Bitcoin and Blockchain

Trust, Millennials and Disruption
Executive Summary

• Overview

• Are banks too powerful?

• Demographics—Millennials

• Wall Street smells profits

• Wall Street cares—Diversification
Nothing about this Recession, nor this Bear market, is pre-ordained and hence staying defensive is logical. We know a few things though. This bear market is entering its 14th month and at a 52% peak to trough decline, is the most severe since the Great Depression. We wanted to do a comprehensive look at past Bear markets to determine patterns of duration, magnitude (of decline), as well as leading indicators to confirm a trough. Not surprisingly, the range of outcomes for this bear market are wide. Our four broad insights are as follows:

Source: Fundstrat, Bloomberg
DURATION does not matter... the time in a “bear market” is actually less relevant

Figure: Duration of S&P 500 Bear markets versus “retracement”
Since 1929. From JPMorgan report by Thomas Lee dated November 2008

Figure 9: Duration of Bear Markets
Since 1900

- Great Depression: 34 months
- Stagflation ('73-'74): 21 months
- GFC (2008): 17 months

Source: Fundstrat, Bloomberg
RETRACEMENT matters: How much of the previous bull market do you “give up”

Figure: Retracement matters more
Since 1929. From JPMorgan report by Thomas Lee dated November 2008

**Figure 4: Points retraced from 4 Biggest Bears**

- 3/24/00 — 10/9/02: 61%
- 3/10/37 — 3/31/38: 62%
- 9/3/29 — 7/8/32: 107%
- 1/5/73 — 10/3/74: 114%
- 10/9/07 — 11/19/08: 103%

Source: Datastream. Calculated as: Retracement = (points lost in Bear)/(points gained in Bull)

**Figure 5: Implied S&P 500 Low...**

- 3/24/00 — 10/9/02: $1,085
- 3/10/37 — 3/31/38: $1,074
- 9/3/29 — 7/8/32: $720
- 1/5/73 — 10/3/74: $669
- 10/9/07 — 11/19/08: $752

Source: Datastream. Calculated as: Retracement = (points lost in Bear)/(points gained in Bull)

2 greatest bear markets in US history...

What S&P 500 should bottom at in 2009, if we used the two precedent greatest bear markets as targets.
Using 2 “prior” massive “bears,” we forecast S&P 500 bottom of 667-720

PREDICTION #1:
Bottom 667-720

PREDICTION #2:
Bottom around May 2009...

Figure 1: Forecasted Range of Bear Market: Buy below 720, Sell above 1125. End date around May 2009.

Through 2009

'S73-'74 DURATION:
21 months since 10/07

MEDIAN DURATION:
19 months since 10/07

SELL range:
50% retracement Peak to Trough

BUY range:
720 = 107% retrace matches '29-'32 decline

Source: Datastream
2014 bear: Key is bear market *retraced* price to 1M prior to peak...

In our view, a better way to think about the 2013-2015 bear market is how much did the bear market “roll back” prices.

- BTC's trough price of $183 (on 1/14/15) was BTC's price 1-month prior to the 11/29/13 peak—in other words, BTC bottomed at the price it traded at on 10/25/13, or $183.

![BTC 2013-2015 chart](source: Fundstrat, Bloomberg)

It took a 405 day bear market to re-trace 1 month of gains...

Same price 10/25/13, 1M prior to Nov peak...

Source: Fundstrat, Bloomberg
2018 Bear: BTC re-traced to its price 1M prior to peak *TWICE*

Looking at the 2013-2015 analog, perhaps the better way is to look at the price 1M prior to its peak of $19,511 on 12/18.

- BTC, one month prior to the 12/18/17 high was $5,605 (11/13/17), a price it saw on 2/16/18 (within a hair) and on 6/29/18. In other words, based on a time re-tracement of 1M prior to the peak, BTC has bottomed.

Source: Fundstrat, Bloomberg
The two bear markets have a similar pattern of re-tracement....

In traditional markets, we have often written about bear markets as simply re-tracements of the preceding advance.

- And the 2018 Bitcoin bear market resembles the 2014 bear market on this basis. The 2014 Bear re-traced prices to levels 1-month prior to the top (took 405 days). The 2018 Bear seems to have achieved this but over 193 days.

Figure: BTC 2013-2015 and BTC 2017-2018 (two time frames)

Bloomberg

<table>
<thead>
<tr>
<th>Date</th>
<th>1/1/17</th>
<th>1/17</th>
<th>2/1/17</th>
<th>3/1/17</th>
<th>4/1/17</th>
<th>5/1/17</th>
<th>6/1/17</th>
<th>7/1/17</th>
<th>8/1/17</th>
<th>9/1/17</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

$0  $200  $400  $600  $800  $1,000  $1,200  $5,000  $7,000  $9,000  $11,000  $13,000  $15,000  $17,000  $19,000

2014 Bear peak → trough: 405 days
2018 Bear peak → trough: 193 days

Source: Fundstrat, Bloomberg
Since April 6\textsuperscript{th}, the Bear Market is about the correction in Alts. Down ~46%
ALTS: Best performing YTD are those with the best user growth...
We have compared the change in active addresses (30D avg) vs start of year and the price performance of the token.

- As shown below, there seems to be a relationship between change in active users (% change vs start of year) and the relative price performance of the token.

Source: Coinmetrics.io, Fundstrat, Bloomberg
ALT-CORRECTION INDEX: 97% of Alts down >70%, worst since 2013...
The percentage of Alt-token down 70% from their highs soared to 97% on 8/22/18—which is the highest figure since at least 2013.

• The previous high was October 25, 2014 when this figure reached 87%.

Figure: Alt-correction index: % of Alt-tokens down 70% from 9-month highs, rolling
Since 2013

Source: Fundstrat, Bloomberg
BUY SIGNAL: In 2014, Alt-season started after 87% reading... ~3X in 7 weeks

In 2014, after that alt-correction index reached 87%, the alt-coin season started.

- In 2014, Alts rallied 2.7X in 7 weeks—thus, we believe there is a good chance alt-coins rally from here.

Figure: % of Alt-tokens down 70% from 9-month highs, rolling Since 2013

Source: Fundstrat, Bloomberg
Why HODL? Ex-10 best days for BTC, has fallen 25% annually since 2013

The reason “buy and hold” (or HODL) makes sense for BTC is that a handful of days each year account for the bulk of gains for BTC.

- As shown below, BTC was down, on average, every year if we exclude the gains for the top 10 days (based on % change).
- If we looked at the top 10 “point gain” days, BTC would be down even more every year.

Figure: Return of BTC based on top 10 days (% chg daily) vs rest of year
Since 2013

Ex-top 10 days, BTC is down 25% annually 2013-2017...
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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 surprise 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
Concentration = centralization: Banking is highly concentrated

Figure: Banking in the Industrials Nations is a concentrated industry...
Recent

Five Biggest U.S. Banks Control Nearly Half Industry's $15 Trillion In Assets

From “Concentration in the Banking Industry” by Barruch Ben-Zekry, University of California Berkeley

What about banking?

- In many industrialized countries banking is a highly concentrated industry.
- The top three banks in:
  - Finland control 85% of the market.
  - Norway control 84% of the market.
  - New Zealand control 77% of the market.
  - South Africa control 77% of the market.
Cost of Fraud and Trust is still high...

- Very few other "services" for consumers cause this much disruption in their lives.

**Figure: From Identity Theft Resource Center**

<table>
<thead>
<tr>
<th>Americans’ expenses/disruptions as a result of criminal activity in their name [2016]</th>
</tr>
</thead>
<tbody>
<tr>
<td>I had to request government assistance</td>
</tr>
<tr>
<td>I had to borrow money</td>
</tr>
<tr>
<td>Had to use my savings to pay for expenses</td>
</tr>
<tr>
<td>Couldn’t qualify for a home loan</td>
</tr>
<tr>
<td>I lost my home/place of residence</td>
</tr>
<tr>
<td>I couldn’t care for my family</td>
</tr>
<tr>
<td>Had to rely on family/friends for assistance</td>
</tr>
<tr>
<td>Lost out on an employment opportunity</td>
</tr>
<tr>
<td>Lost time away from school</td>
</tr>
<tr>
<td>Missed time away from work</td>
</tr>
<tr>
<td>Was generally inconvenienced</td>
</tr>
<tr>
<td>Other</td>
</tr>
<tr>
<td>None of these</td>
</tr>
</tbody>
</table>

Source: Identity Theft Resource Center

**Fundstrat, Bloomberg**

For exclusive use of Fundstrat clients
The share of GDP going to the Financial sector is rising globally...

The cost of the Financial Sector to their respective economy is rising across all regions. We can measure this by looking at the OECD’s metric of Financial sector as % of value-add.

• Note how this figure is more than 2X the level it was in 1970. And has consistently risen across geographic regions.

Source: Fundstrat, Bloomberg
...this despite falling interest rates. Banks make money regardless of rates. One would think bank and financial sector profits would generally follow the trend in interest rates. Lower rates = lower profits.

- But as shown below, despite falling interest rates, Financial sector share of GDP has been increasing.

Figure: US 10-yr yields and Financial Value-Add
Since 1933

Since 1970, interest rates have generally been falling…

But the Financial sector has grown despite this…

Source: Fundstrat, Bloomberg
Blockchain could reduce ~$4 Trillion of costs out of global economy...
A simple illustration is to think about how much economic drag can be eliminated by blockchain, preventing double-spend plus reducing the overall cost of the financial system.

**Figure: How much GDP can blockchain unlock?**
Fundstrat

<table>
<thead>
<tr>
<th></th>
<th>Current</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Global GDP</td>
</tr>
<tr>
<td>b</td>
<td>Financial sector</td>
</tr>
<tr>
<td>c = a * b</td>
<td>Financial sector</td>
</tr>
</tbody>
</table>

**Range of Blockchain-based system**

<table>
<thead>
<tr>
<th></th>
<th>Low</th>
<th>Mid</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>d</td>
<td>GDP cost (% share)</td>
<td>5.0%</td>
<td>3.5%</td>
</tr>
<tr>
<td>Financial sector</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>e = d * a</td>
<td>powered by Blockchain</td>
<td>$4.0</td>
<td>$2.8</td>
</tr>
<tr>
<td>f = e - c</td>
<td>Boost to GDP</td>
<td>$0.8</td>
<td>$2.0</td>
</tr>
<tr>
<td>= f / a</td>
<td>% GDP</td>
<td>1%</td>
<td>3%</td>
</tr>
</tbody>
</table>

Source: Fundstrat, Bloomberg
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US Overview: Millennials largest generation in terms of overall # of births...

The millennials are significant for two reasons, their sheer size, both in the US and the rest of the world. But also because of their relatively young age.

- First, they are the largest single generation ever (larger than Boomers) and number 2.5 billion globally.
- Second, But at an average age of 26.5, they are just entering their prime income years.

![Figure: Total World Population divided by age groups](image)

2017. Data provided by the DESA UN Data sets.

Source: Fundstrat. Peak population figures above include immigration. **Reduced immigration will lead to a smaller overall size of GenZ.**
GLOBAL: 43% of the World adults are Millennial: 2.5 billion people

- As shown below, the global population of millennials (those born between 1981-2000) is about 2.5 billion globally, or about 43% of adults. In other words, the total potential number of bitcoin wallets could grow significantly from the current levels, given the sheer size of this cohort.

Figure: Total World Population divided by age groups
2017. Data provided by the DESA UN Data sets.

Source: Fundstrat, United Nations, Bloomberg
DEMOGRAPHICS: 2018 crossover year, Millennial “adults” exceed “teens”

2018 is a milestone as this is the year that the number of global Millennials (born 1980-2000) exceeds teens.

- The number of “adult” Millennials (>age 30) is set to rise from 1.0 billion to 2.4 billion by 2030.

Figure: The crossover is 2018 when there are more Millennial “adults” than “teens”

UN Population survey

Source: Fundstrat, UN DESA, Bloomberg
And by 2029, Millennials to control the largest share of disposable income...

Figure: Percentage Share of Disposable Income of each generation
From 1990 to 2050

Source: Fundstrat. US Disposable income is nominal SAAR $\,. The calculation is based on Federal Survey of Consumer Finance to determine median income by generation. The population data is using single age census data to determine number of millennials of working age. Using this population x income ratio x # millennials determines aggregate income. Income projections based on 2.0% Real GDP growth, 1% inflation and household disposable income share constant of 70%.
Millennials Credit card spending **growing faster** than GenX or Boomers...

Credit card spending growth by age cohort is shown below. What is being measured is the year over year aggregate spending on Chase Credit cards.

- Millennials spending growth is far outstripping any other cohort. In fact, Boomers, Silent Generation and Greatest Generation are actually seeing declines.

Figure: Chase credit card spending growth based upon age cohort.
Per Chase Bank

Source: Fundstrat, Bloomberg
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.
There’s no slowing down millennials
Capitalizing on a growing and influential generation

71% of millennials would rather go to the dentist than listen to what banks say and 33% believe that in five years they won’t need a bank.¹³

Bitcoin and Blockchain prevent “double-spend” in a digital world...

<table>
<thead>
<tr>
<th>Year</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>62%</td>
</tr>
<tr>
<td>2015</td>
<td>51%</td>
</tr>
<tr>
<td>2014</td>
<td>47%</td>
</tr>
</tbody>
</table>

https://www.creditcards.com/credit-card-news/online-mobile-banking.php

Gen Xers (70 percent) and millennials (68 percent) are the most likely to primarily turn to mobile or online banking.³
There’s no slowing down millennials
Capitalizing on a growing and influential generation

Millennials’ total liquid assets by 2020³

$7 trillion

10% in crypto:
~ $700 billion

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

USD off gold standard August 15, 1971

For exclusive use of Fundstrat clients
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...
Millennials **LOVE** Bitcoin and Blockchain

Figure: Fundstrat FS CryptoFX 300 Index
Morningstar
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ICE launching a crypto-exchange…

The NYSE's Owner Wants to Bring Bitcoin to Your 401(k). Are Crypto Credit Cards Next?

Backed by Microsoft and Starbucks, Intercontinental Exchange is launching a startup called Bakkt to make the cryptocurrency safe for your retirement fund, and maybe for retail, too.

By Shera Tully
August 3, 2018

Adds Sprecher: “Millennials don’t trust traditional financial institutions. To gain their trust, banks, brokerages, and asset managers can use a currency that millennials believe in, like Bitcoin. Using digital currencies brings a lot of sizzle.”

http://fortune.com/longform/nyse-owner-bitcoin-exchange-startup/
Bitmain valued @ $12 billion

Mining Giant Bitmain Valued at $12 Billion in New Funding Round

Bitcoin mining giant Bitmain has reportedly closed a Series B funding round that values the firm at approximately $12 billion.

Cryptocurrency exchange Coinbase recently tried to value itself at $8 billion

That’s how much it felt it was worth when it set out to acquire Earn.

By Theodore Schleifer | @tuddyschleifer | Apr 27, 2018, 6:04 pm EDT
Bitmain and Coinbase among top 20 exchanges on valuation...

<table>
<thead>
<tr>
<th>Ticker</th>
<th>Company</th>
<th>Market Cap</th>
<th>LTM Revenue</th>
<th>LTM Net Income</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>CME US CME Group Inc</td>
<td>$57,562</td>
<td>$3,824</td>
<td>$4,262</td>
</tr>
<tr>
<td>2.</td>
<td>ICE Intercontinental Exchange</td>
<td>43,795</td>
<td>4,690</td>
<td>2,476</td>
</tr>
<tr>
<td>3.</td>
<td>388 HK Hong Kong Exchanges &amp; Clear</td>
<td>37,072</td>
<td>1,629</td>
<td>1,056</td>
</tr>
<tr>
<td>4.</td>
<td>DB1 GR Deutsche Boerse Ag</td>
<td>27,108</td>
<td>2,925</td>
<td>987</td>
</tr>
<tr>
<td>5.</td>
<td>LSE LN London Stock Exchange Group</td>
<td>20,553</td>
<td>2,487</td>
<td>651</td>
</tr>
<tr>
<td>6.</td>
<td>NDAQ US Nasdaq Inc</td>
<td>15,770</td>
<td>2,510</td>
<td>741</td>
</tr>
<tr>
<td>7.</td>
<td>B3SA3 BZ B3 Sa-Brasil Bolsa Balcao</td>
<td>12,844</td>
<td>1,298</td>
<td>413</td>
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<tr>
<td>8.</td>
<td>Bitmain</td>
<td>12,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>CBOE US Cboe Global Markets Inc</td>
<td>11,798</td>
<td>1,935</td>
<td>505</td>
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<tr>
<td>10.</td>
<td>8697 JP Japan Exchange Group Inc</td>
<td>9,770</td>
<td>1,090</td>
<td>456</td>
</tr>
<tr>
<td>11.</td>
<td>ASX AU Asx Ltd</td>
<td>9,312</td>
<td>606</td>
<td>341</td>
</tr>
<tr>
<td>12.</td>
<td>Coinbase</td>
<td>8,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13.</td>
<td>MKTX US Marketaxess Holdings Inc</td>
<td>7,807</td>
<td>405</td>
<td>154</td>
</tr>
<tr>
<td>14.</td>
<td>SGX SP Singapore Exchange Ltd</td>
<td>5,854</td>
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<td>269</td>
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<tr>
<td>15.</td>
<td>ENX FP Euronext Nv</td>
<td>4,419</td>
<td>647</td>
<td>298</td>
</tr>
<tr>
<td>16.</td>
<td>MOEX RM Moscow Exchange Micex-Rts Pj</td>
<td>3,816</td>
<td>684</td>
<td>338</td>
</tr>
<tr>
<td>17.</td>
<td>X CN Tmx Group Ltd</td>
<td>3,672</td>
<td>573</td>
<td>299</td>
</tr>
</tbody>
</table>
CFA Institute is adding crypto to its CFA exam... 

...WOW

Cryptocurrencies

‘This Is Not a Passing Fad’: CFA Exam Adds Crypto, Blockchain Topics

By Michael Patterson and Andrea Tan

Updated on

- Candidates get their first look at the new material next month
- Finance and crypto worlds have become increasingly intertwined

It might be the definitive sign that cryptocurrencies have arrived on Wall Street.

CFA Institute, whose grueling three-level program has helped train more than 150,000 financial professionals, is adding topics on cryptocurrencies and blockchain to its Level I and II curriculums for the first time next year. Material for the 2019 exams will be released in August, giving candidates their first opportunity to start logging a recommended 300 hours of study time.

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.

<table>
<thead>
<tr>
<th>IPOs</th>
<th>Only profitable <strong>Technology</strong> companies go public...</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Private Equity</th>
<th>Public equity is larger than the private market...</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td># private equity companies as percent of Wilshire 5000 2000: 32% 2016: 84%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Bonds</th>
<th>Bonds are income instruments...</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>% bonds with negative rates (G7, ex-US) 2000: 0% 2017: 80%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Central Banks</th>
<th>Central banks only own bonds and risk-free assets...</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>BoJ ownership of Topix 2002: 0% 2015: 2.5%</td>
</tr>
</tbody>
</table>

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

For exclusive use of Fundstrat clients
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.

<table>
<thead>
<tr>
<th>Store of Value</th>
<th>20-yr CAGR</th>
<th>Value ($ billions)</th>
<th>% Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gold</td>
<td>5.0 %</td>
<td>$9,000</td>
<td>3 %</td>
</tr>
<tr>
<td>Collectible Art</td>
<td>3.0</td>
<td>$17,000</td>
<td>6</td>
</tr>
<tr>
<td>Real Estate</td>
<td>5.0</td>
<td>$228,000</td>
<td>82</td>
</tr>
<tr>
<td>Government bonds (neg rate)</td>
<td>-0.5 *</td>
<td>$20,000</td>
<td>7</td>
</tr>
<tr>
<td>Cars, collectibles</td>
<td>7.0</td>
<td>$5,000</td>
<td>2</td>
</tr>
<tr>
<td>Global stores of value</td>
<td></td>
<td>$280,000</td>
<td>100 %</td>
</tr>
<tr>
<td>Bitcoin</td>
<td>n/a</td>
<td>$200</td>
<td>0.1 %</td>
</tr>
</tbody>
</table>

* Average interest rate of negative rate government bonds
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

<table>
<thead>
<tr>
<th>Ticker</th>
<th>Company</th>
<th>EV Value (billions)</th>
<th>Tangible Assets</th>
<th>Intangible value estimates</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>PP&amp;E Prepaid expenses</td>
<td>Deferred Tax Assets LT Assets Current Assets ex-Cash</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FB</td>
<td>Facebook Inc-A</td>
<td>$485,860</td>
<td>$8,591</td>
<td>$1,312</td>
</tr>
<tr>
<td>AMZN</td>
<td>Amazon.Com Inc</td>
<td>$642,703</td>
<td>$29,114</td>
<td>$3,869</td>
</tr>
<tr>
<td>AAPL</td>
<td>Apple Inc</td>
<td>$738,444</td>
<td>$33,783</td>
<td>$8,974</td>
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<tr>
<td>NFLX</td>
<td>Netflix Inc</td>
<td>$97,807</td>
<td>$250</td>
<td>$227</td>
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<tr>
<td>NVDA</td>
<td>Nvidia Corp</td>
<td>$130,831</td>
<td>$521</td>
<td>$62</td>
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<tr>
<td>GOOG</td>
<td>Alphabet Inc-Cl</td>
<td>$674,371</td>
<td>$34,234</td>
<td>$1,819</td>
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<tr>
<td>TSLA</td>
<td>Tesla Inc</td>
<td>$64,871</td>
<td>$5,983</td>
<td></td>
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<tr>
<td></td>
<td>FAANNG Composite</td>
<td>$2,834,887</td>
<td>$112,476</td>
<td>$1,819</td>
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<tr>
<td></td>
<td>S&amp;P 500</td>
<td>$28,618,706</td>
<td>$4,514,372</td>
<td>$4,556</td>
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</tbody>
</table>

Source: Fundstrat, Bloomberg

For exclusive use of Fundstrat clients
Since 2014, Bitcoin traded at 2.4X P/BE mining... compared to 0.97X today

- Currently, BTC trades at 0.97 P/BE mining. This is a discount to its long-term average of 1.82X.

- Since 2014, the P/BE has averaged 2.4X, compared to 0.97X currently.

- Applying 2.4X (the P/BE average since 2014) to the projected YE break-even cost implies a $21,948 price for BTC by year-end. The point is that considering P/BE, BTC has substantial upside from current levels.
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)

---

**Gold had very high annualized volatility when it first traded freely**

Source: Fundstrat, Bloomberg

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Executive Summary

• Overview

• Are banks too powerful?

• Demographics—Millennials

• Wall Street smells profits

• Wall Street cares—Diversification
**Bitcoin speculation levels low compared to FX and commodities...**

While speculation has risen as a share of Bitcoin trading (per article on the previous page), the level of overall speculative share for BTC trading is low compared to traditional markets.

- Using data from coinmarketcap and coinmetrics, BTC speculation to use ratio is 2.5X. This compares to 96X for USD and 31X for oil (see following pages). Hence, there is room for substantially higher speculation.

---

**Figure: Comparative speculation to use ratio of Bitcoin vs USD and vs Oil**

Various (see below)

<table>
<thead>
<tr>
<th>Proxy</th>
<th>Speculation</th>
<th>Use</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bitcoin today</strong></td>
<td>$1,969 billion Exchange volume (USD) coinmarketcap.com</td>
<td>$808 billion Adj. on-chain volume (USD) coinmetrics.io</td>
<td>~2.5X</td>
</tr>
<tr>
<td><strong>If Bitcoin was a currency</strong></td>
<td><strong>US Dollar</strong> $1,966 Trillion (spot, futures, options)</td>
<td>$20.4 Trillion (GDP)</td>
<td>~96X</td>
</tr>
<tr>
<td><strong>If Bitcoin was a commodity</strong></td>
<td><strong>Oil</strong> $81.2 Trillion (ICE, CME only)</td>
<td>$2.6 Trillion (annual consumption)</td>
<td>~31X</td>
</tr>
</tbody>
</table>

FANG benefitted from the growth of the internet...
FANG has produced sizable gains since 1997 and as shown below, this is function of FANG operating in a secularly growing market.

- From 1998 to now (20 years), the number of global internet users rose from 147 million to 4.2 billion.

Figure: # internet users worldwide
From IDC. From 1993 to 2017

Source: Fundstrat, Bloomberg
FANG: Since ’97 to now (~20 years), FANG up 1,567X...

FANG returns have been astounding since 1997:

- The returns generated by FANG stocks was a multiple of the growth in internet users—this makes sense. The idea of network value would argue the value creation would be a multiple of the growth in users. In fact, it is almost a perfect log function.

Figure: Comparative performance of Top 7 Consumer stocks versus S&P 500

Source: Fundstrat, Bloomberg
FANG was only *created* 1-3 years after internet 1.0 loser...
What most investors do not realize is that FANG companies were only created 1-3 years after their predecessor, losing entity.

- Hence, it did not take decades to see who the winner versus losers were.

**Figure: FANG vs Internet 2.0 winners**
Per Fundstrat

<table>
<thead>
<tr>
<th></th>
<th>1.0</th>
<th>2.0</th>
<th>Years Difference 2.0 less 1.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td>Social Media</td>
<td>2003</td>
<td>2004</td>
</tr>
<tr>
<td>A</td>
<td></td>
<td>1999</td>
<td>1994</td>
</tr>
<tr>
<td>N</td>
<td>Streaming</td>
<td>1995</td>
<td>1997</td>
</tr>
<tr>
<td>G</td>
<td>Search</td>
<td>1995</td>
<td>1998</td>
</tr>
</tbody>
</table>

Source: Fundstrat, Bloomberg

For exclusive use of Fundstrat clients
Facebook vs Myspace: FB surpassed within 5 years...

Similarly, it took less than 4 years for Facebook to beat Myspace.

- As shown below, the monthly active users of Facebook surpassed Myspace by May 2009. This is about 5 years after Facebook was launched.
- Again, in internet time, this was a mere 5 years.

Figure: It took less than 5 years for Facebook to beat Myspace
Comscore
1980s FANG: Consumer spending 3X from 1981-2000, 54% to 58% of GDP


- During this time, PCE ex-healthcare, rose from $1,694 billion to $6,020 billion, or a 3X increase in 15 years.
1980s FANG: Top 7 Consumer stocks—WCHHGLD—1,171X

The comparative performance of the top 7 Consumer stocks vs S&P 500 is below. The top 7 consumer stocks (then) were: Walmart, Circuit City, Hasbro, Home Depot, Gap, Limited Brands and Dillards.

- The relative performance of these Top 7 large-cap consumer stocks was staggering, gaining 117,159% during that time, or a 1,171X compared to a 16X increase in the S&P 500.

Figure: Comparative performance of Top 7 Consumer stocks versus S&P 500
1980 to 2000

Top 7 Consumer ’80-’00
117,159% or
1,171X

S&P 500 ’80-’00
1,615% or
16.2X

1980s FANG (’81-’00) has a return during this time that is similar to FANG (’97-’18)

Source: Fundstrat, Bloomberg
GLOBAL: 20% of Millennials own Crypto = 10X increase in wallets...

We estimate there are approximately 50 million holders of Bitcoin (making some assumptions about BTC held in exchange accounts) and perhaps 2 million (but could be 2-10 million) with at least $1,000 of BTC.

- This is not the “mature” state of crypto as there are >225 million PayPal accounts and 4.7 billion Mastercard/Visa accounts.

Figure: Number of estimated accounts
Various sources

SOV King: Bitcoin around >9 years...Crypto time 3X faster than internet

In the 9 years since the launch of Bitcoin, multiple alt-coins have been launched, but none has surpassed Bitcoin.

- In other words, Bitcoin is the store of value king—compared to developments in internet, crypto time is faster. Hence, we would have expected a platform to have surpassed Bitcoin, as a superior store of value.

Figure: Many tokens and alt-coins have been launched since 2009, but Bitcoin still dominant

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Neutral (N): The analyst expects the performance of his or her industry/sector coverage universe over the next 6-18 months to be in line with the relevant broad market benchmark, being the S&P 500 for North America.

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