



2018 Blockchain Outlook

Buy. Rotate. Repeat.

We remain constructive on the outlook for bitcoin and blockchain overall and while returns should be strong, we forecast returns to be lower than 2017. In 2017, the aggregate value of blockchain tokens (FS CryptoFX Agg Index) rose 2,498% and bitcoin rose 1,369%.

- 2018 FORECAST:** We forecast the crypto-currency market cap to exceed \$1.2T (FS CryptoFX) ([Slide 3](#)), with leadership led by tokens with the strongest use case (digital currencies) and therefore, see large-cap token dominance rising in 2018. In our view, the strongest use case for crypto-currencies is financial corridors (transactions, transfers) and those tokens focused on this area should outperform—favor BTC, ETH, etc. Technical, institutional and regulatory hurdles remain, but clearly momentum is established. But tokenization of assets has significant potential (and greater governance and regulatory issues) and 2018 should be a year of progress.
- Bitcoin has fallen >40% from its \$20,000 high and the 6 most recent declines of >25% saw bitcoin retrace 60%-70% of its recent rally ([Slide 5](#))—hence, we expect Bitcoin's major low to be \$9,000 and would be aggressive buyers around that level. We see Bitcoin and Ethereum dominance rising in 2018 from 40%/19%, respectively, and therefore both outperform aggregate indices [Slide 17](#).
- TACTICAL STRATEGY ROTATION:** Even as Bitcoin fell >40% from its mid-Dec highs, the FS CryptoFX 250 (small-cap) rose 96% ([Slide 19](#)). Small-caps outperformed bitcoin in 5 of the last 6 Bitcoin sell-offs but it is unusual to see small-caps rise. This only happened 3/10/17 to 3/17/17 and similar to today, suggests rotation into alt-tokens rather than an outright outflow of USD out of crypto-currencies. Part of the cycle is fueled by Crypto HF inflows (and deployment) and part is due to the ICO cycles [Slide 16](#). As such, we see rotations in 2018 as opportunities for investors to outperform BTC.
- INSTITUTIONAL INFLOWS SHOULD RISE IN 2018, SUPPORTING GAINS.** Ultimately, we expect institutions to become more comfortable with valuation approaches to crypto, as markets have shown willingness to accept evolution in market approaches—consider that prior to 1995, 92% of Tech IPOs were profitable—today, it is 20% ([Slide 9](#)). Equally important, crypto-currency correlation to equity, bonds and commodities is low, arguing for portfolio allocations to crypto [Slide 11](#).
- Looking beyond 2018, adoption of blockchain is powered by millennials and outside the US ([Slide 42](#)). Millennials are the largest population cohort at 96mm and are now just entering their prime income years—surveys show millennials have low trust in existing financial institutions and we see this demographic driving adoption.
- TECHNICAL COMMENTARY:** Bitcoin and the FS CryptoFX Indices have corrected back to important trend support near 100-dma's. We expect this support levels will hold and define the lower end of 2018 trading ranges. Our expectation is for a very broad trading range to develop through Q1 into Q2 followed by upside acceleration in H2.

New recommendations: We are expanding our recommendations for 2018, advocating investors look at 3 additional tokens: Ethereum (second largest blockchain) with a YE target of \$1,900 (vs \$1,000 today). Ethereum Classic (ETC) which is essentially a hybrid of ETH/BTC and a YE target of \$60 (\$25 today). And NEO, which further expands flexibility on smart contracts with a YE target of \$225 (\$130 today).



Jan 18th 2018

CRYPTO FX STRATEGY

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	Fundstrat target		
	Current	Mid18	YE18
Overweight			
Bitcoin	\$9,400	\$20,000	\$25,000
Ethereum	856	1,500	1,900
Eth Classic	25	40	60
NEO	114	150	225

Blockchain ETNs..

GBTC	\$1,500	\$2,200	\$2,800
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Performance	1Q18	2Q18	3Q18	QTD	YTD
Bitcoin	(28%)	-	-	(28%)	(28%)
FS CryptoFX 10	(28%)	-	-	(28%)	(28%)
FS CryptoFX 40	(20%)	-	-	(20%)	(20%)
FS CryptoFX 250	(9%)	-	-	(9%)	(9%)
FS CryptoFX 300	(26%)	-	-	(26%)	(26%)
FS CryptoFX Agg.	(26%)	-	-	(26%)	(26%)

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Bloomberg: FSGA <[GO>](#)

[Click here](#) for research library.

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Rotation: Buy. Rotate. Repeat.

Fundamental case for blockchain strong

Millennials are an important driver

Recommendations

FS CryptoFX Indices

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2018 Forecasts Summary

Our forecasts for the crypto indices are shown below.

- In general, we see 2018 being a strong year but we see the larger and more established blockchains growing in dominance in 2018—hence, better upside for ETH and BTC over the FS CryptoFX indices.
- But the story, in our view, will be the need to be tactically rotating in 2018.

Figure: 2018 Forecast

Fundstrat indices. 100=inception date for the indices 10/1/17

	Description	Market cap (\$ billions)	Current Value	Mid-2018	YE 2018	
FS CryptoFX 10	Largest 10 tokens	\$509.1B	\$260.12	\$380.00	\$525.00	
FS CryptoFX 40	Mid-cap 40 tokens	85.1	357.74	491.00	625.00	
FS CryptoFX 250	Small-cap 250 tokens	34.2	347.14	473.00	600.00	
FS CryptoFX Agg	Aggregate Index	630.8	270.50	385.00	500.00	
	Ticker (coinmarketcap.com)	Rating	Market cap (\$ billions)	Current Value	Mid-2018	YE 2018
 Bitcoin	BTC	OW	\$177B	\$9,400	\$20,000	\$25,000
 Ethereum	ETH	OW	89	856	1,500	1,900
 Ethereum Classic	ETC	OW	3	25	40	60
 Neo	NEO	OW	8	114	150	225

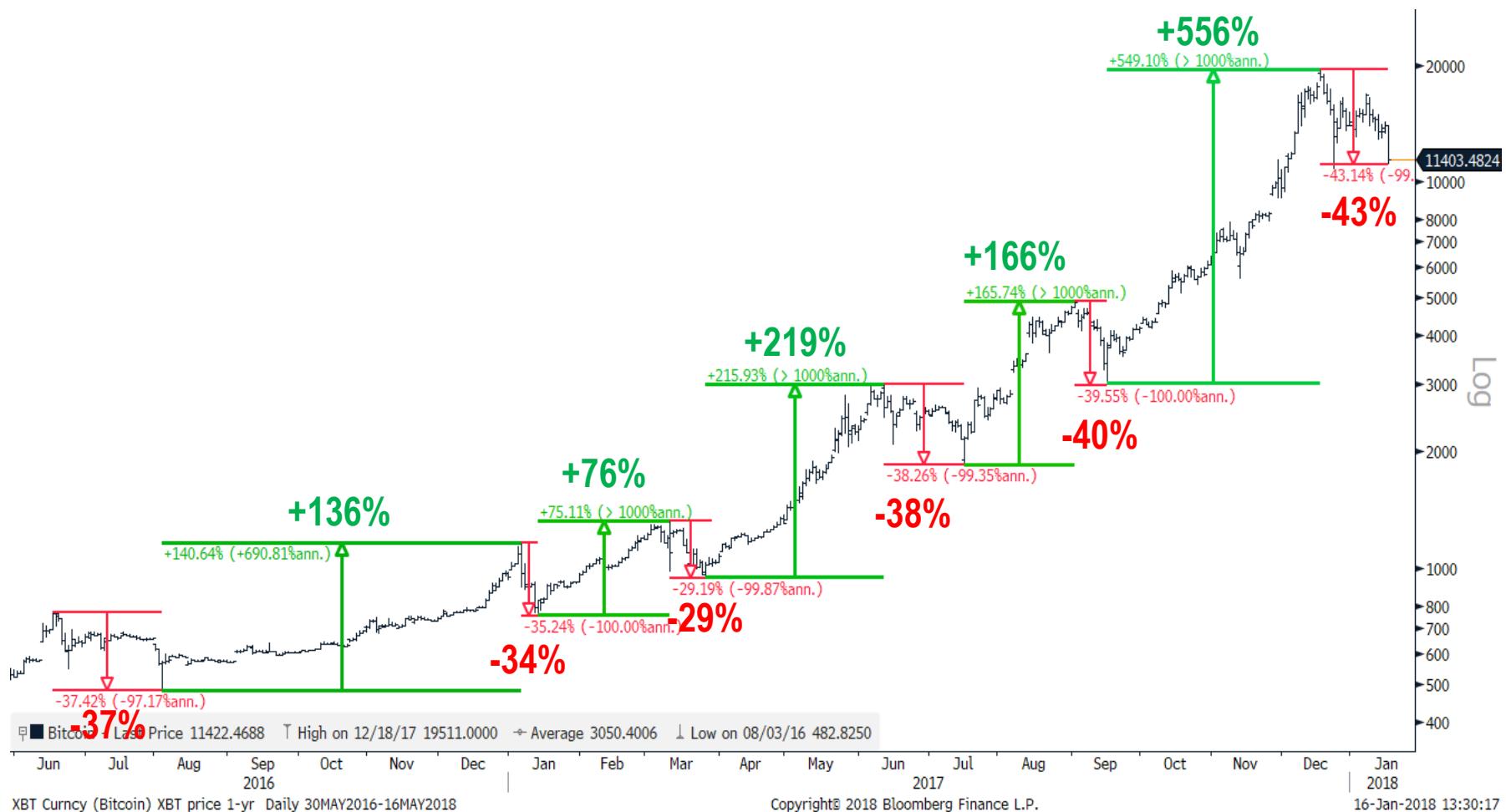
Source: Fundstrat, Bloomberg

Rotation: since mid-2016, 6 rallies >75% and 6 sell-offs >25%

Bitcoin since mid-2016 has seen 6 bull and bear market cycles—in other words, what happens in years in equity markets is “months” in the crypto-world.

Figure: Bitcoin rallies and sell-offs since mid-2016

Price is Bitcoin per USD



Rotation: Past declines suggest bitcoin “major bottom” is \$9k

We have provided comparative statistics on these rallies and declines below and what is relevant are the sell-off statistics.

- We think the best way to think about sell-offs is to look at it through the lens of retracements—how much of the prior rise is given back.**
- The recent rally of 94 days saw a \$16,536 increase in bitcoin’s price (+556%) and a 63% retracement implies that bitcoin’s price should retrace to around \$9,000.**
- We view this \$9,000 as the biggest buying opportunity in 2018—and we would be buyers at levels around here.**

Figure: Bitcoin rallies and sell-offs since mid-2016

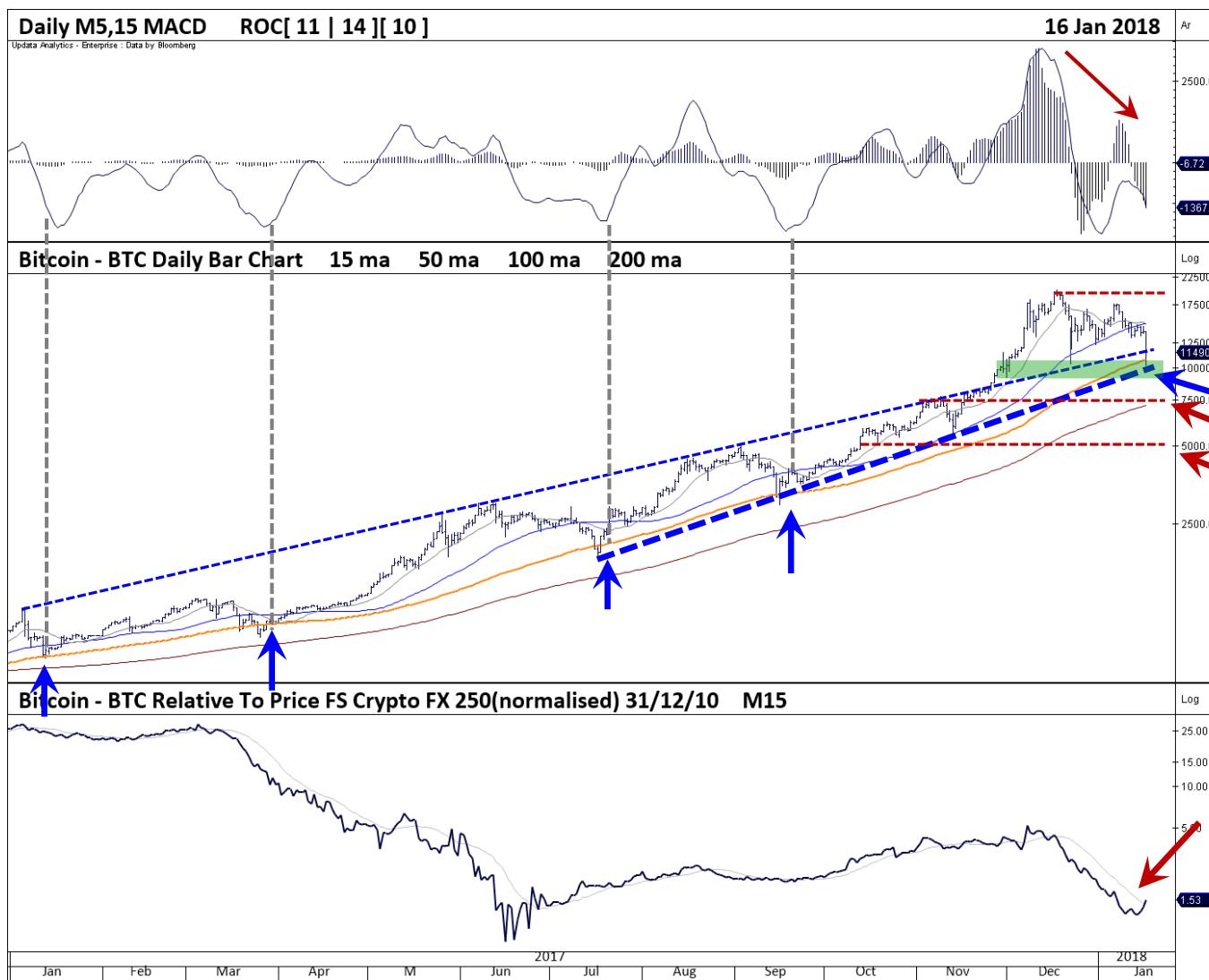
Price is Bitcoin per USD

Bitcoin bulls						Bitcoin bear markets							
Start	End	Days	Price		% change	Start	End	Days	Price		% change	Loss vs gain	Implied BTC low
			High	\$ chg									
2/1/16	6/16/16	136	\$772	\$408	112%	6/16/16	8/3/16	48	-\$290	-37%		71%	\$7,766
8/3/16	1/4/17	154	\$1,141	\$658	136%	1/4/17	1/12/17	8	-\$388	-34%		59%	\$9,753
1/12/17	3/10/17	57	\$1,327	\$575	76%	3/10/17	3/27/17	17	-\$387	-29%		67%	\$8,365
3/27/17	6/12/17	77	\$3,000	\$2,060	219%	6/12/17	7/17/17	35	-\$1,148	-38%		56%	\$10,298
7/17/17	9/1/17	46	\$4,921	\$3,069	166%	9/1/17	9/15/17	14	-\$1,946	-40%		63%	\$9,024
Average			84		149%	Average			24		-36%		63%
9/15/17	12/18/17	94	\$19,511	\$16,536	556%	12/18/17	1/16/18	29	-\$8,442	-43%		51%	

$= (b) * (d)$
 $* (a) \text{ on}$
 $(d) = (c) / (b)$
 12/18

TECHNICAL STRATEGY: Bitcoin – BTC

- BTC is stress testing important support at its 2017 uptrends and 100-dma near ~ 10,000. While a short-term break below this support level is possible we view the current correction as a pullback within an uptrend.



Momentum

- Daily momentum remains negative

Price

- BTC is challenging beginning to break its uptrend support band at its 100-dma (~10,000) which has provided support following prior 40+% corrections (blue arrows).
- Support is near current levels at BTC's 2017 uptrend and 100-dma which we expect to hold and define the lower end of the 2018 trading range.
- For reference, next support is at the November highs near 7500 followed by the November trading range lows near 5500.
- Despite the recent damage, we view the current pullback as correction in an uptrend and not a longer-term top.

Relative Performance vs FX 250

- Early evidence of a defensive trend reversal developing vs the broad FX 250 smaller-cap index.

Source: Fundstrat, Coinmarketcap.com, Updata

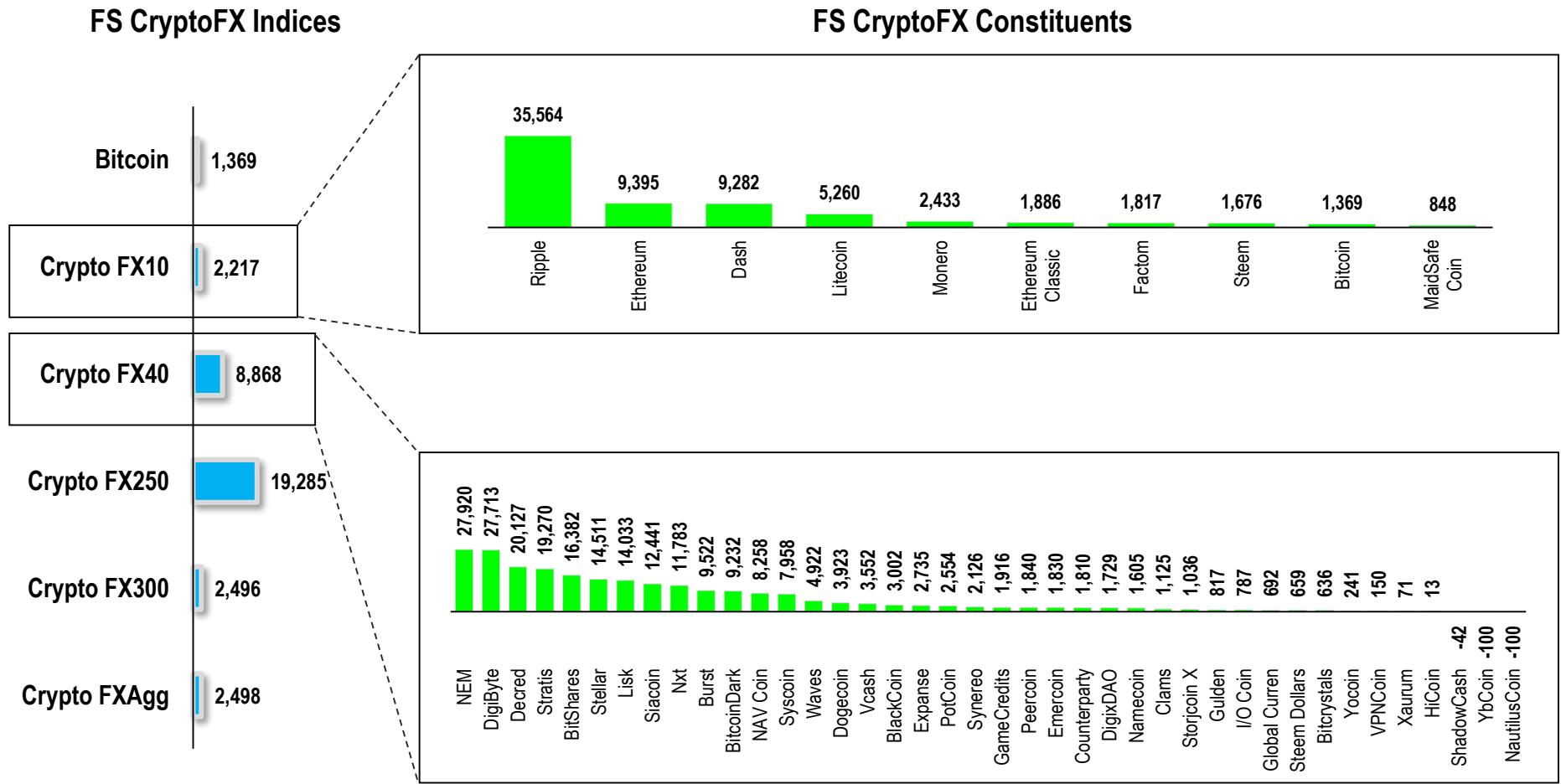
Price return in 2017: While bitcoin saw big gains, alt-coins beat bitcoin...

Probably an understatement to say 2017 was a strong year for crypto-currencies. Take a look below:

- Of the top 50 coins at the start of 2017, only 3 declined (Shadowcash, NautilusCoin and YbCoin).

Figure: 2017 Price return of various FS CryptoFX Indices and their respective constituents

Based on constituents at the start of 2017—the FS CryptoFX indices are rebalanced every 3 months. 2017 return



Source: Fundstrat, Bloomberg

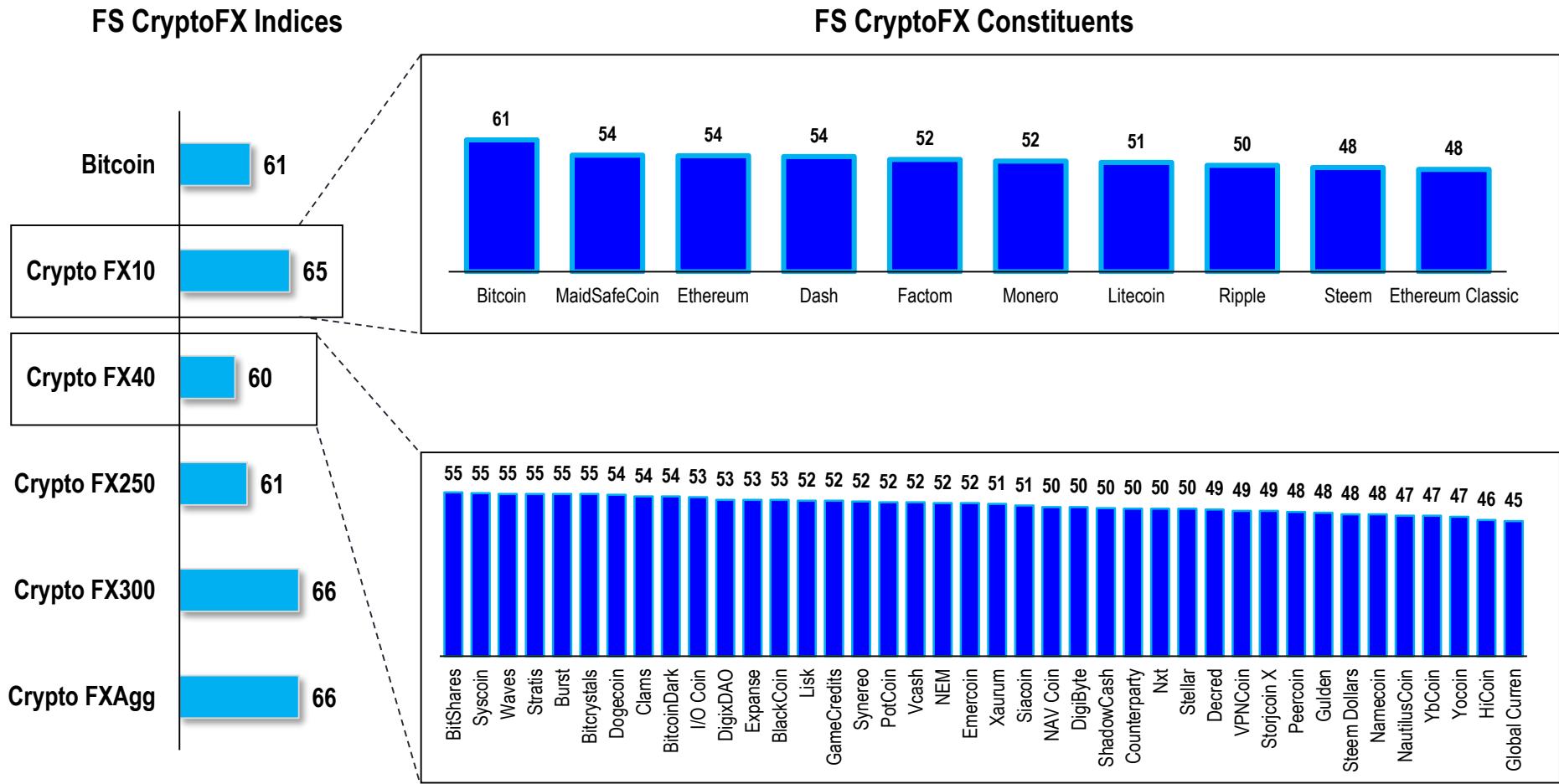
Win-ratio analysis: Few tokens rose more than 50% of the days...

Another way to look at the performance of tokens is to look at win-ratio and as shown below, the win-ratios are low.

- The best performing token in terms of consistent win-ratio was bitcoin and it was only up 61% of days.

Figure: Win-ratio in 2017 of FS CryptoFX Indices

Based on constituents at the start of 2017—the FS CryptoFX indices are rebalanced every 3 months. 2017 win-ratio



Source: Fundstrat, Bloomberg

Finance 101 books 30-yrs ago not true anymore... will evolve for crypto...

We believe crypto and blockchain valuations will lead to an evolution in thinking about market valuations for tokens. While these are not traditional equities, there are elements available to create a valuation approach.

- Investors seem to be dismissive of the value of tokens, because of the apparent blurriness of token governance versus equity (like a tracking stock) and the unclear position within a capital structure.**
- But as highlighted below, while fundamental valuation remains central to any approach, markets have evolved their approach to valuations of assets.**

Figure: Comparative changes in approach to valuations

Fundstrat estimates.

		<i>Textbook 30-yrs ago...</i>		<i>Reality today...</i>	
IPOs	<i>Only profitable <u>Technology</u> companies go public...</i>	% profitable at IPO 1980-1995 average	92%	1999-2000 2013-2017 average	20%
Private Equity	<i>Public equity is larger than the private market...</i>	# private equity companies as percent of Wilshire 5000 2000:	32%	2016:	84%
Bonds	<i>Bonds are income instruments...</i>	% bonds with negative rates (G7, ex-US) 2000:	0%	2017:	80%
Central Banks	<i>Central banks only own bonds and risk-free assets...</i>	BoJ ownership of Topix 2002:	0%	2015:	2.5%

<https://site.warrington.ufl.edu/ritter/files/2018/01/IPOs2017Statistics-1.pdf>

<https://www.toptal.com/finance/private-equity-consultants/private-equity-industry>

Regulation: St Louis Fed is constructive on bitcoin and blockchain...

The St Louis Fed even sees bitcoin as a useful crypto-currency

Figure: Abstract St Louis Fed

Published January 10, 2018



A Short Introduction to the World of Cryptocurrencies

Aleksander Berentsen and Fabian Schär

In this article, we give a short introduction to cryptocurrencies and blockchain technology. The focus of the introduction is on Bitcoin, but many elements are shared by other blockchain implementations and alternative cryptoassets. The article covers the original idea and motivation, the mode of operation and possible applications of cryptocurrencies, and blockchain technology. We conclude that Bitcoin has a wide range of interesting applications and that cryptoassets are well suited to become an important asset class. (JEL G23, E50, E59)

Federal Reserve Bank of St. Louis *Review*, First Quarter 2018, 100(1), pp. 1-16.
<https://doi.org/10.20955/r.2018.1-16>

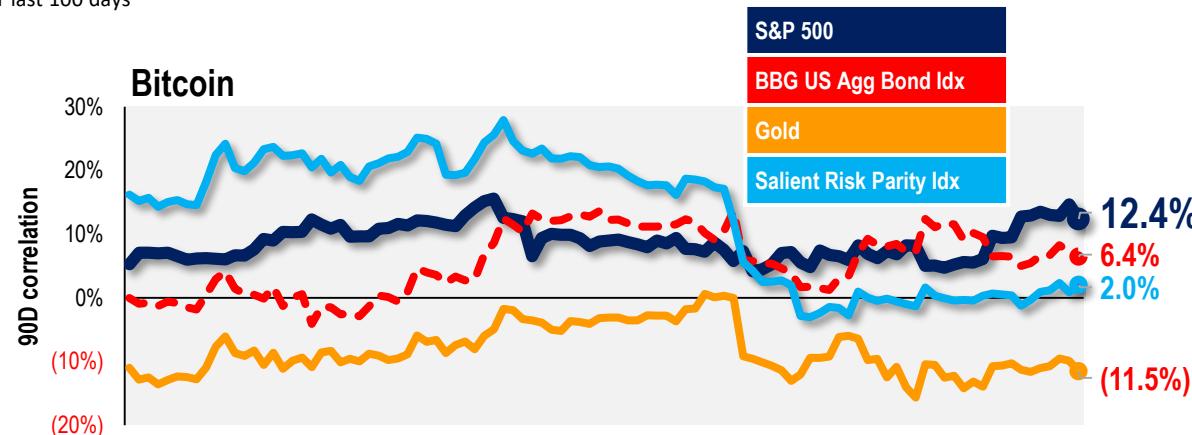
Source: <https://files.stlouisfed.org/files/htdocs/publications/review/2018/01/10/a-short-introduction-to-the-world-of-cryptocurrencies.pdf>

Crypto correlation to other asset classes is low and falling...

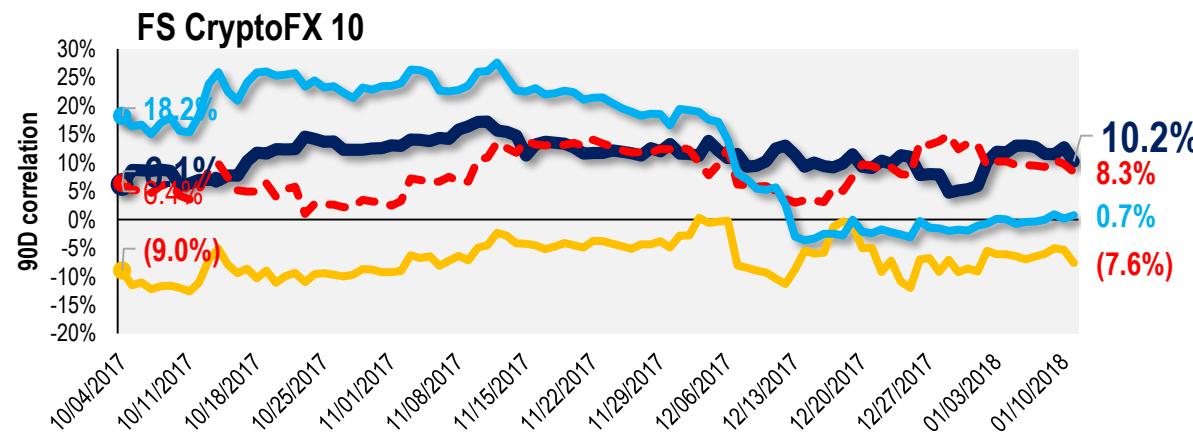
When looking at rolling correlations of Bitcoin to other asset classes, the correlation is still low.

Figure: 90D Rolling Correlation - Bitcoin & FS CryptoFX 10 Correlation against Major Asset Classes

Over last 100 days



Bitcoin correlation to other asset classes is declining and continues to be negatively correlated to Gold—not surprising and evidence of cannibalization of demand for gold.



Even looking at the top 10 tokens (which includes bitcoin), the correlation to other asset classes is quite low.

Source: Coinmarketcap.com, Bloomberg, other sources and Fundstrat.

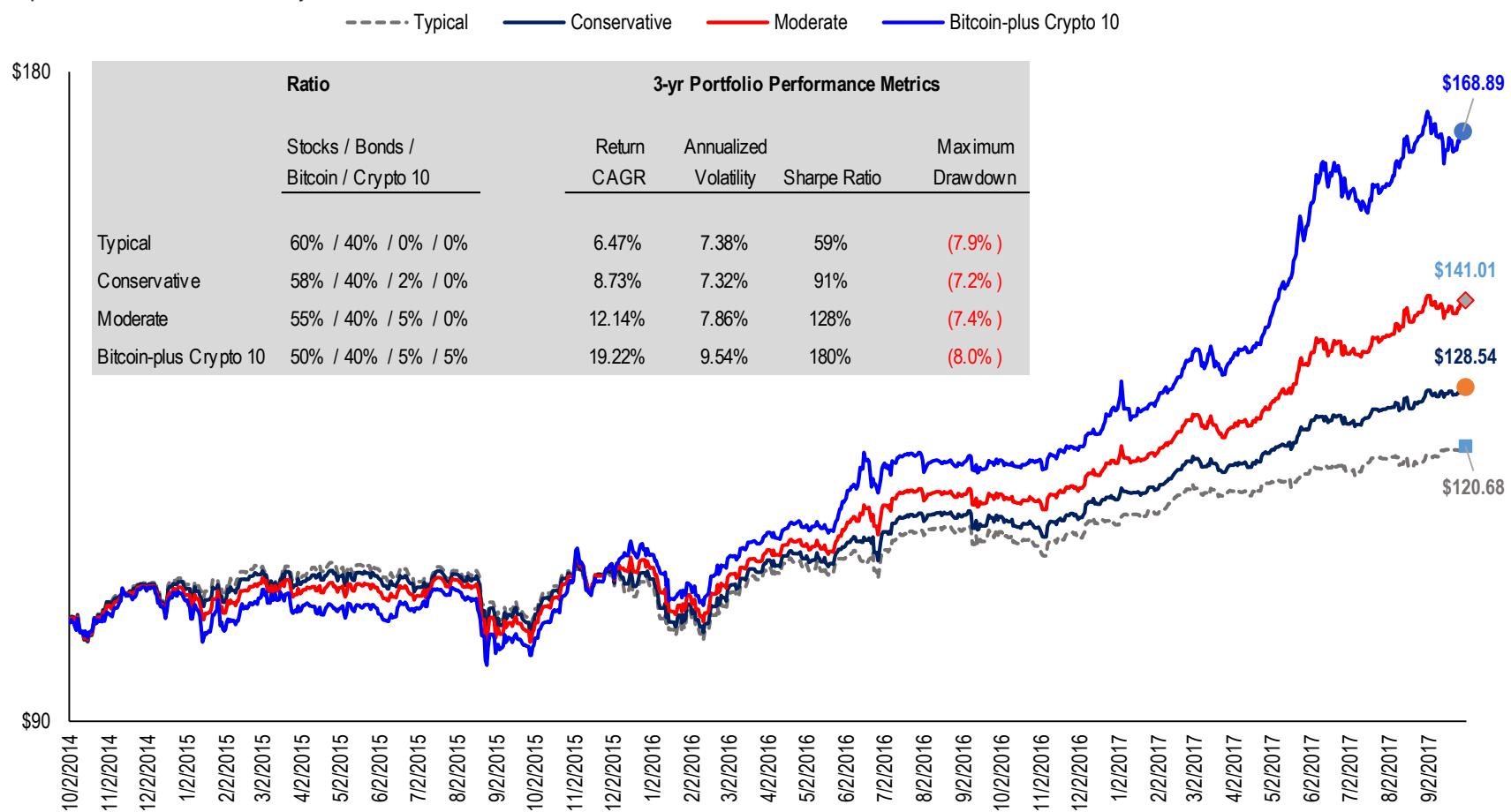
ENHANCED PORTFOLIO RETURN: Crypto adds return, boosts Sharpe-ratio

To illustrate the positive effects from adding Crypto currencies to a portfolio, consider the performance of various portfolios below.

- By adding even 2% to the portfolio (funded by reducing equities by 200bp), 3-yr annualized gains rise 226bp. Pushing this to 5% increases total return by 547bp, nearly doubling the return of a typical stock/bond blend.

Figure: Performance metrics of various asset allocation portfolios with modest crypto-currency exposure

Each portfolios rebalanced every 3-months.



Source: Fundstrat, Bloomberg, Updata

TECHNICAL STRATEGY: 2018 Outlook - Base Building in Q1-Q2, Acceleration In H2

Figure: Technician Summary

By Rob Sluymer

TA and Fundstrat Indices

- We continue to view technical analysis as an important tool to manage exposure to cryptocurrencies.** In particular, Fundstrat's proprietary FS CryptoFX indices and Advance-Decline lines tracking the performance of the FX 10 (large-caps), FX 40 (mid-caps), FX 250 (small-caps), FX 300 and FX Aggregate universes provide a unique insight into rotational shifts developing within this emerging area.

Long-term uptrend intact

- It is premature to conclude a major top or reversal has been established for the crypto universe. Why?** Despite the recent weakness in many crypto currencies, down >50% in January, the long-term uptrends for our FS CryptoFX indices remain positive with no meaningful technical evidence in place yet to conclude a major top or reversal has been established.

100-dma as key support

- In fact, another trading low is likely to develop near current levels.** The 100-dma has provided support during prior index corrections for Bitcoin (BTC) and is the level most indices are now approaching. Our expectation the current correction will stabilize near the 100-dma as a proxy for the longer-term uptrend.

H1 Technical Outlook

- While it is premature to decisively conclude a low is developing, our expectation is that our FS CryptoFX indices are in the process of stabilizing/bottoming near current levels that will define the low end of their 2018 trading range. A similar technical backdrop appears to be developing for Bitcoin BTC.

Base building in Q1-Q2

- Given the magnitude of the rally in Q4-Q1 rally and severity of the January pullback, we expect a broad trading range to develop through Q1 into Q2 capped by the highs established in January. Despite the magnitude of a 100% trading range, a multi-month consolidation would unwind weekly momentum indicators, tracking 1-2 quarter shifts, from overbought levels toward levels that could support another upside later in Q2 into H2.

BTC

- Bitcoin (BTC)** has now corrected back to its 2017 uptrend coinciding with support near its 100-dma near \$10,000. Consistent with our view above we expect BTC will consolidate in a very broad 100% (10k-20k) trading range through most of H1 suggesting an upside target of 20K by June 2018. In theory, a doubling of the trading range would suggest an upside target of 30,000 by YE 2018.

ETH, ETC, NEO

- We also highlight the technical profiles for Ethereum (ETH), Ethereum Classic (ETC) and Neo (NEO). Each of these cryptocurrencies appear to be in short-term pullbacks within emerging uptrends.

Source: Fundstrat, Bloomberg, Updata

Risks

- **Mining conglomerates becomes too powerful and essentially takeover the blockchain.**
- **Millennials decide they like gold and allocate away from risky assets.**
- **A major blockchain is hacked by a nation-state.**
- **Governments decide they have to destroy blockchain.**
- **Citizens decide they trust governments and banks.**
- **Quantum computers hack encryption.**
- **Humor: A crypto-expose is featured on 60 minutes**

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Tokenomics: Why do alt-coins seems to rotate versus bitcoin....

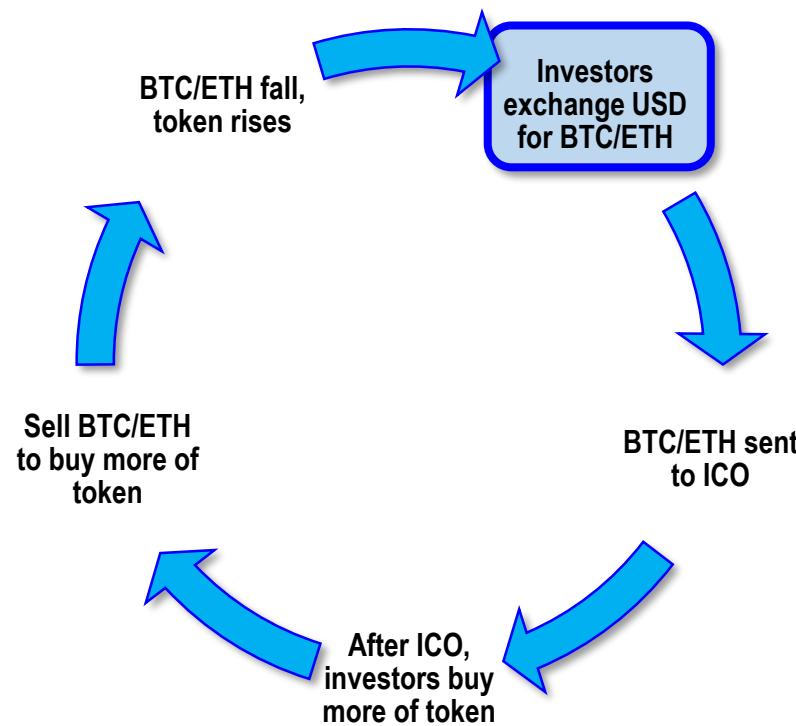
We see two liquidity factors behind this: the ICO cycle and the Crypto-fund investment cycle.

- ICOs typically use bitcoins or ether as a medium of exchange. Investors exchange USD for BTC/ETH and then buy the token sale. This leads to an initial rise in BTC/ETH followed by outflows.
- Crypto-funds receive inflows of USD and likely initially deploy this by acquiring BTC/ETH. Then as they diversify the fund, they buy alt-tokens and sell BTC/ETH.

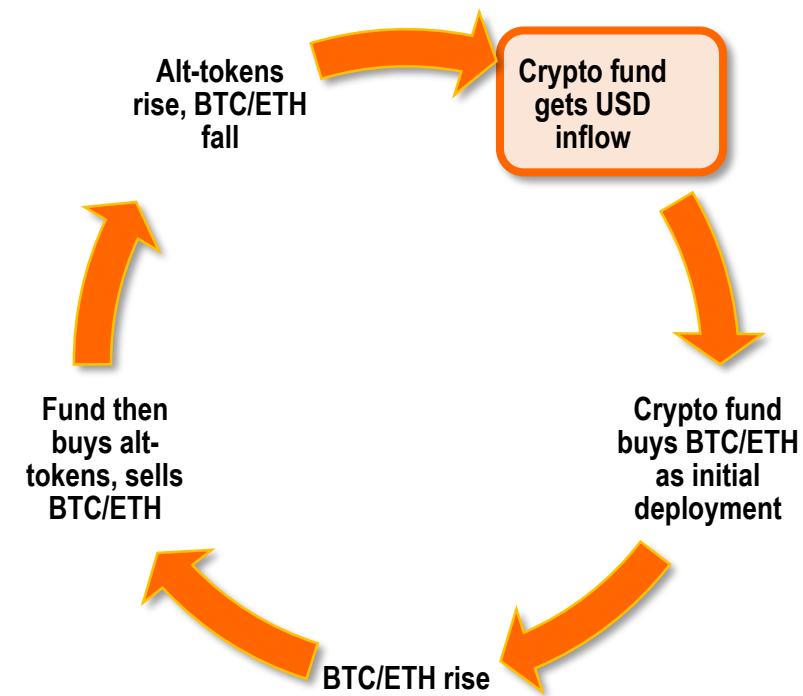
Figure: Tokenomics, or the reason we see a rotation between Large-cap and small-cap tokens.

Per Fundstrat

ICO cycle...



Crypto-fund inflow cycle...

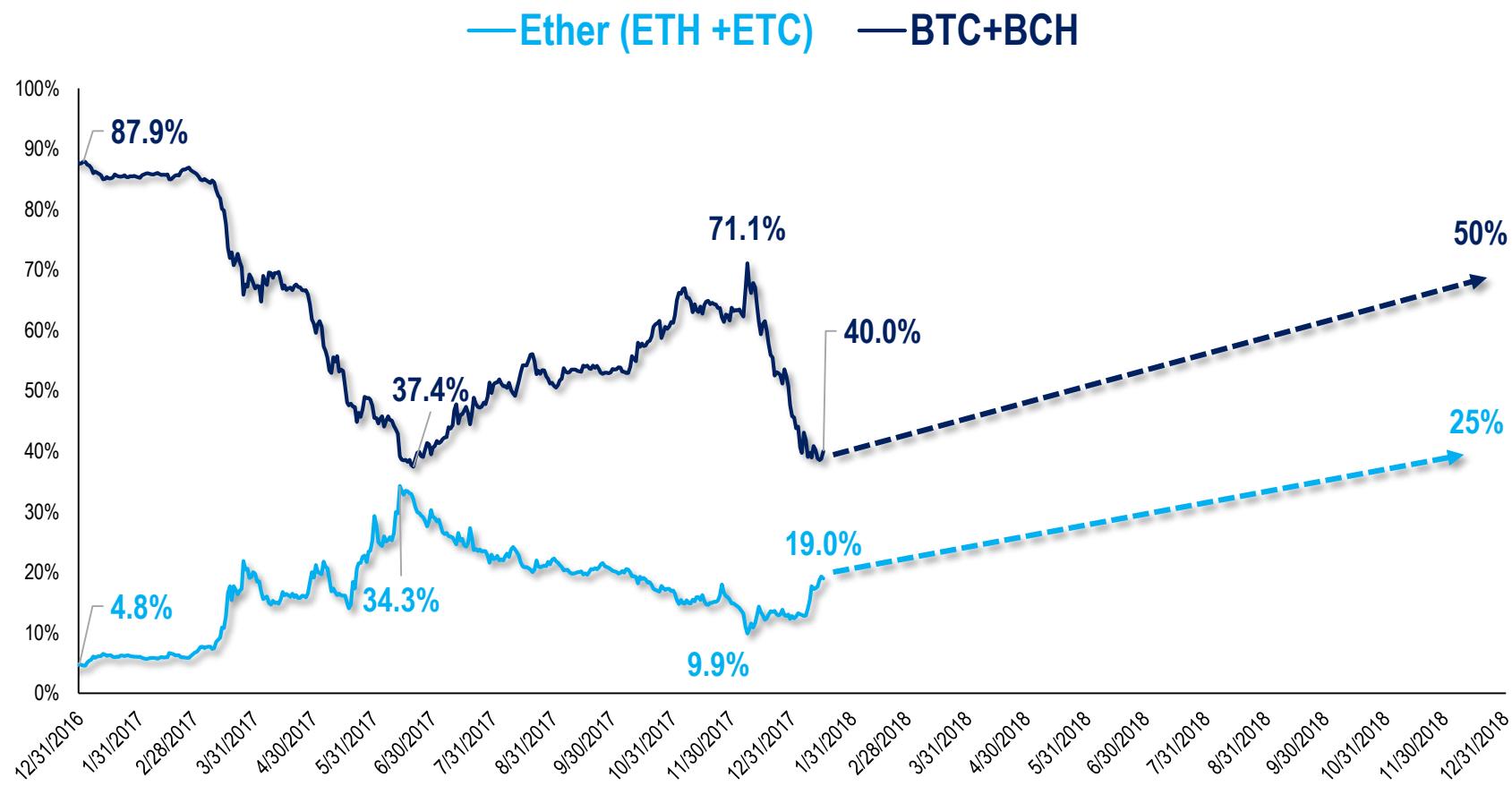


Source: Fundstrat, Bloomberg

We expect BTC and ETH dominance to rise in 2018...

We expect BTC and ETH dominance to rise in 2018—by the end of the year. The reason for this is that the strongest use case for tokens remains financial transactions and the two dominant platforms are BTC and ETH (ETH given the rise of ICOs).

Figure: Dominance of Bitcoin (BTC + BCH) and Ethereum (ETH + ETC) as share of total liquid tokens
% of total crypto-currency market cap



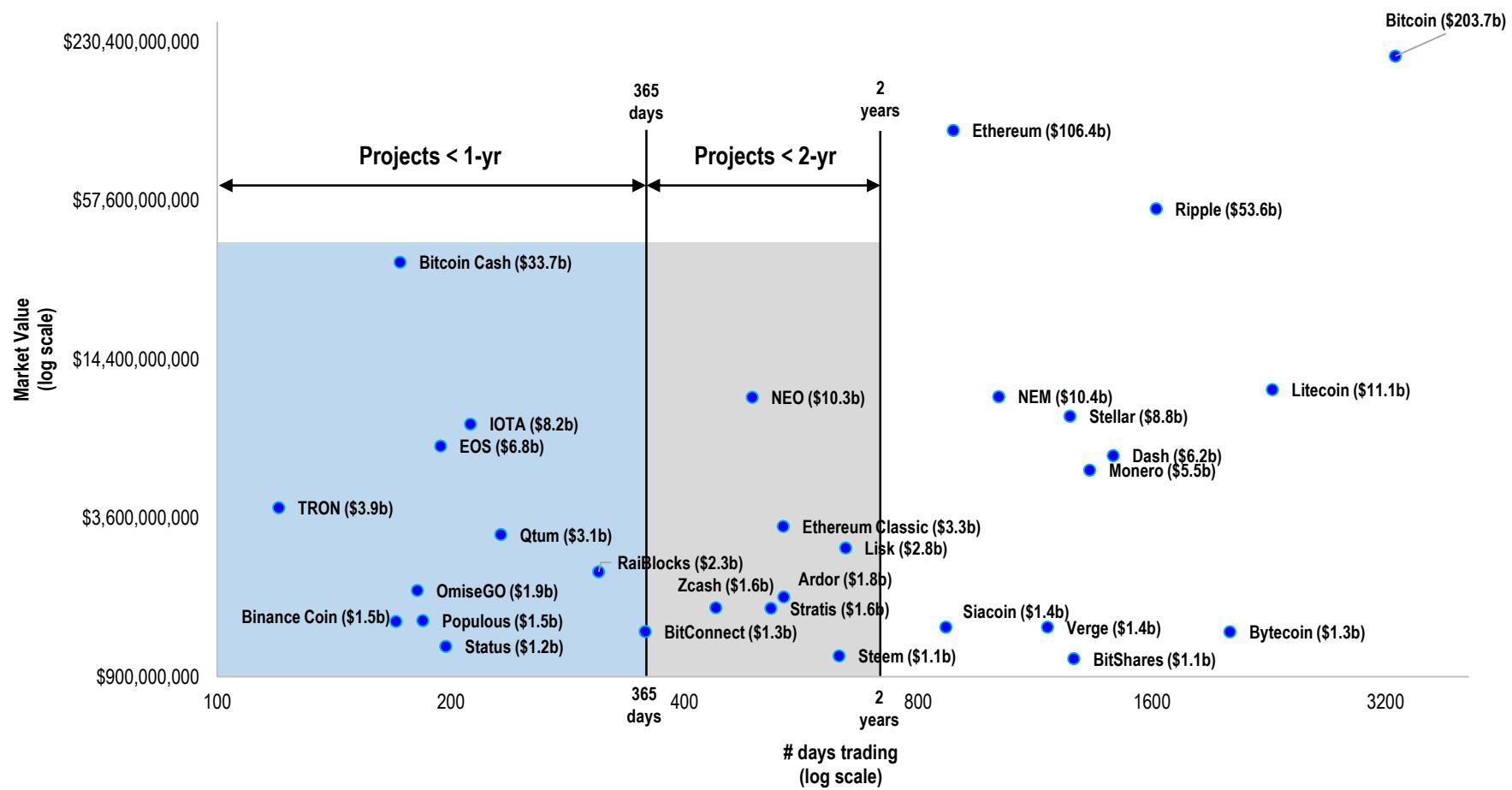
Age vs Value: 18 of 30 tokens >\$1 billion in value trading <2-years...

We have taken the 30 largest tokens in our universe (FS Crypto 50) with >\$1 billion of market value and compared this value to the duration of the token.

- Nearly 2/3 of the tokens have been trading for less than 20 years and 11 of those trading for less than 1-year. In other words, this amplifies the contrast between fundamentals and market value---using maturity of project as a proxy.**

Figure: Comparative age of Token versus Market Capitalization (of those >\$1 billion value)

X-axis: Days; Y-axis: Market Value



Source: Fundstrat, Bloomberg

Rotation: Small-caps tend to rally when bitcoin is in a “bear market”

Small-cap tokens (FS Crypto 250) have outperformed Bitcoin in 5 of the 6 bear markets.

- In other words, this bitcoin sell-off seems to point to “re-allocation” rather than outright selling.

Figure: Bitcoin rallies and sell-offs since mid-2016

Price is Bitcoin per USD



	-37%	+136%	-34%	+76%	-29%	+219%	-38%	+166%	-40%	+556%	-43%
	6/16/16 to 8/3/16	8/3/16 to 1/4/17	1/4/17 to 1/12/17	1/12/17 to 3/10/17	3/10/17 to 3/27/17	3/27/17 to 6/12/17	6/12/17 to 7/17/17	7/17/17 to 9/1/17	9/1/17 to 9/15/17	9/15/17 to 12/18/17	12/18/17 to 1/15/18
Best	FX 40 56.2%	BTC 103.9%	Blockchain equities -1.5%	FX 10 41.8%	FX 250 88.4%	FX 250 2425.1%	Blockchain equities -1.9%	BTC 119.5%	Blockchain equities -1.4%	BTC 425.5%	FX 250 96.4%
	FX 250 -1.4%	FX 10 93.0%	FX 40 -11.8%	BTC 38.8%	FX 40 62.9%	FX 40 910.1%	BTC -16.2%	FX 40 114.6%	FX 250 -25.2%	FX 10 368.3%	FX 40 66.7%
	Blockchain equities -8.2%	Blockchain equities 55.3%	FX 250 -20.0%	FX 250 31.9%	FX 10 10.3%	FX 10 304.3%	FX 10 -31.5%	FX 10 106.5%	BTC -25.6%	FX 40 336.2%	FX 10 -3.9%
	BTC -26.1%	FX 250 27.2%	FX 10 -29.0%	FX 40 23.4%	Blockchain equities 0.1%	BTC 154.3%	FX 40 -43.5%	FX 250 95.4%	FX 10 -29.7%	Blockchain equities 231.8%	Blockchain equities -7.1%
	FX 10 -29.0%	FX 40 9.8%	BTC -30.3%	Blockchain equities 14.2%	BTC -6.4%	Blockchain equities 37.0%	FX 250 -43.7%	Blockchain equities 44.9%	FX 40 -33.3%	FX 250 204.3%	BTC -27.7%

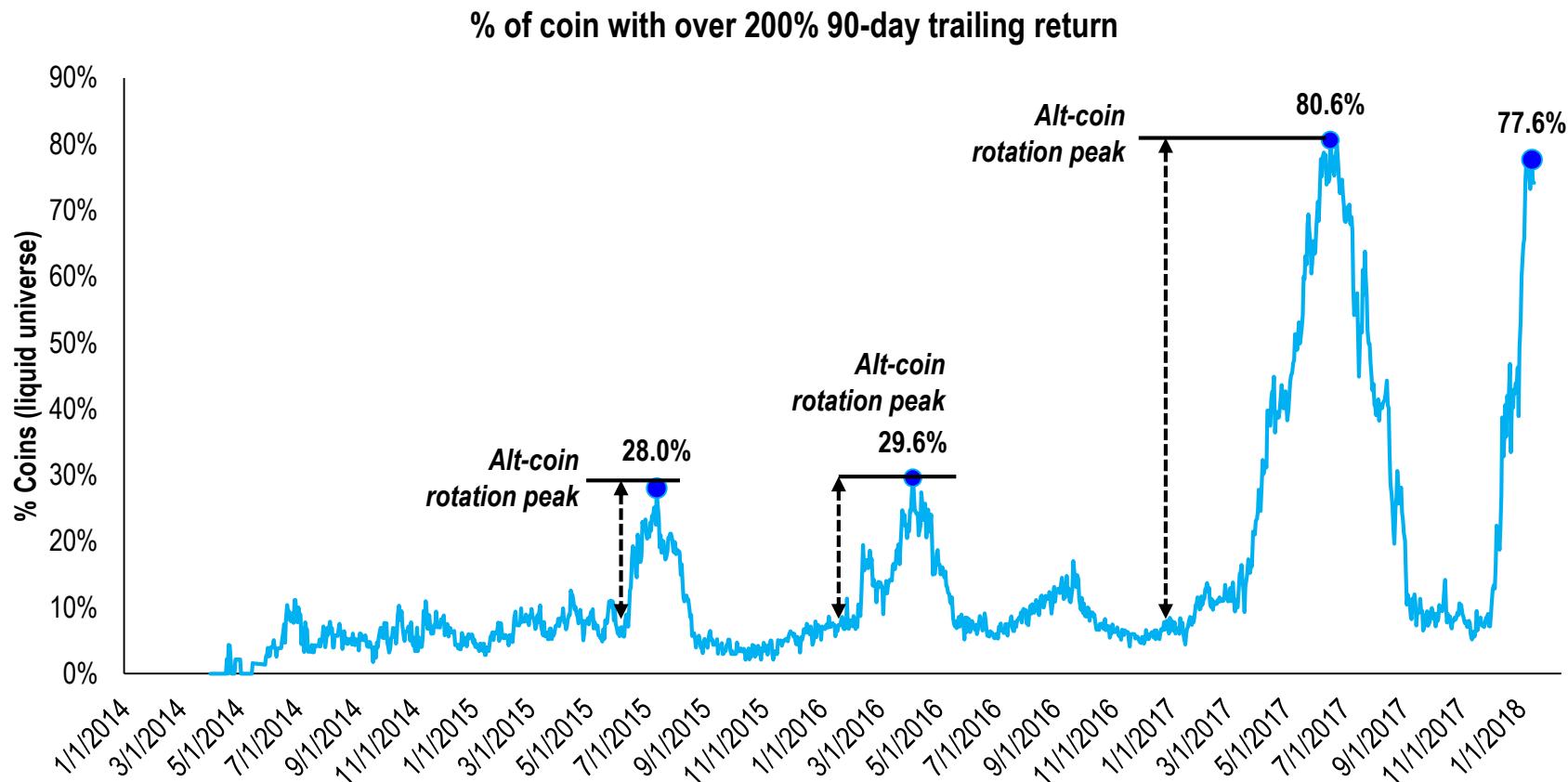
2017 was an exceptionally good year for alt-tokens and 2018 so far...

Below we have calculated the percentage of alt-tokens that have risen by at least 200% in the past 90-days—and since 2014, this has been a surprisingly cyclical series.

- In 2015 and 2016, the peak of the alt-coin rallies was 28% of tokens rising 200% in a rolling 3M period. In 2017, this figure peaked at 81% in mid-2017 and in early-2018, this is hovering at 78% and approaching the 2017 highs.
- Not surprisingly, when alt-coins are selling off, this is bullish for bitcoin/ETH.

Figure: Alt-coins surged since December

Based on the liquid universe of alt-coins. 57 in 2014. 250 in 2015. 400 in 2016. >700 in 2017.



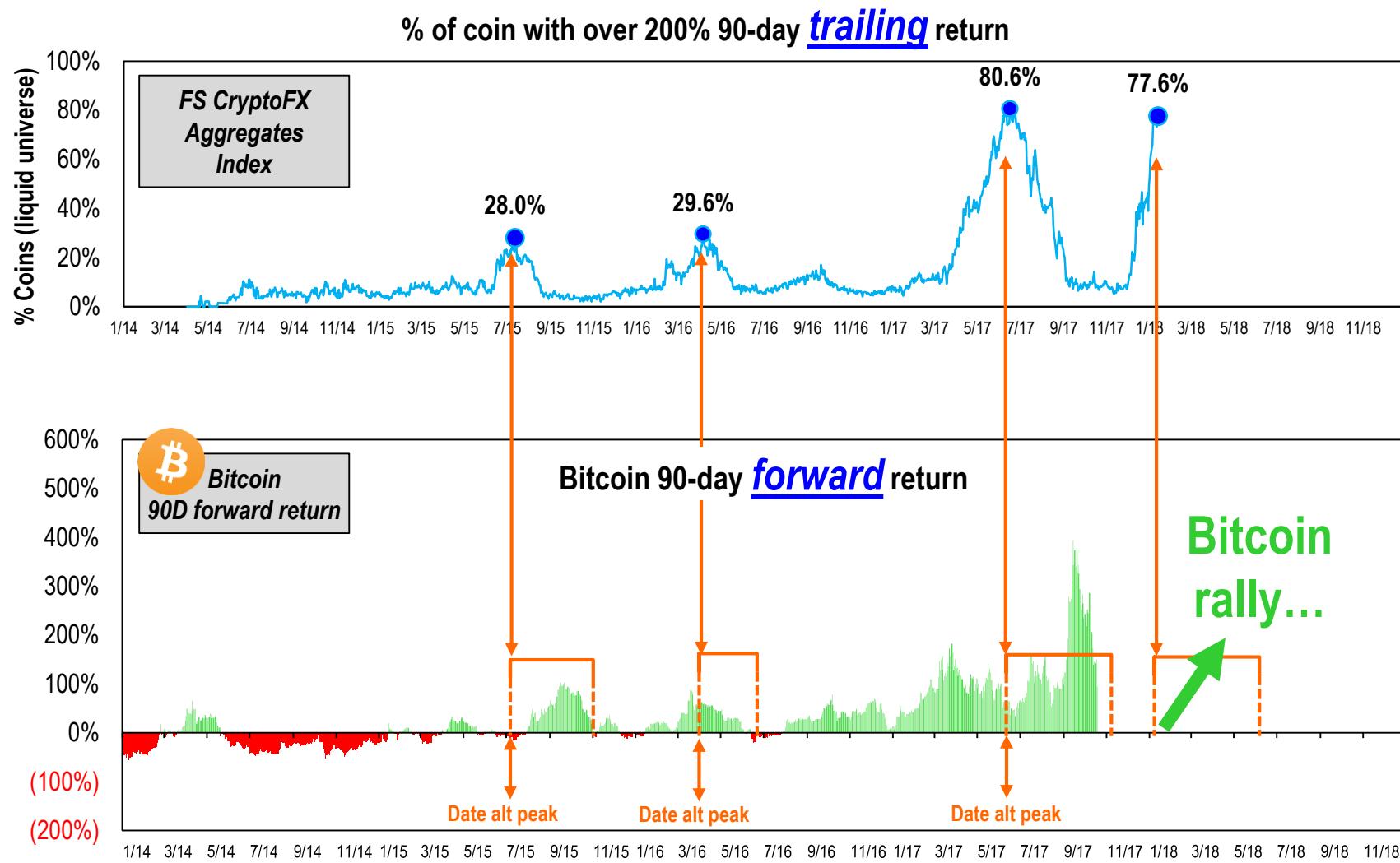
Source: Fundstrat, Bloomberg

Rotation: When alt-coin surge peaks, the gains shift to Bitcoin...

- When the Alt-coin surge peaks, we generally see a surge in Bitcoin... and likely Ethereum as well...

Figure: Alt-coins surged since December

Based on the liquid universe of alt-coins. 57 in 2014. 250 in 2015. 400 in 2016. >700 in 2017.



Source: Fundstrat, Bloomberg

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Case for blockchain still strong in 2018 (vs a centralized solution)

The case for blockchain is growing in 2018. So why do we need blockchain? There are multiple reasons including the need to establish digital trust (trustless) in an increasingly digital world (think Equifax). Moreover, one could argue de-centralized ledgers are more secure (proof of work, etc.) than additional centralized systems. And other reasons are highlighted below.

Figure: Opportunities and challenges for blockchain in 2018

Fundstrat

Positives...

Enhanced digital trust

Solves key problem in digital world

Immutability

Important to engender digital trust

Distributed ledger/
decentralization

Protects information

Tokenization

Fractionalization/ Real world to digital assets

Public vs private chain

Industry still deciding

Audibility and Traceability

Blockchain/ de-centralized ledgers have complete records

Scaling

Solutions to speed blockchain

Challenges...

User experience

Nowhere as easy as web

Inter-operability

Big hurdle

Does it need to be a blockchain?

Centralized solutions can deliver similar benefits

Public vs private chain

Enterprise prefer private chains

Privacy

Too much anonymity?

The right scaling

Blockchain does not scale easily

Human error given immutability

Humans still make mistakes

Source: Fundstrat, Bloomberg

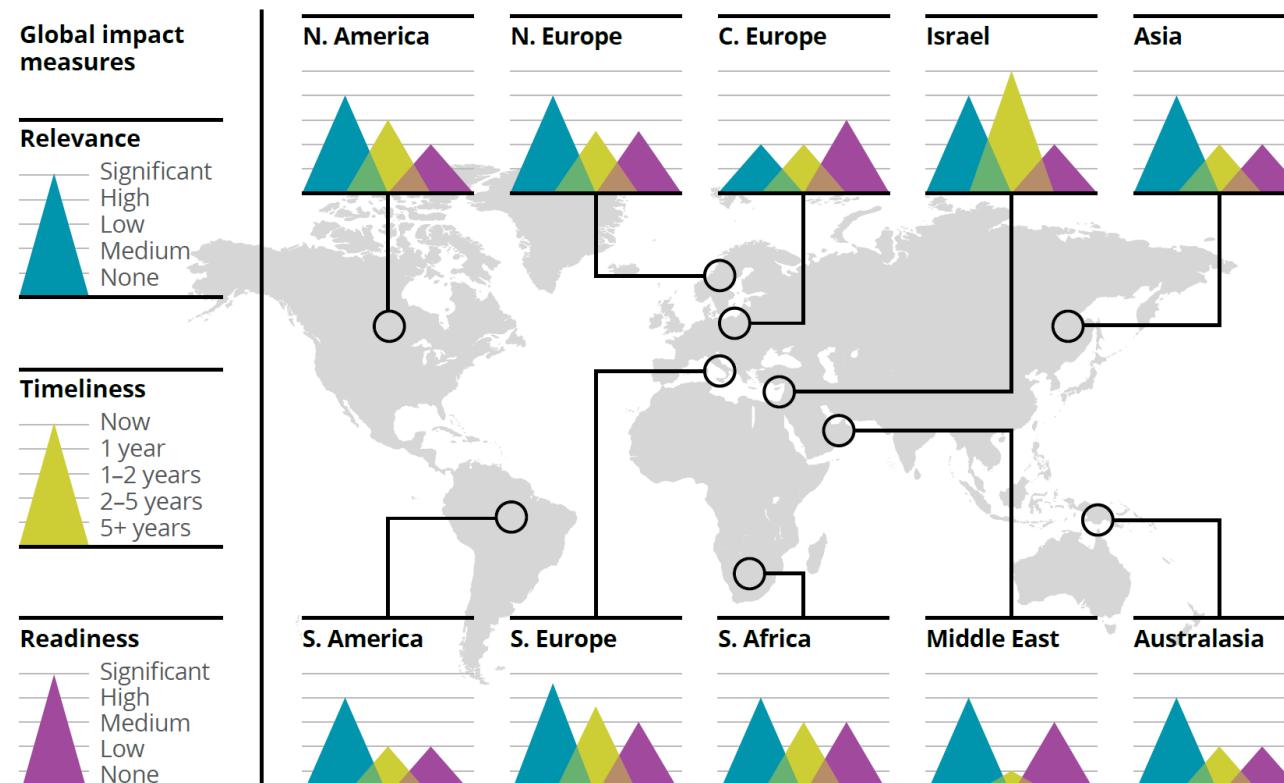
Blockchain's fundamental impact is still 2020 and beyond...

As for thinking about corporate adoption of blockchain, many companies see the relevance of blockchain (see below) but the timeliness and readiness as further back.

- **Deloitte's survey shows that the US and Europe (and Israel) are the places with greater timeliness of blockchain deployment.**

Figure: Blockchain Global Impact: from Deloitte Tech Trends 2018

January 2018. <https://www2.deloitte.com/insights/us/en/focus/tech-trends/2018/blockchain-integration-smart-contracts.html>



Source: Deloitte analysis.

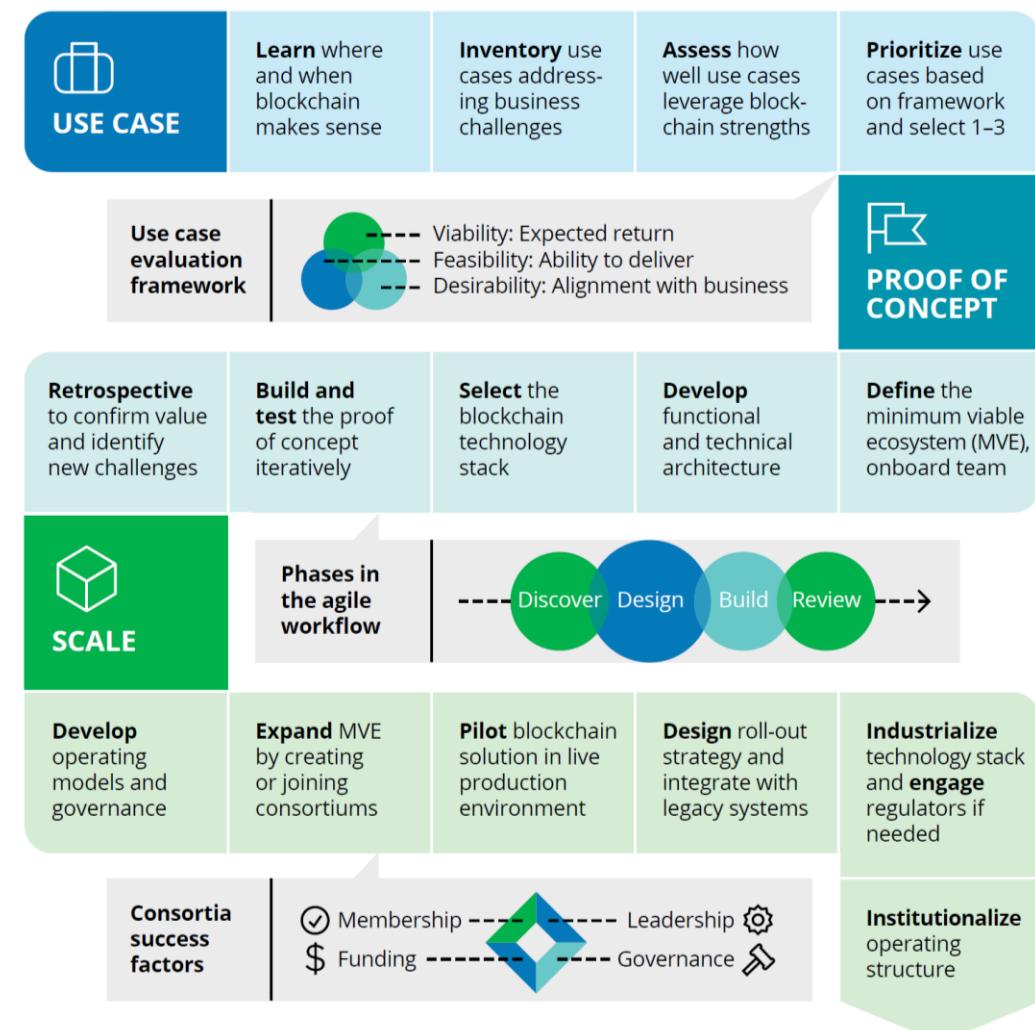
Deloitte Insights | Deloitte.com/insights

Use case is only the first step, institutionalization takes time...

And the among the reasons that timeliness is a few years out is that the process from moving from “use case” identified to “deployment” is a multi-stage process.

- And add the fact that there may be institutional skepticism about deploying these use cases and this no doubt further adds to the friction of the process.**
- Perhaps this explains why digital store of value and digital money and the resulting ecosystem growth has been faster to scale—this is not a replumbing of an existing financial system but the creation of a parallel one.**
- Tokenization and utility tokens need to follow the roadmap on the right—hence, the use cases for these are strong and we should expect to see many innovative ideas in 2018. But the speed of adoption will follow the path of past disruptive technologies.**

Figure: Blockchain Roadmap: from Deloitte Tech Trends 2018
January 2018.



There is also a need for blockchain expertise in the workforce...

Blockchain coding expertise is also not widespread—although many program in other native programming languages. But to deploy a token requires knowledge of the underlying coding language (which is open-sourced).

- Indeed.com's (somewhat dated) survey shows, postings for this expertise are up exponentially.

Figure: Indeed.com notes a surge in posting for blockchain postings
Posted April 2016

Posted on April 1, 2016



As the chart shows, demand for workers with knowledge of “Blockchain” technology is on the rise in Indeed job listings data, too. **In fact, this is the most recent keyword of all as interest was basically non-existent until the middle of 2015.** Since then however we have seen an impressive 5,500 percentage point increase.

Source: Fundstrat, Bloomberg. <http://blog.indeed.com/2016/04/01/job-trends-spotlight-cutting-edge-technologies/>

Bitcoin and Blockchain solve a critical problem with digital world...

Distributed ledgers offer improvements over proprietary ledgers

- a cryptographic transaction network without intermediaries
- consensus on veracity of transactions
- transaction permanence and immutability
- prevention of “double spend”
- no potential for failure of a single node to bring down the entire system
- suited for applications that require a permanent time and date stamp
- scalable to multiple participants, account holders and account entries
- applicable to an array of financial assets

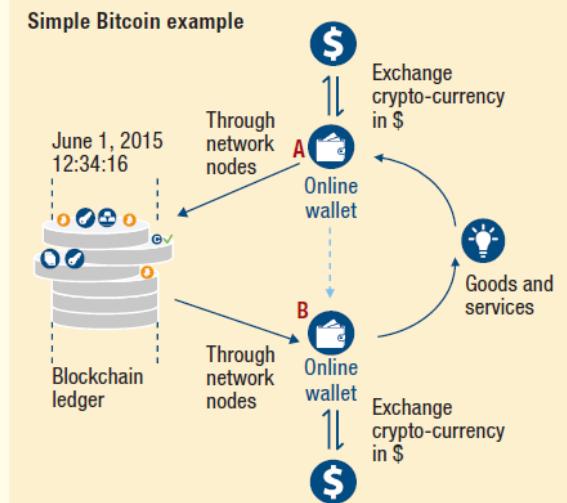
McKinsey sees blockchain as one of the most disruptive technologies since the advent of the internet...

Exhibit 1

The blockchain is one of the most disruptive innovations since the advent of the Internet

The blockchain

- A distributed public digital ledger that maintains, through cryptographic proof, a continuously growing secure list of transactions that is replicated repeatedly.
- A transaction network that potentially can be used by financial institutions and consumers to transact directly.
- Well-suited for applications requiring a rapid, permanent time and date stamp such as:
 - Payments
 - Financial asset transfers
 - Smart contracts
 - Ownership splits and notary services
- A technology that brings substantial benefits in terms of speed, security, transparency, convenience and cost.



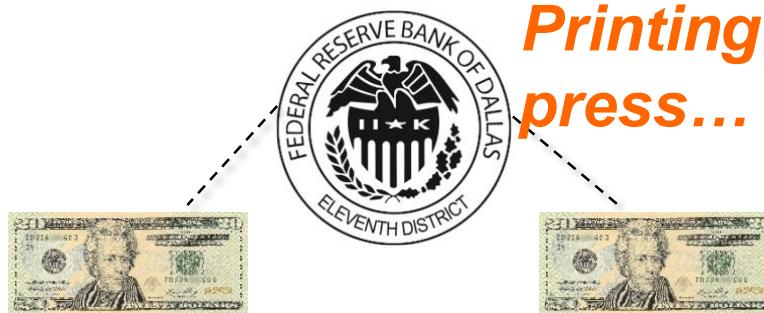
The decentralization of the transaction system will have an important impact on the way business is conducted throughout many industries.

Source: McKinsey & Company

Blockchain enables digital money to exist with trust...

And what is important to keep in mind (and discussed in later pages) is this issue is even bigger outside the U.S. Trust is low among millennials (discussed later) and Trust is particularly low outside the U.S.

Paper money

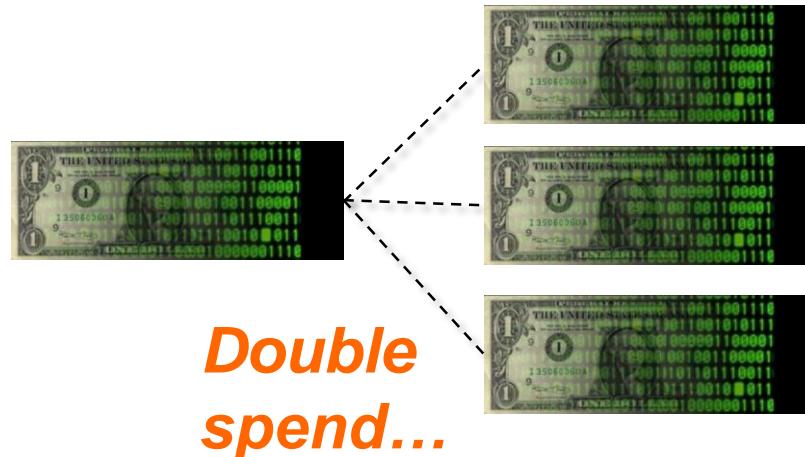


*Printing
press...*

Credit card / Electronic



Digital money



Blockchain



Millennials don't trust banks....

Moreover, as shown below, a Facebook survey done in 2016 shows that Millennials simply do not trust existing financial systems. **This is no doubt shaped by the 2008 Financial Crisis.**

92 Percent of Millennials *Don't Trust Banks*



Earlier in 2016, [Facebook IQ](#), a team of researchers, scientists and analysts funded and supported by Facebook Inc., published a white paper entitled "[**Millennials + money: The unfiltered journey**](#)" to evaluate the beliefs and thoughts of today's youth on traditional banking and financial systems. **The paper found that 92 percent of millennials firmly expressed their distrust of banks.**

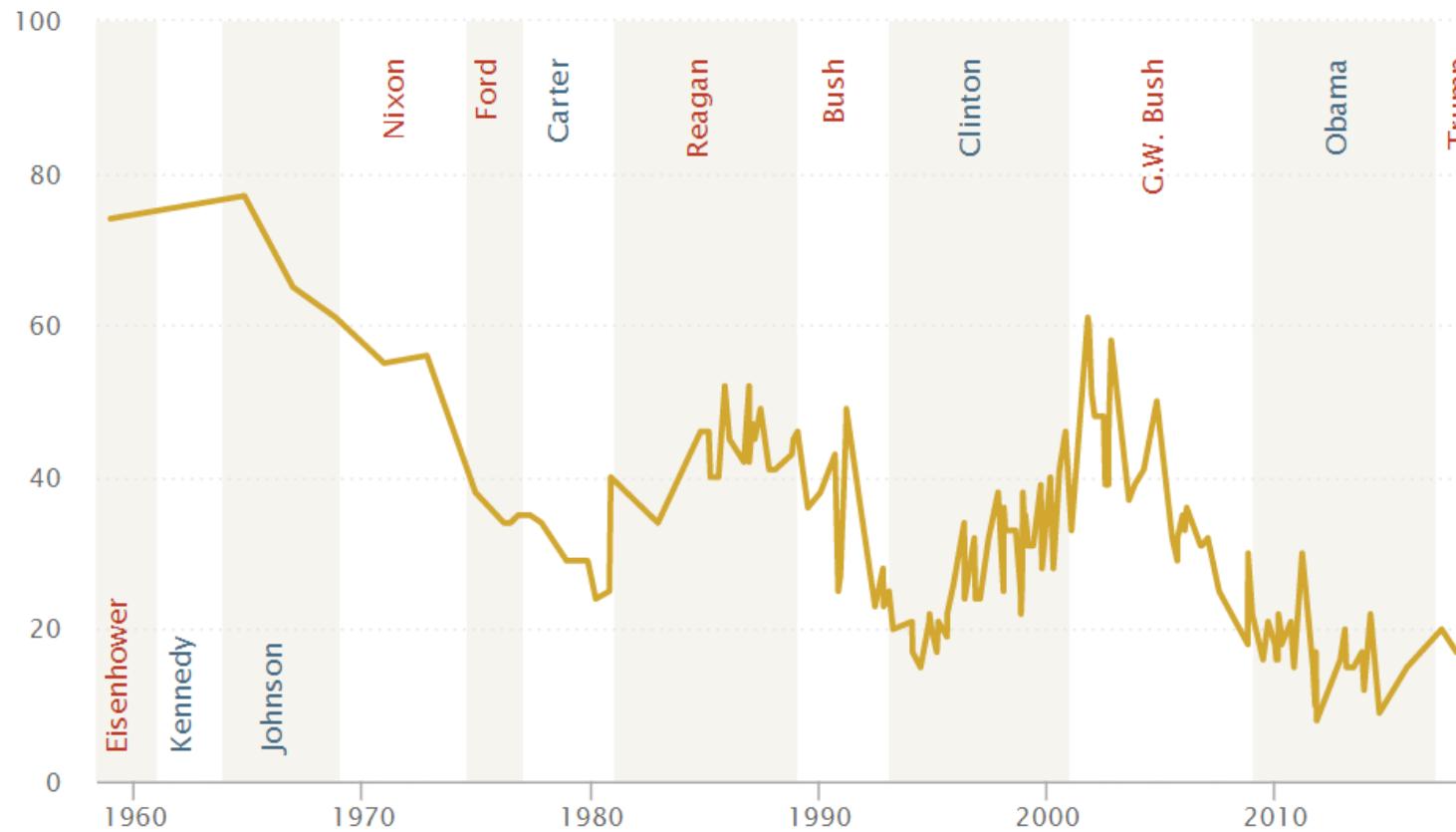
Trust in U.S. government at 60-year lows...

This is not a surprising trend but as the Pew Research center study below shows, trust in the US government has essentially never been lower.

- The slide began at the start of 2000 and has continued to sink—in fact, while it was lower during the depths of the Great Financial Crisis, this survey simply has not recovered. Is it surprising then that there may be a large number of Americans who prefer a system without government interference?

Figure: Trust in U.S. Government at 60-year lows

% who trust the US government in Washington always or most of the time



Source: Pew Research Center, Fundstrat, Bloomberg

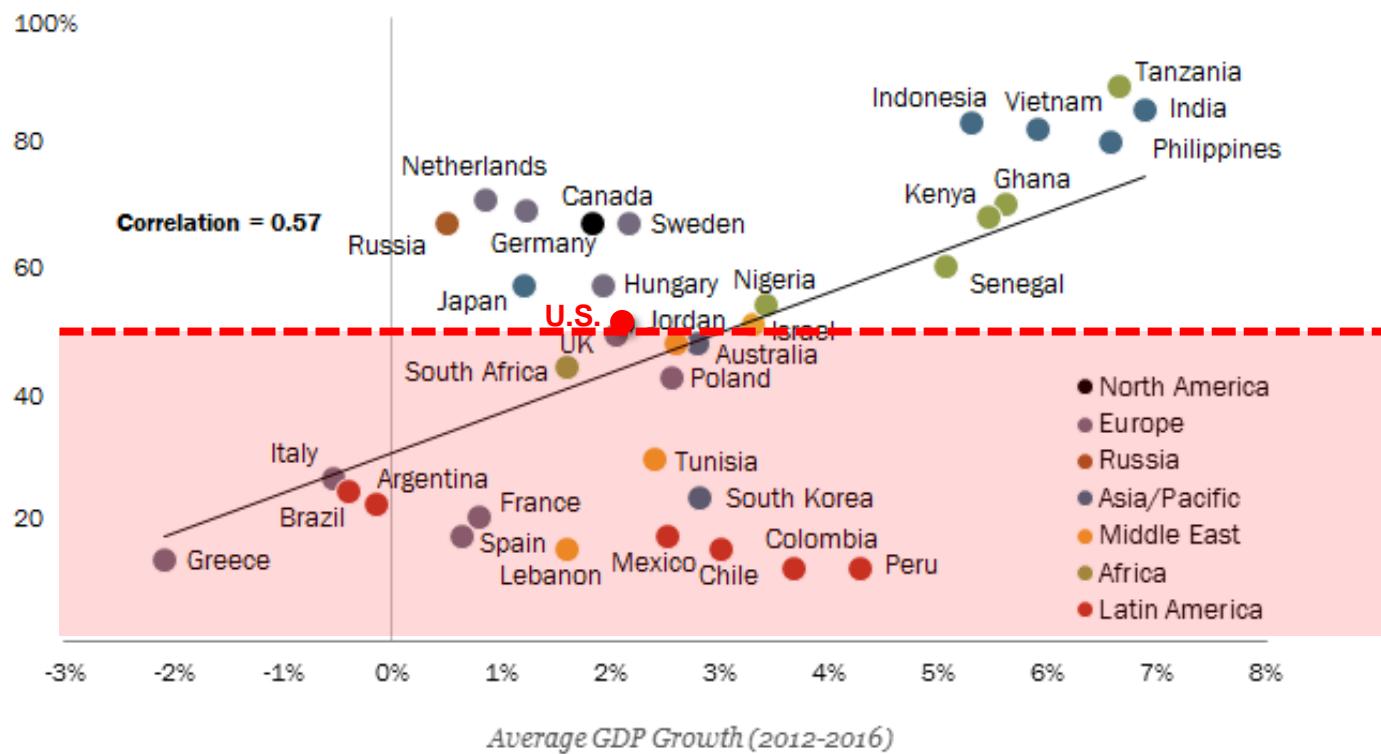
Outside the US, trust in governments is even worse...

But this general distrust of governments is even greater outside the U.S.—as shown below, few countries score better than the US (and many of those are growing faster).

- Hence, it should not be a surprise that bitcoin and blockchain have high adoption rates outside the US. In fact, this survey really highlights those countries below the line are where we see much of the fastest growth of bitcoin.

Figure: Few countries see their citizens trust their government

Question is what % "Trust the national government to do what is right for our country"



Few countries score better than the U.S., in terms of trust by their citizens...

...Note the prevalence of Asian and Latin American nations with low trust ratings...

Note: Venezuela excluded due to lack of economic data.

Source: 2017 Spring Global Attitudes Survey, Q4. Average GDP growth calculated from World Bank data, accessed Sept. 8, 2017.

PEW RESEARCH CENTER

Source: Fundstrat, Bloomberg

Blockchain and bitcoin growing faster outside the US

Bitcoin and blockchain are attractive outside the US because of the inherent structures of those regions.

- **Regions with unstable financial systems or governance make bitcoin more attractive.**
- **Regions with currency controls or strict regulations.**
- **Regions with uncertain economic or financial outlook.**
- **Hence, we see bitcoin and blockchain adoption as a global story.**

Bitcoin (BTC) Volume by Currency				
#	Currency	Volume 24H	Volume 24H TO	Share
1	<u>JPY</u>	B 211,862.87	¥ 83,334,884,108.38	51.33%
2	<u>USD</u>	B 122,329.99	\$ 444,257,926.26	29.64%
3	<u>CNY</u>	B 26,307.00	¥ 525,530,520.18	6.37%
4	<u>KRW</u>	B 21,503.08	₩ 86,920,494,611.09	5.21%
5	<u>EUR</u>	B 16,099.34	€ 49,198,268.32	3.90%
6	<u>AUD</u>	B 3,977.16	AUD 17,963,669.15	0.96%
7	<u>SGD</u>	B 3,539.55	SGD 17,204,775.36	0.86%
8	<u>HKD</u>	B 1,647.93	HKD 46,102,356.78	0.40%
9	<u>PLN</u>	B 825.40	zł 11,302,044.06	0.20%
10	<u>USDT</u>	B 824.65	USDT 2,981,219.26	0.20%
11	<u>GBP</u>	B 818.73	£ 2,292,066.60	0.20%
12	<u>CAD</u>	B 537.34	CAD 2,539,113.93	0.13%
13	<u>RUB</u>	B 513.45	₽ 115,632,372.31	0.12%
14	<u>ZAR</u>	B 372.78	ZAR 20,154,787.33	0.09%
15	<u>MXN</u>	B 295.46	MXN 20,483,679.43	0.07%
16	<u>MYR</u>	B 256.21	MYR 3,975,439.43	0.06%

Intangibles (including brand) essentially 91% FANG value...

When those question the value of blockchain, investors need to be mindful there is substantial investment in infrastructure, etc. in blockchain. But the real value, as we have argued, is in the network value of the blockchain itself—that is, as users grow, the value of the network rises exponentially.

- But as added perspective, note that 91% of the FANG enterprise value today is intangible—physical assets only represent 9% of the value of the business—in other words, many growth companies today are valued on their intangible values (subscriber base, brand, etc.)**

Figure: Comparative value of Intangibles as % total EV

Based on Bloomberg data

Ticker	Company	EV	Tangible Assets					Intangible value estimates		
			Enterprise Value	PP&E	Prepaid expenses	Deferred Tax Assets	LT Assets	Assets ex-Cash	Intangible Value	Intangible as % EV
FB	Facebook Inc-A		\$485,860	\$8,591			\$1,312	\$4,952	\$471,005	97%
AMZN	Amazon.Com Inc		\$642,703	\$29,114			\$3,869	\$19,800	\$589,920	92%
AAPL	Apple Inc		\$738,444	\$33,783		\$8,974	\$1,188	\$54,464	\$640,035	87%
NFLX	Netflix Inc		\$97,807	\$250		\$227	\$7,389	\$3,987	\$85,954	88%
NVDA	Nvidia Corp		\$130,831	\$521			\$62	\$1,738	\$128,510	98%
GOOG	Alphabet Inc-C1		\$674,371	\$34,234	\$1,819	\$383	\$0	\$19,075	\$618,860	92%
TSLA	Tesla Inc		\$64,871	\$5,983			\$9,539	\$2,867	\$46,483	72%
FAANG Composite			\$2,834,887	\$112,476	\$1,819	\$9,584	\$23,359	\$106,882	\$2,580,767	91%
S&P 500			\$28,618,706	\$4,541,372	\$4,556	\$359,580	\$1,140,730	\$3,988,148	\$22,017,705	77%

Source: Fundstrat, Bloomberg

Store of Value still best. Is 2018 the year we see growth in tokenization?

In general, tokens tend to fall into one of the following 4 categories—although some consider the first two (store of value and digital currency) to be the same:

- In general, we see Store of Value to remain the best use case—hence, we like Bitcoin. But in 2018, it seems that the crypto-community is spending a lot of time focusing on tokenization and the potential to expand blockchain this way.**

Figure: General categories of tokens

Per Fundstrat

Purpose	Store of Value <i>Digital Gold</i>	Digital Currency <i>Currency</i>	Utility <i>Pay for services</i>	Security tokens <i>Fractional exposure</i>
Appreciation potential	A store of value is the function of an asset that can be saved, retrieved and useful when retrieved. More generally, a store of value is anything that retains purchasing power into the future.	Yes	Yes	Yes
Decentralized or not?	Blockchain	Blockchain mostly	Mixed	Mixed
Representative Tokens	Bitcoin Ethereum classic	Ethereum Neo Qtum Bitcoin Cash Zcash Monero Dash Telegram (GRAM)	Powerledger SingularityNET FunFair Paragon STEEM KWHcoin Filecoin Tron	Tether Basecoin LAToken Goldmint (MNT) Jibrel Networks (JNT)

Source: Fundstrat, Bloomberg

Digital Store of Value addresses \$280T market...

Traditionally, gold is cited as an example of Store of Value (SoV) but individuals allocate their savings to other stores of value—although we are mixing collectibles and stores of value:

- Notably, when we incorporate Gold, Art, Real Estate and even government bonds (especially those with zero or negative interest rates), we can see that SoV is a \$280T market (see below). Of this, bitcoin today represents a mere \$200 billion (0.1%)—hence, the market for digital SoV is small today.

Figure: Comparative Store of Value
\$ Billions.

		20-yr CAGR	Value (\$ billions)	% Total
Gold	Estimate Fundstrat	5.0 %	\$9,000	3 %
Collectible Art	https://www2.deloitte.com/lu/en/pages/art-finance/articles/art-finance-report.html	3.0	\$17,000	6
Real Estate	http://www.mcguire.com/blog/2017/04/savills-world-worth/	5.0	\$228,000	82
Government bonds (neg rate)	Deutsche Bank	-0.5 *	\$20,000	7
Cars, collectibles	Estimate Fundstrat	7.0	\$5,000	2
Global stores of value			\$280,000	100 %
Bitcoin		n/a	\$200	0.1 %

* Average interest rate of negative rate government bonds

High-net worth families allocate \$1.6T to Art...

Art is both an investment and store of value for buyers. And as shown below, ultra high net worth families have an estimated \$1.6T allocation to Art and collectibles. We estimate this represents 10%-15% of the total market for art. The remainder are owned outside of the survey clients and by governments and institutions.

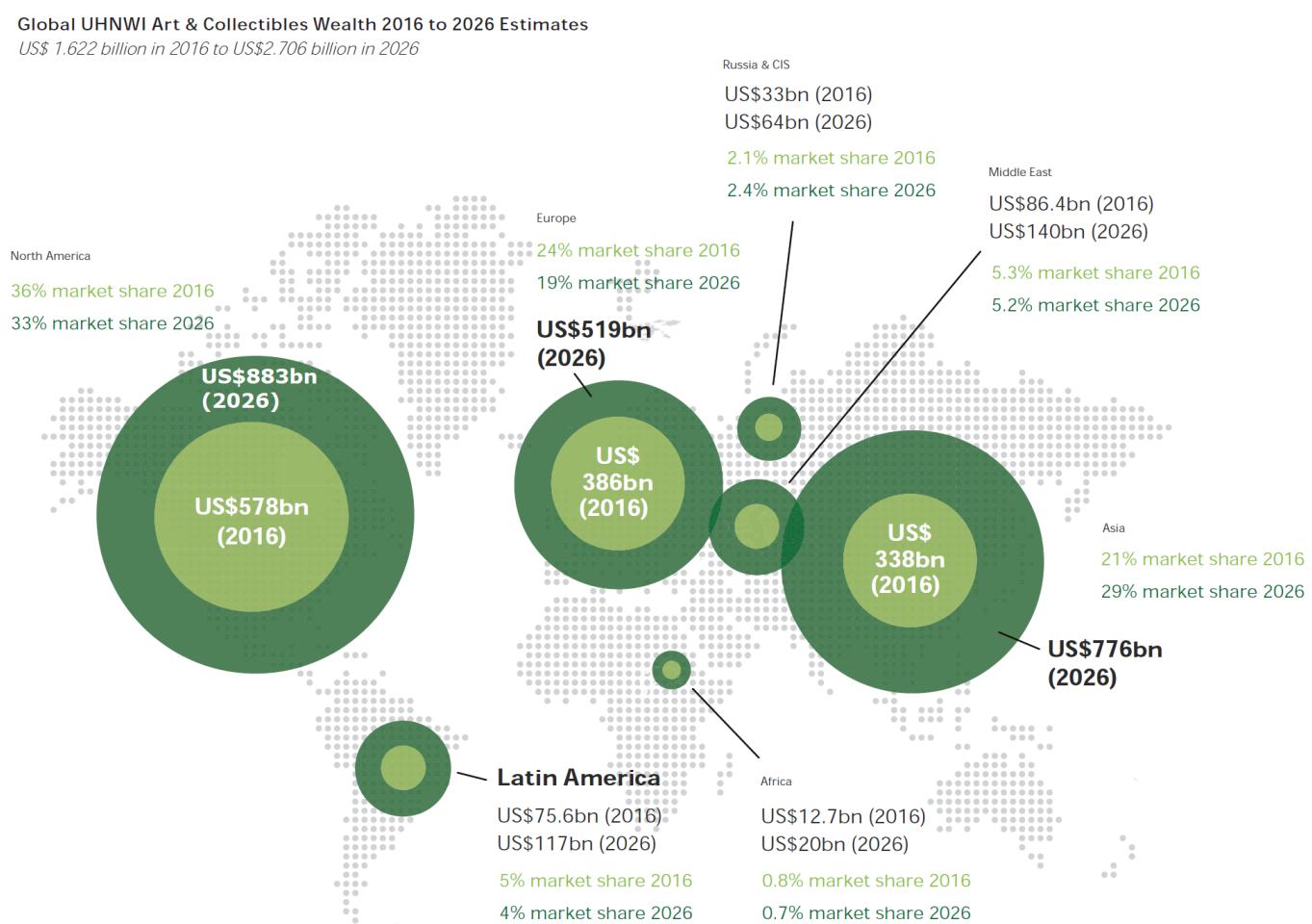
Figure: Estimated Family Office allocation to Art

From Deloitte Art Report 2017

Per PrivateInvestor.com

Art cannot be compared to traditional assets such as equities, bonds or even commodities. The access to information is restricted for the layman, liquidity is often constrained, holding costs are comparatively high and even though there are techniques to analyze the market, the value of an artwork is ultimately driven by a large variety of parameters, part of those being extremely difficult to predict.

If family offices own about 10%-15% of all collectible art, this implies that the aggregate value of Art as a store of value is \$11 to \$17 Trillion.



<http://www.privateartinvestor.com/art-business/art-collecting-as-a-means-to-store-value/>

<https://www2.deloitte.com/lu/en/pages/art-finance/articles/art-finance-report.html>

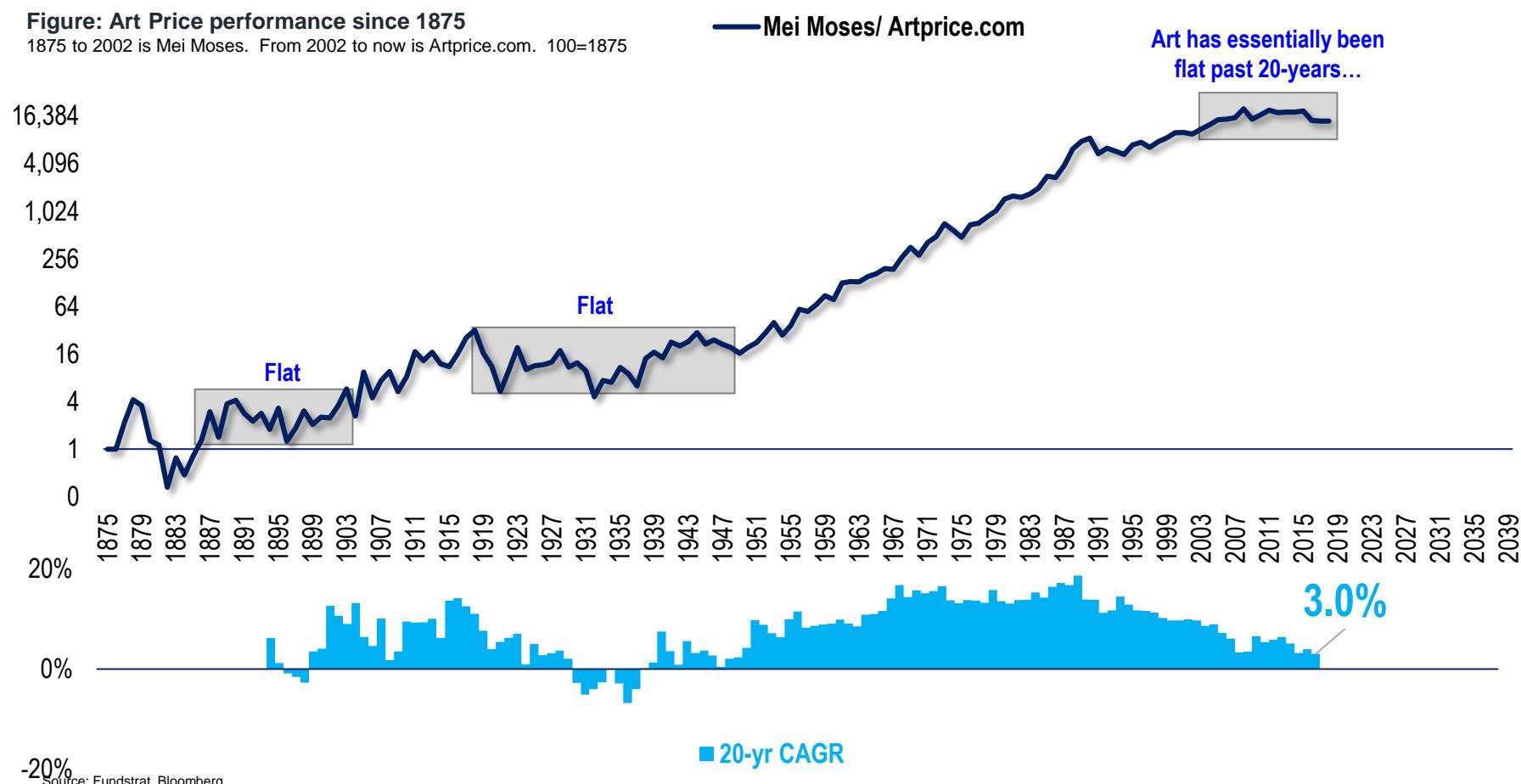
Art has appreciated at 3% gross 20-year CAGR...

We have shown the price performance of art from 1875 to today, concatenating the Mei Moses art index (acquired by Sotheby's) with a more modern series developed by artprice.com.

- While there was a period of tremendous appreciation from 1950 to 1987, Art since then, has performed a lot less spectacularly—in fact, in the past 20 years, the CAGR was 3%. Art storage has high maintenance cost (see prior page) and there is also survivorship bias (does not track destroyed art)—hence, future durability of Art as a store of value to outperform the last 20-years is not clear.

Figure: Art Price performance since 1875

1875 to 2002 is Mei Moses. From 2002 to now is Artprice.com. 100=1875



Asset tokenization is an evolution of fractionalization....

Moving assets to a digital platform (easier for those natively digital) is an evolution of fractionalization and securitization as discussed below.

- As shown below, timeshares were arguably the earliest innovation in fractionalization. And more recently, the gig and sharing economy brought innovations like Uber and Airbnb, which are analogs to asset tokenization that could be seen in coming years.

Figure: Examples of fractionalization to digital asset tokenization

Not a complete list

1972: Frequent Flyer Miles

The very first modern frequent-flyer program was created in 1972 by Western Direct Marketing, for United Airlines.



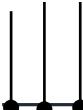
1970: Mortgage Securitization

The U.S. Department of Housing and Urban Development created the first mortgage-backed security. Ginnie Mae mortgage loans.



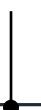
1969: Time-shares

The first non-hotel timeshare in the US was the Kaua'i Kai'lani, started in Kauai, Hawaii in 1969 by the people who later founded Vacation Internationale.



1987: Netjets fractional jet ownership

In 1987, the NetJets program was officially announced becoming the first fractional aircraft ownership format in history.



2009: Kickstarter

Kickstarter launched on April 28, 2009, by Perry Chen, Yancey Strickler, and Charles Adler.



2009: Uber

Founded as UberCab by Garrett Camp, the cofounder of StumbleUpon, and Travis Kalanick.



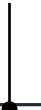
2008: Airbnb

Brian Chesky and Joe Gebbia came up with the idea of putting an air mattress in their living room and turning it into a bed and breakfast.



2017: Venezuelan Oil

Venezuela plans to issue a crypto currency backed by oil



Source: Fundstrat, Bloomberg

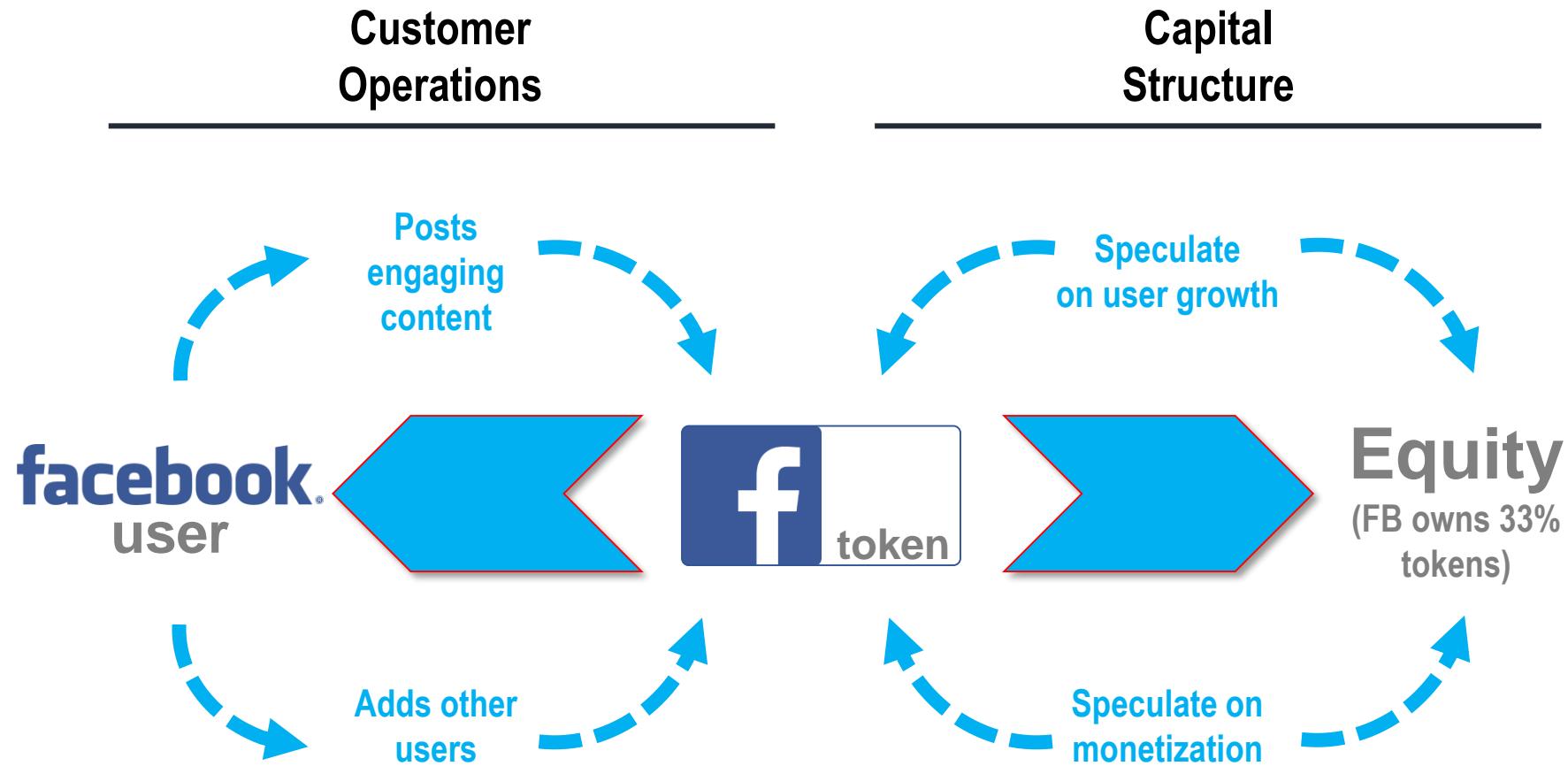
Would Facebook be an ICO today?

Many in the crypto community wonder if Facebook would actually be an ICO today—rather than a traditional equity.

- After all, its 2 billion users and the resulting network effect have created one of the largest companies in the S&P 500—yet, those users were not rewarded for sharing their information and creating this business.

Figure: Illustrative example of a token for a social media company

Simply a concept, please do not judge this to be a business plan



Source: Fundstrat, Bloomberg

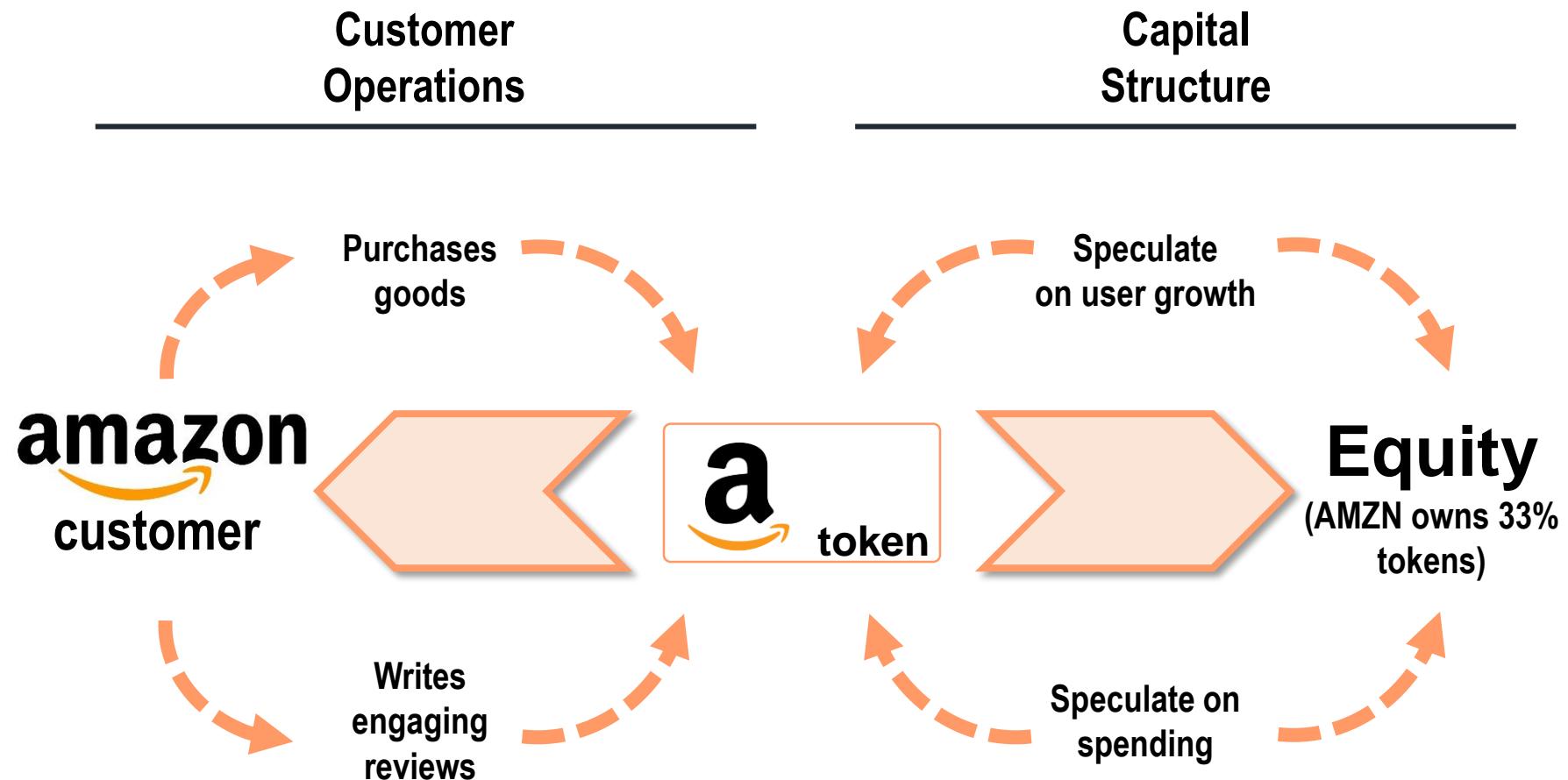
Should Amazon issue a token?

Similarly, Amazon delights its customers and their loyalty is evident in the company's continued growth.

- But the customer loyalty is benefitting equity holders—would an Amazon token bridge this customer vs beneficiary relationship?

Figure: Illustrative example of a token for a digital based business

Simply a concept, please do not judge this to be a business plan



Source: Fundstrat, Bloomberg

Overview

Executive Summary

Rotation: Buy. Rotate. Repeat.

Fundamental case for blockchain strong

Millennials are an important driver

Recommendations

FS CryptoFX Indices

Appendices

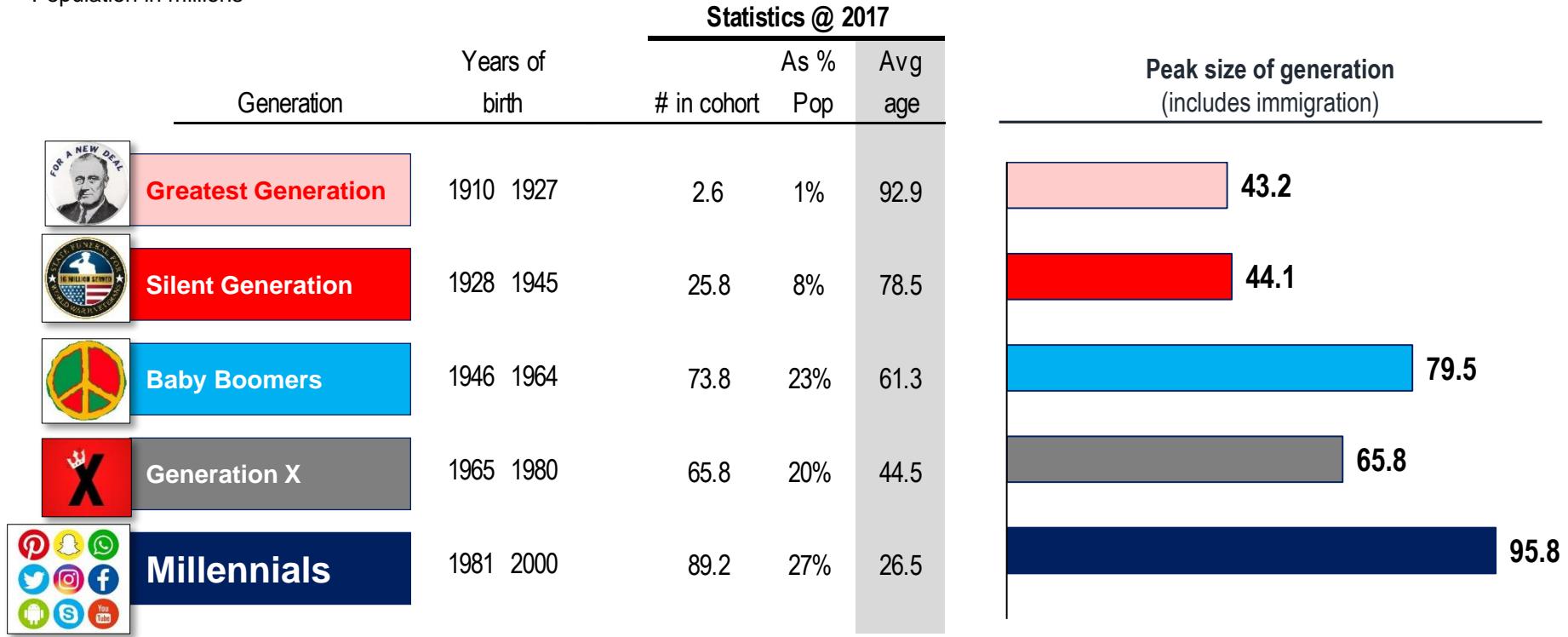
Millennials are largest population cohort ever

Millennials are currently the largest population cohort (born 1981 to 2000) and current have an average age of 26.5.

- As shown below, this is the single largest cohort ever at 96 million (peak size) and currently represents 27% of the total US population.
- As discussed on the following pages, the millennials are entering their prime working years

Figure: Comparative size of generations

Population in millions



Source: Fundstrat, Census Bureau. Note, the population of each cohort exceeds the total births due to immigration.

Each generation sees innovations... its mostly digital today

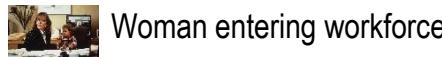
Each generation is also characterized by innovations that differentiate that generation from prior generations.

- As shown below, what differentiates the millennial experience (in their 20s) is the growth of social media and digital businesses. Notably, we believe blockchain is the newest innovation.

Figure: Innovations seen when each generation was in their 20s

General sources. Wired magazine.

Baby Boomers in their 20s 1970s-1980s



Woman entering workforce



Mail order business



PCs/Apple



Microsoft/GUIs



GPS



Game consoles



Mobile phones



Laserdisc/CDs

Disruptive and misunderstood by prior generation

Source: Fundstrat

GenX in their 20s 1990s-2000s



email



amazon WWW/ e-commerce



Digital Cellular



Mobile email



Mobile data



Text messaging



Google



Paypal



Video Games



Digital photography



MP3

Millennials in their 20s 2000s-now



Facebook



Uber



Airbnb



Instagram



Kickstarter



Digital video streaming



Blockchain/Bitcoin



Electric cars



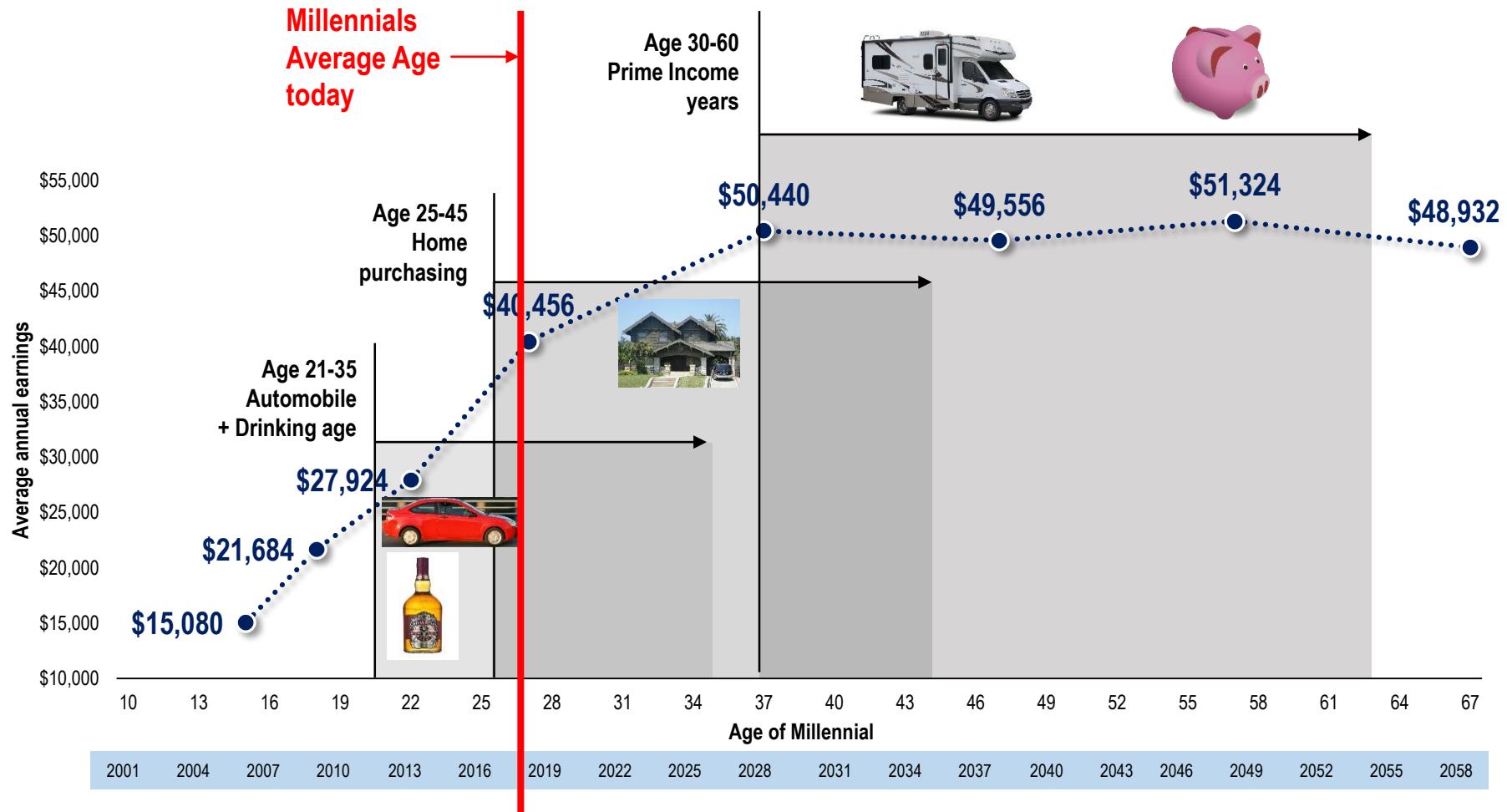
Online dating

Millennials average age is 26.5... still early in life cycle

The oldest millennials are 36 but the average age is 26.5. As shown below, this means the peak of millennials are driving the automobile market but just beginning to impact the housing market. And early in the investing market.

- As the following slides show, millennials are now the most important cohort to follow for several key segments.

Figure: Life cycle of Millennial spending and income
Survey of Consumer Finance for 2017 "real income" levels (born between 1981-2000)



Source: Fundstrat, Bloomberg, Census Bureau

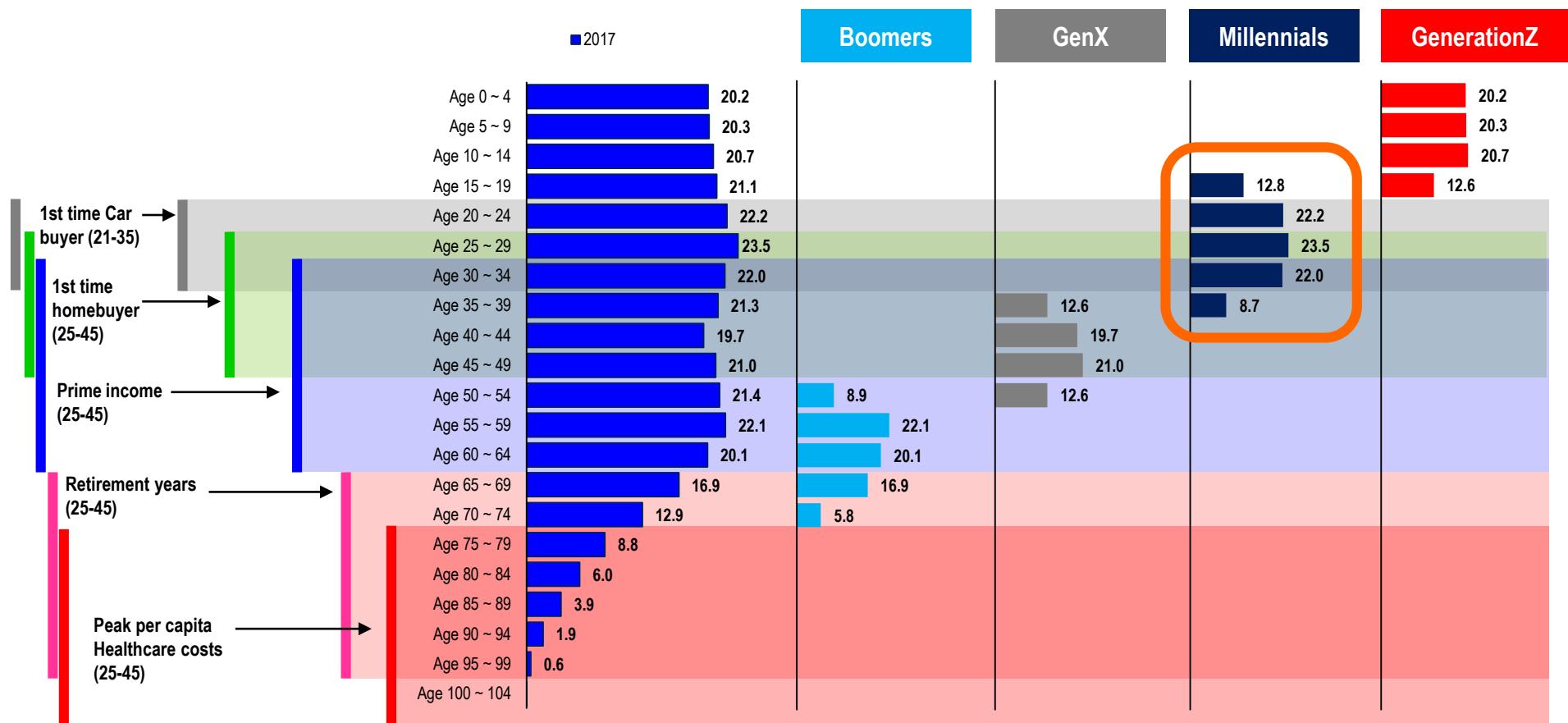
Millennials maturing autos, peak homebuying and early prime income

To highlight the life cycle of various generations, we have highlighted population distribution and shown the various generations and their respective distribution. Additionally, we shaded the various life cycle behaviors (auto buying, etc.).

- Millennials are now dominating Automobile purchasing, entering homebuying and beginning to generate prime income.

Figure: Composition of Generations by age group

Census bureau



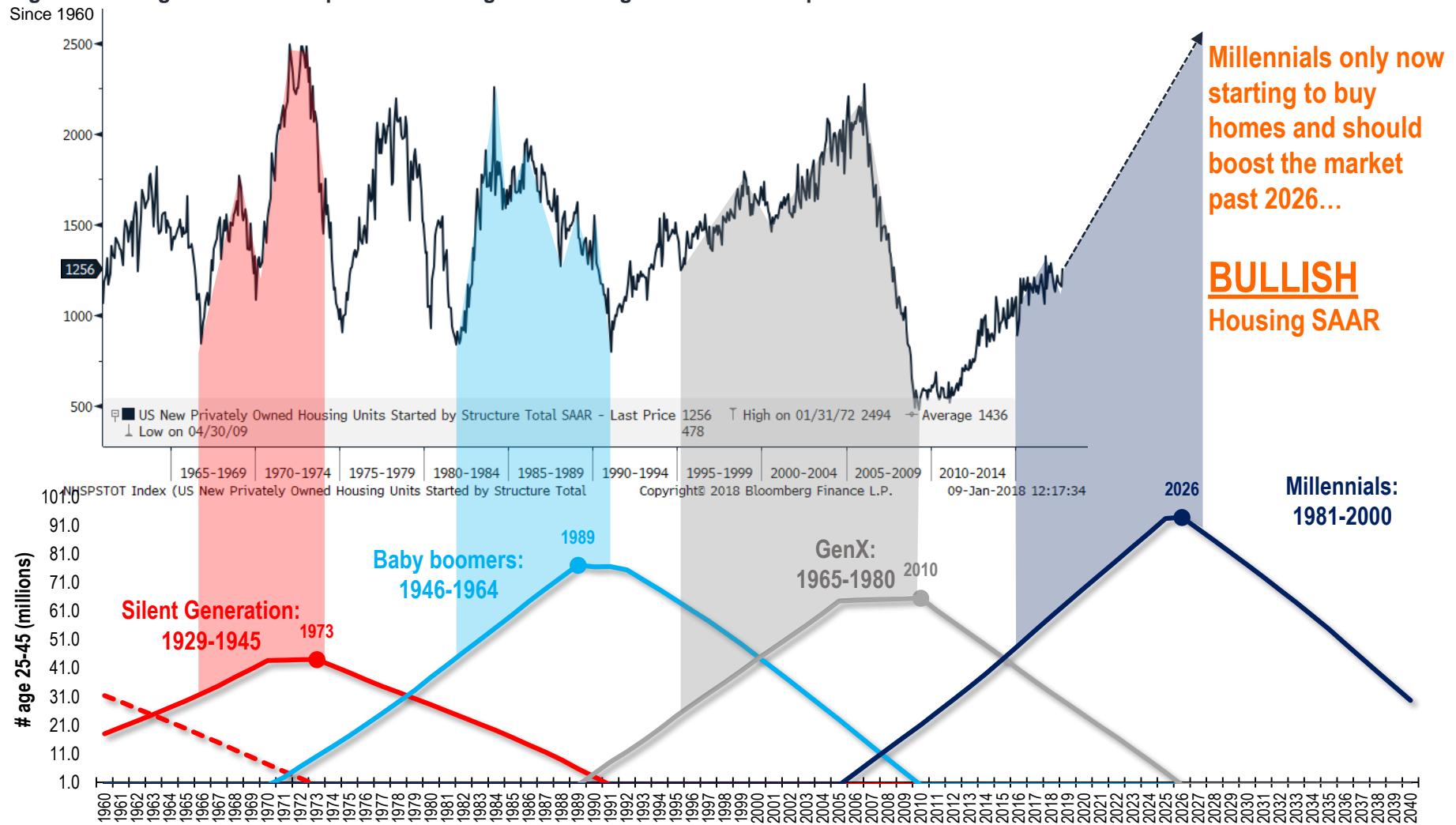
Source: Fundstrat, Bloomberg, Census bureau

Housing follow generations and implies peak starts 2029 or so...

We believe the prime market for homebuyers is age 25-45 and as shown below, this cohort size seems to explain housing cycles.

- If precedent generations are a template, housing starts should rise through 2029 towards 2.5 million starts.

Figure: Housing starts and comparative size of generations age 25-45. Starts reported in thousands.



Millennials are just entering their prime income years

Of the 96 million millennials, about 30 million are just entering their prime income years.

- Thus, the key question from an investment perspective is how the millennials will impact the investment market in the coming decades. After all, each generation seemed to prefer a different investment product.

Figure: Composition of Generations by age group

Census bureau



Source: Fundstrat, Bloomberg, Census bureau

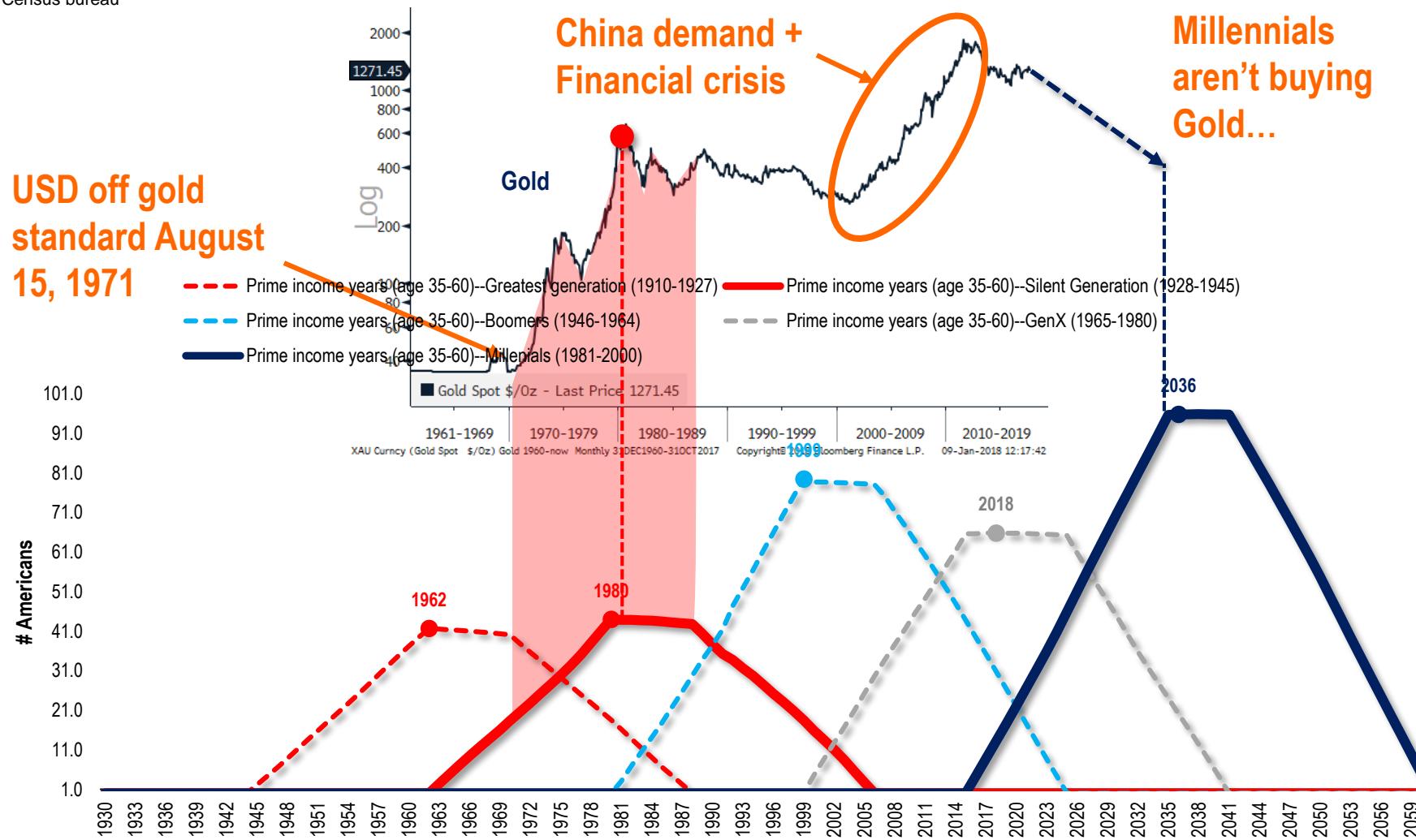
Silent Generation bought gold...

As shown below, the Silent Generation was in their prime income years. The USD moved off the gold standard in 1971.

- As shown, this surge in gold and coincident generational prime income of “Silent Generation” means this generation is the key cohort of “gold bugs”.

Figure: Comparative Gold prices and the prime income years of various generations

Census bureau

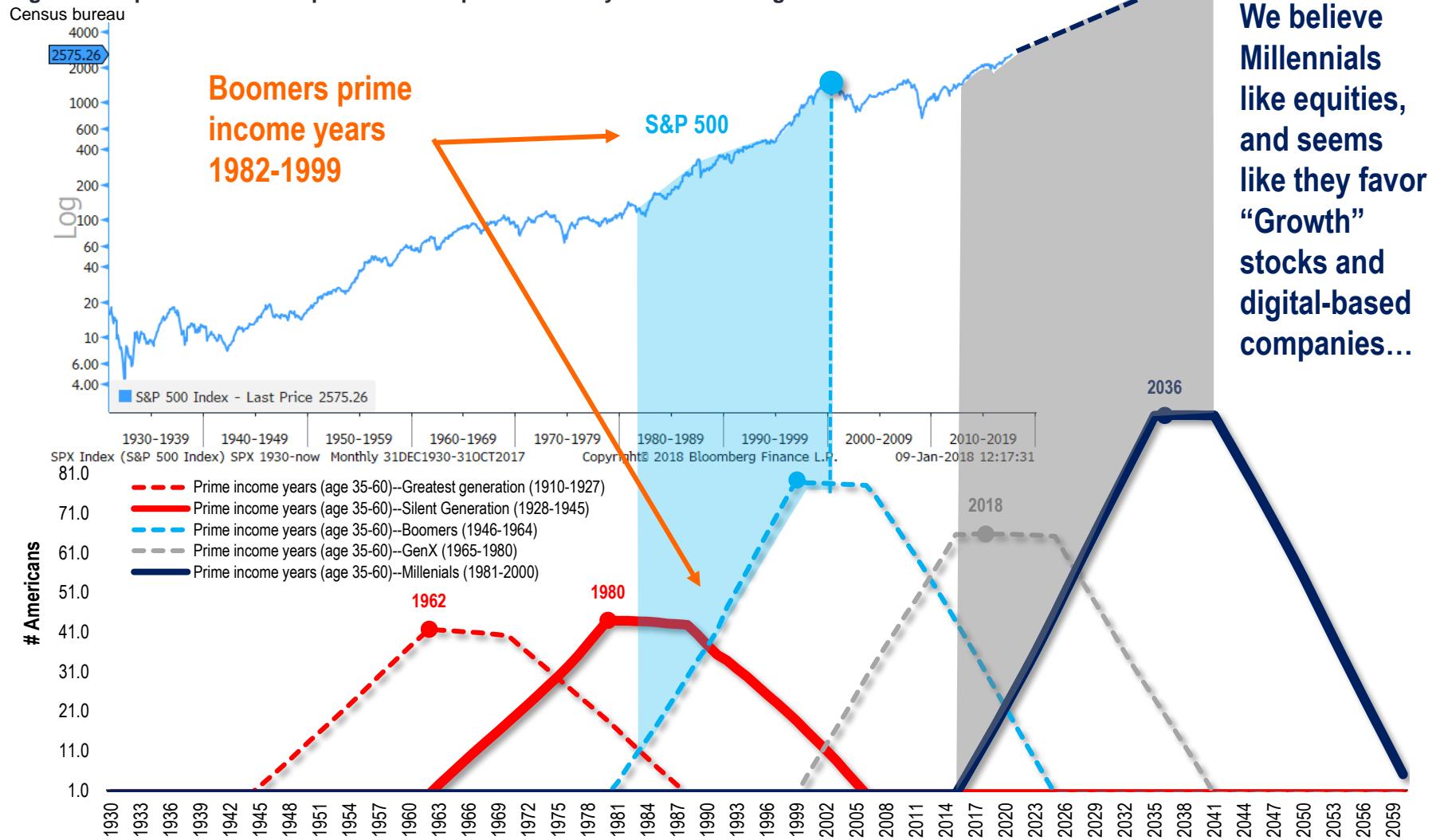


Boomers bought equities... millennials like “Growth stocks”

The Baby boomers prime income years stretched from 1982 and peaked in 1999.

- Baby boomers prime income years stretched from 1982 and peaked in 1999, coinciding with equity market peak.

Figure: Comparative S&P 500 prices and the prime income years of various generations



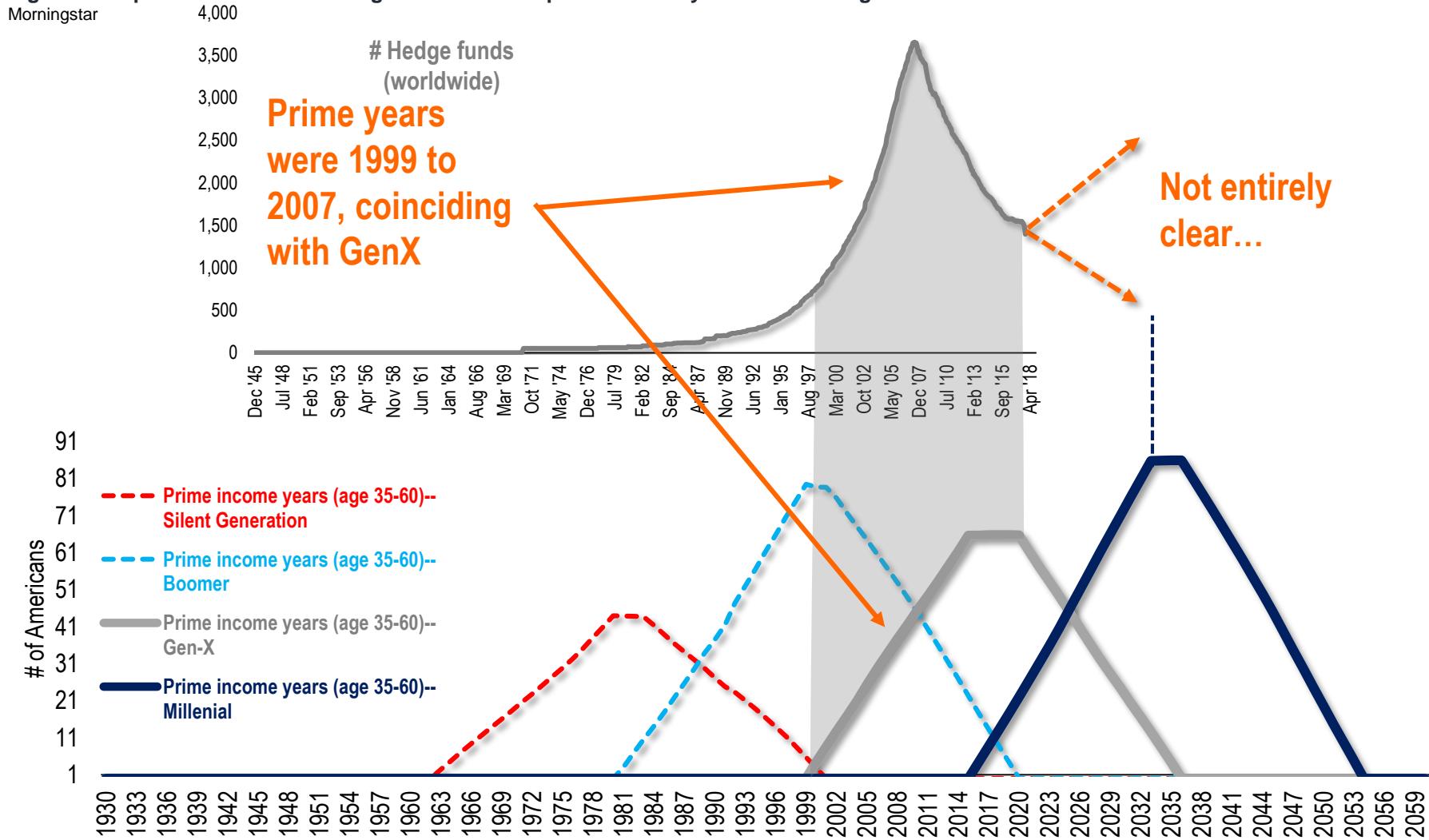
We believe Millennials like equities, and seems like they favor “Growth” stocks and digital-based companies...

GenX really liked Hedge funds...

The prime years for hedge funds (based on number) was 1990s to 2007. Since then, the number of funds has been declining.

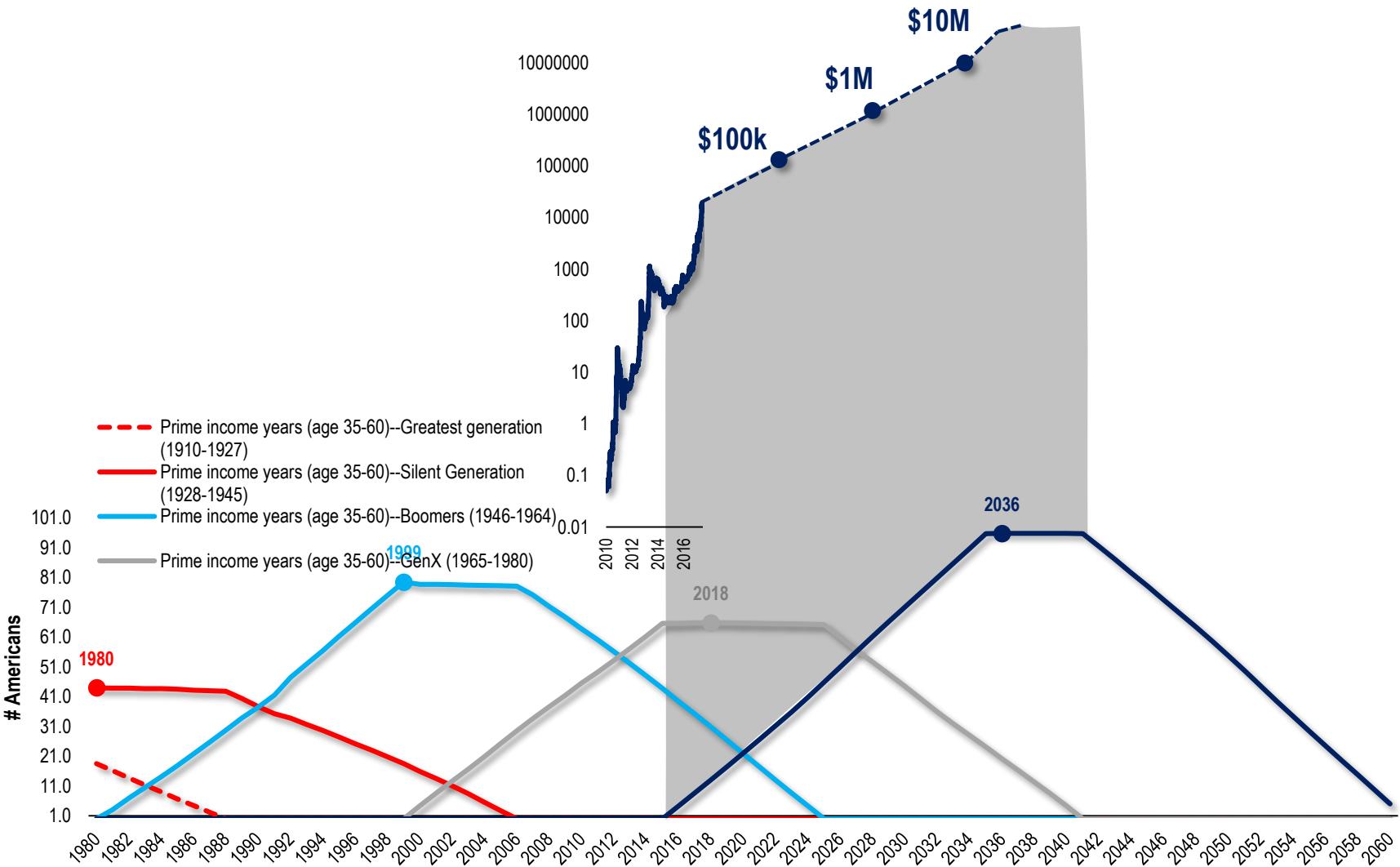
- The hedge fund industry is evolving and those with deep fundamental or a unique advantage will likely appeal to millennials..

Figure: Comparative number of Hedge funds and the prime income years of various generations



Millennials LOVE Bitcoin and Blockchain

Figure: Fundstrat FS CryptoFX 300 Index
Morningstar



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Bitcoin

Digital Store of Value

		Current	Mid-2018	YE-2018
Bitcoin	BTC	\$9,400	\$20,000	\$25,000
History	Bitcoin is the first true digital peer to peer currency system that ushered in the era of cryptocurrency and related technologies. Bitcoin was announced by Satoshi Nakamoto in November 2008 and the first block was mined in January 2009. Its code has been forked and used directly or indirectly for most of the other cryptocurrencies. Even when the code is not directly forked, Bitcoin has formed the basis of almost every other cryptocurrency in existence. Bitcoin is described in the original whitepaper as "A Peer-to-Peer Electronic Cash System".			
Forks	Bitcoin Cash, Bitcoin XT, Bitcoin Classic, Bitcoin Unlimited, Bitcoin Gold, Bitcoin Diamond			
Foundation / Developer support	Bitcoin Core			
White Paper	https://bitcoin.org/bitcoin.pdf			
Website	https://bitcoin.org			
Differentiation	Original crypto currency, digital gold / store of value			
Average Block Time	10 minutes			

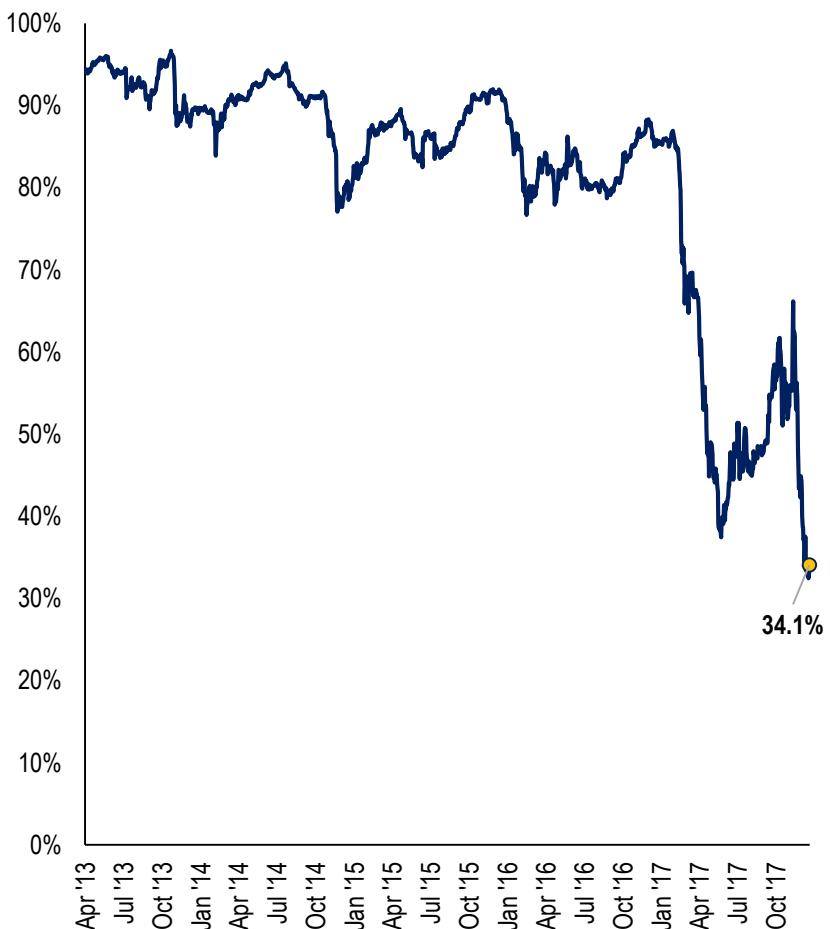
Market Cap (USD, billions)
Supply—current/ max (millions)
Consensus Mechanism

\$177.1

16.8 / 21.0 BTC

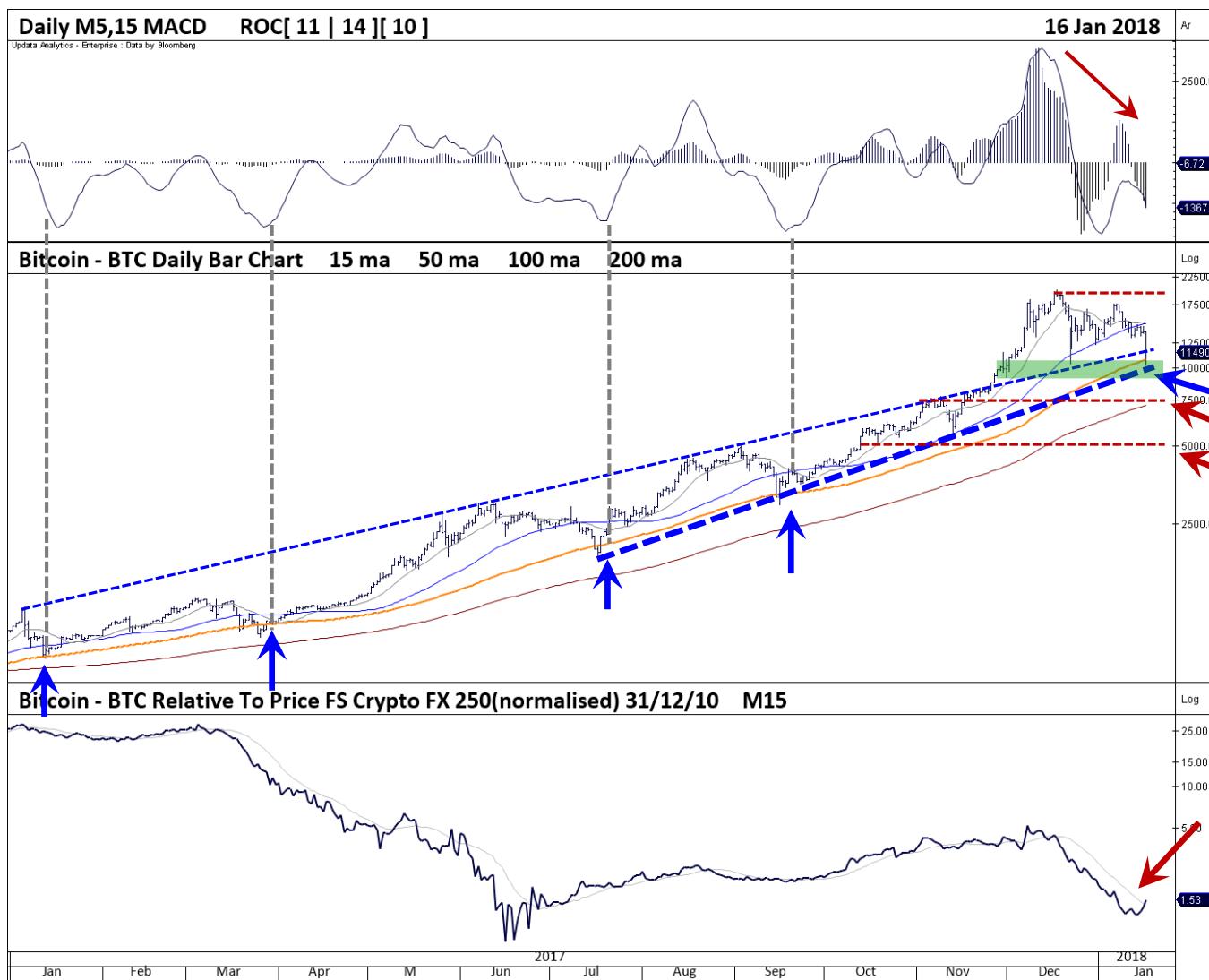
Proof of work

Figure: Bitcoin share of total FS CryptoFX Aggregates Index percent



TECHNICAL STRATEGY: Bitcoin – BTC

- BTC is stress testing important support at its 2017 uptrends and 100-dma near ~ 10,000. While a short-term break below this support level is possible we view the current correction as a pullback within an uptrend.



Momentum

- Daily momentum remains negative

Price

- BTC is challenging beginning to break its uptrend support band at its 100-dma (~10,000) which has provided support following prior 40+% corrections (blue arrows).
- Support is near current levels at BTC's 2017 uptrend and 100-dma which we expect to hold and define the lower end of the 2018 trading range.
- For reference, next support is at the November highs near 7500 followed by the November trading range lows near 5500.
- Despite the recent damage, we view the current pullback as correction in an uptrend and not a longer-term top.

Relative Performance vs FX 250

- Early evidence of a defensive trend reversal developing vs the broad FX 250 smaller-cap index.

Source: Fundstrat, Coinmarketcap.com, Updata

Framework for bitcoin: ~\$125,000 per unit by 2022

We have created a framework for valuing bitcoin, based on the assumptions outlined below:

- In short, we looked at the projected growth of money supply (M0) and a forecast for the ratio of the alternative currencies to M0 (gold historically is the bulk of this value). And then allocated a share to bitcoin. Under this forecast, we see bitcoin rising to \$125,000 by 2022.

Figure: Key variables in valuing Bitcoin and other cryptocurrencies

\$ trillions, except bitcoin value

	1.	X	2.	X	3.	=	Value
	Money supply growth		Ratio alternative currency to M0		Bitcoin share of alternative		Bitcoin value
	M0, or cash assets, including currency and is called narrow money		Ratio of alternatives, including gold to M0.		Bitcoin share of alternative currency. 5-year projection		Based on 21mm maximum units (fully diluted)
Current:	\$1.55T		487%		~3.5%		~\$15,000
2022E:	\$2.2T		600%		~20.0%		~\$125,000
1921-2017 Average:	7.0%		554%				

Source: Fundstrat, Bloomberg

REALISTIC FORECAST: A model for valuing bitcoin—December 15, 2017

Our model for valuing bitcoin is below, driven principally by M0, or US money supply.

- We highlight the key variables below: (i) alternative currency to M0 (historical ratio shown at 554%) and (ii) bitcoin share of this alternative currency. Essentially, we see bitcoin cannibalizing gold—and our model shows gold's value being relatively static against a rise in bitcoin.**
- The upside is substantial, as bitcoin could see unit value rise by 8X by 2022.**

Figure: Model for valuing bitcoin

Values are \$ billions, except unit prices

			1921-2017 average	Terminal Value	Now 2017	2018E	2019E	2020E	2021E	5-yr 2022E	5-yr CAGR
(a)	M0 supply (USD in circulation) % chg y/y	\$ bils	6.50%	7.00%	\$1,555	\$1,663	\$1,780	\$1,905	\$2,038	\$2,180	7%
Key → variable	(b)	Ratio Alternative currency to M0	554%	600%	487%	510%	532%	555%	577%	600%	
	(c)=(a)*(b)	Implied value of alternative currencies % chg y/y			\$7,571	\$8,477	\$9,473	\$10,566	\$11,766	\$13,083	12%
	(d)	Gold share of alternative currencies		80.0%	99.3%	95%	92%	88%	84%	82%	
	(e)=(c)*(d)	Implied value of gold in circulation	\$ bils		\$7,518	\$8,091	\$8,675	\$9,269	\$9,867	\$10,719	7%
Key → variable	(f)	Estimated total gold circulation % chg y/y	metric tons	1.48%	191,928	195,383	198,900	202,480	206,125	209,835	
	(g)=(e)*billion /[(f)*32150.7]	Implied value of gold/ troy oz (32150.7 oz./ metric ton)	\$/oz		\$1,218	\$1,288	\$1,357	\$1,424	\$1,489	\$1,589	5%
	(h)=1-(d)	Bitcoin share of alternative currencies		20.0%	0.7%	4.6%	8.4%	12.3%	16.1%	20.0%	
	(i)=(c)*(h)	Implied value of bitcoin in circulation	\$ bils		\$53	\$387	\$798	\$1,298	\$1,899	\$2,617	
	(j)	Bitcoin share (maximum, fully diluted)			21.0	21.0	21.0	21.0	21.0	21.0	
	= (i)/(j)*billion	Implied value of each bitcoin	\$/unit		\$2,524	\$18,407	\$37,981	\$61,787	\$90,433	\$124,599	118%

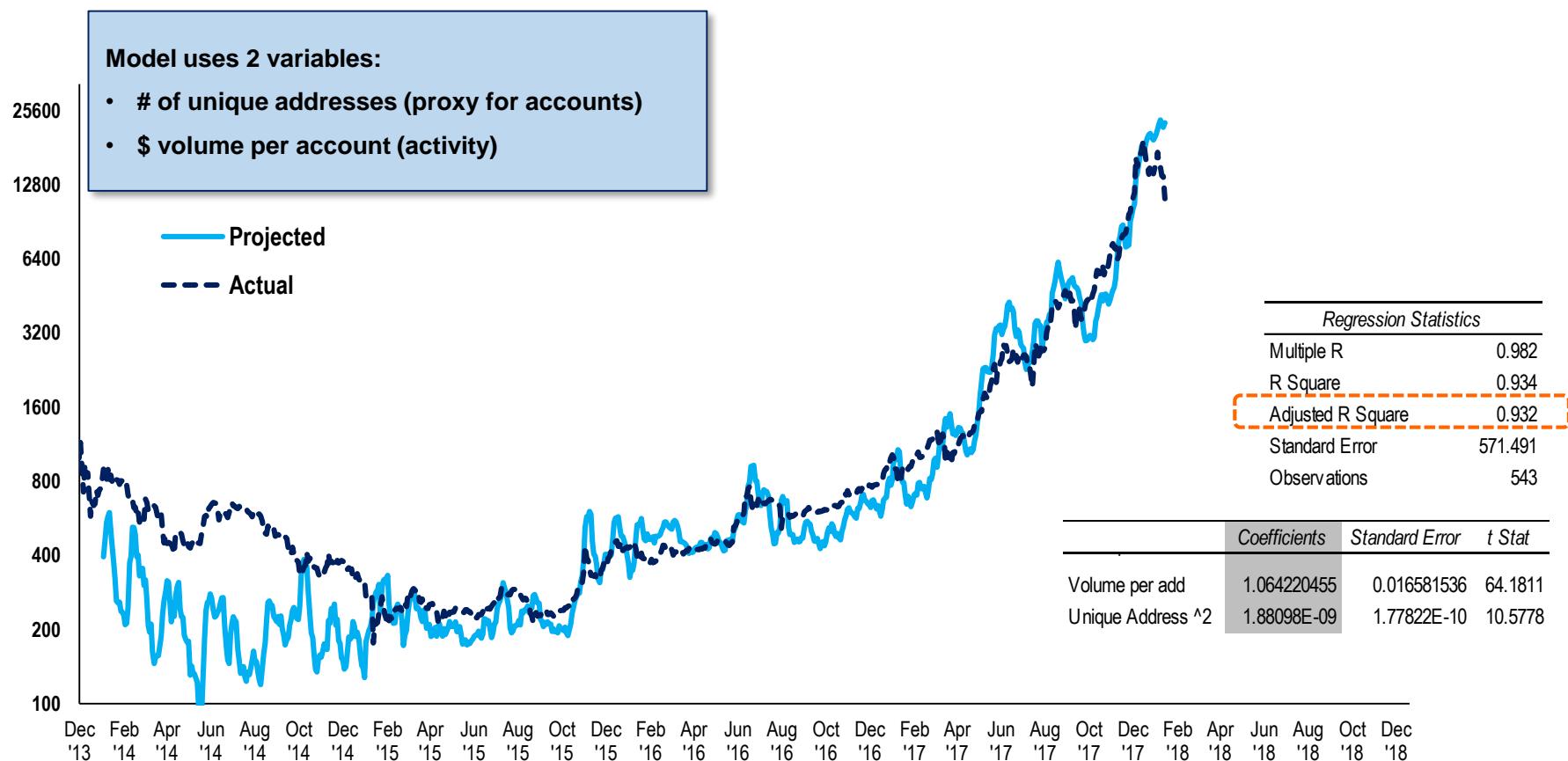
Source: Fundstrat, Bloomberg

Bitcoin's price is 93% correlated to Addresses and \$ trading/acct...

As shown below, the modeled bitcoin has explained about 93% of the change in bitcoin prices since 2013.

- In other words, bitcoin's value is a function of volume plus exponentially linked to the number of users.
- We found that a model using two variables: (i) unique addresses (proxy for accounts) (n^2) and (ii) estimated transactions per user (proxy for usage) (linear) explain 93% of the price movement of bitcoin. As such, we can use this method to suggest a short-term range for bitcoin.

Figure: Comparative Price of Bitcoin against a “Model-based Bitcoin” using volume and unique addresses
Since 2013



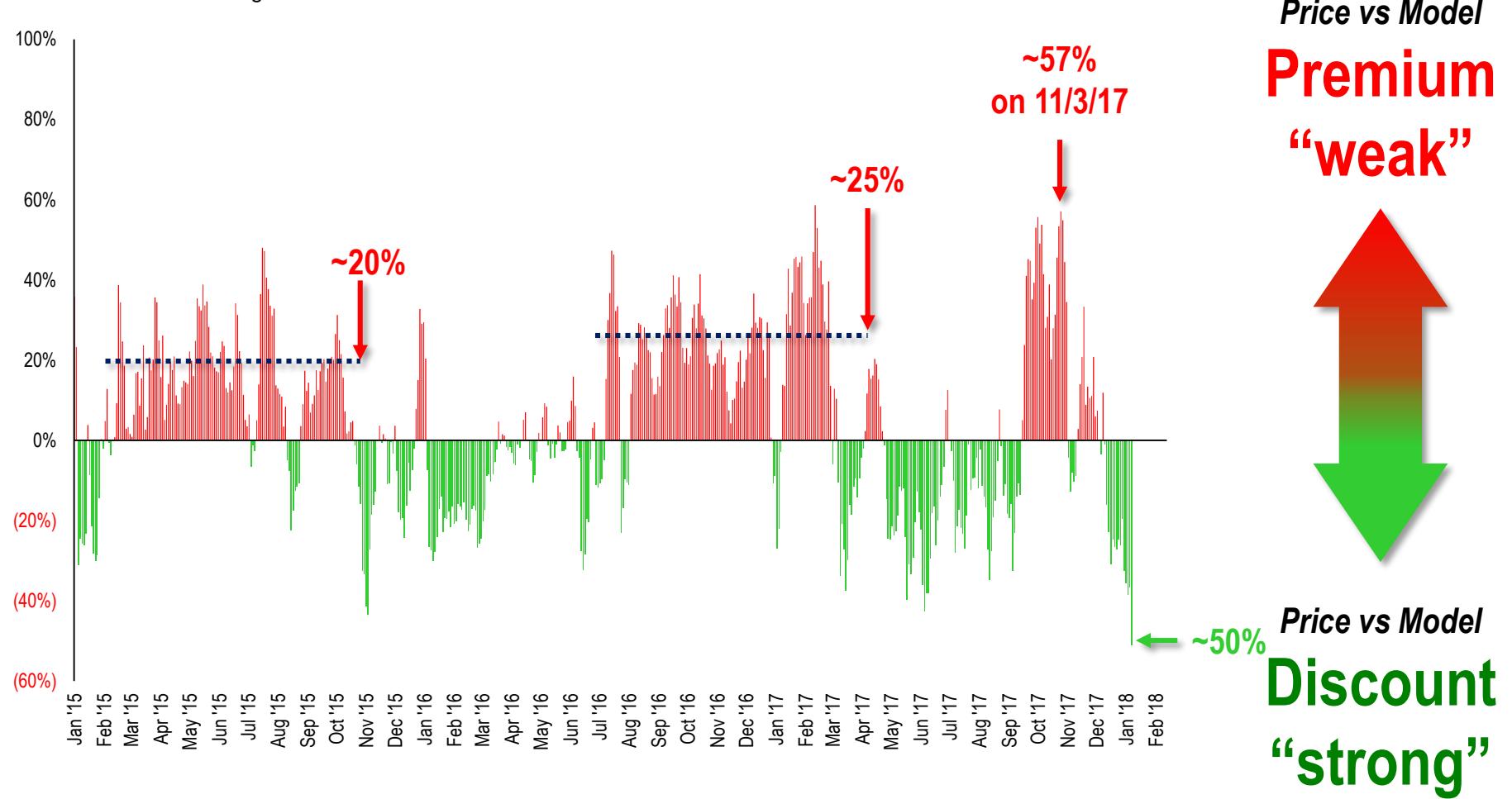
Weak vs Strong hands measured by spread “fundamental” and “market”...

As shown below, the value differential between the current price of bitcoin and the “fundamental model” is about a 50% discount.

- This is the lowest spread since Nov 2015 and suggests many of the recent buyers of the token are strong hands.

Figure: Mid-2018 Target Value for Bitcoin

Based on two variable regression



Revised mid-2018 Target: Now \$20,000 from \$11,500 based on higher volumes

Below we have modeled bitcoin “price” based on polynomial regression of unique addresses plus transaction volume. Such an approach is consistent with the other approaches noted on the prior pages.

- We project user accounts to grow 50% by then (consistent with past few quarters) and usage per account to rise 10%.
- This implies Bitcoin would be worth about \$20,000 by mid-2018. This is an increase from our prior target of \$11,500 as current values have risen faster than expected. This implies 75% upside to the currency by mid-year.

Figure: Mid-2018 Target Value for Bitcoin

Based on two variable regression

Rationale	Correlation			Current Value	Mid-2018	Target Value	YoY % chg
	R-squared	N	Coefficient				
Unique Addresses	Units	63.29%	N^2	1.880976E-09	769,938	895,505	50.0%
\$ transaction volume/ user	Usage per unit	83.41%	N	1.064220E+00	\$16,917	\$17,529	10.0%
Bitcoin Estimate "Fair" Value				\$11,500		\$20,163	
<i>Est. upside (or downside)</i>						75%	

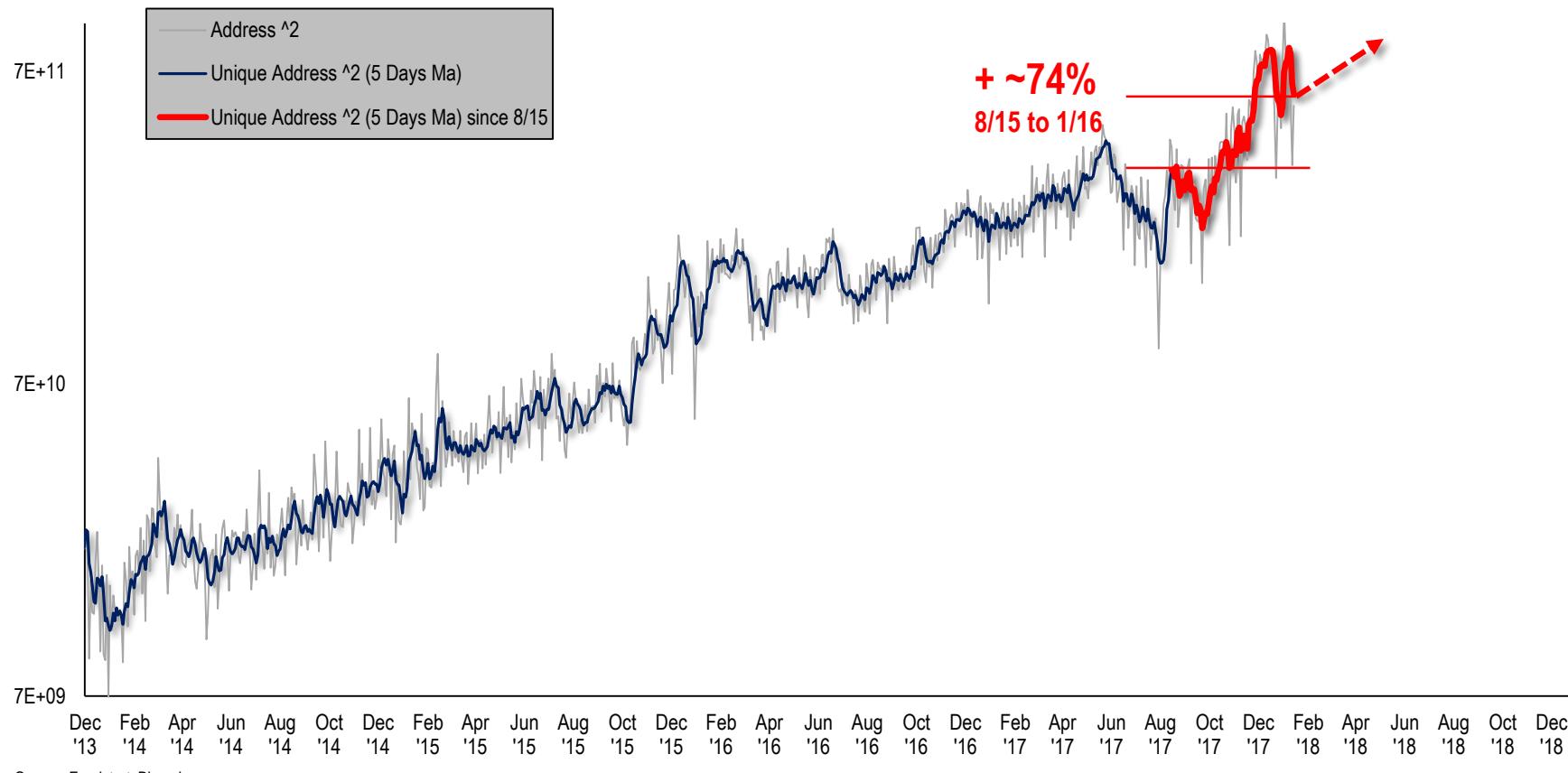
Source: Fundstrat, Bloomberg, blockchain.info

Unique Address growth has been strong and forecast to continue

Unique address growth has been impressive, growing 72% yoy and our model takes this value to the ^2.

- Unique address growth has been 72% in the past 12 months and as shown below, this value is up 37% since 8/15/17 when we first published this model.
- And given the potential expansion of wallets, we see this figure continuing to expand. This is a proxy for users but is best viewed as a proxy for “transaction IDs” created on the blockchain.

Figure: Unique Address Growth has improved since 8/15
Since 2013



Source: Fundstrat, Bloomberg

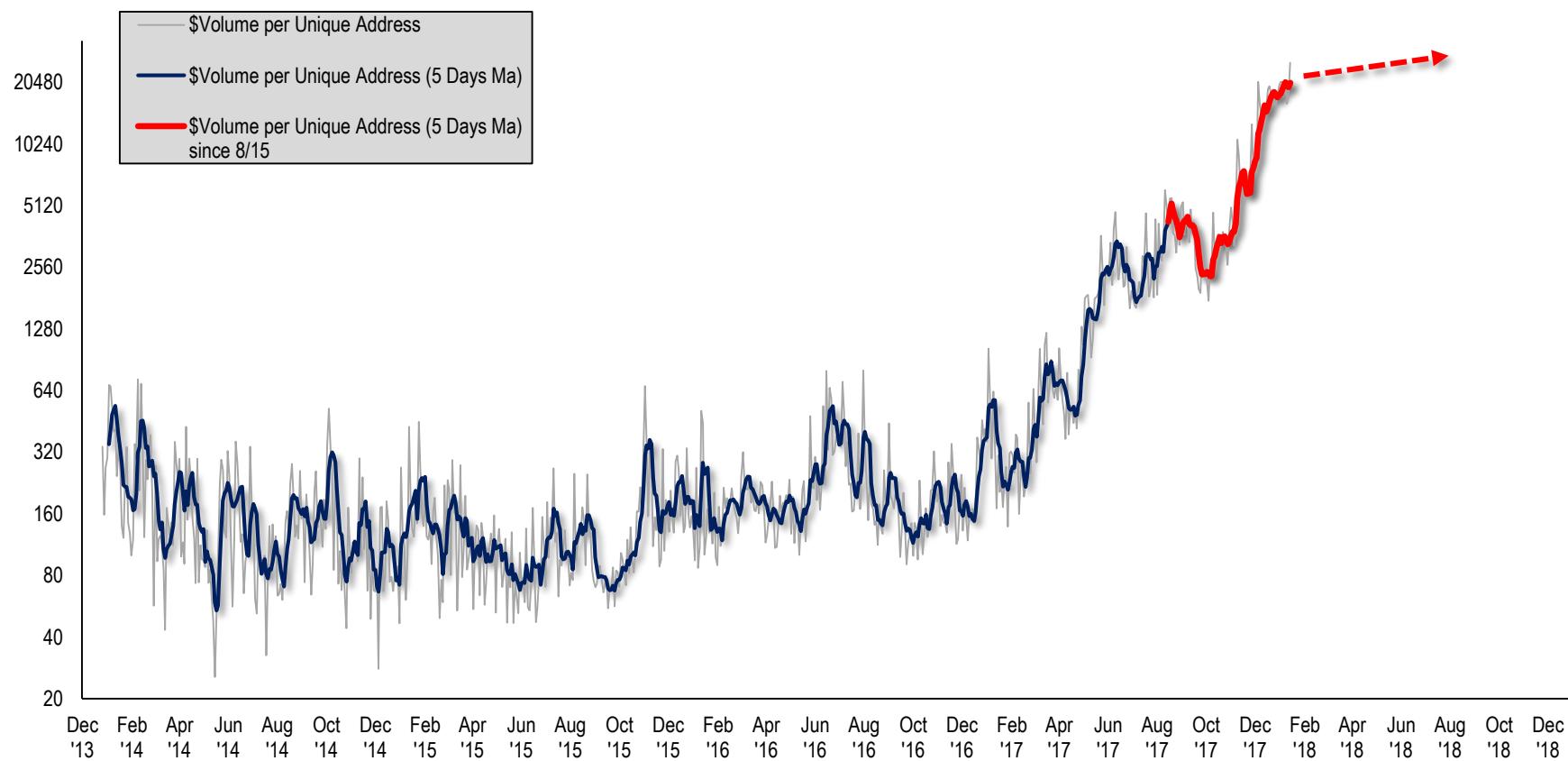
Value per transaction is up since 8/15

As shown below, the USD value per transaction is up 300% from \$4,050 in August 2015.

- The value per transaction will rise as Bitcoin price goes up and has less explanatory value anyways (it is linear not log).

Figure: USD Value per transaction

Since 2013



Source: Fundstrat, Bloomberg



Ethereum

Smart contracts = World computer

		Current	Mid-2018	YE-2018
Ethereum	ETH	\$856	\$1,500	\$1,900
History				
		Ethereum was initially described in a white paper by Vitalik Buterin, in late 2013 with a goal of building decentralized applications. Formal development of the Ethereum software project began in early 2014, and was funded by an online public crowdsale , with the participants buying the Ethereum value token (ether) with bitcoin. The future release version "Serenity" should include a fundamental change to Ethereum's consensus algorithm to enable a basic transition from hardware mining (proof-of-work) to virtual mining (proof-of-stake). Improvements to scalability, specifically sharding, are also said to be a key objective on the development roadmap.		
Forks		Ethereum Zero,		
Foundation / Developer support		The Ethereum Foundation, The Ethereum Enterprise Alliance		
White Paper		https://github.com/ethereum/wiki/wiki/White-Paper		
Website		https://www.ethereum.org/		
Differentiation		Smart Contract		
Average Block Time		15.6 s		

Market Cap (USD, billions)

Supply—current/ max (millions)

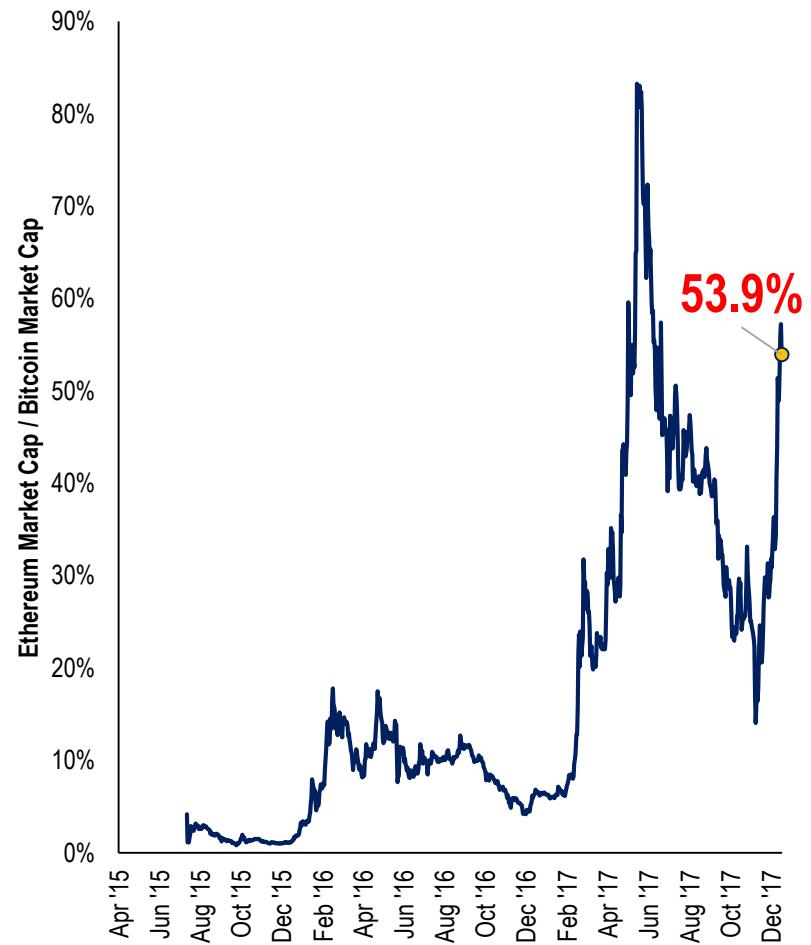
Consensus Mechanism

\$89.2

97 / Unlimited ETH

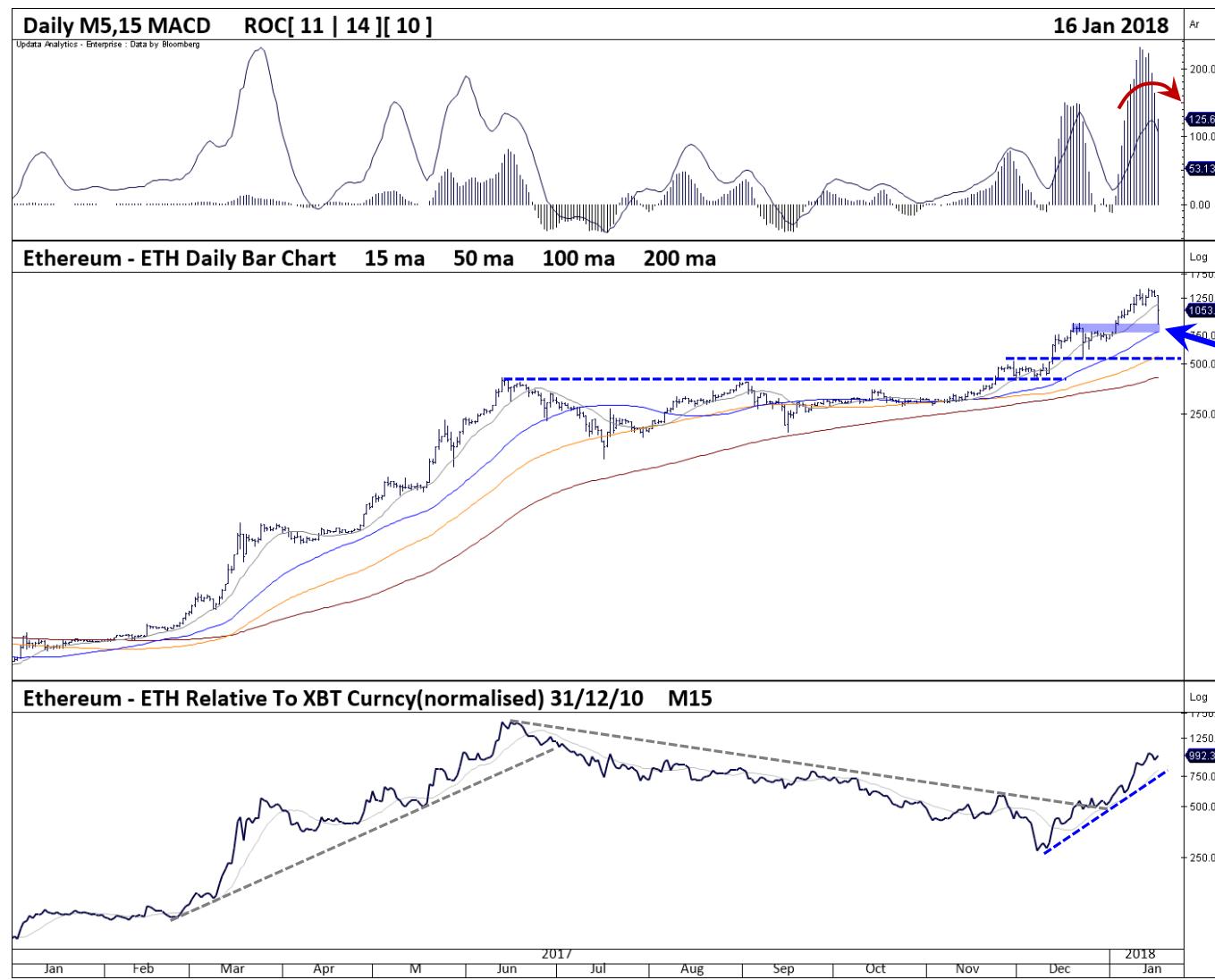
Proof of work

Figure: Ethereum Market Value as % Bitcoin percent



TECHNICAL STRATEGY: Ethereum - ETH

- Price uptrend intact with relative performance versus BTC early in an intermediate-term upside reversal. We expect pullbacks/corrections to be relatively short-lived confined to first support (blue band) near 800.



Source: Fundstrat, Coinmarketcap.com, Updata

Momentum

- Daily momentum is early in a downturn suggesting another 4+ weeks of consolidation before another upside rebound is likely to develop.

Price

- ETH's long-term uptrend is intact with ETH testing first important support at the 12/22/17 highs near 820 followed.
- Next support is at the 50-dma at 780. For reference the 100-dma is currently at 530.

Relative Performance vs BTC

- Early in an intermediate-term upside reversal in place. Use near-term weakness to accumulate ETH vs BTC



Ethereum Classic

Best hybrid of BTC and ETH

Current Mid-2018 YE-2018

Ethereum Classic ETC \$25 \$40 \$60

History	Ethereum Classic is an open-source, public, blockchain-based distributed computing platform featuring smart contract (scripting) functionality. It provides a decentralized Turing-complete virtual machine, the Ethereum Virtual Machine (EVM), which can execute scripts using an international network of public nodes. Ethereum Classic also provides a value token called "classic ether", which can be transferred between participants, stored in a cryptocurrency wallet and is used to compensate participant nodes for computations performed. The classic ether token is traded on cryptocurrency exchanges under the ticker symbol ETC. Gas, an internal transaction pricing mechanism, is used to prevent spam on the network and allocate resources proportionally to the incentive offered by the request. Ethereum Classic appeared as a result of disagreement with the Ethereum Foundation regarding The DAO Hard Fork. It united members of the Ethereum community who rejected the hard fork on philosophical grounds. Users that owned ETH before the DAO hard fork own an equal amount of ETC after the fork.
Forks	Ethereum,
Foundation / Developer support	Ethereum Classic community
White Paper	http://ethereum-classic-guide.readthedocs.io/en/latest/
Website	https://ethereumclassic.github.io/
Differentiation	Smart Contract
Avg Block Time	14.4 s

Market Cap (USD, billions)

Supply—current/ max (millions)

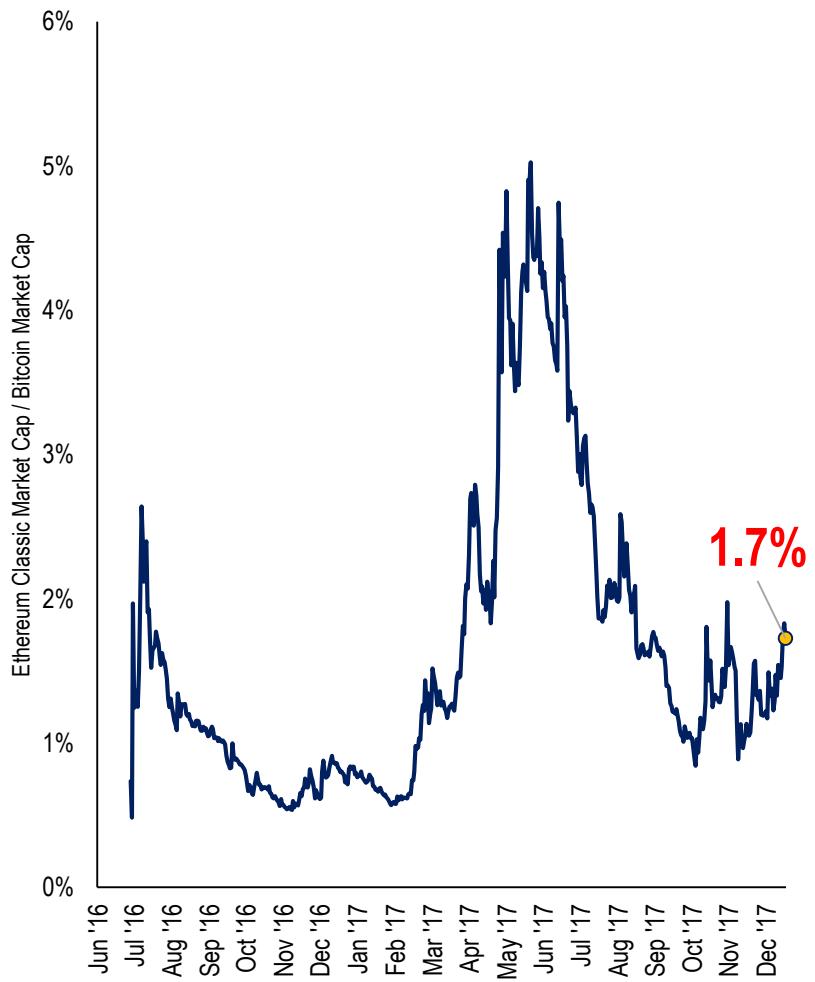
Consensus Mechanism

\$2.7

99.2 / 210.0 (proposed)

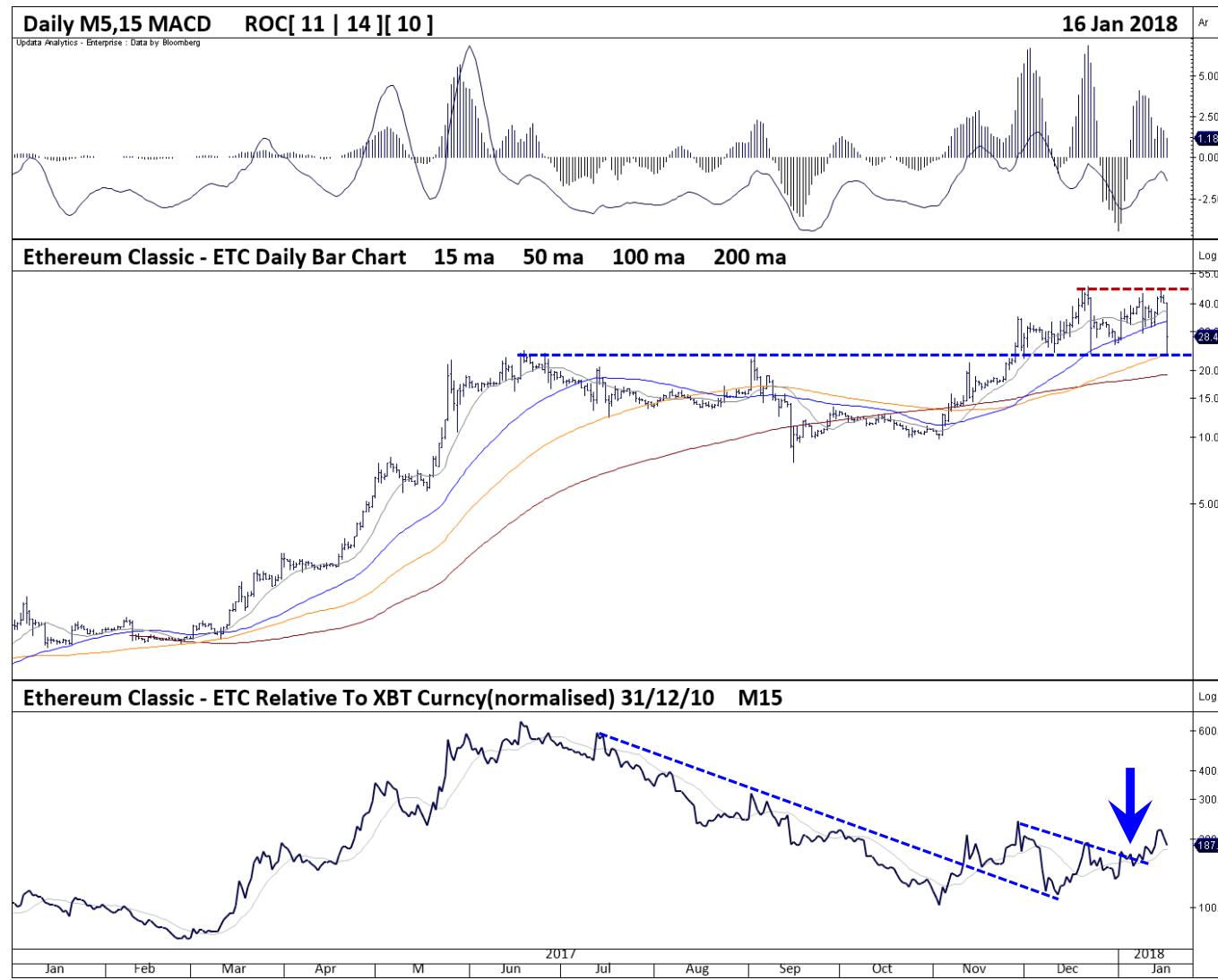
Proof of work

Figure: Ethereum Classic Market Value as % Bitcoin percent



TECHNICAL STRATEGY: Ethereum Classic - ETC

- Consolidating in a broad volatile trading range above major support with relative performance vs BTC showing early evidence of reversing to the upside.



Momentum

- Neutral

Price

- ETC's is consolidating in a broad trading range above major support above its 100-dma (23.56) and 6/22/17 highs (24.62).
- An upside break out of the upper end (47.77) of the \$23 trading range would suggest a move to \$70.

Relative Performance vs BTC

- Early evidence of an intermediate-term upside reversal but ETC will need to move above the November highs (blue arrow) to confirm a meaningful trend reversal.



Neo

Dynamic Smart contracts

		Current	Mid-2018	YE-2018
Neo	NEO	\$114	\$150	\$225
History	Formerly known as Antshares, NEO is a recent iteration on Ethereum's smart contracts. NEO is the use of blockchain technology and digital identity to digitize assets, the use of smart contracts for digital assets to be self-managed, to achieve "smart economy" with a distributed network. NEO essentially has a 100% pre-mine as well as proof of stake model which allows users to derive additional coins (in the form of GAS) by holding them in a wallet. NEO has a sister company OnChain that's already a "made man" in terms of the financial services industry. It is also currently working with the Chinese and Japanese government along with large corporations including Alibaba. NEO is considered more of a open-source public cloud model which will be separate from OnChain but can also interconnected in terms of the cross chain functionality as we will see more of with NeoX			
Forks	Neo Gold			
Foundation / Developer support	NEO Community, Onchain			
Website / White Paper	https://neo.org/ http://docs.neo.org/en-us/			
Differentiation	Smart Contracts that support additional code bases (C#, VB.Net, F#, JAVA, Kotlin) Pre-mined / Proof of stake			
Avg Block Time	30 s			

Market Cap (USD, billions)

Supply—current/ max (millions)

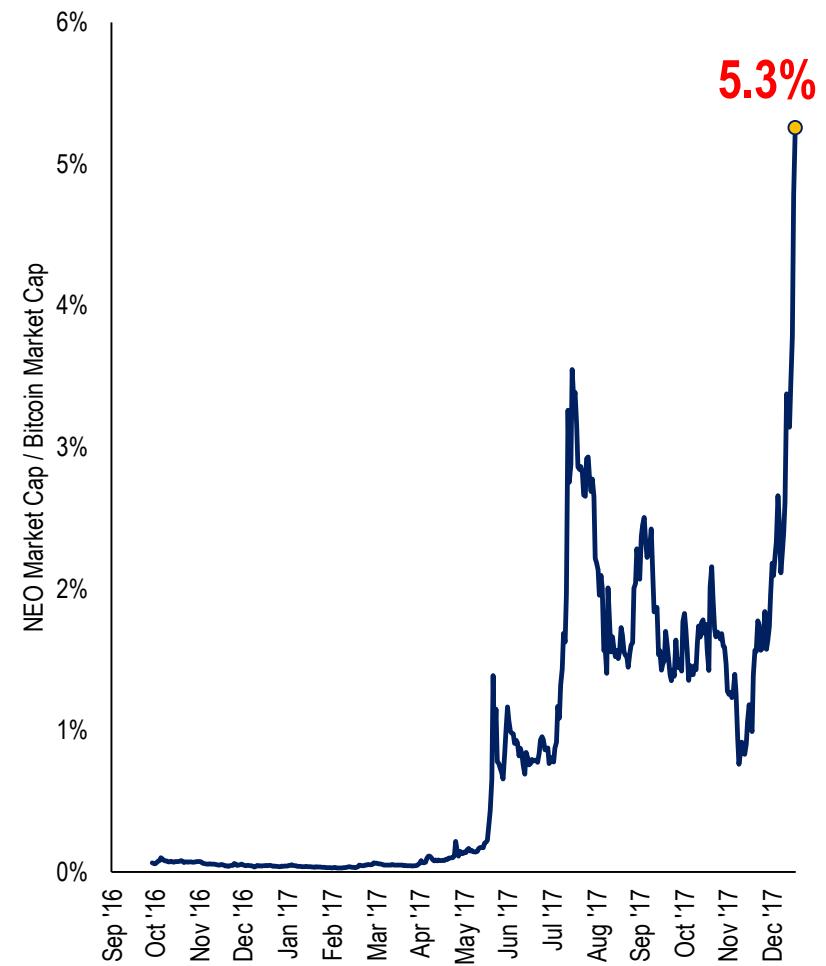
Consensus Mechanism

\$8.1

65 / 100 NEO (pre-mined)

Proof of stake

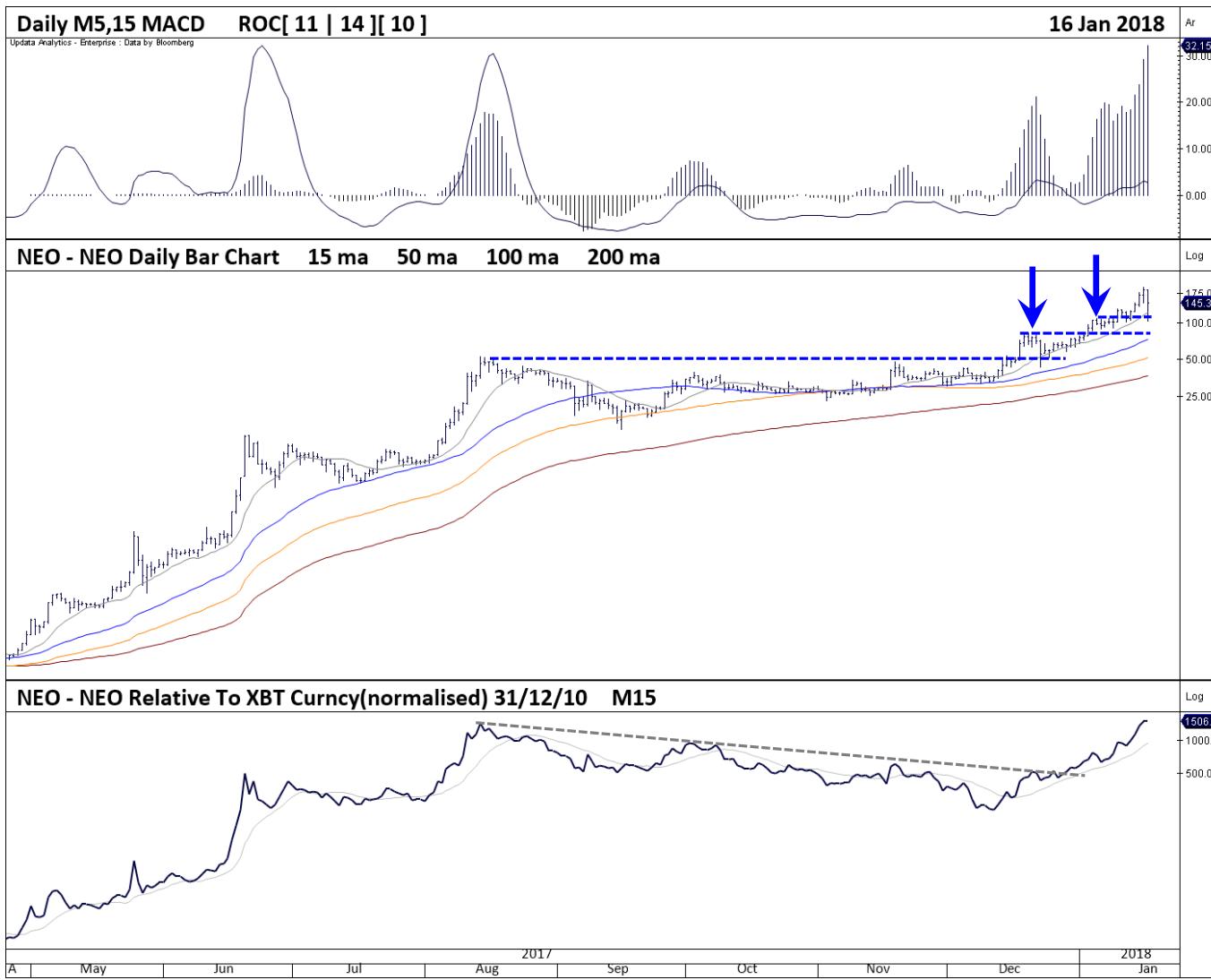
Figure: Neo Market Value as % Bitcoin
percent



Source: Fundstrat, Bloomberg, Investopedia by Joe Liebkind, Coincentral by Aaron Mangal

TECHNICAL STRATEGY: NEO - NEO

- Given NEO has only recently broken-out from its Q3-Q4 2017 trading range, we expect pullbacks to relatively short lived and to hold support above a very broad range defined by the 12/22 and 01/09 highs.



Momentum

- Advanced/overbought

Price

- NEO is early in a new uptrend after breaking-out of its Q3-Q4 2017 trading range in December.
- Support begins between the 01/09/18 highs at 129 followed by the 12/22/17 highs near 82.
- Next major support is at the 50-dma (blue ma) currently at 71.
- We view a short-term pullback as a healthy price behavior given NEO broader bullish price pattern.

Relative Performance vs BTC

- Early evidence of an intermediate-term upside reversal underway supportive of NEO price profile.

Overview

Executive Summary

Rotation: Buy. Rotate. Repeat.

Fundamental case for blockchain strong

Millennials are an important driver

Recommendations

FS CryptoFX Indices

Appendices

TECHNICAL STRATEGY: 2018 Outlook - Base Building in Q1-Q2, Acceleration In H2

Figure: Technician Summary
By Rob Sluymer

- TA and Fundstrat Indices**
- **We continue to view technical analysis as an important tool to manage exposure to cryptocurrencies.** In particular, Fundstrat's proprietary FS CryptoFX indices and Advance-Decline lines tracking the performance of the FX 10 (large-caps), FX 40 (mid-caps), FX 250 (small-caps), FX 300 and FX Aggregate universes provide a unique insight into rotational shifts developing within this emerging area.
- Long-term uptrend intact**
- **It is premature to conclude a major top or reversal has been established for the crypto universe. Why?** Despite the recent weakness in many crypto currencies, down >50% in January, the long-term uptrends for our FS CryptoFX indices remain positive with no meaningful technical evidence in place yet to conclude a major top or reversal has been established.
- 100-dma as key support**
- **In fact, another trading low is likely to develop near current levels.** The 100-dma has provided support during prior index corrections for Bitcoin (BTC) and is the level most indices are now approaching. Our expectation the current correction will stabilize near the 100-dma as a proxy for the longer-term uptrend.
- H1 Technical Outlook**
- While it is premature to decisively conclude a low is developing, our expectation is that our FS CryptoFX indices are in the process of stabilizing/bottoming near current levels that will define the low end of their 2018 trading range. A similar technical backdrop appears to be developing for Bitcoin BTC.
- Base building in Q1-Q2**
- Given the magnitude of the rally in Q4-Q1 rally and severity of the January pullback, we expect a broad trading range to develop through Q1 into Q2 capped by the highs established in January. Despite the magnitude of a 100% trading range, a multi-month consolidation would unwind weekly momentum indicators, tracking 1-2 quarter shifts, from overbought levels toward levels that could support another upside later in Q2 into H2.
- Acceleration in H2**
- **Bitcoin (BTC)** has now corrected back to its 2017 uptrend coinciding with support near its 100-dma near \$10,000. Consistent with our view above we expect BTC will consolidate in a very broad 100% (10k-20k) trading range through most of H1 suggesting an upside target of 20K by June 2018. In theory, a doubling of the trading range would suggest an upside target of 30,000 by YE 2018.
- BTC**
- We also highlight the technical profiles for Ethereum (ETH), Ethereum Classic (ETC) and Neo (NEO). Each of these cryptocurrencies appear to be in short-term pullbacks within emerging uptrends.
- ETH, ETC, NEO**

Source: Fundstrat, Bloomberg, Updata

Fundstrat CryptoFX Indices

Figure: Fundstrat Crypto Indices Overview

FS CryptoFX

Index	Description	# Cryptos	Base date (first date)	Top currencies
FS CryptoFX 10	Large-cap Index: Tracks the performance of the top 10 largest and most liquid Crypto-currencies	10	10/1/2013	Bitcoin, Ethereum, Ripple, Litecoin, Dash, IOTA, Monero...
FS CryptoFX 40	Mid-cap Index: Tracks the performance of the top 11-50 Crypto-currencies based on market value and most liquid	40	4/1/2014	NEM, BitConnect, Lisk, Waves, Stratis...
FS CryptoFX 250	Small-cap Index: Tracks the performance of the top 51-300 Crypto-currencies based on market value and most liquid	250	7/1/2015	DigixDAO, BitcoinDark, SingularDTV, FirstCoin, Blocknet....
FS CryptoFX 300	Market Index: Tracks the performance of the top 300 Crypto-currencies based on market value and most liquid	300	7/1/2015	Bitcoin, Ethereum, Ripple, Litecoin, Dash, IOTA, Monero...
FS CryptoFX Aggregate	All-cap Index: Tracks the performance of the aggregate index of Crypto-currencies	630	10/1/2013	Bitcoin, Ethereum, Ripple, Litecoin, Dash, IOTA, Monero...

Figure: Constituent Information and Key Performance Stats

Fundstrat Crypto Indices

Index	Averge Market Cap	Total Market Cap	Performance			Over last 365 days vs. S&P 500				
			MTD	QTD	YTD	Relative Return	Alpha	Beta	Volatility	Sharpe Ratio
Bitcoin	-	\$250,652	74.9%	312.6%	1757.3%	2212.6%	2225.5%	0.16	88.8%	4.0
FS CryptoFX 10	\$33,582	\$335,818	54.6%	213.6%	1900.8%	2355.0%	2364.1%	0.41	82.9%	4.3
FS CryptoFX 40	\$394	\$15,761	38.5%	78.3%	3490.8%	3370.0%	3387.1%	(0.12)	114.7%	3.7
FS CryptoFX 250	\$50	\$4,542	42.4%	76.8%	9105.2%	9655.7%	9713.4%	(2.77)	225.9%	3.1
FS CryptoFX 300	\$1,212	\$357,397	53.6%	199.6%	2003.6%	2470.3%	2481.0%	0.30	83.6%	4.3
FS CryptoFX Aggregate	\$581	\$357,578	53.6%	199.5%	2004.2%	2471.1%	2481.7%	0.30	83.6%	4.3

Source: Coinmarketcap.com, Bloomberg, other sources and Fundstrat.

Crypto-currencies are simply not correlated to equities, bonds, gold, HF.

Take a look at the correlation matrix below. What really stands out is that correlations to other asset classes is low.

- Interesting to see the negative correlation to other commodities and perhaps this explains why CTAs and commodity funds seem to be earlier in looking at crypto.

Figure: FS Crypto FX Indices Correlation Matrix against Major Asset Classes (%)

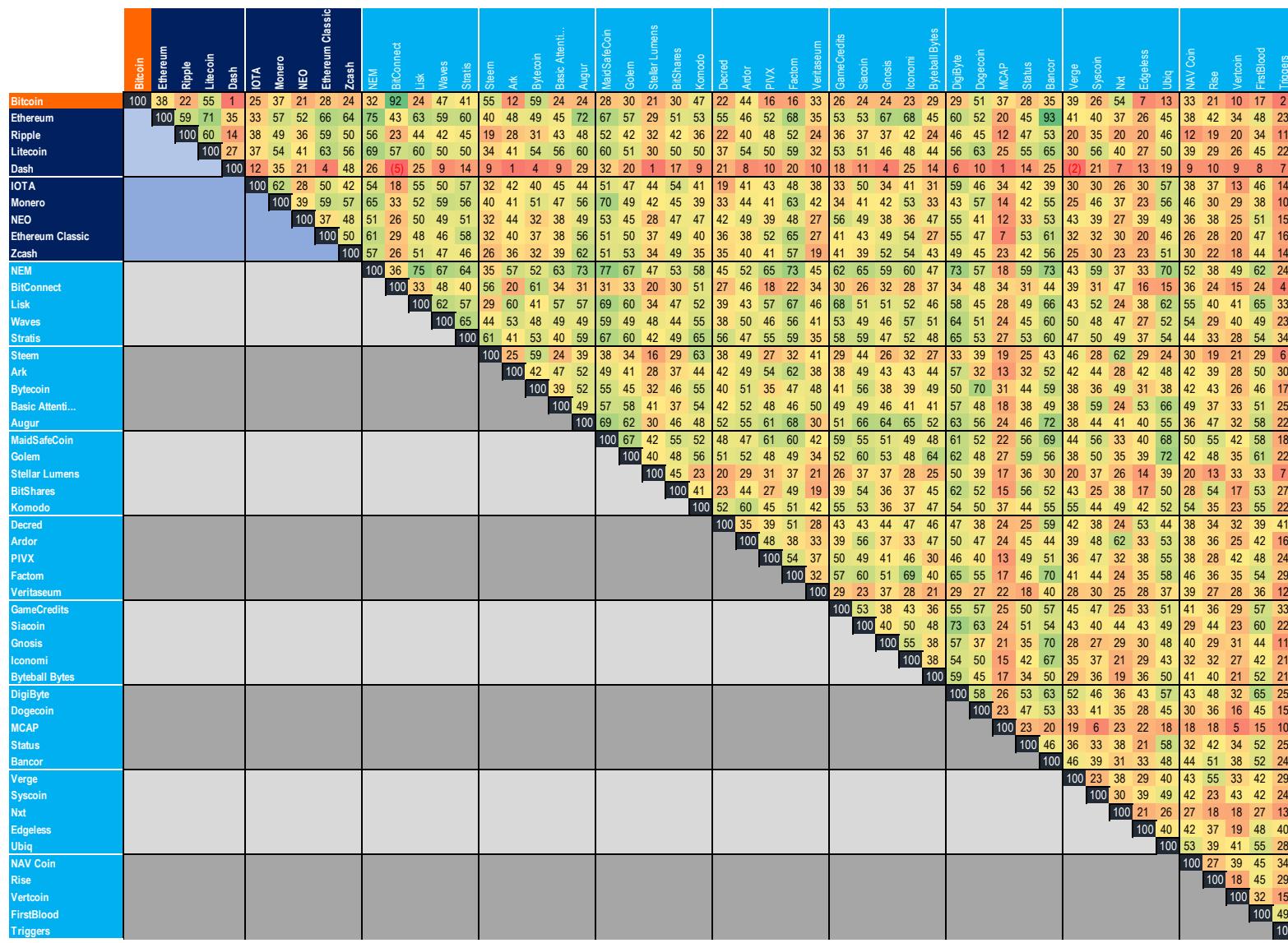
Based on the daily return of last 90 days

	Bitcoin	FS CryptoFX 10	FS CryptoFX 40	FS CryptoFX 250	FS CryptoFX 300	FS CryptoFX Aggregate	S&P 500	The US Dollar Index	MSCI All World Index	Bloomberg Barclays US Agg Bond Index	Salient Risk Parity Index	Bloomberg Comdty Total Return Index	Bloomberg Barclays US Treasury Index	Gold	Oil
Bitcoin	100	91	31	37	88	88	13	14	1	8	2	(17)	9	(9)	(11)
FS CryptoFX 10		100	54	55	100	100	11	4	5	10	1	(15)	11	(5)	(7)
FS CryptoFX 40			100	79	62	62	13	(3)	10	9	3	(0)	9	11	5
FS CryptoFX 250				100	62	62	5	(14)	10	16	1	(5)	16	17	(8)
FS CryptoFX 300					100	100	12	3	7	11	1	(14)	11	(4)	(7)
FS CryptoFX Aggregate						100	12	3	7	11	1	(14)	11	(4)	(7)
S&P 500							100	23	69	(20)	16	(12)	(22)	(6)	3
The US Dollar Index								100	11	(17)	(3)	(26)	(19)	(45)	(7)
MSCI All World Index									100	(16)	28	(6)	(18)	7	11
Bloomberg Barclays US Agg Bond Index										100	65	35	99	50	27
Salient Risk Parity Index											100	71	64	59	53
Bloomberg Comdty Total Return Index											100	35	63	67	
Bloomberg Barclays US Treasury Index												100	50	26	
Gold													100	27	
Oil															100

Cross Token Correlation Matrix

Figure: Correlation Matrix (%)

Based on the daily return of last 90 days



Source: Coinmarketcap.com, Bloomberg, other sources and Fundstrat

FS CryptoFX 10 and 40 members ranked by Win Ratio and Upside less Downside Vol

How to read this: the “Highest/Lowest Win Ratio” based on past 90-day daily return. High Win Ratio means the cryptocurrency more positive return days

How to read this: Upside less Downside vol is calculated by using the volatility of daily returns on up days minus the volatility of daily returns on down days over the past 90 days.

How to read this: The Leadership Ratio ranks the cryptocurrencies on the combined Win Ratio and Upside less Downside Volatility spread

A

Win Ratio — 90 days
Sorted high to low

Rank	Win	90 Day	Rank	Win	90 Day
Rank	Ratio	%	Rank	Ratio	%
1 Bitcoin	61	254	26 Ethereum Classic	49	73
2 BitConnect	57	194	27 Veritaseum	48	49
3 FirstBlood	57	(2)	28 Monero	48	116
4 Dogecoin	57	54	29 Nxt	48	596
5 Ardor	56	274	30 Siacoin	48	32
6 Litecoin	56	50	31 Decred	47	53
7 IOTA	53	638	32 Bancor	47	7
8 Komodo	53	0	33 PIVX	47	26
9 Stratis	53	43	34 Dash	47	122
10 Zcash	52	49	35 NEO	47	46
11 Ripple	52	16	36 GameCredits	47	(3)
12 Bytecoin	52	39	37 Steem	47	23
13 Vertcoin	52	864	38 Basic Attenti...	47	(16)
14 Rise	52	10	39 Ubiq	47	(12)
15 Ethereum	51	53	40 Gnosis	47	(26)
16 Augur	51	18	41 Factom	47	(21)
17 Ark	51	49	42 Byteball Bytes	46	(27)
18 Status	51	75	43 MaidSafeCoin	46	(24)
19 Stellar Lumens	51	657	44 Edgeless	46	73
20 BitShares	51	56	45 MCAP	46	(39)
21 Waves	50	75	46 NEM	44	(13)
22 Verge	50	17	47 Golem	44	(22)
23 DigiByte	50	(15)	48 Syscoin	44	24
24 NAV Coin	50	18	49 Ionomi	43	(28)
25 Lisk	49	17	50 Triggers	43	(23)

B

Upside Vol less downside Vol — 90 days
Sorted high to low

Rank	UV less DV	90 %	Rank	UV less DV	90 %
Rank	Day	Ratio	Rank	Day	Ratio
1 Triggers	219	(23)	26 Ark	21	49
2 Stellar Lumens	170	657	27 Stratis	20	43
3 MCAP	145	(39)	28 Byteball Bytes	18	(27)
4 IOTA	138	638	29 MaidSafeCoin	17	(24)
5 Nxt	137	596	30 Zcash	17	49
6 NAV Coin	117	18	31 BitConnect	17	194
7 Gnosis	115	(26)	32 GameCredits	17	(3)
8 Syscoin	106	24	33 DigiByte	14	(15)
9 Steem	96	23	34 Bitcoin	14	254
10 Dash	93	122	35 Lisk	13	17
11 Veritaseum	87	49	36 Factom	13	(21)
12 Rise	85	10	37 NEM	10	(13)
13 Vertcoin	76	864	38 Basic Attenti...	10	(16)
14 NEO	75	46	39 BitShares	10	56
15 Decred	70	53	40 FirstBlood	9	(2)
16 Edgeless	58	73	41 Augur	9	18
17 Status	52	75	42 Ethereum	8	53
18 Siacoin	51	32	43 Dogecoin	5	54
19 PIVX	45	26	44 Golem	4	(22)
20 Ionomi	43	(28)	45 Ubiq	3	(12)
21 Ardor	42	274	46 Bancor	1	7
22 Waves	33	75	47 Ripple	(2)	16
23 Monero	31	116	48 Bytecoin	(7)	39
24 Verge	25	17	49 Komodo	(13)	0
25 Ethereum Classic	24	73	50 Litecoin	(15)	50

Rank of A + B

Leadership Ratio (avg of A + B)
Sorted high to low

Top 25	UV less DV	90 %	Bottom 25	UV less DV	90 %	
Rank	Day	Ratio	Rank	Day	Ratio	
1 IOTA	53	138	638	1 Golem	44	4
2 Stellar Lumens	51	170	657	2 Ubiq	47	3
3 Rise	52	85	10	3 NEM	44	10
4 Vertcoin	52	76	864	4 Bancor	47	1
5 Ardor	56	42	274	5 Factom	47	13
6 NAV Coin	50	117	18	6 Basic Attenti...	47	10
7 BitConnect	57	17	194	7 MaidSafeCoin	46	17
8 Nxt	48	137	596	8 Byteball Bytes	46	18
9 Status	51	52	75	9 Ionomi	43	43
10 Bitcoin	61	14	254	10 GameCredits	47	17
11 Stratis	53	20	43	11 Bytecoin	52	(7)
12 Veritaseum	48	87	49	12 Lisk	49	13
13 Zcash	52	17	49	13 Edgeless	46	58
14 FirstBlood	57	9	(2)	14 BitShares	51	10
15 Waves	50	33	75	15 Ripple	52	(2)
16 Ark	51	21	49	16 Ethereum	51	8
17 Dash	47	93	122	17 Augur	51	9
18 Verge	50	25	17	18 Komodo	53	(13)
19 Steem	47	96	23	19 Litecoin	56	(15)
20 Decred	47	70	53	20 DigiByte	50	14
21 Dogecoin	57	5	54	21 Syscoin	44	106
22 Gnosis	47	115	(26)	22 PIVX	47	45
23 MCAP	46	145	(39)	23 Monero	48	31
24 Siacoin	48	51	32	24 Ethereum Classic	49	24
25 NEO	47	75	46	25 Triggers	43	219

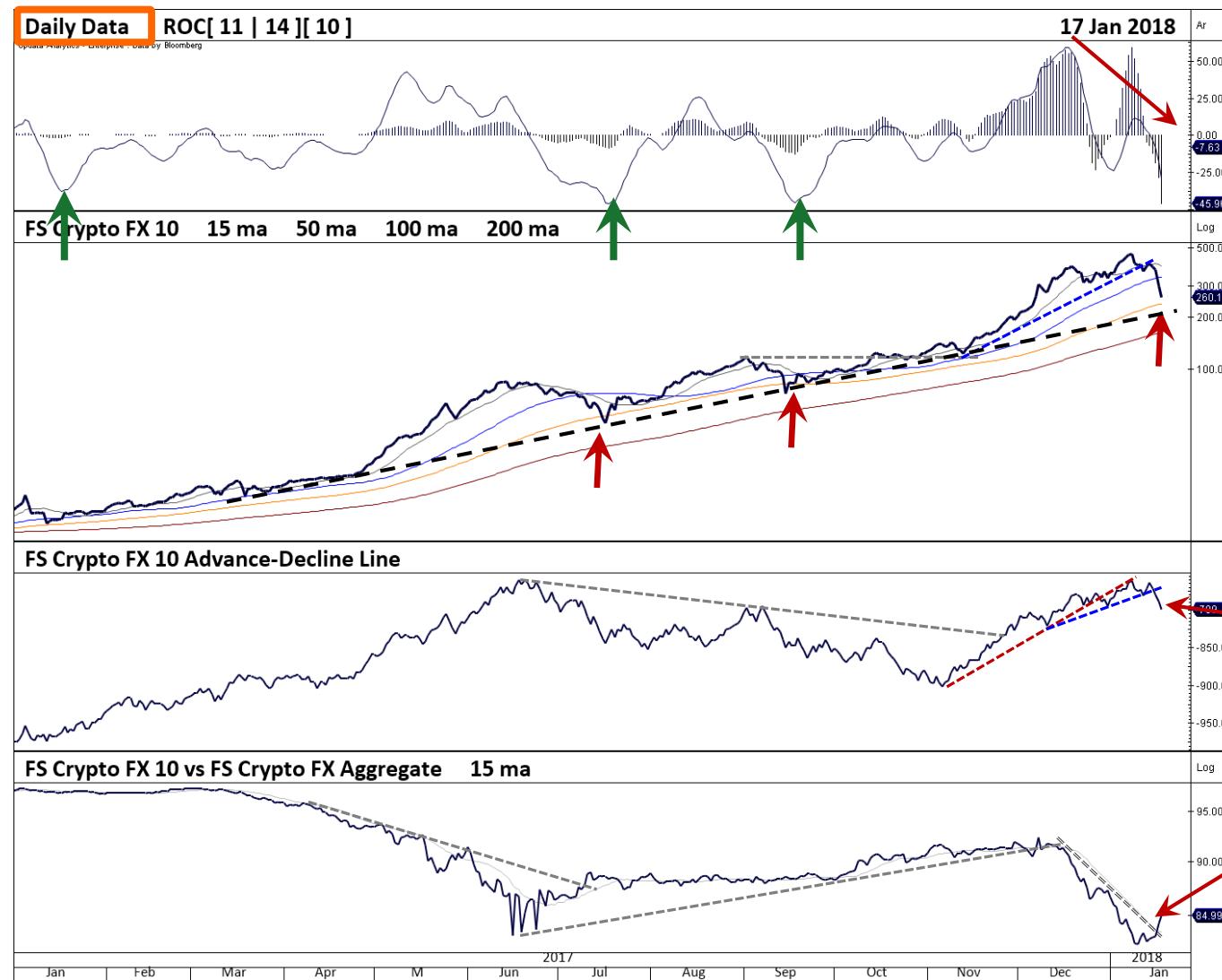
Source: Coinmarketcap.com, Bloomberg, other sources and Fundstrat.

fundstrat

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TECHNICAL STRATEGY: FS CryptoFX 10 Index

- The current pullback is viewed as correction within an established uptrend rather than a longer-term top.
- Expect support to hold near the 100-dma and a broad consolidation to follow through Q1 into Q2.



Momentum

- Unwinding toward oversold levels.

Price

- Correction nearing next support at the 100-dma which has provided support during prior corrections near the 2017 uptrend.
- We expect the FX 10 to hold near current levels consolidating through most of Q1 into Q2 in a broad trading range.

Advance – Decline

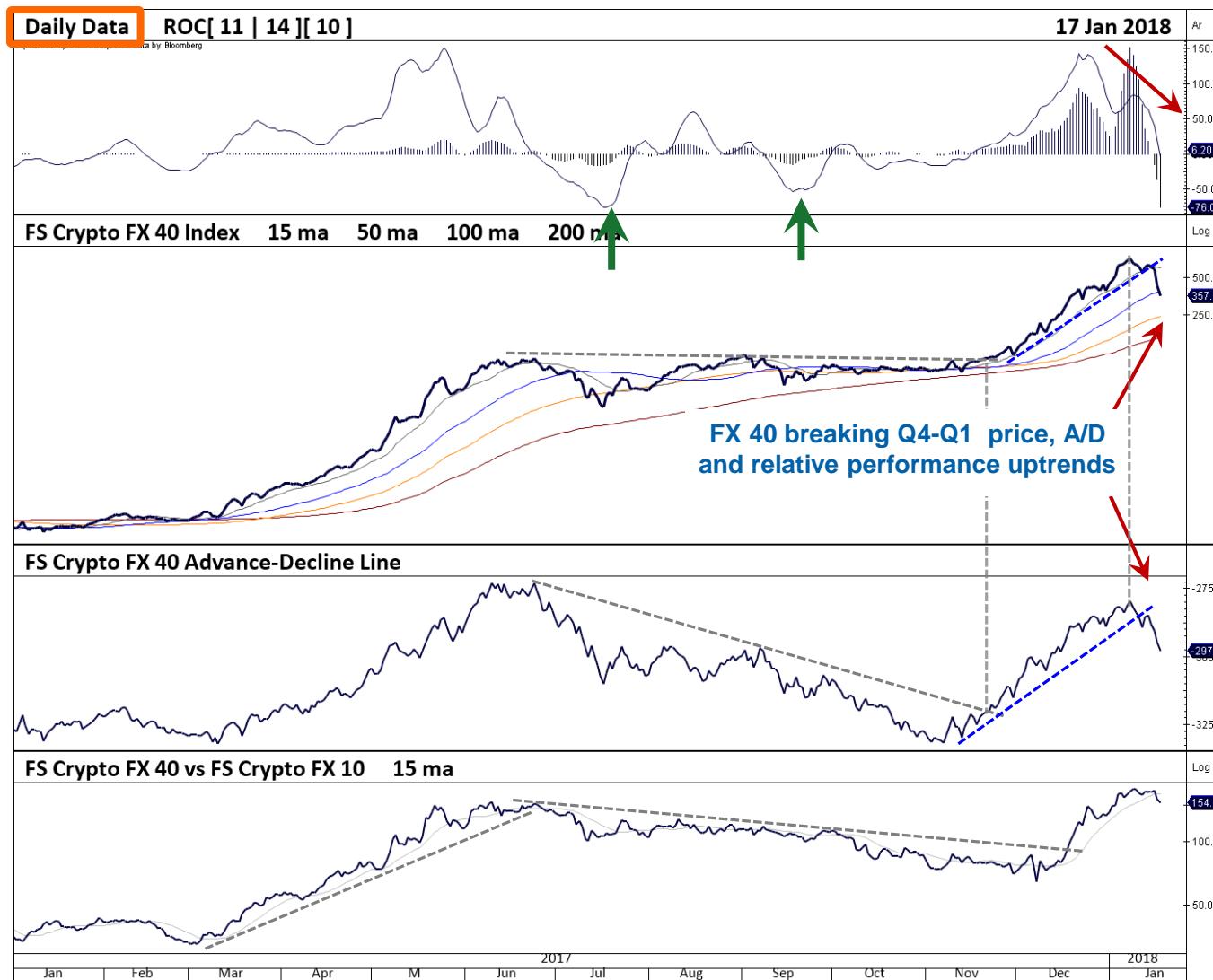
- Breadth is beginning to weaken with the top 10 as relative performance vs the Aggregate Index (see below) is beginning to reflect a shift back toward the larger-cap FX 10.

Relative Performance vs FX Agg. Idx

- Early evidence of a defensive trend reversal developing favoring the FX 10 over smaller cap cryptocurrencies.

TECHNICAL STRATEGY: FS CryptoFX 40 Index

- Correction underway within a longer-term uptrend. Given the mid-cap FX 40 recently emerged from its June-November trading range, we expect the current pullback to be short lived and to hold support near the 100-dma.



Momentum

- Moving toward oversold levels.

Price

- Correction quickly approaching next support near the 100-dma

Advance – Decline

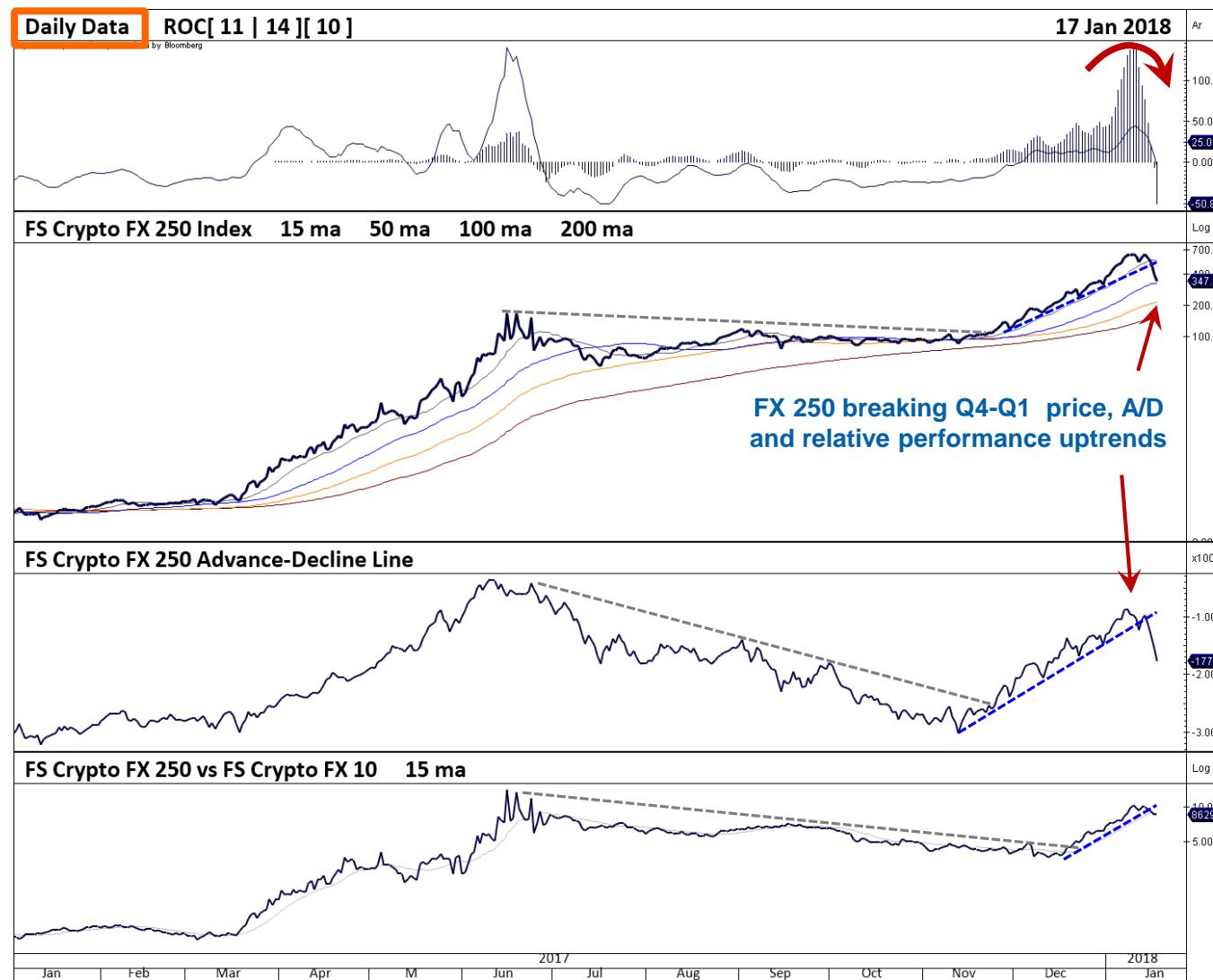
- Uptrend break in place reinforcing correction window being open. Watch for upside reversal as evidence of rotation back to smaller-cap indices.

Relative Performance vs FX Agg. Idx

- Decelerating and at risk of reversing

TECHNICAL STRATEGY: FS CryptoFX 250 Index

- Correction underway within a longer-term uptrend. Similar to the mid-cap FX 40, the small-cap FX 250 Index recently emerged from its June-November trading range, we expect the current pullback to be short lived and to hold its 100-dma.



Momentum

- Short-term/daily momentum remains negative and has yet to bottom

Price

- Correction nearing next important support near the 100-dma.

Advance – Decline

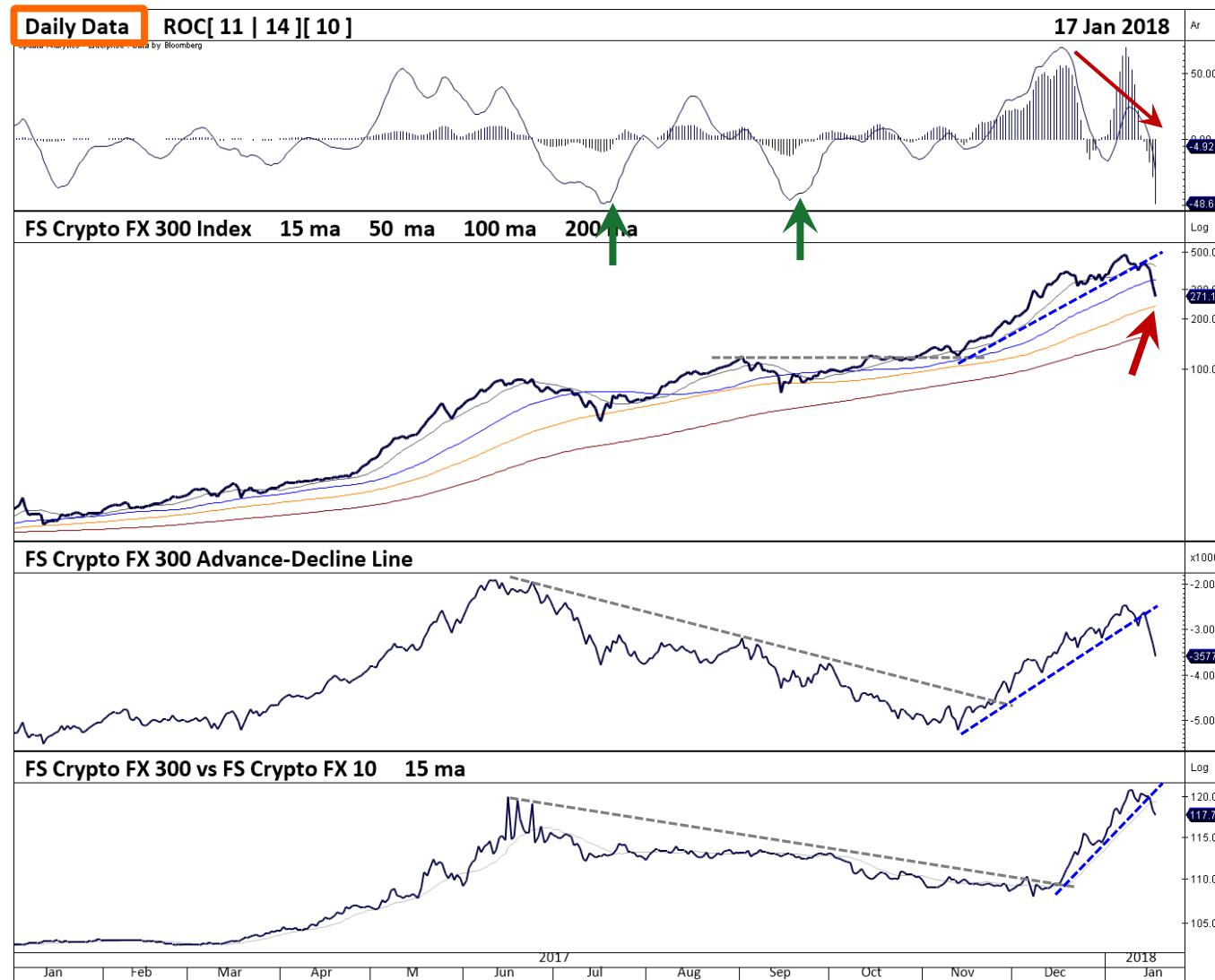
- Breadth has reversed its November-January uptrend.

Relative Performance vs FX Agg. Idx

- Early evidence of a trend reversal developing

TECHNICAL STRATEGY: FS CryptoFX 300 Index

- The technical profile of the FX 300 mirrors that of the FX 10 given the market cap of the FX 10 is 81% of the FX 300.
- Similar short-term reversal are in place within the context of longer-term uptrends. Expect further consolidation through Q1



Momentum

- Daily momentum remains negative

Price

- Correction window open as the FX 10 breaks its November-December uptrend and 50-dma.

Advance – Decline

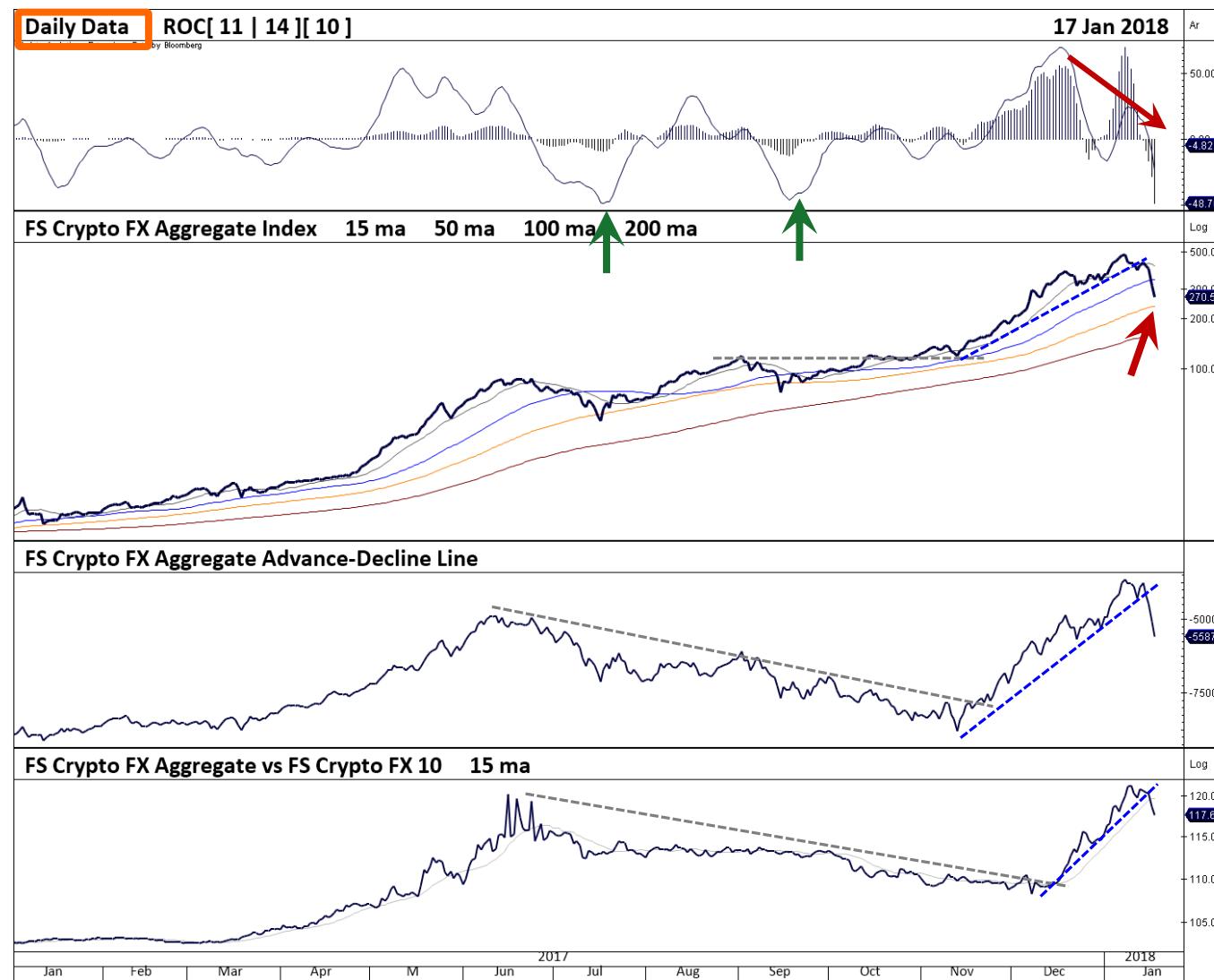
- Trend break in place. Wait for upside reversal before re-allocating capital to smaller-cap currencies.

Relative Performance vs FX Agg. Idx

- Early evidence of a trend reversal developing

TECHNICAL STRATEGY: FS CryptoFX Aggregate Index

- The technical profile of the FX Aggregate Index mirrors that of the FX 10 given the market cap of the FX 10 is 80% of the FX Aggregate Index. A short-term correction is in place within the context of longer-term uptrend. Expect consolidation through Q1.



Momentum

- Momentum divergence in place.

Price

- Correction window open as the FX Aggregate Index breaks the November-December uptrend and 50-dma.

Advance – Decline

- Breadth is beginning to weaken with the top 10 as relative performance vs the Aggregate Index (see below) is beginning to reflect a shift back toward the larger-cap FX 10.

Relative Performance vs FX Agg. Idx

- Early evidence of a trend reversal developing

Overview

Executive Summary

Rotation: Buy. Rotate. Repeat.

Fundamental case for blockchain strong

Millennials are an important driver

Recommendations

FS CryptoFX Indices

Appendices

Best analogy is biomimicry

Biomimicry is an approach to innovation that seeks sustainable solutions to human challenges by emulating nature's time-tested patterns and strategies.

- **Velcro based on burdock burrs**
- **Shinkansen Bullet trains inspired by Kingfishers**
- **Wind turbines modeled after humpback whales**
- **Desalination by Nobel Prize awarded to Peter Agre based on cell walls**
- **Harvesting water modeled after Stenocara beetle**
- **LEDs boosted 55% based on Firefly anatomy**

De-centralized control is a hallmark of many complex systems in nature

- **Ant colonies have no centralized control but based on decentralized rules (most like blockchain)**

Bitcoin and Blockchain solve a critical problem with digital world...

Distributed ledgers offer improvements over proprietary ledgers

- a cryptographic transaction network without intermediaries
- consensus on veracity of transactions
- transaction permanence and immutability
- prevention of “double spend”
- no potential for failure of a single node to bring down the entire system
- suited for applications that require a permanent time and date stamp
- scalable to multiple participants, account holders and account entries
- applicable to an array of financial assets

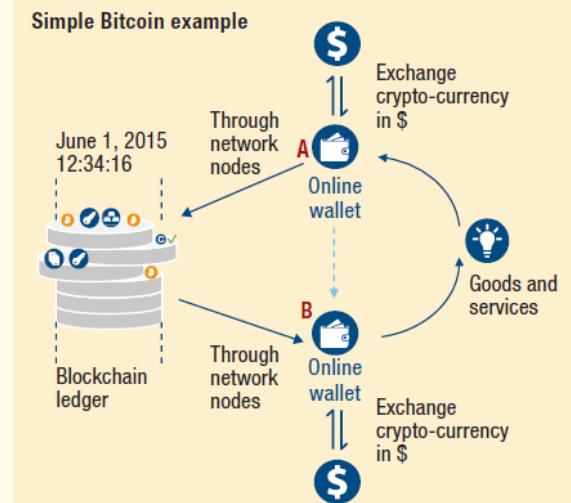
McKinsey sees blockchain as one of the most disruptive technologies since the advent of the internet...

Exhibit 1

The blockchain is one of the most disruptive innovations since the advent of the Internet

The blockchain

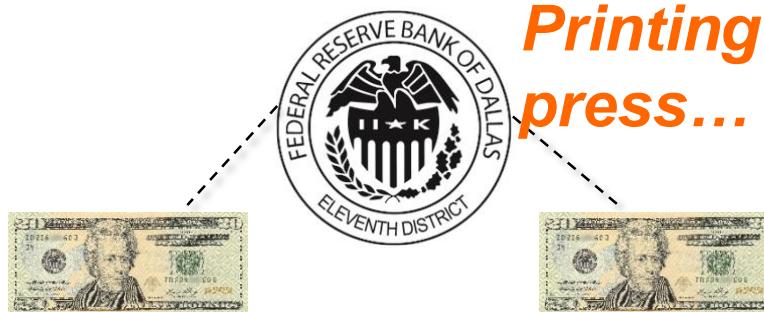
- A distributed public digital ledger that maintains, through cryptographic proof, a continuously growing secure list of transactions that is replicated repeatedly.
- A transaction network that potentially can be used by financial institutions and consumers to transact directly.
- Well-suited for applications requiring a rapid, permanent time and date stamp such as:
 - Payments
 - Financial asset transfers
 - Smart contracts
 - Ownership splits and notary services
- A technology that brings substantial benefits in terms of speed, security, transparency, convenience and cost.



Source: McKinsey & Company

Blockchain enables digital money to exist with trust...

Paper money

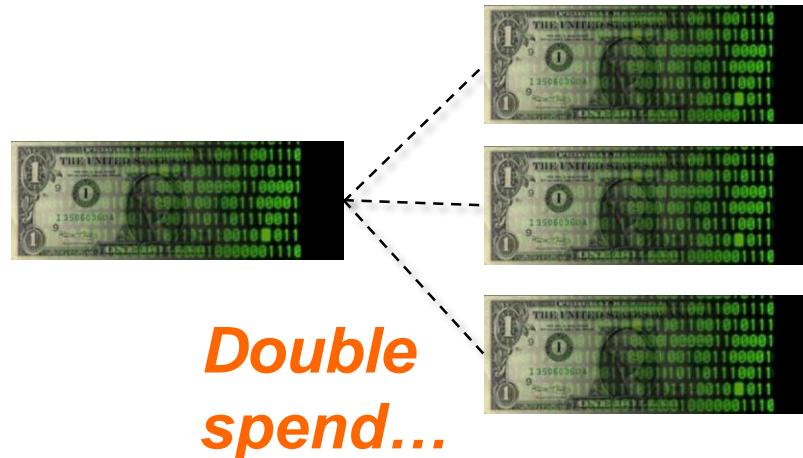


*Printing
press...*

Credit card / Electronic

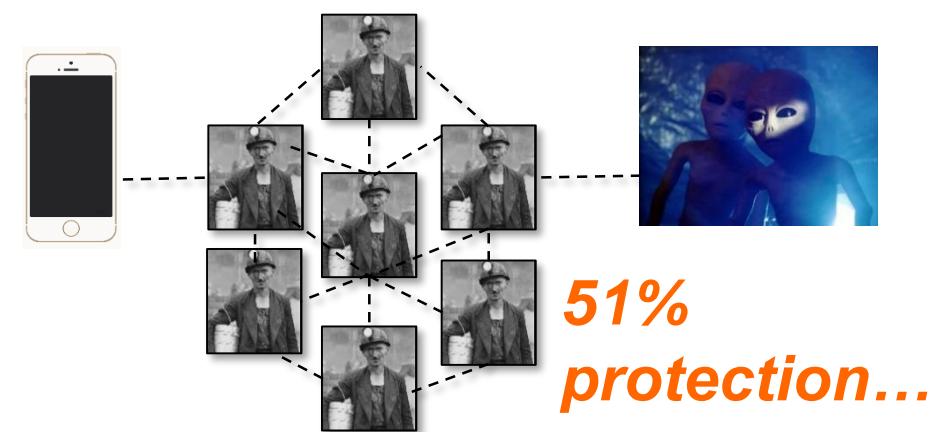


Digital money



*Double
spend...*

Blockchain



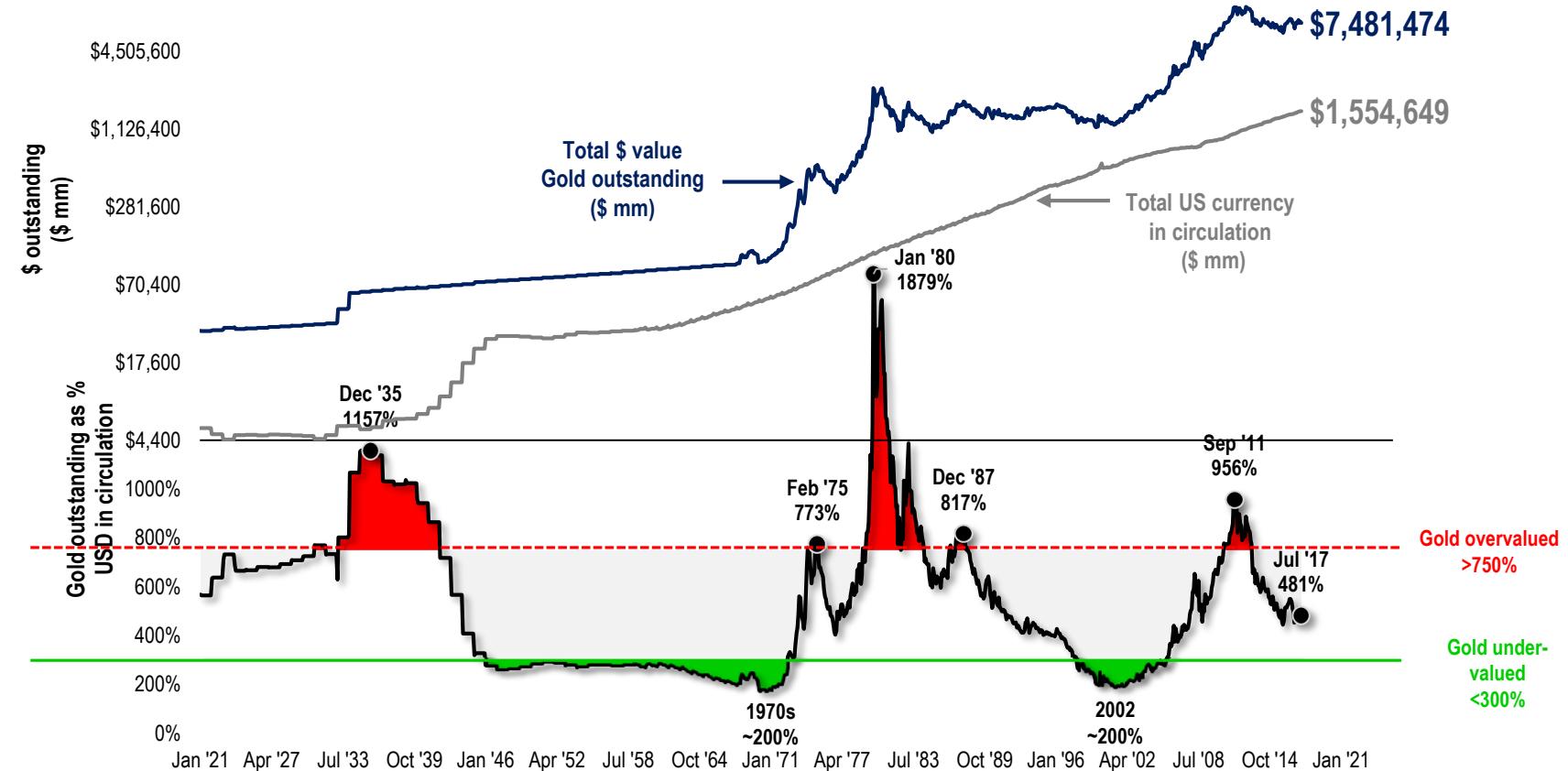
*51%
protection...*

Surprisingly, there is a lot more gold circulating than USD

There is about \$7.4T of gold in circulation today, representing gold coins, jewelry, etc. This figure is 5X the size of US dollars in circulation (M0). As shown below, there has always been more gold than dollars in circulation.

- We highlight below, the range of ratio since 1921, which has moved from a low of 200% (1971 and 2002) to highs exceeding 750%.
- As noted below, we see values above 750% as “gold bubbles” and below 300% as “gold buys”

Figure: Gold price and gold value outstanding as % USD in circulation
\$ mm and the ratio is %. Since 1921



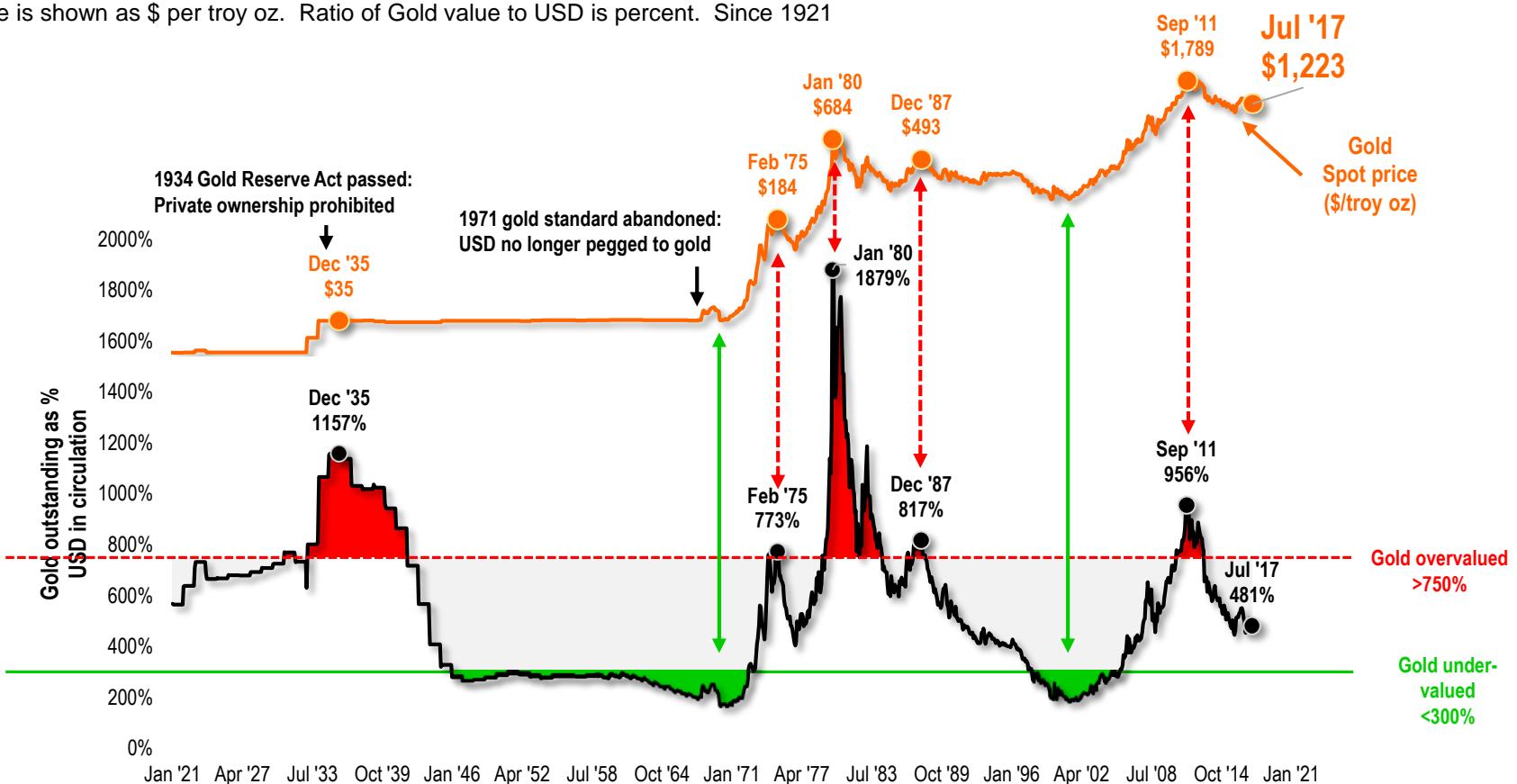
Source: Fundstrat, Bloomberg

Gold a buy when value as % circulation <300%... a sell >750%

Highlighting when gold is attractive or unattractive is shown below.

- As shown below, gold has generally been attractive as an investment when the ratio of gold/USD in circulation is below 300%, which is what was seen in the 1970s and by 2002.
- But it tends to look expensive above 750%, which is associated with tops.

Figure: Gold price and gold value outstanding as % USD in circulation
Gold price is shown as \$ per troy oz. Ratio of Gold value to USD is percent. Since 1921



Source: Fundstrat, Bloomberg

@ \$7.5T outstanding, Gold is the third largest asset class

Figure: Comparative size of asset classes
\$ trillions. US asset classes versus Gold (global)

Category	% assets	2005		Delta ('05 to '15)	2015		10-yr CAGR
		Amount outstanding (\$T)			Amount outstanding (\$T)	% assets	
Treasuries	11%	\$4.2		\$8.7		19%	11.9%
Mortgages	19%	\$7.2		\$1.5		13%	2.0%
ABS	3%	\$1.3		\$0.1		2%	0.9%
Municipals	8%	\$3.0		\$0.7		6%	2.1%
Investment grade	11%	\$4.2		\$2.7		10%	5.1%
High Yield	2%	\$0.6		\$0.6		2%	7.2%
Agency Securities	7%	\$2.6		(\$0.7)		3%	-2.9%
Gold	7%	\$2.6		\$4.9		11%	11.3%
US Equities	32%	\$12.2		\$9.8		33%	6.1%

We compare the size of gold to other asset classes. We realize this is not pure apples to apples, since Gold is a global commodity while the other asset classes are U.S.

- At \$7.5T of outstanding value, Gold is the third largest asset class behind Treasuries and US equities.
- Notably, gold's outstanding value has compounded at 11% annually, with 1.5% associated with supply growth.

Source: Fundstrat, Bloomberg

Central banks hold ~18% of all gold... game changer if they buy crypto?

Figure: Central bank holdings of gold.

Source: World Gold Council. As of June 2017. \$ in billions

		Metric tonnes	\$ value (billions)	% of reserves**	Est. % total gold
1	United States	8,133.5	\$319.9	75.2%	4.3%
2	Germany	3,377.3	132.8	69.7%	1.8%
3	IMF	2,814.0	110.7	1)	1.5%
4	Italy	2,451.8	96.4	67.5%	1.3%
5	France	2,435.9	95.8	65.8%	1.3%
6	China	1,842.6	72.5	2.4%	1.0%
7	Russia	1,687.3	66.4	17.1%	0.9%
8	Switzerland	1,040.0	40.9	5.8%	0.5%
9	Japan	765.2	30.1	2.5%	0.4%
10	Netherlands	612.5	24.1	66.2%	0.3%
11	India	557.8	21.9	6.1%	0.3%
12	ECB	504.8	19.9	27.6%	0.3%
13	Turkey ⁶⁾	436.0	17.2	17.3%	0.2%
14	Taiwan	423.6	16.7	3.8%	0.2%
15	Portugal	382.5	15.0	54.7%	0.2%
16	Saudi Arabia	322.9	12.7	2.5%	0.2%
17	United Kingdom	310.3	12.2	8.5%	0.2%
18	Lebanon	286.8	11.3	21.8%	0.2%
19	Spain	281.6	11.1	17.7%	0.1%
20	Austria	280.0	11.0	48.5%	0.1%
21-99	Central banks 21-99	4,479.3	176.2	—	2.4%
World ⁷⁾		33,425.6	\$1,314.8	1)	17.6%

* This table was updated in June 2017 and reports data available at that time. Data are taken from the International Monetary Fund's International Financial Statistics (IFS), June 2017 edition, and other sources where applicable. IFS data are two months in arrears, so holdings are as of April 2017 for most countries, March 2017 or earlier for late reporters. The table does not list all gold holders: countries which have not reported their gold holdings to the IMF in the last six months are not included, while other countries are known to hold gold but they do not report their holdings publicly. Where the WGC knows of movements that are not reported to the IMF or misprints, changes have been made. **The percentage share held in gold of total foreign reserves, as calculated by the World Gold Council. The value of gold holdings is calculated using the end of month LBMA Gold price published daily by ICE Benchmark Administration. In April 2017 the end of month gold price was US\$1,266.45. Data for the value of other reserves are taken from IFS, table 'Total Reserves minus Gold'.

1. BIS and IMF balance sheets do not allow this percentage to be calculated. In the case of any countries, up to date data for other reserves are not available. 2. BIS data are updated each year from the BIS's annual report to reflect the Bank's gold investment assets excluding any gold held in connection with swap operations, under which the Bank exchanges currencies for physical gold. The bank has an obligation to return the gold at the end of the contract. 3. West African Economic Monetary Union including the central bank.

4. Includes only "Monetary gold" as of February 2014. 5. Signatories to the fourth Central Bank Gold Agreement which commenced in September 2014. The signatories include: ECB, Austria, Belgium, Cyprus, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland. 6. Gold has been added to Turkey's balance sheet as a result of a policy accepting gold in its reserve requirements from commercial banks. Please see this link for information on this policy action

<http://www.tcmf.gov.tr/wps/wcm/connect/57c5777d-1f48-4eb4-98ba-a14c6aaaddc20/AN02012-38.pdf?MOD=AJPERES&CACHEID=57c5777d-1f48-4eb4-98ba-a14c6aaaddc20> 7. World total as calculated by the IMF. This will not equal the total for the countries in the table as 'World total' will include data for countries beyond the top 100 and for countries that do not publish their reserves. World total also captures BIS holdings inclusive of swap operations (please see footnote 2 above for World Gold Council treatment of BIS holdings). 8. In July 2015 The State Bank of Vietnam stated that gold reserves totalled 10 tonnes. This is omitted from our ranking above due to the current absence of any published data. Please see Disclaimer on the following page.

In our view, owning crypto-currencies is a game changer, enhancing the legitimacy of the currency and likely accelerating the substitution for gold (by investors). Already central banks have looked into this possibility according to several news stories ([Bloomberg article, click here](#)).

Central banks are major holders of gold, as shown on this table.

- The combined holdings represent an estimated \$1.3T in gold holdings, representing about 50% of total foreign reserves.

This is about 18% of total gold outstanding (there are 190,000 metric tonnes outstanding), a surprisingly high share of total gold reserves.

- While one may say this is preposterous to say central banks would own bitcoin—we believe that Central banks would view crypto currencies differently if Bitcoin's aggregate value exceeded \$500 billion (see prior slides)

Given the deceleration of new coins, total units not until 2045 or later

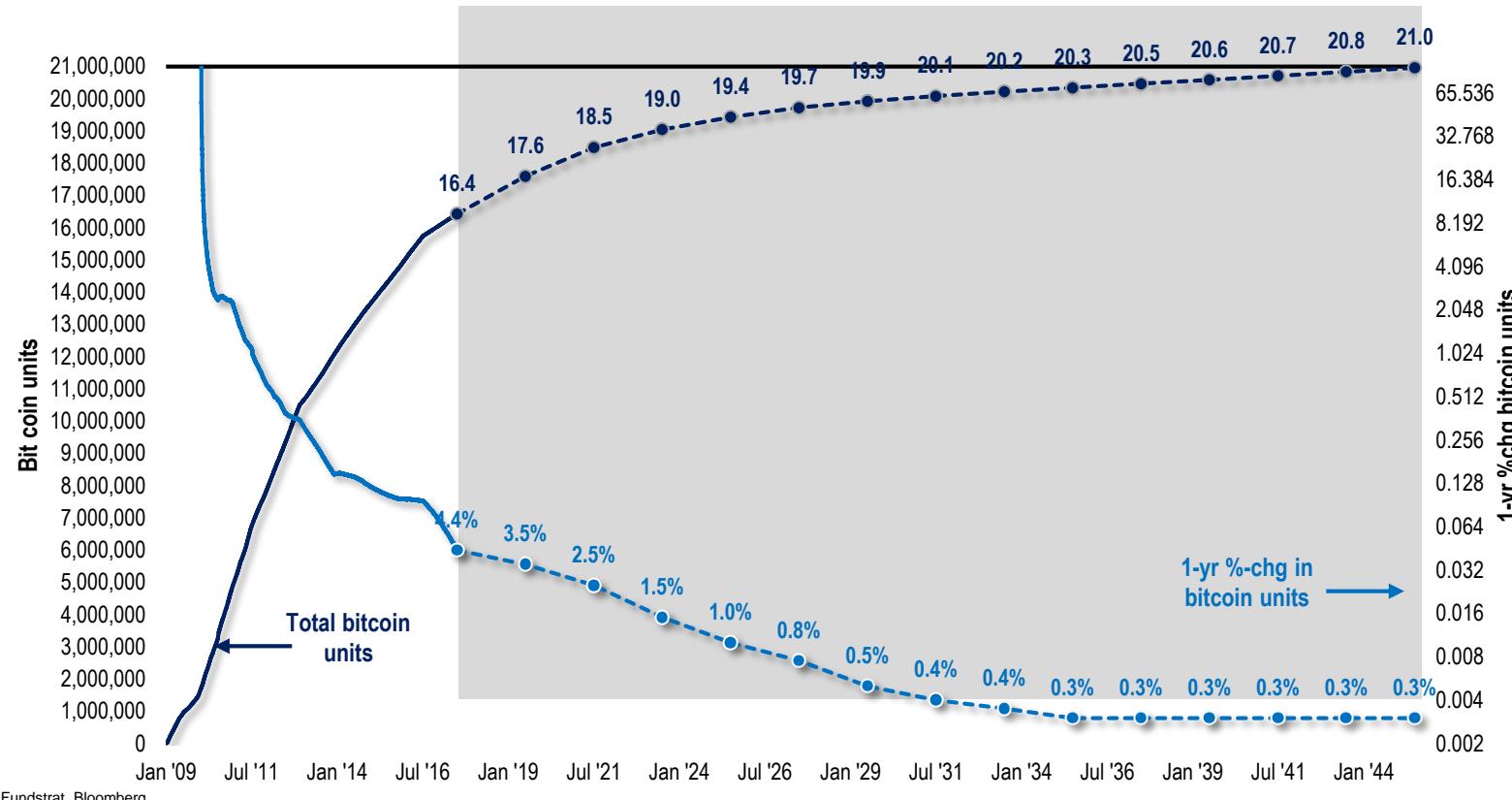
The theoretical maximum number of bitcoin units is 20,999,999.9769 (21mm) and we made a forecast for when this maximum number of units would be mined.

- We assumed that the rate of new coins would slow from 4.4% towards low single digits before bottoming at 0.3% annually—at this rate, the theoretical maximum number of coins would not be reached until 2045 or later.**
- By comparison, gold supply is expected to grow 1.5% annually (rate since 1921) and hence, bitcoin is arguably becoming a scarcer store of value.**

Figure: Bitcoin units and % growth

Since 2009

Maximum number of bitcoin is:
20999999.976900



Source: Fundstrat, Bloomberg

Bitcoin volatility is high, so it is not as stable as Gold yet...

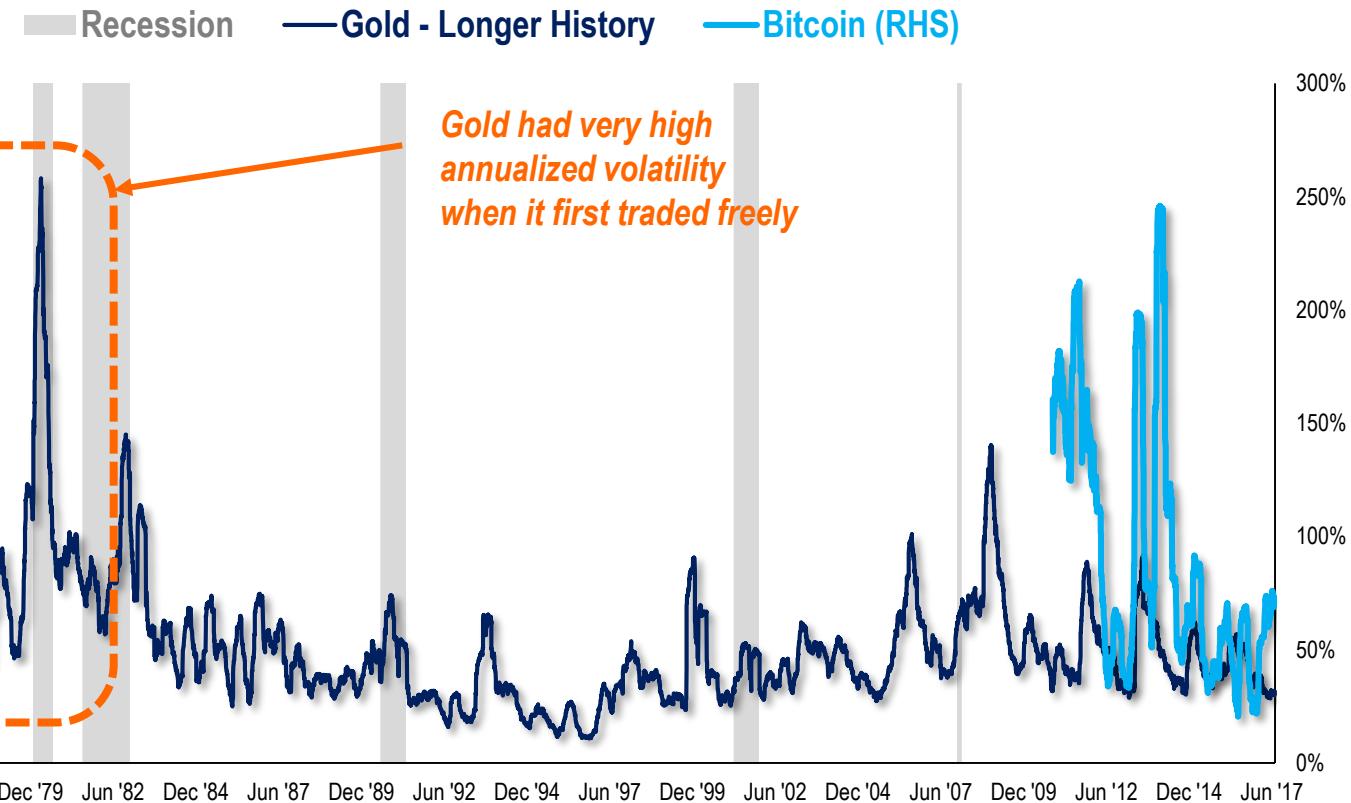
We compared the annualized volatility of gold and bitcoin (90d volatility annualized) to compare the relative stability of each.

- Bitcoin annualized volatility is high relative to gold and is an argument for why it is not as reliable a store of value compared to gold—however, as shown on the chart, gold's volatility was similarly high during the early 1970s when gold was first freely priced (gold standard abandoned).

Figure: Annualized volatility of gold and bitcoin

Since 1969

90 Days Rolling Volatility on Daily Return (Annualized)



Source: Fundstrat, Bloomberg

#5: Herfindahl-Hirschman Index (HHI) measures industry concentration

This is a measure developed by economists Orris Herfindahl and Albert Hirschman and is widely used in anti-trust and competitive analysis.

- This looks at the market share of the top players and is calculated by squaring ($N\%^2$) the respective player's market share (see below).
- The higher the resulting index value, the greater the likelihood of industry concentration.

Figure: Explaining the HHI calculation
Per public sources

Formula [\[edit \]](#)

$$H = \sum_{i=1}^N s_i^2$$

The Herfindahl Index (H) ranges from $1/N$ to one, where N is the number of firms in the market. Equivalently, if percents are used as whole numbers, as in 75 instead of 0.75, the index can range up to 1002, or 10,000.

HHI%	Index Value	Market Structure
<0.01	<100	<u>highly competitive</u> industry
0.01 to 0.10	100 to 1,000	<u>moderately competitive</u> industry.
0.10 to 0.15	1,000 to 1,500	competitive industry.
0.15 to 0.25	1,500 to 2,000	<u>medium</u> concentration.
>0.25	>2,500	<u>high</u> concentration

Source: Fundstrat, Bloomberg

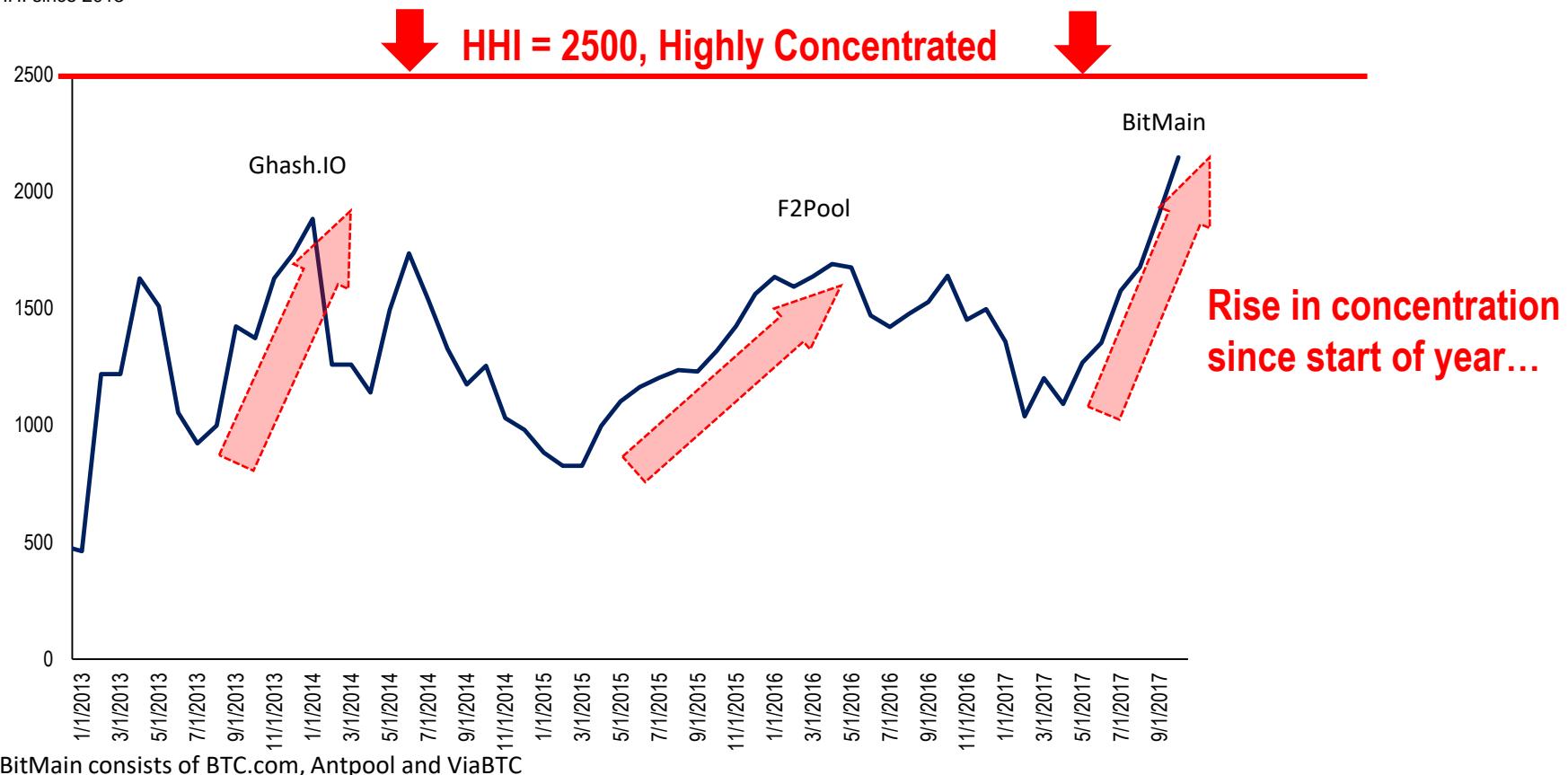
#6: Bitcoin mining is beginning to look too concentrated...

We compiled comparative HHI index for bitcoin mining, used publicly available datasets and our compilation of this over time.

- As shown below, there have been periods where mining HHI approached 2,500, which as noted on the prior slide, indicates high concentration. But similarly, given the robust economic incentives as well as alternative mining tokens—we expect mining concentration to fall in coming months.

Figure: Historical Bitcoin Mining Concentration

HHI since 2013



Source: Fundstrat, Bloomberg, btc.com/stats/pool,

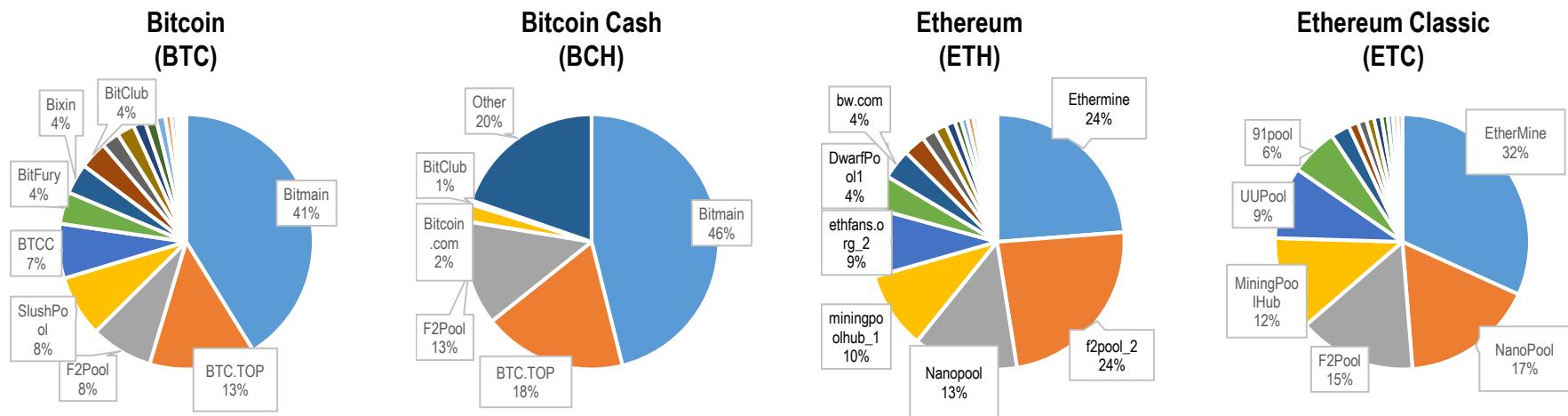
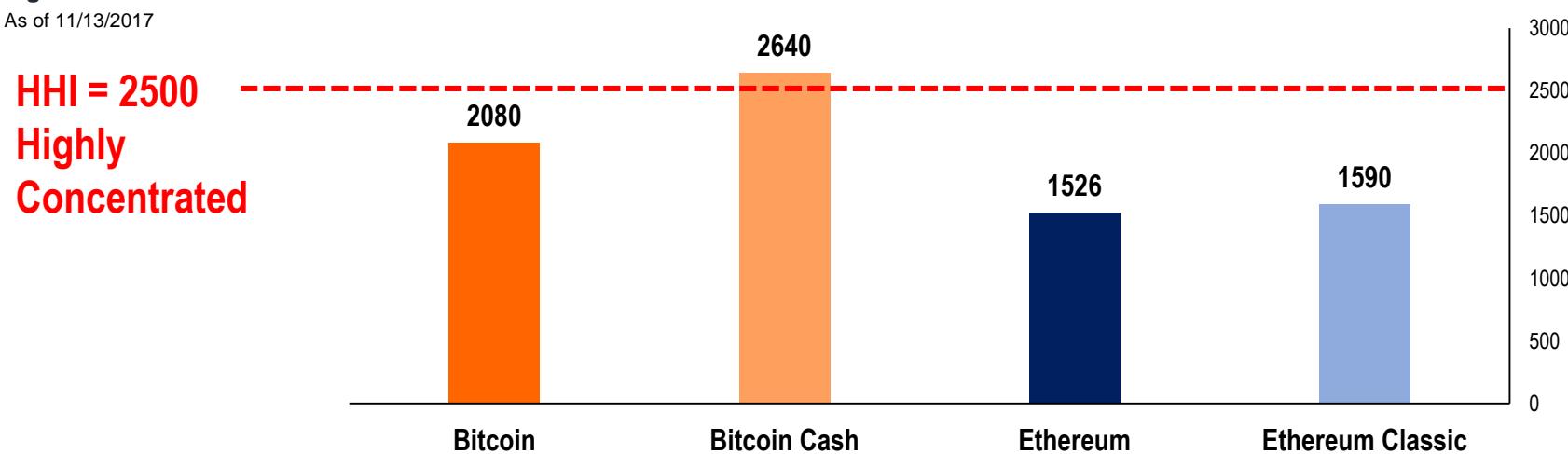
#7: Bitcoin Cash is the only token (of majors) with excess concentration

As shown below, the only major token with a high miner concentration ($HHI > 2500$) is Bitcoin cash.

- And it speaks to the GPU-benefits that ETH and ETC have competitive mining structures (lower HHI).

Figure: Hash Power Distribution for Bitcoin, Bitcoin Cash, Ethereum, Ethereum Classic

As of 11/13/2017



Source: Fundstrat, Bloomberg, cash.coin.dance, etherscan.io, gastracker.io, btc.com

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