

The purpose of the below is to provide data-based analysis that will aid the process of deciding whether SR-NYSEArca-2016-176 should be approved. It is not meant to be a discussion on the merits of the Ethereum concept or the broader block chain technology. It is also not going to look into the custody, trust and NAV calculation methodology of the particular ETP proposal. Instead, it examines the proposal's consistency with Section 6(b)(5) of the Securities Exchange Act of 1934, namely that the rules of a national securities exchange be "designed to prevent fraudulent and manipulative acts and practices" and "to protect investors and the public interest.". In order to address that, I look into 3 topics: 1) Is ETH traded on regulated exchanges? 2) Do these execution venues have ways of sharing information between them? 3) What is the state of the derivative Ether market and how does it compare to Bitcoin?

Firstly, where is Ether (ETH) traded?

In order to answer this question it is important to understand how Ether is traded, in other words what currency do investors tend to use to buy or sell Ether. And that is a point that seems to elude a lot of commenters/journalists who tend to ignore the ETH/BTC transaction volume when gauging exchanges' market share. They would argue that the ETH/BTC trading would have no bearing on the ETH/USD price. That is fundamentally flawed – basic financial theory dictates that one could achieve ETH/USD exposure by, for example, buying/selling BTC/USD and then buying/selling ETH/BTC (therefore bypassing ETH/USD trading). In fact, this so called triangular arbitrage is currently observed in most large exchanges. Including ETH/BTC traded volume is important as it significantly changes the market share that US crypto exchanges hold in the global marketplace. In figure 1 below I have included a split of the various currencies that ETH trades against in order to put across the importance of taking into account ETH/BTC volume. You can clearly see the dominant share of ETH/BTC. In figures 2 and 3 I have provided charts that show the share of trading done on US digital asset exchanges. As you can see, it is less than 60%. It is safe to say that a significant share - 40% of ETH trading is done outside regulated US exchanges – sometimes in jurisdictions such as the Caribbean, China, Russia or Cyprus.

Figure 1: ETH currency pairs share

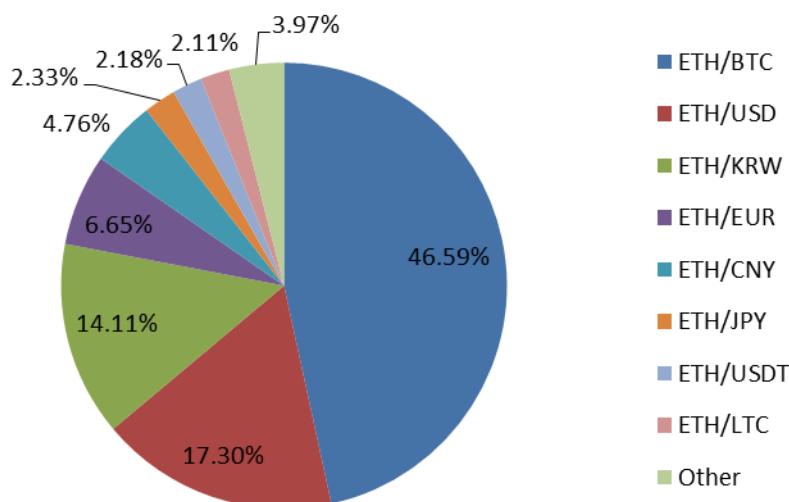


Figure 2: Digital currency exchange market share in ETH trading

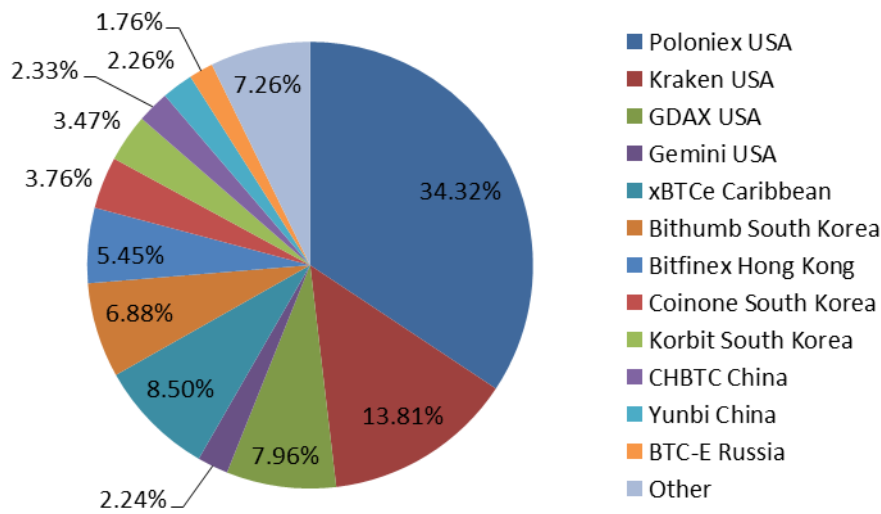
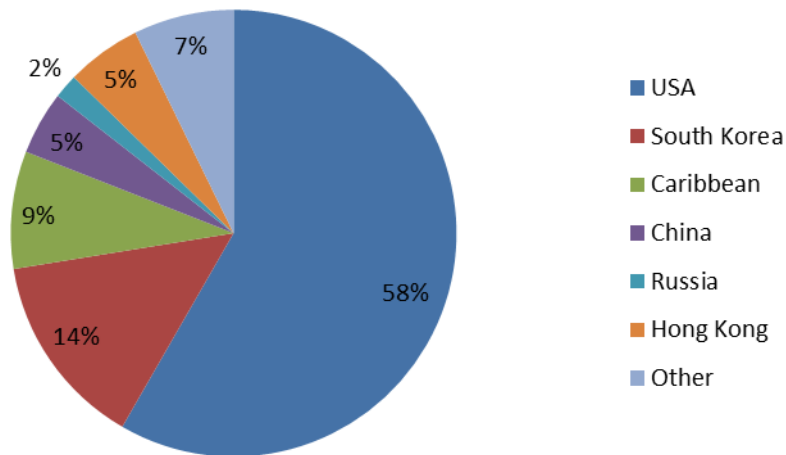


Figure 3: Country market share in ETH trading



Data source: <https://coinmarketcap.com/> as of 09/May/2017 based on data over 24 hrs

What about the future? It is not clear whether the US exchanges will continue to uphold/increase their 60% market share. In fact, one could make a case that trading might shift in favour of Asia – Japan and China in particular. Going back to figure 1, two phenomena are noteworthy: 1) ETH/CNY accounts for less than 5% of all ETH trading and ETH/JPY for around 2%. This compares to around 20% for BTC/CNY and 10% for BTC/JPY (the latter is growing rapidly and has accounted for 1/3 of overall BTC trading over the past few days as a result of pent-up demand coming from the newly-legitimized Japanese crypto currency market). One might make the argument that this gap (between

each country's fiat for BTC and fiat for ETH market shares) is due to the fact that most ETH trading in China and Japan is done vs BTC or other crypto currencies. A closer examination of the data shows that this is not the case – less than 2% of ETH/BTC trading is done on Japanese and Chinese exchanges. A more plausible explanation is that ETH is a new offering in those countries that is set to grow – the 3 biggest Bitcoin Chinese exchanges don't actually offer ETH trading while the largest Japanese one – Bitflyer only began offering ETH in the latter part of 2016. As interest and demand for Ether increases so will competition among exchanges and the resulting product offerings (e.g. in Japan in April 2017 alone there were 10 new entrants applying to become crypto currency exchanges). Both countries are candidates to see explosive demand growth for ETH trading that will likely be met on local exchanges (judging from Bitcoin where more than 95% of all BTC trading in each country is done on local exchanges).

Secondly, the Commission has continued to emphasize the importance of surveillance-sharing agreements between the listing exchange and any other market places where either the underlying asset or the derivatives of that asset trade. Do we currently have in place such surveillance-sharing agreements? The short answer is 'No'.

None of the large venues in Bitcoin trading (in and out of the US) are part of the Intermarket Surveillance Group. The current proposal only discusses information sharing agreements falling within the cross-market surveillance administered by the FINRA on behalf of NYSE Arca. There is a generic sentence short on specifics which states *"that the Exchange may obtain information regarding trading in the Shares from markets and other entities ... with which the Exchange has in place a comprehensive surveillance sharing agreement ("CSSA")"*. But how straightforward would it really be to enter into CSSAs with the large digital asset venues? Even if the 4 big US players manage to enter into such agreements it would be a lengthy and costly process for these young capital-constrained companies (e.g. remarkably little is known about the market leader Poloniex which handles more than 33% of the ETH market and more than \$100m in daily crypto volume– even though it began operations in 2014 the company seems to have legally incorporated a virtual office in Delaware in 2016, the management team has avoided any public appearances and little is known about them, the company's funding sources or capitalization) as it would require infrastructure development and headcount increases. In addition there is a significant share of ETH trading done outside the US (40% as per figure 1) - sometimes in murky regulatory regimes with little transparency (e.g. xBTC-e which holds a higher market share in ETH trading than the 3rd biggest US player – GDAX seems to be based in the Caribbean (the exchange has managed to remain exceptionally secretive about its operations, ownership structure, regulatory regime or its relationship with another large market player sharing a similar name- BTCe)). Cross-border agreements will be hard to secure as that would entail multiple jurisdictions, different levels of compliance standards and most importantly sizeable capital expenditures for entities that have little to gain from such agreements – whereas I appreciate that a certain level of legitimacy and credibility will be gained from entering into such agreements I am doubtful that the benefits will outweigh the reasons why those players have chosen to incorporate in jurisdictions outside the US in the first place.

One part of the proposal is a great step in the direction of information gathering- *"the Exchange is able to obtain information regarding trading in the Shares and the underlying through ETP Holders acting as registered Market Makers, in connection with such ETP Holders' proprietary or customer*

trades through ETP Holders which they effect on any relevant market". Getting more information from designated market participants is a good way to enhance the Exchange's understanding of the underlying asset's market behaviour but, it is not enough to capture any manipulating behaviour. Those designated market makers are likely to have a limited share of the overall market and are unlikely to provide the comprehensive picture that is needed to adequately protect investors.

It is quite interesting and relevant to note a recent and widely publicized case (and there are similar episodes reported every week for various crypto currencies and exchanges) from 9th May 2017 when both Poloniex and Kraken (c.50% of the entire ETH market) went down at the same time as a result of a Distributed Denial of Service (DDoS) attack. Both websites were unavailable for around one hour during which traders were unable to access those websites to carry out any trading. It is suspicious that right before Kraken's website became inaccessible there was a large ETH sell order. As a result ETH price fell in 10 minutes from \$90 to \$26 (71%) triggering a myriad of stop-losses only to recover after the websites were back fully operational. Manipulation or not, it is interesting to look at the reaction of Poloniex and Kraken: all that the former (the world leader in crypto currency trading) did was to tweet: *"Coins are safe. We should be back up in about 15 minutes"*. A day later, at time of writing, users are complaining that funds are frozen and withdrawals have been blocked. Kraken stated that they investigated the incident and they concluded that there was no *"evidence of a coordinated attack or market manipulation"*. Episodes like this showcase the reality of crypto currency trading- risky, opaque, highly fragmented with unaccountable venues sharing little/no information. Rather than having to take the word (normally delivered via Twitter) of a highly conflicted party with an incomplete view of the market (such as Kraken/Poloniex in this case), the public should be able to rely on an independent entity/regulatory body or another vehicle that has the tools and authority to quickly and holistically source information, investigate and prosecute perpetrators. Such structure has been in place for equities, bonds and commodities for decades.

Thirdly, what is the state of the market for derivatives on Ether?

The Commission has previously stated that when the majority of the spot market is not regulated *"there must be significant, regulated derivatives market related to the underlying asset with which the Exchange can enter into a surveillance-sharing agreement"*. Many commenters have described the Bitcoin derivative market as *"nascent"* (in fact even Bats BZX Exchange which filed a proposed rule change to list and trade share of the Winklevoss Bitcoin Trust used the exact same word to describe the Bitcoin derivatives market). If the Bitcoin derivative market is nascent, then the Ether derivatives market is pre-natal. A lot of the players in the Bitcoin futures market do not have any offerings in Ether. For example, Deribit- a prominent Bitcoin options and futures player based in Lithuania does not provide any Ether products. Similarly, China/Hong-Kong-based OKCoin, UK-based CryptoFacilities and US-based (and CFTC-registered) TeraExchange have no Ether offerings. One of the most prominent digital derivatives exchanges currently is BitMex – the 24-hour volume of its ETH futures contract represents less than 2% of the physical ETH trading. What is more, the exchange complies with Seychelles law and regulations. As far as margin trading is concerned, there has been a step in the right direction. At the end of March 2017, margin trading for institutional clients began on GDAX – the first time a US player provides leveraged trading for crypto vs fiat (Poloniex has provided leveraged crypto vs crypto trading for some time now) to US customers. Whereas this is promising, there is little information on the volume traded so far and the market remains dominated by foreign players.

In summary, whereas more than 50% of ETH trading is currently carried out on regulated US exchanges there is still a significant percentage done abroad. It is not certain that the market share of regulated US exchanges will increase or even remain stable. A case can be made that US venues' importance will decrease. At the same time, surveillance-sharing agreements between the listing exchange and the significant markets relating to the underlying asset do not currently exist. The Ether derivatives market is negligible. In conclusion, approving the SR-NYSEArca-2016-176 proposal at its current form and at this stage of market development would be premature and would fail to protect investors and the public interest – manipulating the underlying Ether price on un(der) regulated markets would be trivial, affordable and in most cases-legal. More work needs to be done on information-sharing agreements and on the development of other tools that enable the ETP-listing exchange to detect and deter manipulative conduct.