



James J. Angel, Ph.D., CFP[®], CFA
Associate Professor of Finance
Georgetown University¹
McDonough School of Business
Washington DC 20057

[REDACTED]

[REDACTED]

Twitter: @GuFinProf

April 17, 2022

Securities and Exchange Commission
100 F St. NW
Washington, DC 20549-9303
Rule-comments@sec.gov

Re: Order Instituting Proceedings to Determine Whether to Approve or Disapprove
a Proposed Rule Change to List and Trade Shares of Grayscale Bitcoin Trust
(BTC) under NYSE Arca Rule 8.201-E

File No. SR-NYSEArca-2021-90
Also SR-NYSEArca-2021-89, SR-NYSEArca-2021-37

¹ All opinions are strictly my own and do not necessarily represent those of Georgetown University or anyone else. I am very grateful to Georgetown University for financial support. Over the years I have served as a Visiting Academic Fellow at the NASD (predecessor to FINRA), served on the boards of the EDGX and EDGA stock exchanges, served as Chair of the Nasdaq Economic Advisory Board, and performed consulting work for brokerage firms, stock exchanges, other self-regulatory organizations, market makers, industry associations, and law firms. I am the academic director for the FINRA Certified Regulatory and Compliance Professional (CRCP[®]) program at Georgetown University. I've also visited over 75 stock and derivative exchanges around the world. As a finance professor, I practice what I preach in terms of diversification and own modest and well-diversified holdings in most public companies, including brokers, asset managers, market makers, and exchanges.

Dear SEC:

In summary:

- Just Say Yes.
- The SEC looks silly approving bitcoin futures-based ETFs but not a physically-based one.
- Moving more bitcoin activity onto regulated venues will better protect investors and deter manipulation.
- SEC must require entities engaged in crypto to have WSPs to avoid crypto from ransomware and other illegal activities.
- The SEC has the legal authority to apply, and should apply, Regulation BI to all products, including crypto, carried by brokers and investment advisers, not just “security” products.
- Most cryptos really are securities, and the SEC should quickly but gently bring them into the regulated world with a principles-based sandbox approach, not regulation by enforcement.
- The SEC should adopt a Rule 15c2-11 approach to brokers trafficking in cryptos
- It is in the public interest to require entities engaged in crypto to disclose their environmental impact.

Background

We are in the midst of an amazing technological revolution in finance. So-called digital assets provide several extremely important innovations over traditional securities. These include

- 1) Digital assets are bearer assets that trade 24/7 in a low-friction market.
- 2) Blockchain based settlement creates quasi-immutable records of transfer and simplifies post-trade processing and corporate action processing.
- 3) Programmability creates the potential for smarter securities far more useful than our traditionally “dumb” stocks and bonds.

- 4) Decentralized (“DeFi”) protocols provide the opportunity to re-engineer financial services.

This new technology creates many opportunities for valuable new services, and traditional services at lower cost. However, the need for appropriate financial regulation has not gone away. We the people still want to make sure that money is not stolen from our wallets, physical or digital. We want to be protected from fraudsters and manipulators who sell bogus products and manipulate markets. We want to be able to trust that our financial intermediaries, whether they are traditional institutions or defi protocols, will not fail and bring down the economy in a wave of contagion.

There is a pressing need for intelligent regulation that provides enough clarity to promote the useful uses of these innovations while still achieving the objectives of sound financial regulation.

For many years, the backers of the Grayscale Bitcoin Investment Trust (GBTC), among many others, have sought unsuccessfully to list crypto-based ETFs on our national security exchanges. The SEC has repeatedly adopted a “Just Say No” approach, citing fears about manipulation of the cash market. Then the CFTC permitted bitcoin futures to start trading, or, more precisely, looked the other way when the CME self-certified its bitcoin futures contracts. The SEC then permitted the ProShares Bitcoin Strategies Trust (BITO), a product that basically just holds near-month bitcoin futures, to start trading.

The SEC has clear investor protection concerns. The SEC rightfully fears, or should fear, that putting its imprimatur on bitcoin products would open the floodgates to hordes of unsophisticated FOMO-ing at the mouth retail investors mindlessly piling in at the peak of a bubble. Greedy promoters will push “investing” in dubious cryptos when they really are really just pushing speculative trading, not investing.

I share those concerns.

It is quite unclear what fundamental value, if any, bitcoin has in its current incarnation. Is it just a brilliant prototype, destined to be superseded by other superior digital asset technologies? (Remember Netscape? The Altair computer?) Or is it the everlasting foundation of The New Financial World Order destined to be worth millions? Some believe that it will be worth quite a lot and others think it lacks value. In short, it is a lottery ticket. In general, the loudest touts are those

who have already made significant investments in bitcoin and have a financial incentive to get others to purchase or trade bitcoin in order to increase the value of their investments. Is this a pyramid scheme, or are they just putting their money where their mouth is?

The fact that bitcoin may ultimately be worthless should not prevent the trading of bitcoin-based products on our highly-regulated and well-surveilled national securities exchanges. Many startups and biotech companies will ultimately be worthless as well. Our economic growth requires capital markets that are open to risky ventures. We need risk takers willing to make risky investments in new and not yet proven technologies, or there would be no new technologies and no economic growth. It is better to let informed investors decide what risks they want to take, not risk-averse bureaucrats.

It is too late to prevent a speculative frenzy in cryptos. The crypto cows have left the barn. Brokers and money transmitters now tout “investing” in cryptos in general advertising. In addition to trading BITO, brokers such as Robinhood, SoFi and eToro permit trading in spot bitcoin. Brokers are already pushing crypto speculation in retirement accounts:

The advertisement features a dark blue background with several 3D-rendered Bitcoin coins in shades of green and yellow. At the top center is the iTrustCapital logo, consisting of a white 'i' in a square followed by the text 'ITRUSTCAPITAL' in white and green. The main text is centered and reads 'WITH AN EASY-TO-USE CRYPTO IRA' in large, bold, white and green letters. In the bottom left corner, there is a small white box containing the text '#1 Crypto IRA' and 'itrustcapital.com', along with a blue 'Learn more' button. In the bottom right corner, there is a grey button with the text 'Skip Ads' and a right-pointing arrow. At the very bottom left, there is small text that reads 'Ad 1 of 2 · 0:05 © itrustcapital.com'.

Locking the barn door now will not stop the speculative frenzy in bitcoin or other “coins.” The SEC can, however, contain some of the damage through approving Grayscale’s application.

Denying the Grayscale application makes the SEC look either really stupid or completely arbitrary and capricious.

The SEC permits a futures-based ETF such as BITO to be traded on a national securities exchange, but not a physical-based ETF such as GBTC. So let me get this right – the SEC won’t let investors purchase an investment product that buys spot bitcoin and is traded on a national securities exchange, but they let investors buy the spot bitcoin from the same brokers that they would use for the ETF???

The SEC’s logic is that the futures market is a transparent and regulated market and thus is not too manipulated, but the spot bitcoin market is too sketchy and too prone to manipulation. The SEC is unsuccessfully hiding behind an obviously transparent fig leaf. It may sound plausible within the debating club on F-Street, but it is laughable to anyone who understands markets. The spot and futures markets are so interconnected that actions on one instantly affect the other. Any manipulations in the spot market instantly affect the futures prices and vice versa. To pretend otherwise demonstrates a shocking lack of comprehension of how markets operate.

The optics of this situation are not pretty and do not reflect well upon the SEC. Chair Gensler was formerly chair of the CFTC, the agency that allowed the self-certified bitcoin futures contracts to trade. In other words, it was the regulator that he molded so expertly for many years that did it. For the SEC to say that bitcoin *futures* prices are so manipulated that they cannot be trusted would be to besmirch the reputation of a fellow regulatory agency, one previously chaired by the current SEC Chair. This would cause political problems for relations between the CFTC and the SEC and would be an embarrassment to the current SEC Chair. If that is the true reason for the SEC’s decisions, it would truly be arbitrary and capricious.

A physical-based ETF is less vulnerable to manipulation than an index-based cash-settled futures contract.

GBTC is a simple product. As of this writing, each share of GBTC is equivalent to 0.00092739 BTC.² When converted to an ETF, the creation process will be simple: Transfer .092739 BTC to the sponsor and get 100 shares of GBTC.³ Likewise, the redemption process will be simple: Submit 100 shares and receive .092739 bitcoin. An investor who trades this product is getting the exposure to bitcoin that they want. Note that investors do not have to have any direct involvement with those sketchy exchanges in order to create or redeem the ETF shares.

The CME futures contract is based on the BRR Bitcoin Reference Rate Index. In the words of the CME:

“BRR is a daily reference rate of the U.S. dollar price of one bitcoin as of 4 p.m. London time.

Each day, the BRR aggregates the trade flow of major bitcoin spot exchanges during a specific one-hour calculation window. This one-hour window is then partitioned into 12, five-minute intervals, where the BRR is calculated as the equally-weighted average of the volume-weighted medians of all 12 partitions.”⁴

Got that? The CME product is based on the spot price of bitcoin derived from those allegedly too sketchy exchanges that the SEC doesn't trust and where the manipulation allegedly takes place. One thus has the possibility of manipulation not only on the CME itself, but also on the numerous bitcoin “exchanges” that the CME is using for the calculation of the index used for the ultimate cash settlement of the contract. A physical-based product in which the fund actually holds the bitcoin is far less vulnerable to manipulation than the futures contracts.

The SEC has a clear mandate to protect investors. Let's explore how the SEC can better protect investors in this rapidly evolving world:

² This amount does decay gradually over time as management fees are taken out.

³ There could also be a cash component to compensate for the cash balance within the trust, if any.

⁴ <https://www.cmegroup.com/education/courses/introduction-to-bitcoin/introduction-to-bitcoin-reference-rate.html>

Protect us from the contango and rollover costs in futures-based products!

Bitcoin futures are generally in “contango”, which means that the prices in the back months are generally higher than prices in the front months. Thus, when a futures-based ETF is faced with the looming expiration of its contract, it has to pay a higher price to roll it over into the next month. This imposes continuing losses on investors from the difference in price between the soon-to-expire contract and the new contract. These losses will occur perpetually.

Furthermore, the liquidity on the CME contracts leaves a bit to be desired. They only trade a few thousand contracts a day and the bid-ask spreads are pretty wide. The bid-ask spreads are so wide that I have personally stopped using them. This means that the investors who use the futures-based contracts are also hit with wide bid-ask spreads when they roll over positions in addition to the contango cost.

A simple product like GBTC that merely holds bitcoin will impose far fewer transactions costs upon investors who just want to buy and hold bitcoin.

Protect us from the Pink Sheets!

GBTC is currently traded on the OTC Market, formerly known as the Pink Sheets. With all due respect to the great job that Cromwell Coulson has done to modernize the OTC Market, the fact remains that transactions costs are generally higher in the OTC Market than they are in the listed exchange-based markets. By permitting GBTC to become a standard exchange-listed product, investors will enjoy the lower trading costs and deeper liquidity generally found on exchange-listed products. Moving GBTC to our national securities exchanges will give investors the benefits of the intense competition among our 16 national securities exchange and 30+ ATSS. It will also give investors the additional protection from the heightened surveillance that the exchanges do on their issuers and the trading on exchange platforms.

Protect us from steep and random discounts from NAV!

Under its current structure, there is no arbitrage mechanism to keep the price of GBTC anchored on the value of its holdings. As of this writing, GBTC is selling at a discount of 24.6% from its Net Asset Value (NAV). This discount fluctuates.

Permitting GBTC to become a standard ETF will bring in the arbitrage forces needed to eliminate this discount.

Protect us from high fees!

It is often said in securities regulation, thanks to Louis Brandeis, that “sunlight is the best disinfectant.” To that, I would add “Competition is the best lubricant.”

Right now, the shareholders of GBTC pay a 2% annual fee for the privilege of being locked into the product. This fee made sense when bitcoin products were new and required significant marketing, along with extensive regulatory costs. As the product has matured, there is no longer a need for such a steep fee. No wonder it sells at a huge discount! BITO and BTF have an expense ratio of 0.95%.

Approval of an ETF will undoubtedly force GBTC to bring its fee into line with the competition or else face an immediate outflow of virtually all its assets. Additional competition is likely to push fees down even further.

Protect us from wallet cyber risk!

One of the features of digital assets is that they are bearer assets: Anyone with the private key controls the asset. This means that there is always a huge cybersecurity risk with digital assets. Investors holding digital assets directly have this risk. They face the ever present danger that a cybercriminal will drain their wallet in a heartbeat. When that happens, there is no recourse.

Brokers offering cryptos to their customers also have this custody and hacking risk.

By approving crypto-based ETFs such as GBTC, this custody and cybersecurity risk is thus outsourced to the ETF promotor. This will reduce the cyber and hacking risks stemming from direct holding of ETFs by the investor. To the extent that investors substitute ETFs for direct holdings of cryptos in their brokerage accounts, it will also reduce the cyber risk of the brokers.

Protect us from ransomware: Require WSPs to prevent acceptance of stolen coins!

It is a crime to knowingly possess stolen property.⁵ One of the great advantages of blockchain technology is that a public blockchain like that of bitcoin contains a record of every transaction. The SEC should require that all market participants that handle bitcoin have Written Supervisory Procedures (WSPs) in place to prevent acceptance of bitcoin that have been stolen in hacks or involved in ransomware or other illicit operations.

Protect us from sleazoids pushing cryptos as “investments”!

The technological boom has led to a speculative bubble and the creation of thousands of dodgy coins of dubious value. Channeling investor interest into a regulated space, in which security products are properly registered, trading is surveilled, and brokers held to Reg BI (or better), will make it more likely that investors will trade in legitimate products with some plausible reason to succeed. The “Just Say No” strategy pushes investors into dealing with the dark alley “exchanges” that gleefully profit from trading in dubious coins.

Permitting spot-bitcoin ETFs such as GBTC to be traded on our securities markets will be a step in this direction. The more that the SEC can move crypto trading into the regulated world, the better we investors will be protected.

Protect us from other products trafficked by BDs and RIAs.

The Commission has gone to great lengths to increase the trust that investors can place in their brokers and advisers. Before they can recommend a security to their retail investors, they must determine that it is in the best interest of the investor under Regulation Best Interest. However, as currently written, Reg BI only applies to *security* transactions.⁶ As the Commission well knows, there are many

⁵ If it has crossed state lines, it is a federal crime. 18 U.S. Code § 2315. States have their own criminal codes as well for intrastate receipt of stolen goods. For example, the Code of Virginia states:

§ 18.2-108. Receiving, etc., stolen goods.

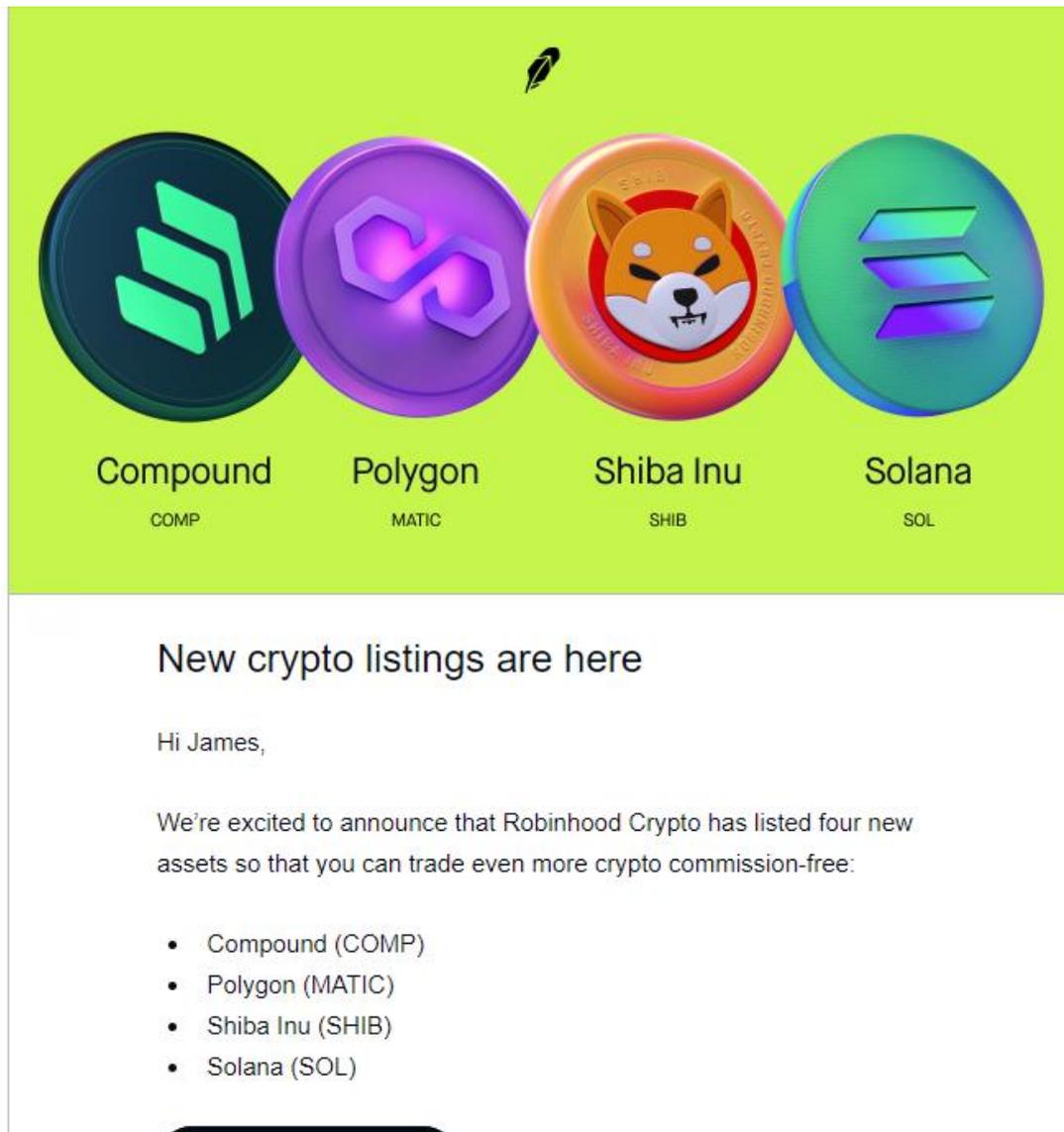
A. If any person buys or receives from another person, or aids in concealing, any stolen goods or other thing, knowing the same to have been stolen, he shall be deemed guilty of larceny thereof, and may be proceeded against, although the principal offender is not convicted.

<https://law.lis.virginia.gov/vacode/title18.2/chapter5/section18.2-108/#:~:text=Receiving%2C%20etc.%2C%20stolen%20goods.,principal%20offender%20is%20not%20convicted.>

⁶ The precise wording is as follows:

digital assets that are not currently treated as securities, and many digital assets whose status is, well, uh, subject to judicial interpretation.

Here is an example of what is being promoted by broker dealers:



§ 240.151-1 Regulation Best Interest.

(a) Best interest obligation.

(1) A broker, dealer, or a natural person who is an associated person of a broker or dealer, when making a recommendation of any securities transaction or investment strategy involving securities (including account recommendations) to a retail customer, shall act in the best interest of the retail customer at the time the recommendation is made, without placing the financial or other interest of the broker, dealer, or natural person who is an associated person of a broker or dealer making the recommendation ahead of the interest of the retail customer

Retail investors rightly expect that SEC-regulated advisers and FINRA-regulated brokers have to adhere to a best interest standard when it comes to recommendations of securities transactions. I would be shocked if any of them realized that this standard does not apply to other financial products sold by advisers and brokers. This is an appalling gap in investor protection: A broker or adviser is held to a best interest standard on a security product, but the SEC looks the other way if the broker rips the investor off with a dodgy insurance product or a sketchy crypto coin. It does not and should not have to be this way.

Apply appropriate 15c2-11-style rules to purveyors of cryptos.

The SEC has gone to great lengths to force more disclosure in the OTC Market. The revamped 15c2-11 process has shut off the ability for most retail investors to access some of the real legitimate firms that are not transparent. An example is the once-NYSE-listed preferred shares of Amtrust Financial Services. The parent company was taken private, but the preferred shares were left outstanding.⁷ Amtrust deregistered and delisted the preferred shares, which then traded on the OTC Markets. After the new 15c2-11, brokers have cut off general access to the shares. Even though Amtrust's insurance operations are highly regulated, with the public disclosures generally required of insurance companies, such disclosures don't fit the specific requirements of 15c2-11. Hence, its public preferred shares have been relegated to gray market purgatory. This reduced liquidity has lowered the price, inflicting harm on the existing shareholders when they go to sell their

⁷ This would not be the first instance of companies going private and harming their preferred shareholders. Don't forget the infamous saga around W2007 Grace Acquisition I. See <https://www.sec.gov/litigation/admin/2015/34-74782.pdf> Such going dark firms exploit the loophole created by how the SEC defines the number of "shareholders of record" for the purposes of SEC registration requirements. The beneficial shareholders who hold shares through their brokers in "street name" are not counted. Thus, many large public companies with literally thousands of not millions of beneficial holders have relatively small number of shareholders "of record" and need not register with the SEC. The only reason for them to remain SEC registrants is to remain listed on our stock exchanges. See Commissioner Lee's excellent remarks at <https://www.sec.gov/news/speech/lee-sec-speaks-2021-10-12>

shares. It also provides a juicy opportunity for the insiders to scarf up the shares at a discount.

The following screen shot from Interactive Brokers shows NT, for Not Tradeable, for Amtrust's remaining public securities.

Company Name	Financial Instrument	Account
AMTRUST FINANCIAL SERVIC	AFSIA	NT
AMTRUST FINL SVCS INC DEP SH RE...	AFSIB	NT
AMTRUST FINANCIAL SERVIC	AFSIC	NT
AMTRUST FINANCIAL SERVIC	AFSIM	NT
AFSI 6.95 12/31/49 PFD	AFSIN	NT
AMTRUST FINANCIAL SERVIC	AFSIP	NT
AMTRUST FINANCIAL SERVIC	AFFS	NT
AMTRUST FINANCIAL SERVICES, INC ...	AFFT	NT

So let me get this straight: the SEC won't let brokers provide general access to a legitimate financial services firm like Amtrust, but at the same time is lets the brokers that it (indirectly) regulates push meme coins??? This makes no sense.

The SEC should require a 15c2-11-like process for US entities that offer participation in crypto tokens. Before offering such a token a form similar to 15c2-11 needs to be filed affirming that there is sufficient available information regarding

- Names and contact information for backers of token
- What the token does, including any legal rights of token holders.
- Appropriate information regarding the financial condition of whatever the token represents.

Dodd-Frank gave the SEC authority over ALL sales practices of broker-dealers and RIAs, not just securities.

§914(h) of Dodd-Frank reads (**emphasis added**) “
(h) OTHER MATTERS.—The Commission shall—
“(1) facilitate the provision of simple and clear disclosures to investors regarding the terms of their relationships with brokers, dealers, and investment advisers, including any material conflicts of interest; and
“(2) **examine and, where appropriate, promulgate rules prohibiting or restricting certain sales practices, conflicts of interest, and compensation schemes for brokers, dealers, and investment advisers that the Commission deems contrary to the public interest and the protection of investors.**”

Indeed, Congress felt so strongly about this that it inserted the same language both in the Securities Exchange Act and the Investment Advisers Act. Congress didn't even attempt to customize the language to make the Securities Exchange Act amendment refer to brokers and dealers and the Adviser's Act amendment only to RIAs. Instead, both sections refer to brokers, dealers, and investment advisers.

Note that this is in addition to the grant of authority in §914(f) regarding the standard of care for advice supplied to retail investors about securities. This authority §914(h) is NOT limited to securities. As Congress repeated this in Dodd-Frank, let me repeat this again: This authority is NOT limited to securities. Thus, the Commission has explicit and broad rulemaking authority to deal with ALL sales practices of broker dealers and RIAs, not just those having to do with individualized advice to retail investors about securities. In particular, the Commission has authority over the sales practices of everything that broker dealers and RIAs sell, including crazy cryptos and dodgy annuities. It is in the public interest and the protection of investors for the Commission to exercise this authority. I recommend that the Commission update Regulation BI to clarify that it applies to all sales practices of broker dealers and RIAs.

Protect us from bad executions! Apply best-ex requirements to crypto.

Brokers are held to very strict best execution requirements for transactions in securities. Most consumers will naturally expect that the same protections apply for cryptos. Brokers should be held to the same best-execution requirements for cryptos, including disclosures for payment for order flow. I suspect that many of

the brokers and money transmitters trafficking in crypto have execution practices that would not pass muster in the equity space. This is a mass fleecing which should be stopped.

Permitting GBTC to become an exchange-traded ETF will bring its trading into the highly regulated exchange world where the highest best-execution practices are observed and enforced. Investors will be better protected trading crypto-based products on our national securities exchanges than trading them directly with their brokers.

Protect us from money transmitters acting like brokers!

This vital aspect of consumer protection could be a bit harder for the SEC, given our archaic and obsolete regulatory structure. The SEC generally does not regulate money transmitters, who are regulated mostly by the states with a large helping of FINCEN. I suspect that the SEC's instinctive reaction is "We don't regulate them. Go talk to their regulators, if you can figure out who they are." This sort of made sense when all the money transmitters did was send money from one person to another like the old Western Union.

However, some money transmitters such as PayPal have morphed into crypto brokers. They are not really selling the service of moving crypto money from one person to another, but are now pushing speculation in crypto. Here is a screen shot from the PayPal web site:



Buy, sell, and hold crypto with confidence

Use the app to stay up to speed on the fast-paced digital market of Bitcoin, Bitcoin Cash, Ethereum, and Litecoin.¹

Get the App Discover Crypto

Crypto Asset	Price Change
Bitcoin (BTC)	↑ \$\$\$
Bitcoin Cash (BCH)	↑ \$\$\$
Ethereum (ETH)	↓ \$\$

Notice the ad says nothing about using PayPal to transmit crypto from one user to another. PayPal is acting as both a broker and a depository institution, not just a money transmitter.

This brings up numerous investor protection considerations that state money-transmitter regulators are not well equipped to handle. These crypto brokers should be required to adhere to the same rules as other brokers, including FINRA registration, Customer Protection Rule (15c3), Regulation BI, Know Your Customer, and best execution requirements.

In the past the SEC staff has opined that certain cryptos are not securities, creating a loophole for the money transmitters and others to slither through. The SEC can and should revisit this issue, just as it has revised no-action letters over the years. I do believe, like former Chair Clayton and current Chair Gensler, that most fungible cryptos are securities.⁸ They can be classified as investment contracts, and thus securities, under the now famous Howey Test as follows:

- *An investment of money.* People spend money on cryptos, either directly on a fiat-crypto basis or indirectly by exchanging another cryptos with value.
- *In a common enterprise.* Digital assets such as bitcoin are fungible and tradeable. The value of a particular digital asset is commonly determined.
- *With the expectation of profit.* Clearly, people are buying cryptos because they expect to make money.
- *To be derived from the efforts of others.* Without the crypto miners, there would be no tokens. Crypto assets clearly get their value from the anticipated actions of the miners, and thus the efforts of others.

Since most tokens are securities, the money transmitters that are trafficking in them are acting as unregistered brokers in securities. The SEC should bring them into compliance through an explicit but not-too-painful on ramp. It should not rely upon Regulation by Enforcement (RBE), which will result in decades of litigation and regulatory uncertainty.

Furthermore, the SEC can interpret each address holding a crypto token as a shareholder “of record” unless proven otherwise. Since most major tokens have many thousands if not millions of addresses holding their tokens, most cryptos

⁸ Even though the IRS treats tokens such as bitcoin as commodities for tax purposes, such tokens could still be securities for the purposes of our securities laws.

would meet the requirements for registration under Section 12 of the Securities Exchange Act.

Protect us from regulatory uncertainty!

The point is that there is a crying need for investor protection, and that all financial services should be on a consistent footing. Somebody has to do it! And it makes sense for the SEC to do so. Most of the people and enterprises working within the digital asset industry want to comply with the rules. They just need to know what the rules are. The lack of clarity from regulators creates a Kafka-esque environment in which no one will tell them what the rules are and how they apply.

The SEC need not be embarrassed to update its views on digital assets as we have all learned much more over the years of the crypto revolution. The SEC has revised and withdrawn many staff no-action letters over the years. The previous staff comment that Ethereum was not a security should be overturned.⁹

I know that the SEC has suffered serious setbacks as various rules have been thrown out (sometimes rightly so) under judicial review. This may make the SEC extremely cautious, especially while fighting a death match with Ripple in court. My advice is to not fear the courts, but just do the right thing. While I am not now, nor have I ever been, an attorney, my observation is that the courts have generally applied a common sense smell test.¹⁰ If what the Commission did clearly made good sense to the courts, then the courts upheld it in the spirit of Chevron deference. If the Commission's action didn't clearly make good sense, then the courts accepted the arguments of the plaintiffs and threw it out.

What I don't recommend is more Regulation by Enforcement (RBE). RBE will keep the SEC bogged down in litigation such as the Ripple death match.

Declare an amnesty for token issuers and platforms who agree to comply with a simple principles-based crypto disclosure regime.

Instead of RBE, put out an interpretation that virtually all of those fungible tokens are securities, and declare a no-action amnesty period for those market participants (including issuers, "exchanges," wallet providers, and money transmitters) who

⁹ See <https://www.sec.gov/news/speech/speech-hinman-061418>

¹⁰ I have not even played one on TV, either.

notify the SEC within 60 days that they are beginning the process of registration and compliance. This should bring the money transmitters and other crypto entities into compliance with the customer protections that US citizens demand.

New technology requires new rules.

However, don't make the mistake of trying to shoehorn new technologies into old rules. As the economics of some of these tokens are often quite different from traditional brick and mortar enterprises, it does not make sense to require exactly the same rules.

New technology often requires different regulation to achieve regulatory objectives. For example, New York city taxicabs are required to be painted yellow so that riders can identify them, and to have bullet proof screens to protect the drivers from robberies. Ride-sharing services such as Uber and Lyft use technology to show the rider what the car is, along with its license plate number. There is no need for a yellow paint job. Likewise, as cashless operations, there is negligible risk that the known riders will attempt to rob the drivers, eliminating the need for a bullet proof shield.

The SEC needs to focus on how to meet the objectives of our securities laws in light of how this technology is different from traditional securities. For example, most crypto exchanges and their defi brethren are very transparent, so there is little need at this time to impose additional trade reporting rules. Similarly, it would be premature to impose Regulation SCI requirements immediately on the industry, although cyber security is an extremely important issue.

Like other jurisdictions, the SEC should adopt a principles-based sandbox approach. This allows the SEC to learn from experience. The SEC should use its broad exemptive powers under Section 36 of the '34 Act to waive the more onerous requirements of SEC compliance.

Create a simple token disclosure regime.

Create a sandbox-like super simple registration process for issuers of tokens which makes it easy for legitimate tokens to comply. Don't worry about getting it perfect on the first try. This space is evolving rapidly and the perfectly right rule today

could be the perfectly wrong rule tomorrow. Start simple, and only add more requirements later when it is clear they are needed.

Again, create a simple equivalent of 15c2-11 for brokers and exchanges quoting such tokens. What is really needed is disclosure of the humans behind a token project, their financial interest in the tokens, and a comprehensible description of how it works. This will make it easier to identify and prosecute the real fraudsters. Again, the focus should be on making it as simple as possible to get most of the legitimate tokens into our regulated financial system.¹¹ Disclosures need not be the same, and indeed should be different, from traditional disclosures. Again, more disclosure can be added later.

Let crypto exchanges become a type of ATS.

The current generation of crypto exchanges combine the functions of brokers, custodians, trading platforms, and settlement institutions. The SEC should start with a simple sandbox approach to bring them into the regulated world as a type of ATS. Experience over time will tell what types of regulations are best suited for this environment. Start by promulgating basic principles, and see how it works.

Rely on brokers, rather than Accredited Investor Apartheid, as gatekeepers.

It is natural to wonder how to protect investors from their own lack of sophistication in the shark-filled waters of the token metaverse. The temptation is to copy the current caste system in which poor investors are prevented from investing in securities to which the accredited rich have access. The current system incorrectly conflates wealth with financial sophistication, and serves as a barrier preventing the less wealthy from accessing wealth-building investments.

A better approach for the Wild West of tokens is to make the brokers the gatekeepers. Require brokers to assess the knowledge level of potential crypto investors, perhaps by making them take a test demonstrating that they know what they are investing in as well as how risky those securities are. This would be similar to, but more stringent than, the approach used in granting option trading permissions.

¹¹ I define “legitimate” tokens as those created by people honestly doing something, versus a clearly fraudulent artifice to deceive.

Furthermore, it would be prudent to have rules requiring brokers to place permission limits on crypto exposure to some fraction, say 5%, of their stated net worth or annual income. This would be in the public interest in that it would reduce the risk of investors blowing up their IRAs and becoming wards of the state.

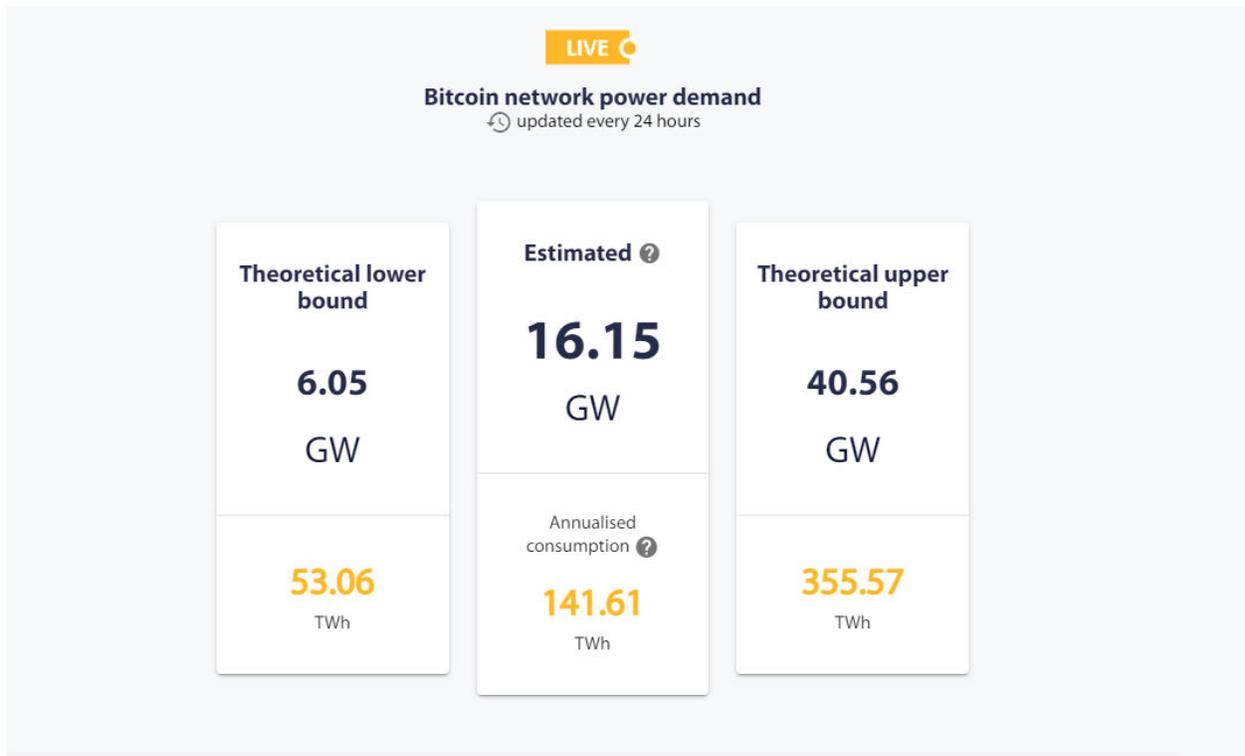
Protect us from the environmental damage of crypto mining!

It is no secret that bitcoin 1.0 is an environmental disaster.

Bitcoin in its current incarnation uses a consensus mechanism known as “Proof of Work” (POW), which is really Proof of Waste.¹² The University of Cambridge publishes the Cambridge Bitcoin Electricity Consumption Index.¹³ As of this writing, they estimate that bitcoin mining is consuming approximately 16 Gigawatts of electricity:

¹² The processors of bitcoin transactions are known as “miners”, which evokes the environmental damage caused by sloppy physical mining activities. A miner earns bitcoins by gathering a group of bitcoin transactions into a block. In order to be paid in bitcoins, the miner has to be the first to solve a math problem that involves brute force guess work. In short, they guess a big number that gives the block of transactions a specific mathematical property. In technogeek terms, they guess a number called a nonce such that the SHA256 hash function of the block header has the right number of zeros at the beginning. Computers have to do the calculation of this hash function over and over again, which is why the hash rate is a good indication of how much computing effort is going into bitcoin mining.

¹³ <https://ccaf.io/cbeci/index>



I am a former electrical engineer with utility experience.¹⁴ I have independently made my own calculations that are comparable to the Cambridge calculations. If anything, the Cambridge estimates are on the low side.¹⁵

How much electricity is 16GW? That is 16,000 megawatts of electricity, or 16,000,000 kilowatts. That is enough to power approximately 16 million homes. A large nuclear power station like the one at Chernobyl is approximately 1 GW. Bitcoin is currently consuming the equivalent of the output of 16 Chernobyls. Here is a graphical representation:

¹⁴ I earned my engineering degree from the California Institute of Technology and worked at Pacific Gas and Electric Company after graduation.

¹⁵ It is actually a straightforward calculation. The hash rate involved in mining bitcoins is easily calculated from the difficulty parameter built into the bitcoin protocol and is widely disseminated on web sites such as blockchain.info. The hashing power and electricity consumption of standard bitcoin mining hardware is also easily determined. Divide the hash rate by the hashing power of industry standard mining computers to determine how many mining computers are in operation. Then multiply by the energy consumed by the industry standard mining computers to see how much electricity is currently being squandered on mining bitcoins.

































Of course, the marginal fuel on this planet is not nuclear, it is carbon based. The implications for climate change are clear: Bitcoin mining is adding significantly to the output of greenhouse gas emissions. The electricity consumption of bitcoin is thus the equivalent of 16 large coal or gas fired power plants. All to process only 3-5 transactions per second on the base bitcoin blockchain.

Many bitcoin apologists are in denial about the environmental damage being done by bitcoin mining. They find it hard to believe that their bright shiny crypto child could possibly do any wrong. Just like the tobacco industry, those with an economic interest in bitcoin mining are waging a FUD campaign to try to convince everyone that bitcoin mining is good.¹⁶ Often they will pretend that bitcoin miners are only using moonbeams and good vibes to mine bitcoin. They will claim that their bitcoins are being mined with renewable energy because the power grid they

¹⁶ FUD = Fear Uncertainty Doubt. For references on the tobacco industry FUD campaign see <https://www.ucsusa.org/resources/disinformation-playbook> See also, *The Cigarette: A Political History*, by Sarah Milov, Harvard University Press, and *Golden Holocaust*, by Robert N. Proctor, University of California Press.

are attached to gets part of its energy from renewable sources such as solar and wind. They will claim that their electrical demand is good for the electrical grid because they can turn off their mining rigs when the grid is short of electricity.

The problem with the miners' defense is this: What matters in terms of carbon emissions is not the average generation mix, but the marginal. In an electrical grid, electricity is comingled from all of the generation resources on the grid: Coal, gas, nuclear, hydro, solar, wind, et cetera. Think of it as one big pool of energy. Renewable sources such as solar and wind generally deliver all they can to the grid on a continuous basis. They are generally not dispatchable, and cannot be called upon to put out more energy upon demand.

When an additional load is placed on the grid, the grid has to generate more power to meet the load.¹⁷ On most electrical grids on this planet, that marginal electricity is generated with a fossil fuel. Thus, even if some of the electricity on the grid is from a solar panel, when an additional mining computer is switched on, it is spewing more carbon dioxide into the atmosphere. This is true even if the miner claims to have purchased "green" electricity from another provider on the grid. Again, all of the electricity on a grid is commingled together. It is the marginal load that matters. It's just physics.

Bitcoin apologists will claim that bitcoin is being mined with stranded or waste energy that would otherwise not be used. It is true that there is some of that, but it accounts for a tiny fraction of bitcoin mining. For example, some oil production facilities also produce natural gas as a byproduct in places where there is no pipeline yet to carry the gas to market. That gas is thus flared for safety reasons or, worse yet, just vented into the atmosphere.¹⁸ Thus, there can be some bitcoin mining done with electricity generated by burning natural gas that would otherwise be wasted.¹⁹ Occasionally, a hydro or wind resource may have more capacity than demand and have to curtail generation, but such instances are quite rare. The reality is that most bitcoin mining results in the burning of additional carbon-based fuels.

Higher bitcoin prices = more CO2 output.

¹⁷ If it did not, the frequency would drop and the grid would begin to collapse.

¹⁸ Natural gas (methane) is an even more potent greenhouse gas than carbon dioxide.

¹⁹ Of course, such gas can and should be pumped into the ground for sequestration or later production.

The bitcoin protocol is designed to produce one block approximately every 10 minutes. Each block can hold only about 2,000 to 3,000 transactions, which puts a hard limit on the capacity of the basic bitcoin network under the current protocol. When more miners join the system, their combined computing power makes it possible to produce a block faster. However, when that happens, the protocol then adjusts the difficulty to keep the average block time at about 10 minutes per block. Thus, the capacity of the bitcoin network will not increase unless there is a consensus to change the protocol. Unfortunately, protocol changes to increase the capacity and scalability of the bitcoin network have been very difficult to achieve due to the governance, or more accurately, lack thereof, of the bitcoin protocol.²⁰ Bitcoin “maximalists” claim that this inability to substantively change the protocol is one of the big advantages of bitcoin.²¹

Bitcoin miners compete to process bitcoin transactions by solving a math puzzle that involves guessing a big number through brute force trial and error. The bitcoin miner who is the first to guess the right number is rewarded with some newly issued bitcoins along with the transaction fees associated with the transactions in the block. Thus, when the price of bitcoin goes up, there is an incentive for more miners (including those with less efficient hardware and more expensive electricity) to mine bitcoin. The addition of more mining capacity will push up the difficulty in order to keep the average block time at ten minutes. Thus, this increased capacity will not increase the transaction handling capacity of the bitcoin blockchain, but just lead to more computers chasing after the now more valuable block reward.

This means that a higher price for bitcoin will lead to more mining and more CO2 output. Anything that increases the price of bitcoin will incentivize more mining, even from those with less efficient computers or more expensive electricity. As the marginal fuel on this planet is carbon-based, that additional mining will result in more CO2 in the atmosphere.

The SEC should require entities involved in bitcoin and other Proof of Waste cryptos to communicate, not just “disclose” the truth.

²⁰ See <https://medium.com/hackernoon/the-great-bitcoin-scaling-debate-a-timeline-6108081dbada>

²¹ See <https://bitcoinmagazine.com/technical/bitcoin-will-never-change-to-proof-of-stake>

The SEC has broad powers to force registrants to disclose information. Unfortunately, such “disclosures” are usually buried in tons of legalese that usually aren’t read, let alone understood, by most investors. Furthermore, they are usually written by the best lawyers that money can buy to conform with the letter of the law while blatantly evading the spirit. Most disclosures are written at such a high level that only those with advanced degrees can understand them.

The SEC should require those pushing crypto products to not only tell the truth about those products, but actually clearly and conspicuously *communicate* those truths. These include:

- Brokers and advisers must repeatedly communicate in clear and conspicuous language the direct monetary risks, cyber risks, and environmental consequences of crypto products. ALL CAPS DISCLAIMERS BURIED AMONG SEVERAL PAGES OF UPPER CASE MINUTIAE ARE NOT SUFFICIENT. Indeed, it is actually harder to read stuff in all capital letters.
- Corporate issuers that hold bitcoin should be required to disclose their bitcoin holdings, and include the associated carbon emissions in their calculations of their environmental footprint.
- Bitcoin miners must disclose their electricity consumption, both in terms of capacity (megawatts) and energy usage (megawatt-hours). In addition, they must disclose the types of generation sources (coal, wind, etc.) for their electricity suppliers, both average and marginal, and disclose this as part of their climate disclosures.

Summary

The time has come for the SEC to approve spot bitcoin-based ETFs. Doing so will move more of the crypto activity onto the best regulated market in the world, our national market system. The SEC should move in a gentle way to create an appropriate regulatory environment for crypto tokens that enhances consumer protection.

Instead of Regulation by Enforcement, offer a no-action period for those crypto purveyors willing to come in from the cold and register with the SEC. Let crypto exchanges become a type of ATS, and let ATSs trade crypto tokens for which a crypto version of 15c2-11 provides basic information to investors. Protect the

unsophisticated investors by making the brokers gatekeepers who restrict crypto trading to small fraction of net worth by investors who understand what they are doing.

Respectfully submitted,

James J. Angel,

Georgetown University