	FIL	--	--	Proprietary	Used to pay for storage.
	SC	$388	13x	Proprietary	Use to pay for storage.
Compute	GNT	$315	15x	Ethereum	Used to pay for compute power.
	SNM	$44	6x	Ethereum	Used to pay for compute power.
Gaming/Gambling	FUN	$136	4x	Ethereum	Used for gambling and fees.
	EDG	$33	9x	Ethereum	Used for gambling.
VideoGames/MktPlace	WAX	$138	9x	Ethereum	Used to transact on the platform.
	ENJ	$48	29x	Ethereum	Used to transact or create goods.
Lending	SALT	$79	11x	Ethereum	Used for membership and fees.
	LEND	$31	7x	Ethereum	Used for fees and collateral.
Prediction Market	REP	$336	16x	Ethereum	Used to create events.
	GNO	$57	6x	Ethereum	Locked to generate platform tokens.
	STX	$14	37x	Ethereum	Used to create events/pay fees.
Interoperability	AION	$169	7x	Proprietary	Used to monetize inter-chain bridges.
	ICX	$532	21x	Proprietary	Used for interchain value fees and staking.
Median		**$107**	**10x**		

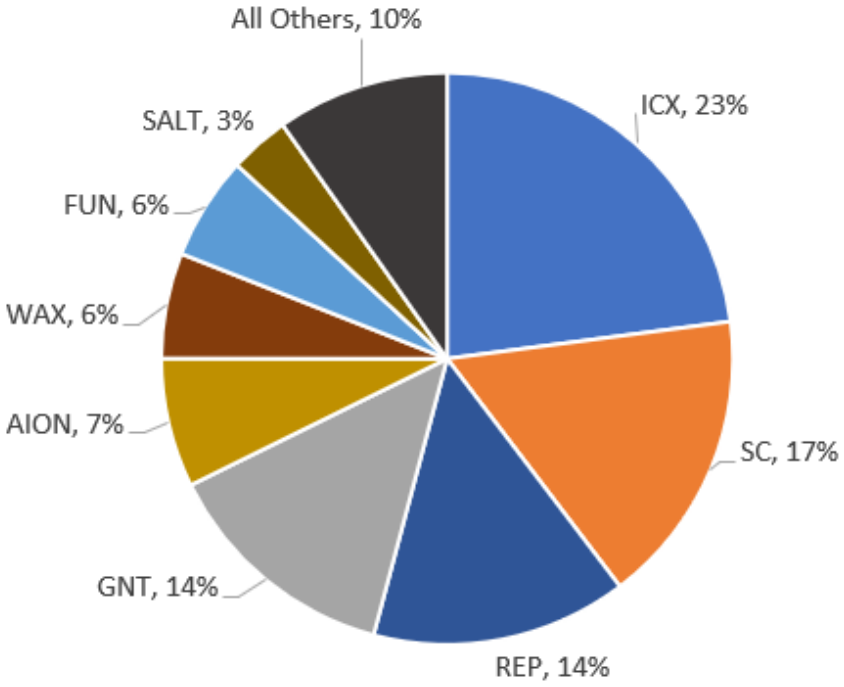
Source: Satis Research

Figure 71: Other Utility Networks - Weighting (by Application)



Source: Satis Research

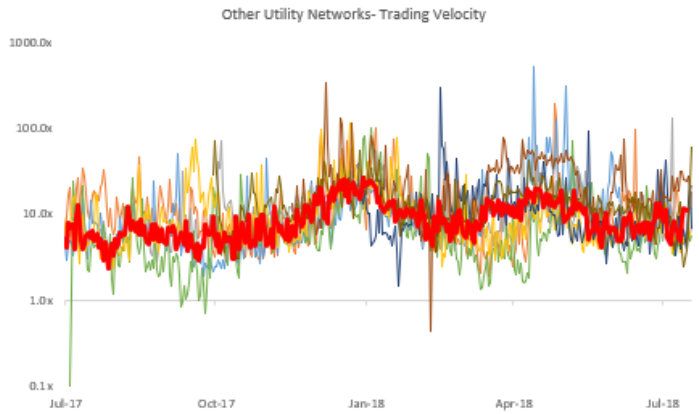
Figure 72: Other Utility Networks - Weighting (by Cryptoasset)



** "All Others" includes: GNO (2%), ENJ (2%), SNM (2%), EDG (1%), LEND (1%), STX (1%)*

Source: Satis Research

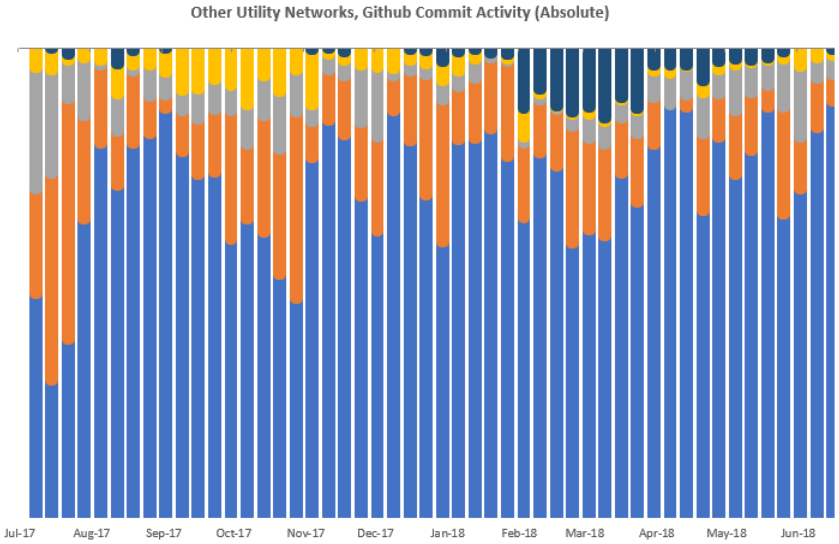
Figure 73: Sector Network Statistics - Trading Velocity



	Start	Finish	Min	Max	Mean	Median
FIL	--	--	--	--	--	--
SC	87x	12x	2x	190x	14x	9x
GNT	6x	12x	2x	521x	15x	9x
SNM	10x	6x	3.46x	128x	12x	8x
FUN	19x	5x	0.7x	102x	9x	5x
EDG	4x	6x	2.4335x	113x	13x	8x
WAX	18x	25x	1x	301x	14x	10x
ENJ	13x	19x	0x	343x	26x	19x
SALT	15x	22x	2x	72x	14x	13x
LEND	20x	15x	1.801x	744x	31x	15x
REP	3x	5x	0.7x	175x	6x	3x
GNO	1x	10x	1x	49x	4x	2x
STX	16x	34x	5.973x	131x	25x	21x
AION	4x	8x	0x	67x	9x	7x
ICX	40x	26x	2x	157x	18x	16x
Median	14x	12x	2x	144x	14x	9x

Source: Satis Research, Coinmarketcap

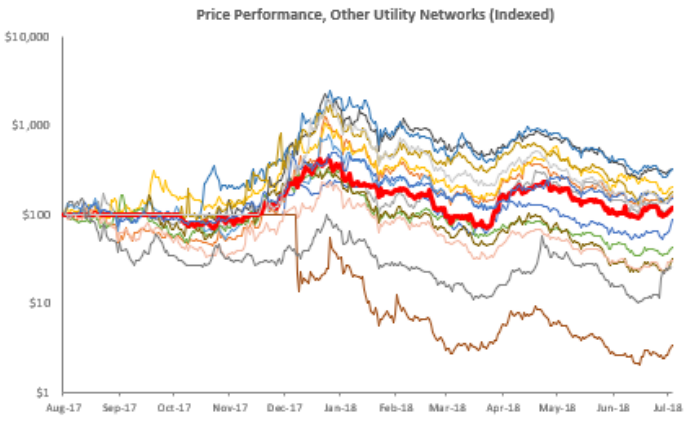
Figure 74: Development Activity



	Start	Finish	Min	Max	Mean	Median
SC	--	44	1	69	25	24
GNT	--	21	--	85	38	40
SNM	--	21	2	90	30	25
REP	--	8	1	78	24	17
GNO	--	1	--	20	3	1
AION	--	1	--	156	50	27
Median	--	15	1	82	28	24

Source: Satis Research, Github

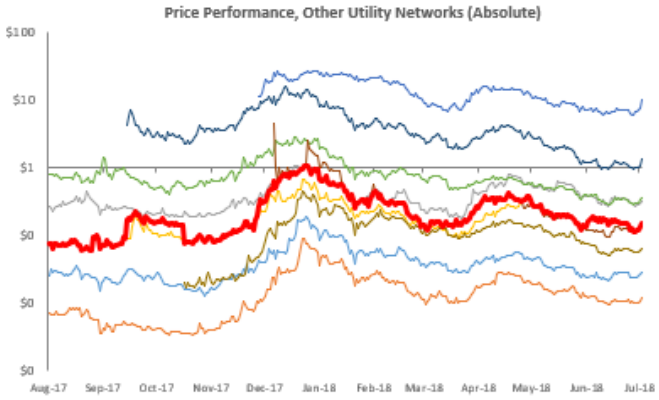
Figure 75: Price Performance (Indexed)



	Start	Finish	Min	Max	Mean	Median
FIL	$100	$89	$53	$241	$117	$100
SC	$100	$157	$45	$1,240	$218	$163
GNT	$100	$124	$70	$411	$152	$127
SNM	$100	$208	$91	$1,061	$286	$240
FUN	$100	$119	$53	$790	$176	$136
EDG	$100	$42	$34	$341	$101	$81
WAX	$100	$3	$2	$100	$43	$11
ENJ	$100	$329	$87	$2,224	$506	$480
SALT	$100	$32	$22	$377	$101	$88
LEND	$100	$168	$100	$1,985	$326	$224
REP	$100	$150	$75	$516	$184	$160
GNO	$100	$30	$23	$230	$68	$60
STX	$100	$25	$10	$153	$36	$29
AION	$100	$177	$79	$1,682	$376	$332
ICX	$100	$328	$92	$2,452	$562	$430
Median	$100	$124	$53	$516	$176	$136

Source: Satis Research, Coinmarketcap

Figure 76: Price Performance (Absolute)



	Start	Finish	Min	Max	Mean	Median
FIL	$12	$10	$6	$28	$15	$13
SC	$0.01	$0.01	$0.00	$0.09	$0.02	$0.01
GNT	$0.3	$0.3	$0.2	$1	$0.4	$0.3
SNM	$0.1	$0.1	$0.1	$1	$0.2	$0.2
FUN	$0.1	$0.03	$0.01	$0.19	$0.04	$0.03
EDG	$0.6	$0.4	$0.3	$3	$0.9	$0.7
WAX	$4.6	$0.2	$0.1	$5	$0.4	$0.3
ENJ	$0.02	$0.1	$0.02	$0.4	$0.1	$0.1
SALT	$4	$1	$1	$16	$4	$3
LEND	$0.07	$0.03	$0.02	$0.37	$0.08	$0.06
REP	$17	$32	$16	$108	$39	$34
GNO	$91	$53	$40	$406	$121	$106
STX	$0.8	$0.4	$0.2	$2.6	$0.6	$0.5
AION	$1.1	$1.1	$0.5	$11	$2.8	$2.5
ICX	$0.5	$1.6	$0.5	$12	$3.4	$2.7
Median	$0.6	$0.4	$0.2	$3	$1	$0.5

Source: Satis Research, Coinmarketcap

Figure 77: Price Performance Comparison

Source: Satis Research, Coinmarketcap

Overview of Regulatory Judgment by Jurisdiction

When viewing cryptoasset market composition, legal consideration is important in determining further characteristics of networks. Projects and/or companies issuing cryptoassets through fundraising, or ICOs, are placed under the heaviest scrutiny. Although we have explained the fundamental differences between investment/security and consumptive/utility cryptoassets, their legal understanding may differ vastly.

This section is meant to serve as an overview of the rules that are generally applicable to establishing whether a digital token issuance or ICO would not be a security - namely what is commonly known as a "utility" token as outlined in our last note. Therefore, this Is generally a speaking discussion of the application of securities law to utility tokens in each jurisdiction, along with other laws in some cases. We are not attempting to discuss the application of securities laws to security tokens; securities laws are particularly complex, but usually do not change in their application to a token issuance that is designed to be a security just because it's a token. However, it is true that the tax issues do tend to get more involved for a security token vs say debt or equity.

When you are choosing a jurisdiction as an issuer of an ICO, there are a few things that we think are important to bear in mind:

Firstly, the jurisdiction in which you incorporate only helps you to the extent your activities are limited to that jurisdiction; the majority of major global jurisdictions will consider you caught by the laws of each country your ICO sells into, both at issuance and on the secondary markets, rather than just the one you are located or incorporated in. For example, in the 21A DAO Report, the United States SEC found jurisdiction over the DAO (a German Foundation), Slock.it (a German corporation) and its four founders, all German nationals residing in Germany. The primary basis on which the SEC found it had jurisdiction over German entities and nationals was that the DAO Tokens were sold through secondary trading platforms (exchanges) to over 700 US customers.

Secondly, there is a tendency to focus on the ICO related aspects of the law in any particular jurisdiction, to the exclusion of any other applicable law. We would encourage issuers to consider not just the ICO aspects, but the corporate, commercial, regulatory and tax laws of any jurisdiction as part of your decision making; including seeking advice from both an international tax accountancy firm, as well as a full service international law firm. To make a fully informed decision you need to have answers to questions such as the following:

- What are the corporate governance requirements for your company or foundation?
- Do you need to physically be in country to hold board meetings?
- How many nationals of the country will need to be on your board?

- What are the requirements to maintain tax residency (e.g., some jurisdictions like Switzerland require you to employ Swiss residents in Switzerland)?
- What the tax rates will be on your general operations and the proceeds of the ICO, especially if you are based in a second and/or third jurisdiction?

Thirdly, there are two key things to understand about the laws that apply to ICOs. The first is that in most of the jurisdictions we list below there are significant regulatory regimes that apply if your ICO is a security, a collective investment scheme, or both. In many of these jurisdictions a collective investment scheme is by definition a security, but also subject to specialized, more stringent rules applicable to collective investment schemes alone. As a result of the focus on the definition of "security", the impact of the laws applying to collective investment schemes tends not to be at the top of people's minds but we have endeavored to source law firm notes under "ICO Resources" that address both regimes. The second is that if your ICO is not a security in most of these jurisdictions and you decide to proceed, you need to remember "don't commit fraud", as memorably oft repeated by one of the smartest lawyers in the space, along with many other areas of risk. You need to remember that just because an ICO isn't a security doesn't mean that big complex areas of law: fraud, contract, AML/KYC, consumer protection laws, etc., don't still apply. In fact, figuring out the applicable laws and requirements for an ICO of a utility token is in many ways harder than figuring out the requirements for a security token offering, because securities laws often preempt (override) other laws.

Without fully comprehending the answers to questions like these and others, it is possible to pick a jurisdiction that is great for an ICO but terrible for actually running a company and/or blockchain platform. Or alternatively, to expose yourself to incredibly complex and serious laws with long statutes of limitations (in some countries up to 20 years) without understanding the scope and scale of the risks you are taking. With that in mind, we've tried to give an overview of several of the major jurisdictions and provided links to materials that we think provide a good overview on these key topics. We would generally recommend Lex Mundi as a jurisdictional resource and they have a great video on ICO friendly jurisdictions. We would absolutely above all recommend seeking qualified, experienced advice from an international tax accountancy firm, as well as a full service international law firm.

However, as noted in our Disclosures and Disclaimers, please bear in mind this is a general research report. The information contained herein does not constitute financial, legal, tax or any other advice. All third-party data presented herein were obtained from publicly available sources which are believed to be reliable; however, we make no warranty, express or implied, concerning the accuracy or completeness of such information. The information herein is not appropriate to be relied upon regarding a specific legal issue or problem.

Europe

The EU

Overview: Several of the EU's regulatory bodies have issued warnings to investors and/or consumers of the dangers in investing in ICOs, but on the other hand, the EU Commission in particular, has announced that it plans to issue a blueprint for regulatory sandboxes for FinTech and is relatively open to pursuing development of FinTech, including ICOs.

From an issuer's perspective, European Securities and Market Authority (ESMA) points to three regulated instruments under EU legislation which ICOs could fall into: 1) Transferable securities 2) Financial Instruments and 3) Alternative investment funds. The exact definition of each is varied and somewhat dependent on the national jurisdiction (e.g., see this discussion of the evolution of the definition of transferable securities in the EU) and review definitions for particular EU jurisdictions below.

Jurisdictional body guidance:
EBA note, July 2014
ESMA note, Sept 2017
EU Fintech Action Plan, March 2018
ICO Law resources: Blockchain Bundesverband Token Regulation Paper

Estonia

Overview: The Estonian Financial Supervisory Authority (EFSA) has noted that each token should be assessed on its own characteristics. The EFSA considers that tokens which give investors certain rights in the issuer company or if the token's value is tied to the future profits or success of a business, to be securities, and as such requires a prospectus registration and the offering would be governed by Estonian's public securities offerings rules, among other regulations. However, the implication is that so long as the token is a true utility token, it would not be considered a security for the purposes of Estonian law.

Jurisdictional body guidance: EFSA: The legal framework of initial coin offering in Estonia
ICO Law resources: Njord Law note, Mar 18
Jurisdictional note: Lex Mundi
Tax note: PwC Estonia Tax Overview

Germany

Overview: BaFin, the German financial supervisory authority, will determine via a case-by-case assessment of the features and circumstances whether the token constitutes a regulated instrument under applicable legislation (e.g. a financial instrument, a security, or a capital investment).

For the token to be deemed a security it has to meet the following criteria: (i) transferability, (ii) negotiability on financial or capital markets (in principle, albeit debatable, this includes crypto-exchanges), (iii) the embodiment of rights in the token, and (iv) the token must not meet the criteria for an instrument of payment. Even if the token is not transferable, it can still represent a capital investment, loosely defined as a purchase of a share in the company's results, a dividend or other kind of interest payment. However, BaFin does note that tokens without these characteristics are unlikely to be considered securities.

ICO issuers are advised by BaFin to clarify any doubts with BaFin division before proceeding with the issuance. BaFin has an easy to use webportal to submit details of an ICO for review. From anecdotal evidence, BaFin responds to requests for clarification in a relatively quick time-frame.

Jurisdictional body guidance: BaFin advisory letter, Mar 18; BaFin Guide to Startups and Fintech; BaFin Portal for ICO Assessment
ICO Law resources: Blockchain Bundesverband Token Regulation Paper, Feb 2018; MWE note: German Federal Supervisory Authority (BaFin) provides guidance on regulation of ICOs, March 2018
Jurisdictional note: Lex Mundi
Tax note: PwC Germany Tax Overview

Gibraltar

Overview: Gibraltar is in the process of drafting legislation specifically targeted at the sale of utility tokens, defined as entitlements to access future networks or consume future services. The government's view is that these tokens represent commercial products and, as such, are not caught by existing securities regulation in Gibraltar even if there is an expectation of profit as the product/service is built out.

The legislation is expected to include regulation on issuance and trading in or from Gibraltar in utility tokens. The regulation is expected to specify minimal required disclosures and regulate promotion & selling activities. Also, Gibraltar is proposing to establish a public register of "authorized sponsors", which would act as a (self) regulatory body for ICOs and approval by an authorized sponsor would be necessary for any ICO.

Jurisdictional body guidance: Gibraltar Finance - Token Regulation - February 2018
ICO Law resources: Isolas Fintech, ISOLAS LLP Gibraltar DLT and ICO Brochure - June 2017
Jurisdictional note: Isolas Overview
Tax note: PwC Gibraltar Tax Overview

Lithuania

Overview: Lithuania has issued ICO guidelines that broadly segregate ICOs based on whether the token is offering its holders profits and/or governance rights, in which case it is subject to the appropriate securities and other regulations. In cases, where the token only grants a right to use a product or service, Lithuania's Civil Code applies, but securities registration is generally not required.

Lithuania is somewhat unique in that it its guidelines include guidance on what the tax implications of token offerings are under different circumstances. Generally speaking, the guidance notes that security token issuance proceeds are not subject to corporate taxation. Furthermore, for utility tokens only granting the right to use a product or service, corporate taxes are applied when the product/service is delivered (i.e., exchanged for the token) rather than at the moment of fundraising through the ICO.

Finally, Lithuania positively encourages regulated token exchanges, e.g. DESICO, which enables decentralized trading of security tokens (in accordance with Lithuanian regulation) and fundraising up to EUR5m pursuant to Lithuania's Crowdfunding laws.

Jurisdictional body guidance:
Lithuania ICO guidelines, June 2018
Position of the Bank of Lithuania on Virtual Currencies and ICOs, Oct 2017
ICO Law resources: Hogan Lovells, Lithuania issues ICO guidance, June 2018
Jurisdictional note: Ernst & Young, Doing Business in Lithuania, Tax and Legal guide 2017
Tax note: PwC Lithuania Tax Overview

Malta

Overview: Similar to Gibraltar, Malta has just this month passed legislation to regulate "Virtual Financial Assets" (VFAs), the Malta Digital Innovation Act, the Innovative Technology Arrangements and Services Act and the Virtual Financial Assets Act. In the Virtual Financial Assets Act, a VFA is defined as any form of digital medium recordation that is used as a digital medium of exchange, unit of account, or store of value and that is not: (a) electronic money; (b) a financial instrument (under EU or Maltese regulation); or (c) a virtual token; where "virtual token" is defined as a form of digital medium recordation that has no utility, value or application outside of the DLT platform on which it was issued and may only be redeemed for funds on such platform directly by the issuer of such DLT asset.

The issuance of VFAs will be regulated by the Malta Digital Innovation Authority, which requires a 3rd party tech audit of the platform, and Malta Financial Services Authority, which needs to review and approve the white paper.

Jurisdictional body guidance: Overview of Maltese DLT regulation, Feb 2018; the Malta Digital Innovation Act, July 2018, the Innovative Technology Arrangements and Services Act July 2018 and the Virtual Financial Assets Act, July 2018
ICO Law resources: GANADO Advocates - Malta: Breaking The Mould In The Blockchain World - July 2018
Jurisdictional note: Lex Mundi
Tax note: PwC Malta Tax Overview

Switzerland

Overview: Switzerland is famous for being the jurisdiction of the Ethereum Foundation and several other well-known Blockchain companies and ICOs. Our previous research shows 27% of ICOs were located in Switzerland in 2017 but only 4% of ICOs in 2018. The Swiss Financial Market Supervisory Authority (FINMA) evaluates tokens on a case by case basis and broadly categorizes them into:

- Payment tokens which are synonymous with cryptocurrencies and have no further functions or links to other development projects.
- Utility tokens are tokens which are intended to provide digital access to an application or service. These tokens do not qualify as securities only if their sole purpose is to confer digital access rights to an application or service and if the utility token can already be used in this way at the point of issue. If a utility token functions solely or partially as an investment in economic terms, FINMA will treat such tokens as securities (i.e. in the same way as asset tokens).
- Asset tokens represent assets such as participation in real physical underlying, companies, or earnings streams, or an entitlement to dividends or interest payments. In terms of their economic function, the tokens are analogous to equities, bonds or derivatives.

FINMA uses a standard form for enquiries as to the category the token falls into, which can be found here.

Jurisdictional body guidance: FINMA note, Feb 2018; FINMA Standard Form for ICO enquires
ICO Law resources: walderwyss Initial Coin Offerings - from Cryptocurrencies to Entrepreneurial Financing - Feb 2018
Jurisdictional note: Lex Mundi
Tax note: PwC Switzerland Tax Overview

The UK

Overview: The UK will evaluate ICOs on a case-by-case basis based on current legislation. In a recent consumer warning issued by the UK's Financial Conduct Authority (**FCA**), the FCA noted many ICOs will fall outside of UK's securities regulation by the FCA. However, the warning specifically notes that some ICOs may be categorized as collective investments or transferable securities and thereby fall within the prospectus regime (true of all EU countries). The FCA runs an online portal through which consumers can report believed ICO scams, found here.

A UK prospectus, which must be vetted and approved by the FCA, is required for an “offer of transferable securities to the public” in the UK. Exemptions are available for an offer of securities to “qualified investors”, which covers most institutional investors, and/or an offer to fewer than 150 persons (excluding qualified investors) in the UK (again this is a private placement exception applicable in all EU countries).

Jurisdictional body guidance: FCA discussion paper, Nov 2017
ICO Law resources: Osbourne Clarke - ICOs - the legal implications - September 2017
Jurisdictional note: Practical Law - Doing business in the UK - May 2017
Tax note: PwC UK Tax Overview

North America

Canada

Overview: Similar to the US SEC application of the Howey Test to digital tokens, the Canadian Securities Administrator (**CSA**) makes a securities classification based on a four-prong test, namely does the ICO involve: (1) An investment of money, (2) in a common enterprise, (3) with the expectation of profit (4) to come significantly from the efforts of others. Broadly speaking the implication of it is that if the token's value is tied to the future profits or success of a business, it would likely be classified as a security.

The CSA has a Regulatory Sandbox Initiative aimed at FinTech businesses, which allows firms to register and/or obtain exemptive relief from securities law requirements under a faster and more flexible process than through a standard application, in order to test their products, services and applications throughout the Canadian market on a time-limited basis.

Each of the Canadian provinces also has its own securities regulator and Quebec and Ontario's financial regulators permitted a particular ICO, Impak's ICO of MPK to be issued within a regulatory sandbox that does not require registration or a prospectus.

Jurisdictional body guidance:
CSA Staff Notice on Cryptocurrency Offerings, Aug 2017; Quebec and Ontario Decision for Relief for Impak
ICO Law resources: McMillan Advises on First Initial Coin Offering Granted Exemptive Relief by Canadian Securities Regulators
Jurisdictional note: Lex Mundi
Tax note: PwC Canada Tax Overview

United States of America

Overview: As we outlined in our last note, in 2017 the USA had the largest market share of ICOs issued, at 32%. That has declined to 10% in 2018 and the complexity of the applicable law in the US, as well as the activities of US regulators, have undoubtedly had an impact. A utility token (a term the SEC has not endorsed) is considered, generally speaking, to be simultaneously a security by the SEC and property by the IRS, which makes for some significant complexity. The SEC's position has focused to date on a facts and circumstances analysis relative to the definition of investment contract under the *Howey* and *Edwards* case law, however it is worth noting that the definitions of "security" and "fund" for the purposes of the Securities Exchange Act of 1933 and the Investment Company Act of 1940 are possibly the broadest in the world. If not a security then a utility token is a commodity for the purposes of the CFTC and transmitting in digital tokens and cryptocurrencies is considered in certain circumstances to be money transmitter business by FinCEN. The USA has seen a significant amount of regulatory action and litigation in cryptocurrency and utility tokens, and the following is a brief chronology of select regulatory actions and commentary from US regulators over the last 12 months and a list of civil class actions can be found here:

Date	Event
July 21, 2017	US v. Ong filed by the US Attorney's Office of the Western District of Washington. Ong is subsequently sentenced in May 2018 to 20 days of incarceration and more than $1 million in forfeitures for acting as an illegal money transmitter, specifically selling Bitcoin for what he believed was money laundering purposes.
July 25	SEC releases the 21A DAO Report (see above discussion)
July 27	In relation to U.S. v. BTC-E and Vinnik, FinCEN assessed $110M civil money penalty against BTC-e a/k/a Canton Business Corporation (BTC-e) for willfully violating U.S. anti-money laundering (AML) laws. Vinnik, one of the operators of BTC-e is also arrested in Greece and FinCEN assessed a $12 million penalty against him for his role in the violations. Vinnik also faced up to 55 years in prison in the US, but after a jurisdictional battle between the US, Russia and France, France apparently succeeds in winning extradition of Vinnik in July 2018.
December 1	SEC v. PlexCorps (aka Plexcoin) filed and SEC successfully obtains an emergency court order to freeze the assets of PlexCorps, Lacroix, and Paradis-Royer.
December 4	U.S. v. Mansy and TV TOYZ, LLC a final order is issued for forfeiture of approximately $118,000 is granted against Mansy and TV TOYZ for failing to register with FinCEN as an MSB and Mansy is sentenced to prison for a year and a day.

December 11	Two actions by the SEC on the same day that some US lawyers consider represented a substantial development in US lawyers' understanding of the SEC position on utility tokens: •SEC issues Cease and Desist Order to Munchee Inc •Jay Clayton, SEC Chairman also issues "Statement on Cryptocurrencies and Initial Coin Offerings" stating that, "On this and other points where the application of expertise and judgment is expected, I believe that gatekeepers and others, including securities lawyers, accountants and consultants, need to focus on their responsibilities."
December 21	US tax reform makes amendments apparently intended to make it clear that an exchange of one digital token or cryptocurrency for another crystallizes the gain (i.e. makes it taxable) on the first.
January 16, 2018	CFTC v. My Big Coin Pay, Inc. filed, charging commodity fraud and misappropriation related to an ICO known as My Big Coin (MBC). On April 5th, the CFTC succeeded in getting a preliminary injunction and the case is proceeding.
January 18	CFTC v. McDonnell and CabbageTech is filed, relating to a scam pretending to sell cryptocurrencies, seeking restitution to defrauded customers, disgorgement of benefits from violations of the Commodity Exchange Act and CFTC Regulations, civil monetary penalties, trading bans, and a permanent injunction against future violations of federal commodities laws, as charged. On March 6, the CFTC wins a preliminary injunction and the case is proceeding.
January 25	SEC v. Arise Bank et al is filed, and the SEC obtains an emergency temporary restraining order, asset freeze, and other expedited relief.
February 6	Jay Clayton testifies before the US Senate stating "There should be no misunderstanding about the law. When investors are offered and sold securities – which to date ICOs have largely been –they are entitled to the benefits of state and federal securities laws and sellers and other market participants must follow these laws. "
February 13	FinCEN sends a letter to Senator Wyden stating: "Generally, under existing regulations and interpretations, a developer that sells convertible virtual currency, including in the form of ICO coins or tokens, in exchange for another type of value that substitutes for currency is a money transmitter and must comply with AML/CFT requirements that apply to this type of MSB". FinCEN requires money transmitters to be registered as a Money Services Business within 180 days of commencing business.
February 21	SEC v. Montroll and BitFunder is filed, parallel with a criminal perjury and obstruction of justice complaint and an arrest warrant filed by the US Attorney's office of the SDNY US v. Jon Montroll
March 23	The Internal Revenue Service issues a notice reminding "taxpayers that income from virtual currency transactions is reportable on their income tax returns" and further that "Taxpayers who do not properly report the income tax consequences of virtual currency transactions can be audited for those transactions and, when appropriate, can be liable for penalties and interest" and further that "Criminal charges could include tax evasion and filing a false tax return. Anyone convicted of tax evasion is subject to a prison term of up to five years and a fine of up to $250,000. Anyone convicted of filing a false return is subject to a prison term of up to three years and a fine of up to $250,000."
April 2	SEC v. Sharma and Farkas is filed regarding the Centra ICO scam and separately both Sharma and Farkas are arrested. The case is amended to extend to a third person, Trapani on April 20. Again, parallel criminal cases are brought against Sharma, Farkas and Trapani by the U.S. Attorney's Office for SDNY and on May 14, all three are indicted on four-counts of securities fraud and wire fraud carrying a total maximum potential sentence of 65 years in prison.
April 5	Jay Clayton speaks at Princeton stating "Just because it's a security today doesn't mean it'll be a security tomorrow, and vice-versa."
April 18	Arthur Breitman, cofounder of Tezos, is fined $20,000 and suspended from associating with broker-dealers for two years by FINRA over allegations that he failed to disclose to Morgan Stanley his early development of Tezos.
May 22	SEC v. Titanium Blockchain Infrastructure is filed and the SEC obtains an emergency asset freeze and the appointment of a receiver for Titanium Blockchain Infrastructure Services Inc.

June 14	Bill Hinman, Director of the Division of Corporate Finance of the SEC, gives a speech at the Yahoo Finance All Markets Summit: Crypto entitled "Digital Asset Transactions: When Howey Met Gary (Plastic)" giving what some US lawyers consider is the most detailed guidance to date on the SEC's views on ICOs and cryptocurrencies, stating amongst other things that: • "[T]he legal analysis must follow the economic realities of the particular facts of an offering, it may not be fruitful to debate a hypothetical structure in the abstract and nothing in these remarks is meant to opine on the legality or appropriateness of a SAFT. From the discussion in this speech, however, it is clear I believe a token once offered in a security offering can, depending on the circumstances, later be offered in a non-securities transaction. I expect that some, perhaps many, may not." • "And putting aside the fundraising that accompanied the creation of Ether, based on my understanding of the present state of Ether, the Ethereum network and its decentralized structure, current offers and sales of Ether are not securities transactions." • "I would like to emphasize that the analysis of whether something is a security is not static and does not strictly inhere to the instrument." • "What are some of the factors to consider in assessing whether a digital asset is offered as an investment contract and is thus a security? Primarily, consider whether a third party – be it a person, entity or coordinated group of actors – drives the expectation of a return. That question will always depend on the particular facts and circumstances,"

Jurisdictional body guidance: SEC - ICOs; SEC Example Scam site - Howeycoins; SEC Cyber Enforcement Actions - Digital Currency/Initial Coin Offerings; IRS Notice 2014/21; CFTC - Customer Advisory: Use Caution When Buying Digital Coins or Tokens; A CFTC Primer on Virtual Currencies; FinCEN February 13, 2018 letter to Senator Wyden; FinCEN 2013 guidance on Virtual Currencies
ICO Law resources: ICO Issuers: Fix the Problem Before the SEC Fixes It for You; MoCo Cryptocurrency Litigation Tracker; SAFT Project; Cardozo Blockchain Project - Not so fast - Risks related to the use of a "SAFT" for Token Sales; Coinbase - A Securities Law Framework for Blockchain Tokens; U.S. State Of Wyoming Defines Cryptocurrency 'Utility Tokens' As New Asset Class
Jurisdictional note: Lex Mundi
Tax note: PwC USA Tax Overview

Caribbean

Bermuda

Overview: The Caribbean jurisdictions have many similarities but some distinct differences also. Bermuda has in particular been a relatively innovative jurisdiction in the ICO and digital asset space. In July 2018, Bermuda passed several pieces of legislation that regulates ICO activity with a relatively effective but light touch, with more to come in the Fall.

Under the Digital Asset Business Act, many of the activities of a secondary exchange and/or wallet provider require registration with the Bermuda Monetary Authority, with a reasonable level of compliance requirements and disclosure including:

- having controllers and officers who are fit persons, insurance, adequate accounting standards and governance;
- maintaining a minimum net capital of $100k; and
- disclosing to the BMA both a business plan (describing the nature and scale of the project, specifics around how the business will be managed) as well as AML/KYC policies.

The two pieces of legislation specifically applicable to ICOs are the Companies and Limited Liability Company (Initial Coin Offering) Amendment Act 2018 (ICO Act) and the related Companies and Limited Liability Company (Initial Coin Offering Regulations) 2018 (ICO Regulations, together with the ICO Act, ICO Legislation). The ICO Legislation again applies to a very broad definition of digital assets, which would include payment tokens and utility tokens. The ICO Legislation applies only to companies incorporated in Bermuda and requires an application to the Minister of Finance to conduct an ICO in or from Bermuda. The ICO Legislation likewise requires amongst other things the following information to be included in the application:

- the names of the persons managing the project and the ICO;
- a clear roadmap and details of the digital asset to be issued in the ICO;
- a projected amount of funds to be raised;
- description of AML/KYC technology to be used; and
- details on compliance and auditing of the ICO.

The white paper must be subsequently filed with the Minister of Finance and the ICO Legislation also requires a similar and reasonable level of detail to be included in the white paper. There are then requirements as to the ICO issuance platform and an audit requirement within 90 days of the completion of the ICO with regard to financial operations and the conduct of the ICO, which is required to be filed with the Registrar of Companies. All in all, it's appears to be a reasonable and balanced approach which addresses many of the issues around poorly run ICOs.

Jurisdictional body guidance: ICO regulation announcement, July 2018; Digital Asset Business Act, July 2018
ICO Law resources: Applebyglobal - A Framework for Initial Coin Offerings in Bermuda - July 2018; Applebyglobal - Bermuda introduces the Digital Asset Business Act - June 2018
Jurisdictional note: Lex Mundi
Tax note: PwC Bermuda Tax Overview

British Virgin Islands

Overview: Unlike Bermuda, the BVI hasn't issued any formal guidance on its approach to ICO regulation to date, but like Singapore as well as the other Caribbean jurisdictions, the BVI has long been used as a Special Purpose Vehicle jurisdiction as a result of flexible English language common law corporate law requirements and tax neutrality (the BVI has a complete absence of income, corporate, capital gains, or withholding taxes).

When considering whether a ICO is a public offering of securities (investments as defined) for the purposes of BVI law, the primary piece of legislation is Part II of the Securities and Investment Business Act of 2010 (SIBA) and in particular the three page definition of "investments" in Schedule I, which is generally viewed as unlikely to catch a true utility token and does not include the concept of "investment contract" or similar concepts which could pull a digital token into the ambit of the securities laws in other jurisdictions. What is possibly relatively unique is that Part II of SIBA is currently not *in force*. Thus, while one can analyze whether or not a digital token is an investment for the purposes of Part II of SIBA and subject to its requirements, including a prospectus, the exercise is currently academic. There are AML/KYC laws in the BVI but again the view of local lawyers is that generally speaking a utility token should fall outside the ambit of these laws.

Jurisdictional body guidance: None as of July 2018
ICO Law resources: Ogier - Crypto-currency and ICOs in the British Virgin Islands - July 2018
Jurisdictional note: Lex Mundi
Tax note: PwC Caribbean Overview

Cayman Islands

Overview: Similarly, to BVI, the Cayman Islands' government hasn't issued guidance on ICOs, although it is expected relatively soon. Also similar to the BVI, the Cayman Islands has no income or capital taxes and the relevant legislation is the Securities Investment Business Law of 2011 (SIBL), and a four-page definition of "securities" in Schedule 1. While common with many other jurisdictions, there is no mention specifically of digital tokens or cryptocurrencies in Schedule 1, Schedule does include a contract for investment purposes. However, the definition of contract for investment purposes is much narrower than the US or Canadian definition for example and focuses on whether the contract is expressed to be trading on a securities exchange or clearing house and whether there is provision for payment, and it is generally viewed by local lawyers that many digital tokens would not be caught by the definition of securities in SIBL. There are AML/KYC laws in the Cayman Islands but again the view of local lawyers is that generally speaking a utility token should fall outside the ambit of these laws.

Jurisdictional body guidance: None as of July 2018
ICO Law resources: Harneys, Mar 2018; Loeb and Smith, Mar 2018
Jurisdictional note: Lex Mundi
Tax note: PwC Cayman Tax Overview

Middle East

Israel

Overview: The Israeli Securities Authority (ISA) issued guidance in March 2018 that it views cryptocurrencies that confer rights similar to the rights conferred by traditional securities such as shares, bonds, and participation units, as securities. In contrast, cryptocurrencies that represent a right to a product or service and are acquired solely for the purpose of consumption will not be deemed securities. In this regard, the relevant test is the actual purpose of the acquisition: if the token cannot be used when it is issued or if it can be traded on a secondary market, these may be indications that its acquisition was made for investment rather than for consumption purposes.

In addition, the ISA noted in the guidance that ISA should consider new ICO capital raising frameworks including: lenient regulation on small scale ICOs and through crowdfunding platforms, a regulatory sandbox and examining the possibility of relying on foreign regulation applying to the subject of cryptocurrencies.

Jurisdictional body guidance:
ISA committee ICO regulation recommendations, Mar 2018
Warning to investors regarding cryptocurrencies, Feb 2018
ICO Law resources: Nir Porat & Co - Digital and Cryptocurrencies
Jurisdictional note: BDO - Doing Business in Israel - 2016
Tax note: PwC Israel Tax Overview

UAE - Abu Dhabi

Overview: Broadly speaking ICOs are not regulated under UAE law, although additional Emirate-specific regulation will apply. Abu Dhabi is the only Emirate so far which issued ICO specific regulation. It specified that any ICO which has features and characteristic of a security, e.g. a right to profits of a business, will be treated as a security in Abu Dhabi; otherwise it will be treated as a commodity, and the spot transactions of the token will not constitute regulated activities for the purposes of Abu Dhabi law.

Jurisdictional body guidance:
Abu Dhabi's Regulation of ICOs and Virtual Currencies under the Financial Services and Markets Regulations, Oct 2017
UAE's Investor Warning, Feb 2018
ICO Law resources: Taylor Wessing, Mar 2018
Jurisdictional note: Lex Mundi
Tax note: PwC UAE Tax Overview

Asia-Pacific

Australia

Overview: The Australian Securities & Investment Commission (ASIC) issued an information sheet in May 2018 clarifying how the ASIC believes existing legislation applies to ICOs. Under the guidance, ICOs need to be evaluated on a case-by-case basis. Moreover, even if the tokens do not trip any financial product regulation, ASIC explicitly states that it is serious breach of Australian law to undertake misleading or deceptive conduct, among other potential breaches of law applicable to an ICO.

The information sheet states that tokens can qualify as regulated financial products if, among other things, they represent:

-- Managed investment schemes: The basic indicators of whether an arrangement is a managed investment scheme are:

- people contribute money or assets to obtain an interest in the scheme
- any of the contributions are pooled or used in a common enterprise to produce financial benefits or interests in property, and
- the contributors do not have day-to-day control over the operation of the scheme but, at times, may have voting rights or similar rights.

Importantly, ASIC notes that if the value of the digital tokens is affected by the use of the funds raised from the token sale (e.g. the funds are used to build the platform) then the ICO is likely to be classified as a managed investment scheme; as such, it requires a range of product disclosure, licensing and potential managed investment schemes registration obligations under the Corporations Act.

-- Shares: If tokens have rights similar to those commonly attached to shares, e.g. ownership, voting or rights to participate in profits of the company – then it is likely that the tokens could fall within the definition of a share. As a result, the offering requires a prospectus registration.

-- Derivatives: A token that is priced based on factors such as another financial product or underlying market index or asset price moving in a certain direction before a time or event, for example through a smart contract, the token might qualify as a derivative.

Jurisdictional body guidance: ICO information sheet, May 2018
ICO Law resources: Gilbert & Tobin, Sept 2017
Jurisdictional note: Lex Mundi
Tax note: PwC Australia Tax Overview

China

Overview: Since September 2017, China has maintained that "token fundraising" is an unauthorized and illegal activity in China; and prohibits any platform to exchange or trade tokens. Moreover, institutions are prohibited from directly or indirectly providing any financial or other services associated with ICOs.

Jurisdictional body guidance: Bank of China Insurance Regulatory Commission guidance, Sept 2017
ICO Law resources: Skadden - China Shuts Down ICOs - September 2017
Jurisdictional note: Lex Mundi
Tax note: PwC China Tax Overview

Hong Kong

Overview: Hong Kong's Securities and Futures Commission (SFC) issued guidance in September 2017 in which the SFC notes that the facts and circumstances of the ICO need to be taken into regard when determining whether tokens qualify as securities.

The SFC's guidelines outline three types of offerings in which digital tokens might constitute securities:
-- Shares and Debentures: Tokens may be regard as shares or debentures if they represent ownership or other shareholder rights in a corporation, e.g. right to an income stream from the corporation, or a right of repayment of principal with interest.
-- Collective Investment Schemes (CIS): The guidance outlines the following features of a CIS:

- it must involve an arrangement in respect of property (property is broadly defined);
- participants do not have day-to-day control over the management of the property (even if they have the right to be consulted or to give directions about the management of the property);
- the property is managed as a whole by or on behalf of the person operating the arrangements, and/or the participants' contributions and the profits or income are pooled; and
- the purpose of the arrangement is to provide participants with profits, income or other returns from the acquisition or management of the property.

The SFC expressly notes: "Where the digital tokens involved in an ICO fall under the definition of "*securities*", dealing in or advising on the digital tokens, or managing or marketing a fund investing in such digital tokens, may constitute a "*regulated activity*". Parties engaging in a "*regulated activity*" are required to be licensed by or registered with the SFC irrespective of whether the parties involved are located in Hong Kong, so long as such business activities target the Hong Kong public."

Broadly speaking, registration exemptions exist for securities offerings to professional investors and high-net-worth individuals (typically entities with over HK$8m in securities portfolios or over HK$40m in total assets) and private placement offerings to not more than 50 persons.

As is common in many jurisdictions, there is very limited case law surrounding what constitutes a CIS. However, the SFC has sent letters to several ICOs and exchanges, where it alleged the ICOs to have be securities issuances and that the tokens traded on the secondary exchange are securities.

Jurisdictional body guidance:
Statement on initial coin offerings, September 2017;
SFC warning on cryptocurrency risks, February 18
ICO Law resources: Slaughter and Amy, Sept 2017; Charltons Quantum, Sept 2017
Jurisdictional note: Lex Mundi
Tax note: PwC Hong Kong Tax Overview

Korea, Republic Of

Overview: Several media outlets have reported that ICO issuance and trading is prohibited in the country, this relates to a statement by the Minister of Justice who is reported to have stated in November 2018 that "There are great concerns regarding virtual currencies and the justice ministry is basically preparing a bill to ban cryptocurrency trading through exchanges". However, the only specific government guidance we are aware of is the requirement (which came into effect in Jan 2018) that cryptocurrencies are traded using "real-name" bank accounts, this measure is intended to make market participants comply with AML laws.

Moreover, under Korea's Securities and Exchange Act (SEA) securities are only defined ostensibly and thereby apply to a limited number of categories (see Law and Policies of Securities Regulation in Korea, pg 3), which do not mention virtual currencies, ICOs, tokens or similar. Therefore, it is believed by Korean attorneys that a vast majority of ICO structures would not fall under SEA's definition of securities.

Korea is also recently reported to be coming up with a plan and/or legislation to promote cryptocurrencies, ICOs and blockchain businesses in Korea, but that draft legislation has not been made public online as far as we are aware.

Jurisdictional body guidance:
Financial measures to curb speculation in cryptocurrency trading, Jan 2018
Revised guidelines for AML on virtual currencies, Feb 2018
ICO Law resources: IPG Legal - Future of Bitcoin in Korea - January 2018
Jurisdictional note: Lex Mundi
Tax note: PwC Korea Tax Overview

Japan

Overview: Japan was one of the first countries to issue ICO specific regulation. In particular the amended Payments Services Act (Apr 2017) requires that businesses that exchange virtual currency (VC) for fiat or another VC to register with the FSA. Under the act VC is defined as a proprietary value that satisfies the following criteria:

- Between unspecified persons: (i) it can be used to settle payments for goods and/or services and exchanged with legal currency; or (ii) it can be exchanged with another virtual currency.
- It can be transferred using an electronic data processing system.
- It is not denominated in Japanese Yen or any foreign legal currency.

If the token issued in the ICO meets the above criteria the issuer and promoter of the ICO are required to register as operators of Virtual Currency Exchanges Businesses.

In addition, the FSA statement noted that ICOs may also be subject to the Financial Instruments and Exchange Act (FIEA), which regulates Collective Investment Schemes (CIS). The definition of CIS under the act is broad: it generally covers any arrangement under which cash and its equivalents are collected from investors and invested in a business, whereby investors are entitled to receive dividends or distribution of assets.

To our knowledge, FSA hasn't provided clarity whether the right to use the platform's future products / services qualifies as a distribution of assets; and thereby trips provisions of FIEA. If an ICO is deemed as a CIS, the issuer and promoter of the issuance are both subject to a number of filling requirements.

Finally, a high profile working group has put forth a proposal for a new set of ICO specific regulations, which is now being contemplated by government. The proposal includes a specification of disclosures that need to be given in the white paper and requires issuers to provide ICO investors a means by which to track the project's progress. It also requires KYC and suitability checks on investors and proposes that exchanges be regulated by requiring an industry-wide minimum standard on token listings, insider trading and market manipulation rules, and cyber security standards.

Jurisdictional body guidance:
Revised Virtual Currency Act, Apr 2017
User and business warning about the risks of ICOs, Oct 2017
Working Group proposal on ICO regulation, Mar 2018
ICO Law resources: So Law, July 2017; Lexology, Dec 2017
Jurisdictional note: Lex Mundi
Tax note: PwC Japan Tax Overview

Singapore

Overview: Singapore, as an English speaking common law jurisdiction regularly utilized as a Special Purpose Vehicle (**SPV**) jurisdiction, with relatively flexible tax and residency laws, and a relatively narrow definition of "security" (see Section 2(1) of the Securities and Futures Act) has been popular as an ICO issuer jurisdiction for several years. The Singapore Monetary Authority has published guidance on digital token offerings as well as guidance from the Inland Revenue of Singapore on virtual currencies. In August 2017, MAS issued clarification that: "(a) that the offer or issue of digital tokens in Singapore will be regulated by MAS if the digital tokens constitute products regulated under the Securities and Futures Act (Cap. 289) (SFA) and (b) ICOs are vulnerable to money laundering and terrorist financing (ML/TF) risks due to the anonymous nature of the transactions, and the ease with which large sums of monies may be raised in a short period of time . . . MAS is currently assessing how to regulate ML/TF risks associated with activities involving digital tokens that do not function solely as virtual currencies".

Jurisdictional body guidance: MAS Guide to Digital Token Offerings; the IRAS Guide on Virtual Currencies; Consumer Advisory on Investment Schemes Involving Digital Tokens (Including Virtual Currencies); and
MAS clarifies regulatory position on the offer of digital tokens in Singapore
ICO Law resources: Jones Day - ICOs - A Singapore Perspective - November 2017
Jurisdictional note: Lex Mundi
Tax note: PwC Singapore Tax Overview

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Data – Pricing data on all charts was captured on 7/18/2018, Github data on 7/16/2018, network data on 7/19/2018, sector key statistics tables on 7/25/2018, and front-page table data on 7/26/2018.

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