

Plodding Mediocrity of Crypto Regulations

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Foreword

Thanks to Peter Van Valkenburgh, Coinbase team, Marco Santori, Ryan Selkis, Preston Byrne, Bart Mallon and Marina Guledani for bringing cascade of resourceful information, without them, I probably wouldn't be able to grasp the regulatory reality so insightfully.

Following is a long Public Service Announcement (PSA). Because many people participate in crypto economy, either through technological contribution, speculation, investing or else, I feel there is a need to shed a light on some issues that are not loud enough. Ideally crypto economy is built around the open-source and most of the information must leave private chat rooms and be available to the public. I am pretty sure the issues I will try to cover are much better analyzed by the relevant people in respecting fields, but because a) these issues look boring, b) are not popular "bull" views and c) are not commercial in nature they are deprived from the light. I consider them to be worth the awareness of the common public, to make public think about these issues and deliberate more. Unfortunately I'm not submitting solutions at this stage, but status quo in the field looks a little bit appalling to me.

Title of this PSA comes from Justice Cardozo's quote¹. Throughout my research around financial market regulation and practices I've come across him multiple times and I will bring Justice Cardozo's quotes at multiple instances here. I think that crypto regulations should take the path of "plodding mediocrity" and in some certain way they do have tendencies to lean towards it. There is bore and avoidance when it comes to crypto regulations, but because we are witnessing new approach in dealings of our wealth we must give regulations more care and thought, and not only people with backgrounds in law but somebody who came into this field to pay off his debt or next rent must have adequate understanding and knowledge of it - this is not hard.

I have to admit that status quo is not the optimal way to describe what I think I see, but I had to use it because a small surrender from this community to anything as challenging as the regulatory opinion at this stage is a really missed opportunity for the decentralized promise. Nothing is ever rainbow and Giancarlo is not the Godsend (but boy he's good), I'm going to list few things that are not your generic ICO banter, but are regulatory in nature and from my perspective require us to be more careful² and to give us more thought rather than excitement. Almost everyone is asking easy questions, trying to avoid the hard ones and to satisfy their instant needs for the sake of stability, everyone is trying to pass their responsibility to the nearest entity and/or authority.

¹ *"In truth, I am nothing but a plodding mediocrity — please observe, a plodding mediocrity — for a mere mediocrity does not go very far, but a plodding one gets quite a distance. There is joy in that success, and a distinction can come from courage, fidelity and industry."*

² Reference to Last Week Tonight Episode aired on 3/11/18 - <https://www.youtube.com/watch?v=g6iDZspbRMg>

I'll make a guess and say that my perspectives and point of views would be irrelevant to most of the people who are well-versed in the United States regulations, ones who have an opportunity to discuss e.g. Proposed Rule 82 FR 60335³ in afterwork hours with peer crypto enthusiasts, but I would like to challenge them. Crypto is a global phenomenon, this is not a tool for me to send a message to a dog⁴ in the United States, this is a movement of the global wealth, the global capital fund raise, it requires one to know the possible risks of exposing oneself to various jurisdictions. I know, at least, that it made me want to pry and see the mechanics behind the most developed financial markets and those mechanics are usually legal texts enabling and regulating financial transactions of any kind. Because I have to observe non-native regulatory environment and apply it to a nascent field of decentralized infrastructure in my native jurisdiction, I of course tend to observe the most well developed and regulated one and that is - United States. And if an opinion of a non-U.S native is not counted towards developing robust crypto regulations than how are we going to deliver on the promise of global crypto economy of interconnectedness. I get excited from the thought of being able to easily participate in the U.S economy from ten thousand miles away, but if regulation stifle this excitement, then we just get another asset class that was taken advantage of in the form of speculation at its inception. I know my voice is not loud enough as of any of those whom I've mentioned in the beginning, but I think that crypto needs outside perspective for the inside workings that might have global influence on the industry overall.

If you zoom-out of your crypto agenda, if you remove all of its decentralized promises, new infrastructure promises, new built-in incentives and if you look at it as a tiny event on the course of evolution, it will look like a small dot where technological advancement has been overtaken by the greedy capital appropriation. Capitalization on this technology came too quickly and to see how many people gained from it really distorts some aspects of its promises. Eventually it will pop and I hope that fundamentals will keep it alive. It depends what pops first although, this technology or any other big market that might channel new wave of funds towards it again. Beware the noise is big and loud as crypto inherited flawed influence of the widespread social media feeds.

Disclosure (if this counts as one): I own some digital currencies and I am an analyst in a non-US, private investment firm. I am optimistic about the technology as any other twitter follower you've got, but I cannot help myself to question everything I read. I'm not paid to read and understand all U.S federal regulations and to think what can come next. Although I'm lucky enough to have luxury to delve into this subject enough to scratch the surface of it and to understand the principles, hope I'll get paid for that later.

³ CFTC issued proposed interpretation of the term "actual delivery" as set forth in a certain provision of the Commodity Exchange Act <https://www.cftc.gov/sites/default/files/idc/groups/public/@lrfederalregister/documents/file/2017-27421a.pdf>

⁴ https://upload.wikimedia.org/wikipedia/en/f/f8/Internet_dog.jpg

Challenges of a remote fund manager

I would like to elaborate and discuss the challenges and perspectives of fund managers from around the world and their approach towards the crypto regulation. One of the benefits that this industry has brought is that it democratized fundraising to some extent. While I might be argued that it did not, because democratization did not come from the fundamentals of the technology but from the lack of any regulatory oversight, I will counter this that technology bears the promise of such democratization and high influx of funds from all over the world forced the regulators, if not to rethink, to at least challenge their opinions, requiring of course important steps in rule-making (these are addressed at the later stage here).

This leads to an interesting challenge for a fund manager the one who is not based out of a well developed economy with strong financial markets, but the one who sits in a developing economy where demand for crypto assets has skyrocketed as its prices have surged in 2017. Of course I've met many fund managers who can not care less about clarity in regulatory environment and are just focused on tripling/quadrupling etc their assets under management, I do not question their motives and I do not think they will relate to these challenges anyhow.

Challenge A: Regulatory outlook

Due to the high interest from investors around the world, there is a trend where fund managers are getting much more acquainted with SEC and US regulations in general. This is due to the lack of a good legal framework in the financial markets in developing economies. As United States has the most complex and developed financial market, fund managers are usually seen to be looking at the US regulations and its signals, trying to abide or replicate their rules into their management. But this is neither a great solution, nor an easy job to do, each jurisdiction is different, has different culture and societal structure, but the biggest gap might be the fact that these managers are looking to the regulatory bodies and signals of institutions that are themselves not yet aware of how crypto must be dealt with, and so this leads to the very distorted perspective that can harm the market overall, because it is in an early stage.

Because there is no regulatory clarity for me to classify any given token as a security or a commodity or a currency per existent legal guidance in jurisdiction where I operate⁵, and because I do not want financial authorities to jump in too early, I quietly start to research the best practices. I personally look at the US capital markets and laws that regulate them. My reasons to do so are a) they are the deepest markets, b) they are the most interconnected and complex markets, c) they are the most developed markets and d) I prefer english reading to a french⁶ one (although I do speak french and EU publishes in english as well, plus EU's

⁵ *Existent legal guidance in non developed economy is important because there is additional uncertainty on how to classify crypto assets in developed economies - more on that later*

⁶ *This is simple show off*

regulations might be more relevant to what course my country will take towards capital markets, still I can't avoid the fact that United States is projecting the best possible image in regards of its financial capabilities). I am following MiFID II⁷ as well but not closely and I am not at all following what happens on Moscow Stock Exchange, South African or Dubai and Singapore markets, although these markets can be praised by others and are more flexible regulatory-wise because they are not operating under the pressure of greater interconnectedness. I think it is great to review these new markets because they are adjustable towards friendlier regulations and that is what the headlines I see are saying. If I had more time and if I read Russian much faster I'd dig more into them, but after all I'm not a volunteered lawmaker at all and I think that at the end of the day U.S. will be the main rule-maker, e.g. when SEC published report on the DAO⁸ and deemed DAO tokens securities, Singapore's MAS was quick to follow and update their loose regulations⁹ to look more like that of the SEC.

Why do I need to pick one regulator who will set the tone per my understanding for the whole industry? Because regulatory signals must be interpreted well, understood well, they are going to help you manage your long-term commitment and they will help you to envision the future for the crypto market in a clearer way and because it is your duty to manage funds responsibly a) towards your investors, b) towards the community from whom you've purchased any tokens and because while operating in a small market, rule-makers (who do not have enough understanding of crypto market) will seek out and approach you with recommendations and you need to be ready to provide them with some guidance. This guidance requires that you both understand how complex non-crypto markets work (long-term crypto planning) and how crypto challenges financial world through technology, I'm not saying you will come up with a solution, but you can come up with recommendations.

These recommendations if implemented by any government will be broadcasted globally through headlines on twitter and market will respond to it in shorter term.

N.B. this is not a discussion about governments creating friendlier environments for crypto startups through regulations such as Zug's crypto valley, note well, that startup will not move to any place where regulations are loose, as a startup you want to move to a place where taxation is not killing your business, where economic activity and talent pool is available and where clear regulations will give you flexible guidance.

⁷ MiFID is the Markets in Financial Instruments Directive (2004/39/EC). It has been applicable across the European Union since November 2007. It is a cornerstone of the EU's regulation of financial markets seeking to improve their competitiveness by creating a single market for investment services and activities and to ensure a high degree of harmonised protection for investors in financial instruments.

⁸ Refer to this address to read the report: <https://www.sec.gov/litigation/investreport/34-81207.pdf>

⁹ Singapore MAS updated report on crypto currencies <http://www.mas.gov.sg/News-and-Publications/Media-Releases/2017/MAS-clarifies-regulatory-position-on-the-offer-of-digital-tokens-in-Singapore.aspx>

Challenge B: Contribution to the market law

Another challenge that I had to face was that fund managers have to contribute to the adequate crypto rule-making in their jurisdictions - how do they proceed with this? Do they consult with financial authorities and if yes how do they do it without bringing conflict of interest. This is an unfortunate goat rodeo¹⁰ that most fund managers run into, but few admit, because raising concerns in a booming¹¹ market while profiting seems outrageously decent from a fund manager.

Of course I think that fund managers are not the only people who can contribute, but these are the people who usually have direct commitment to a) research adequately the regulatory risk and understand it and b) to resort to anything to make sure law is consistent with their stakes toward their holdings. Going to sleep peacefully when you're managing a portfolio of \$30 million for example, is a challenge when you understand that people in charge of regulations in your country have zilch of a grasp towards crypto related topics.

For the fund managers like me and others in my region, especially those who are young, this leads to a thinking of how we want capital markets to be regulated in general (at the Georgian Stock Exchange we only had 75 trades in 2018 so far¹²), do we replicate the old rules from the most complex financial market that is U.S. or do we really create a new task-force and tackle these issues in a fresh manner. It is very hard to push for crypto agenda when there is no capital markets agenda in some economies, this might seem good for crypto because it is free to roll, but in fact this is bad because bad actors might be pushing their own large agendas to the policymakers and crypto topics might be completely omit from them.

To further complicate this issue, lets say in developing economies there is no need for special authorities such as SEC or CFTC, in most cases a simple financial authority such as Central Bank will take the realms of financial rule-makings and crypto (and even in worst cases - capital market) will not be priority in their mandate. It is understandable that big markets urge the creation of special authorities such as SEC or CFTC, but without them pushing a right regulatory agenda is harder. So how to proceed the best with a) adopting healthy regulations for crypto while b) avoiding conflict of interest?

Contribution should happen by educating developers, people who have hands on experience with technology, we should educate investors who have holdings in crypto and who can have a voice in rule-making, because investor protection is a common sense these days. We must educate capital market lawyers who are eager and interested in the technology and we

¹⁰ A Goat Rodeo AKA Goat Rope, is about the most polite term used by aviation people (and others in higher risk situations) to describe a scenario that requires about 100 things to go right at once if you intend to walk away from it.

¹¹ As of the date of this publishing it might seem questionable that we are in the booming market, when since 2018 market has been consistently bear - this trend refers to what happened during the the last two quarters of 2017.

¹² Data from Georgian Stock Exchange from 01/01/2018 to 03/23/2018 http://www.gse.ge/en/trades?securities_id=&from=Jan+1+2018&to=Mar+23+2018

must educate economists who call crypto bullshit, without understanding underlying technology.

Somebody has to do the job of keeping an eye on what happens in the developed economies and somebody has to track the regulatory sentiment and progresses there. We have to opine on these progresses in circles available to us and try to see how these said progresses can work in specific jurisdictions. Then we have to talk and educate everyone involved. We should not be taking seats of lawmakers, because I think this can become ugly with some fund managers promoting their particular agenda. This is why fund managers must become sort of catalysts, consuming this sort of information, processing it and adapting it to eventually share it. Developers should not spend time on reading comments on CFTC rulebooks, or Securities Exchange Acts and its amendments, capital market lawyers should not spend time consuming abundant number of white papers and reading MPC¹³. Fund managers though have vested interest in technology and in regulatory environment, they have skin in the game compared to the chairman of X agency that will endorse Y bills.

¹³ *Enigma's white paper* https://s3.amazonaws.com/enigmaco-website/uploads/pdf/enigma_full.pdf

Key takeaways from recent Senate and House hearings

So far I've explained the reasons why a fund manager based out of developing economy can be willing to watch happenings in the United States regulatory environment. This leads me to point out my views on recent Senate and House hearings. I've covered Senate hearing in more detail before¹⁴ but this time I'm going to dryly cover what was said, during both of those hearings. I will place the remarks and comments that will have a recurring importance in the remainder of this work in *italic*. This part risks to look dry but it will serve me as the foundation for the issues I'll try to address and that are going to be more specific, going beyond "how to create ICO-friendly regulatory environment".

Once again this is a perspective of an outsider view on the insider rule-making, I did not grow up with my family discussing their 401ks, nor I was raised with any understanding of brokerage because there was none around. This all is an acquired perspective on the issues that (if passed) will not influence my behavior as a citizen, but as an actor in crypto economy and its decentralized promise they will influence the market we all want to participate in, thus my input.

Senate Hearing

It was a well anticipated hearing (by crypto enthusiasts) in Senate committee of banking, housing and urban affairs with testimonies from Jay Clayton (chair of SEC) and Chris Giancarlo (chair of CFTC). To a wider public and mostly non US natives, the role of this hearing must be well explained¹⁵ not to cause overreactions, although I am not interested, nor well-versed in explaining the process of how US legislative body works.

When hearing concluded the general consensus in the community was that it was a positive hearing, with no regulatory body saying that any form of blockchain based digital asset needed to be outright banned. Clayton and Giancarlo would acknowledge their understanding of the matter, giving these digital assets more credibility. It is important to understand both chairmen, the complexity of their works, mandates and agendas in between all the work that their agencies provide to one of the most complex financial markets, they arrive to foster the innovation and be supportive of it, it forces us to grow substantial respect for both of the chairmen.

Tones of both SEC and CFTC chairs differed. Giancarlo showing a bit more "love" for crypto, even praising bitcoin by saying "If there were no bitcoin, there would be no distributed ledger technology". Clayton on the other hand being more blunt in these regards and pointing to the fact that so far all of the ICOs that he has seen were securities and that he's eager to work

¹⁴ About that Senate Hearing by Giorgi Gurgenzidze <https://www.entropy.fund/blog/senate-hearing>

¹⁵ I'm Just a Bill - a cartoon explaining process of how bill is passed <https://www.youtube.com/watch?v=FFroMQIKiaq>

with DOJ and other agencies in terms of the enforcement. *On the question about the issues with oversight Clayton remarked about lack of human resources to provide enforcement*¹⁶ as well.

I would like to point that it was under Giancarlo's chairmanship that CFTC deemed bitcoin as a commodity¹⁷. Giancarlo, a republican who was sworn as chairman of CFTC in 2014, has created within CFTC a dedicated group - LabCFTC¹⁸. Meanwhile, SEC in July 2017 published its report into the DAO Hacking¹⁹ (that took place in 2016) and concluded that DAO tokens were securities and had to be registered within SEC in first place. Clayton assumed office in May 2017 and it can be considered that the investigation was initiated prior to him becoming head of SEC (no proof for this assumption though). This should not indicate that one chairman is more inclined into cryptocurrency than the other but it at least can indicate the longevity of one's exposure to the digital assets over the other. More broadly speaking senators and regulators were both knowledgeable about the topic, but it seemed that probably Senators' overall interest was to get answers to their questions and not to craft a general vision for a bill.

Ironically, hearing started with Senator Brown's remark on the "big banks" it was later echoed by Sen. Warren pushing that SEC ignored class action lawsuits, protecting banks and not investors, she later brought an ICO question concluding that most of the ICOs were unregistered securities and prompting from Clayton that none were registered as of the date of the hearing. Senator Brown throughout the hearing kept going back to the question if SEC was doing enough to tame wall street banks' greed. This is an interesting take, although it does have broader political implication from Senators providing comments to agencies and policies they disagree with, but again seeing this taking place during cryptocurrency topic hearing resonates well with the genesis block comment²⁰ that Satoshi included. After all those years proper banking regulation is still up to a debate. What probably neutralized this (if it ever needed to be neutralized) were few senators who shared their stories of how their family dinners included cryptocurrency discussions, with Giancarlo making the first remark on that.

SEC looks at the Securities Act of 1933 as a landmark legal piece of work and it surely is, but *having a more open attitude towards it would benefit the discussion*. It could be seen later on that *there are some gaps where regulators do not know how to act and lack oversight* (this was well referenced as "regulatory vacuum" in the House hearing). Although Howey test²¹ is a good rule of thumb for any ICO raising entity to see if it is offering a security or not, I would be glad to hear more from SEC about what monitoring mechanisms of securities or blockchain tokens would be. As Marco Santori opined last year on Token Summit "*securities, especially*

¹⁶ Have fun with this tweet <https://twitter.com/woonomic/status/973725298444328960>

¹⁷ CFTC statement deems bitcoin as a commodity in coinflip case <https://www.cftc.gov/sites/default/files/idc/groups/public/@lrenforcementactions/documents/legalpleading/enfcoinfliporder09172015.pdf>

¹⁸ LabCFTC oversees and educates people on virtual currencies and fintech <https://www.cftc.gov/LabCFTC/index.htm>

¹⁹ Report of investigation of The DAO <https://www.sec.gov/litigation/investreport/34-81207.pdf>

²⁰ In the first Genesis block satoshi included message "The Times 03/Jan/2009 Chancellor on brink of second bailout for banks" more on that https://en.bitcoin.it/wiki/Genesis_block

²¹ Coinbase, Coin Center, USV and Consensus initiative that addresses very well question of Howey Test <https://www.coinbase.com/legal/securities-law-framework.pdf>

*investment contracts, they can be investment contracts at one point in their life cycle and not be investment contracts at a different point in their life cycle and so on and so forth.*²² This seems like something not yet addressed from SEC's part and this will be challenged in House hearing by Robert Rosenblum, but this is an important input on the debate of regulation. During the hearing *PPM was hailed as the right way of raising funds, all while abstaining from doing Public Offerings unless registered*. Regulation D²³ provides companies with exemption from registration and SAFT is the example contract between issuers and investors so far (yet to be tested in court and recently under the rumored SEC review through subpoenas)²⁴. At the end of the day, as of now, it all boils down to you making an offering to accredited investors.

Peter Van Valkenburgh later supported the idea that not all ICO tokens are securities and bases this assumption on Howey test, which is very healthy approach, but unfortunately it didn't come out loud and clear directly from Jay Clayton. It would be helpful, otherwise actors in the field should be more worried at this stage. After all this confusion only feeds the thought that at some point there will be a sweeping enforcement coming from the SEC.

Another very interesting issue was raised as one of the Senators said "*what's the point of over disclosure if no one is reading it?*" and prompting CFTC chair to reply "I didn't read cover to cover the prospectus of the Index Fund that I've invested last time". This leads us to the point where we must admit that we need a better disclosure systems that function to the non-lawyer folks, mundane topics and lingo must be easily accessible to the regular investors. I would be even bolder saying that this movement will lead us eventually to the democratization of legal documents and it doesn't involve blockchain, it involves consumer attitude and linguistics, but its for another discussion. Take a note that disclosure issue will be brought in the House hearing.

Clayton emphasized that there was a need for clearer jurisdictional lines. Even though there was a lot of discussion about the cooperation between the agencies such as CFTC, SEC, Fed, the patchwork approach was brought up multiple times and that the current cooperation model was not enough to bring oversight and enforcement to the market, this is why federal level control of the market can become relevant in the upcoming hearings. But deploying federal level jurisdiction will be hard on those cryptocurrency exchange businesses that during the recent years suffered from expensive compliance of the state licensing. Unfortunately not much was said about state level legislation and MSB²⁵.

Neither SEC nor CFTC have jurisdiction over the spot markets for true cryptocurrencies. U.S. based cryptocurrency platforms have decided to be regulated for this cause as money-transmission services, which are state-regulated and not overseen directly by federal agencies. *It*

²² Marco Santori on the Panel at Token Summit New York 2017 <https://www.youtube.com/watch?v=IFYzOdxYGzo>

²³ Regulation D provides certain exemption when conducting securities offering <https://www.sec.gov/fast-answers/answers-regdhtm.html>

²⁴ Wall street Journal piece about SEC issuing subpoenas and inquiring about SAFT implementations <https://www.wsj.com/articles/sec-launches-cryptocurrency-probe-1519856266>

²⁵ BSA's requirements for MSB can be found here <https://www.fincen.gov/bsa-requirements-msbs>

must be brought up once again that there is a distinction between exchanges regulated by SEC or CFTC and all those user-friendly interfaces that crypto exchanges might be offering, the latter tremendously lacks oversight from federal agencies, they do not face any compliance mechanism that CMEX or NASDAQ are subject to have.

Bitcoin and similar cryptocurrencies that were deemed commodities had strong reasoning behind them, *which were not questioned*. As other commodities, bitcoin exists independently from any company or organization and is the result of the work that anybody can do to create it, much like oil and gold. But because bitcoin's market is not as big, as regulated and as interconnected as oil and gold, it easily attracts market manipulators and fraudsters. And this creates market supervision gap over spot transactions. CFTC that oversees commodity futures market has a limited hand of authority in the spot markets, all it can do is to investigate post-factum breaches, frauds and custody management as per Dodd-Frank Act. This leaves crypto exchanges out of the oversight and this is where Senators and regulators mostly seem to agree to fill the gap. SEC can oversee the exchanges that trade securities, CFTC oversees the exchanges that trade commodity futures - this is very basic. State licenses that some crypto exchanges have got do not perform the job of the market oversight that federal agencies require, hence the need to do something will become urgent as the market cap for cryptocurrencies will rise. State licenses are transitory regulations that exchanges can have till something more robust and controlling is in place. Peter Van Valkenburgh has mentioned multiple times against the complicated and insufficient mechanisms that these licenses provide, they are burdens to the promise of global movement of the digital assets as Peter has mentioned.

During the hearing other agencies were frequently mentioned in conversation, signaling that this was mostly the warm-up, with bigger hearing and larger testimony panel in sight. We might expect *at some point Consumer Financial Protection Bureau (CFPB) coming and bringing to the table number of consumer dispute claims towards crypto businesses.*

After the hearing Brian Quintenz (CFTC commissioner) noted that in order to fill in gaps identified by federal agencies, *the industry can resort to the formation of self-regulatory organization*. Passing any bill will take a long time and industry can provide a necessary oversight over the spot market exchanges.

Regarding ETF rejections not much was said but Clayton mentioned that they could be coming when the agency is comfortable to do so but first it needs to tackle the custody issues, SEC²⁶ looking into how hedge funds do custody might be indication for that. As for the CFTC's recent developments Giancarlo said that his agency got its hands on the cryptocurrency data through Bitcoin Futures market, which has volatility but "not as large as other assets classes like VIX. We have seen extreme volatility in bitcoin but in our world of commodities we are used to volatility in asset classes" Giancarlo mentioned.

²⁶ Wall street Journal about SEC investigating Hedge Funds and how they custody assets <https://www.wsj.com/articles/crypto-focused-hedge-funds-on-secs-radar-1521757104>

The debate here was about the fundamentals that these regulators look at, and so far, they are supporting the innovation and are being cautious about possible frauds. They show their understanding that crypto per se is nothing of a fraud, much the contrary, but its underlying technology makes it easier for scammers to scam people.

House Hearing

House's financial services committee held a hearing with panel consisting of participants in crypto markets such as Peter Van Valkenburgh - director of research at Coin Center; Robert Rosenblum - partner at Wilson Sonsini Goodrich & Rosati; Dr. Chris Brummer - professor of law at Georgetown University Law Center and Mike Lempres - chief legal and risk officer at Coinbase. This time panel had a hands on knowledge of legal topics around cryptocurrencies. Room at the hearing didn't seem to be packed with Representatives coming in and leaving the room as usual. This time again hearing started with a sound-bites towards the banks, but it did not echo in the remainder of the hearing as it did during the Senate hearing.

Lempres testimony focused on *how fragmented the guidelines from authorities are* and also outlined Coinbase activity on the market, emphasizing that they do not offer tokens to their customers that risk to be considered securities. Dr. Brummer put an accent on the importance of disclosure mechanism, mentioning the importance of S-1 filing with SEC, he included some basic disclosures such as location, problem and proposed technology solution, technology audit and publishing on the public domain as possible disclosure items. Rosenblum testimony recommended SEC to modify and amend their rules to conduct proper enforcement in the short term and for *the long-term consideration he proposed a unified disclosure and registration, saying that now it is early for the full fledged legislation, it is better to take a look at market movements and act accordingly*. Valkenburgh proceeded with explaining cryptocurrencies and bitcoin in a most understandable and eloquent manner saying "the fundamental achievement of Bitcoin and follow-on cryptocurrencies is digital scarcity" while pointing to the different types of crypto assets that exist today.

All testimonies differed in what they wanted to say and that was good. Lempres brought in use-cases from one of the largest cryptocurrency companies, Dr. Brummer talked about a really obvious and simple requirements, Rosenblum provided his vision for how to tackle the legislation in the coming time and Van Valkenburgh put a good description for each type of a token and their regulatory burdens.

Compared to the Senate hearing it was interesting to see two Representatives, Maloney and Budd, to raise questions of prospective bills that they are working on. Representative Maloney emphasized that she is working on the bill to regulate virtual currencies as investments, she implied that there will be a disclosure requirement that SEC will be able to enforce later on, but Dr. Brummer noted to her that not all virtual currencies are securities and SEC will not be able to enforce these disclosures on all the virtual currencies. In order for SEC to do so it will require to widen its authority. Howey test shows that some virtual currencies will

fail it (will not be considered investment contracts) and thus will not be considered securities. *Disclosure and another regulations as well will not stifle the innovation in the sector he said, it will promote healthy information sharing.* For the unsophisticated investors disclosures can help to let them know about the risks that they are taking, as is the case with all investment disclosures.

Another regulation promise was heard from Representative Budd who asked Valkenburgh that *if a security was under the jurisdiction of SEC would make a non-security a commodity.* Again Howey test was brought to representatives' attention and Valkenburgh followed with saying that EU was having more flexible framework towards digital assets and that people move to EU (Germany and Switzerland) because they provide more defined guidances and that SEC must as well provide one or we might see talent outflow. This is where it got interesting between panel members providing different perspectives on the same subject. Here Dr. Brummer said that EU has very undefined terms around virtual currencies under MiFID and that EU has as much uncertainty as U.S. and zero understanding of how it will eventually play out, as far as I understand Valkenburgh had a point, but Dr. Brummer broke it down to more regulatory pieces and his explanation seemed more right. While EU might be creating sandboxes that seem appealing to some companies, the overall sentiment from the EU is very vague as well.

I'd like to bring up Representative Emmer's very vocal comment (instead of getting answers to his questions he used his time to make more statements). What's interesting to me is that, apart from his republican banter on "fewer regulations", he was one of the few who questioned the classification of the crypto assets. He required for more clarity and followed by questioning "*what is a commodity, what is a security but as well what is a currency?*" This might sound a little bit naive but this is the question I'd like to address later in this discussion.

Another highlight came as an echo to previously mentioned Marco Santori's quote about security being investment contract at one point and not at another point in its lifecycle. This was brought up by Valkenburgh in regards to SAFT and later countered by Robert Rosenblum. Valkenburgh explained that what they do (token issuers) is that they sell the promissory notes in capital raising. Once it is past the development stage these promissory notes become commodities likely to be used (as others called them utility tokens). Here it became interesting as Rosenblum asked representatives that he's not yet been asked about his position whether a token must be considered a security or not and provided that he thinks regulators must abstain from drawing lines between when a token is a security and when it's a utility, it's open to second guessing and will be difficult to assess firmly. Thus it is better to first observe the market, provide necessary enforcement for investor protection and for longer-term provide legislation that will have simpler terms, accommodating both of the descriptions and thus avoiding any rigid movements as of now. He said that you can describe that something is or is not a security by the Howey test, *but not in the line of time when it goes from security to commodity - "this test does not provide this. Better have in the long-run a simple guidance that applies to both, so*

we avoid lawyers, courts, litigations and SEC". This is fresh perspective being expressed publicly and anything that challenges widespread opinion is worth discussion at this stage, for this Rosenblum's effort must be highly appreciated.

The hearing included lot of information in the form of replies by panelists, I'm willing to highlight some that I found pertinent to our further discussion.

Dr. Brummer was often bringing back the topic of disclosure saying at one point that Commodities and Securities Acts put a different emphasizes on disclosures that the House must take into consideration. Dr. Brummer argued that bitcoin is different from Gold, because digital currency is not tangible it is harder to understand, while gold is easier, because it's there and it's shiny and tangible. Commodities Act provides disclosures "as buyers beware approach", it is not thorough and imperative in its tone while Securities Act is, which makes disclosure a clear obligation with punitive implications for providing misleading information²⁷, and putting more obligations on relationship between contracting parties over securities and platforms of trade. Regulations around disclosure in the crypto tokens must take into account and harmonize these two approaches, maybe leaning towards the Securities Act tone, because bitcoin is intangible and not clear to understand for the most of the people who are there to invest.

Dr. Brummer also raised very interesting question that was the need to incorporate information sharing in the rule-making, so that they do not enclose the token economy, this is important but completely blank field now. This can play a major role of how the decentralized promise plays out at the end of the day, if we have one framework that works only in one jurisdiction and it protects investors within its confined borders then we might have an issue where the funds can not move easily and freely.

Lempres was explaining Coinbase's position, saying that they do not support ICOs, because it's the most vague issue for them and they, at this stage, do not deal with SEC because it is not yet clear what position it will eventually hold towards tokens that are securities, compared to CFTC which provides more guidance. Lempres mentioned that the state-wide licensing is not the most optimal attitude but he does not think there is a need to institute a new federal agency that will oversee crypto assets, *all tokens so far fall under existing asset classes* that each agency has jurisdiction to conduct oversight and enforcement, he said.

When insurance issue was raised Lempres said that *the cash deposits that Coinbase is holding are FDIC insured but apart from this nothing is compliant with any federal regulations would it be the cybersecurity or anything else like their hot wallets* where they hold cryptocurrency for immediate settlement and trades.

It was interesting to hear Coinbase making its decision to offer a new token, basing on the guidance from CFTC that said of *Bitcoin, Ethereum and Litecoin to be a commodities and*

²⁷ SEC released a statement where it blamed Theranos for misleading its investors during its fund raising practices <https://www.sec.gov/news/press-release/2018-41>

then Coinbase including Bitcoin Cash on the basis that it is a fork of a Bitcoin, thus a derivative of an already existing commodity.

Later Representative Foster asked about *consolidated audits and authentication* and if there were any mechanisms for them to exist. Lempres replied that exchanges do authentications by default and by applying KYC/AML regulations, but pure p2p transactions can still happen out of the sight of the regulators and exchanges, unless sophisticated blockchain analytics tool is in place to investigate the transacting parties²⁸. *Exchanges as well do consolidated audit of the network but this is up to the debate and we'll discuss this as well later on.*

Lempres said that New York BitLicense, although a very thorough and hard to get (only 4 were issued in the State of New York), have chilled businesses, but at the same time made the companies that got them more “respected”.

As per Rosenblum, regulation by enforcement in this dynamic field sets bad example, he as well emphasized that *all VC funding that he has been dealing with was done through PPM* and not through white papers, that would seem crazy to him and this is true.

Valkenburgh brought up analogy of dot-com bubble, saying that there is a bubble but for each overvalued pets.com there was undervalued amazon during the bubble.

Valkenburgh continued on State Licenses by saying that crypto is a global movement of wealth not a state by state one, “the 40th license that your company will get is not the more robust security but just an extra, it won’t bring you reputation or security”. These licenses are focused on the movement from A to B and not custodianship.

Representative Scott later asked *whether digital wallets that hold those currencies (securities in some cases) must be registered with SEC or be licensed as broker-dealers or have cybersecurity protocol compliance to avoid hacks*. These were answered by Valkenburgh but not in full extent in my opinion, he mostly kept on explaining the jurisdictions between CFTC and SEC, that should have given a general understanding to the question, but the issue is more complex.

Valkenburgh ended hearing by saying that harmonization was critical in space. It was not anarchic between agencies but between agencies and state regulators. He finished by bringing in Giancarlo’s outline that said a) KYC/AML; b) Data report; c) Capital Requirement; d) Cybersecurity standards; e) Price manipulation/fraud will do most of the trick. It is a great outline but in case we want to avoid the new agency, we must first thoroughly classify tokens and define their natures.

²⁸ *Ars technica published an interesting article about how government agencies tracked Ross Ulbricht <https://arstechnica.com/series/the-silk-road-bust/>*

Goat Rodeo

Both hearings were interesting and informative, but they didn't provide much of the clues to understand overall attitude of the Congress towards crypto regulation. It seems to be in its early stages so far, where federal agencies and market players are providing information to the members of Congress. This is not bad unless investor rights are protected, the more of the hearing and inclination from Congress we are going to see, the more appropriately the market players can plan ahead their movements (this in itself includes investor protection from a perspective of a healthy actor).

It was as well obvious that no serious legislative debate could be initiated in an environment where Senator Elizabeth Warren was inquiring if SEC catered to Wall Street banks and not investors and where senators discussed tokens at their family gatherings. This again is not bad, it's just not moving legislature ahead.

We now have a Senate hearing with federal agency chairmen discussing current crypto regulatory environment and a House hearing (great panel, insightful representatives, apart from you Sherman) with industry lawyers providing their insights into market and regulation- it is all set to further move ahead and start working on more clear guidances, this should be coming next I guess, providing more sentiment on how Congress will approach this subject overall.

In addressing these hearings and market movements, I would note investor protection as being an immediate need. Example for this was Ethereum price drop that was considered to be related to the SEC crackdown on ICOs. While whole market bled recent weeks with Ethereum the hardest, it displayed the correlation with scammish ERC20 tokens and its prime token. As most of the ICOs would be using ERC20 token to raise funds, the crackdown on shady ICOs would fear those exact investors the most, resulting in Ethereum tanking with them. If investor protection was in place per SEC mandate it could downsize the the correlation between the prime and derived tokens.

It is better to have a transparent discussion before events pain substantial number of people over the loss of funds. This kind of course of events risk regulators regulating crypto out of a populist fear, lacking rationale that some of them have today. That is to say that broader and more knowledgeable people still need to take the realms of crypto legislation. The more alike of Dr. Brummer, Rosenblum, Valkenburgh and Lempres we have to participate in these discussions, the healthier the process will be.

I would love to emphasize the participation of Dr. Brummer in the House hearing, somebody with academic approach to the crypto regulation is definitely bringing a fresh, thoughtful and deeper perspective. I particularly enjoyed him bringing the distinction factor between bitcoin and gold, even though they do look alike providing ground for commodity classification of it, the differences in perception between these two must be bringing their own

effect to the market. And for the same reason I enjoyed Representative Emmer's remark, who seemed to be the only one to ask this same question.

Law is law and we're far from living a reality where code is law and to this extent law can be flawed if a) bad actors draft it, b) bad actors pass it. It will result in good actors being the victims of garbage politico-judicial oppression that had at its core social appeal.

If current regulatory issues become the only part that drives the market we then risk Congress decision to come fast and come without much opinion put in it. We need more things to happen other than regulatory to drive the market, exposing more issues to regulators so they are more thoughtful in their bills.

Everyone in crypto started to have a regulatory outlook and opinion, at first having a regulatory opinion would right-away cast you as bear, now I think that bear settled in and proved itself right, it became a rational norm. This drove general public to neglect further regulatory issues that might arise, passing their responsibility and questioning to the regulators and crypto lawyers. I must admit that public is now well-versed in ICO/securities, Senate hearings, Sen Warren opinions, there's this positive outlook and self-satisfactory moment regarding regulations that "knowing Howey test seems to be enough", this as a result creates lack of a challenging questions being asked and that is what I refer to as a status quo. And yes, of course there are still extremist thoughts that would claim that Bitcoin can not be regulated because it is protected by the first amendment, because text?²⁹

A wake up call: too much is still to happen while there's too much ambiguity.

I believe goat rodeo that happens now is due to the subdued community that found relief and proof in some simple regulatory topics, in Giancarlo. One thing I've learned in crypto is that DYOR (Do Your Own Research) is of the major things you can do to protect yourself and develop your own assumptions. You can not rely on anything (especially when you read things on twitter or reddit, not saying they feed us fake news, but reading without analyzing or proof-checking can lead you to dumb mistakes).

Even though if I think that current process of not rushing to regulate things is the healthiest approach and that regulators can do things step by step, respectively or the agencies' needs, I can't get rid of a thought in the back of my head, that asks me if in order to deliver on the decentralized promise we would not need to review all the complex regulations, tax codes and various Acts that keep market functioning as it does today. Decentralized promise changes the contractual and executory parts of the transaction and isn't most of the law written with that in mind? In such case this is a short-term remedy, but then again maybe this is perfectionist approach to the promise that won't ever materialize itself. After all nobody is going to dedicate in their conscious mind time to revise these laws so extensively. Note that I'm not saying we

²⁹ Blog post that explains how bitcoin is protected by the first amendment of United States Constitution <https://hackernoon.com/why-america-cant-regulate-bitcoin-8c77cee8d794>

need to overhaul and create free market anarchy, I might be implying that we might even need spot market oversight on the contrary and a balance not to stifle the innovation.

With all that being said, I'm leaving this section with two things in mind - a custodianship and lobbying. Custodianship in the world of cryptocurrency that must have in place investor protection and mechanisms to conduct consolidated audit, seems hard to execute through law. I omit the question of oversight over the custody because classification question is not yet addressed, but per my understanding regulating custody for assets managed through PKI, will stumble upon realities of poor user interface³⁰ and finally upon the question what's the point of crypto asset if I do not hold it then?

As for lobbying, I see trend where most of the things coming from legislative chambers that are called "initiatives, forums, meetings, hearings" are just pure banter. The real deal is when we see and force Senators to endorse bills, everything else (serving a publicity) in the world of social media is considered a positive PR. Governors hosting hearings and meeting people is very different from them endorsing and working on bills - this is what they do when they want to take action, it is hard to distinguish their intentions or even inclination to the topic before, they need to have something at stake for it. And for this matter, I think, when we see harder lobbying from crypto community, that's when we'll see more positive and direct actions taking place. Again as I've mentioned earlier in this discussion that educating lawmakers is one of the priorities, lobbying for the right cause is unfortunate job someone has to do and I think that Coin Center, Jerry and Peter deserve a lot of credit for this.

³⁰ Juan benet about the UX challenges <https://youtu.be/tXmnBi4m5x4?t=18m29s>

Commodity class of bitcoin - hurdle to stability

In this section I am going to talk whether bitcoin is a currency or a commodity. Eventually I don't think this subject will be clear to the reader, because it encompasses various complex topics starting from understanding currencies to how forex market works. Main point I would like to make here is that it is still early to agree that bitcoin is a commodity and regulate it as such. Classifying bitcoin as a commodity further brings ambiguity for the long-term vision and, as well, raises its stability questions.

There's difference between currency and commodity. Commodity spot market is not benefiting from direct oversight, while its futures markets are. Commodity is a fungible good, it can be produced by any party. Currency is a medium of exchange and store of value, it can become a commodity in specific situations, while a commodity can be used as a currency in broader cases.

On the surface bitcoin's deflationary nature is the driver for it to become store of value, although forks can avoid it and its technology and decentralization are incentives for it to be used as a medium of exchange. Currency's inflationary nature stimulates us to use it as medium of exchange. A currency works through government backing and by making it illegal to not accept government issued currency, thus having a complete control over it. But these are not rules, seen that some countries are using U.S. dollars and that in prison a cigarette is a better trade instrument than anything else.

Regulatory ABCD

Regulatory issues in crypto worked their path to become a hot topic, sort of an enlightenment with positive outlook. I shared the same perspective in early and mid 2017, when capital kept accumulating in token sales - it did seem irrational to me. I kept thinking that of course in pre-sales millions are raised through PPM and not through 30 pages long white papers and of course broader public flooding the market to make an easy buck will eventually be outplayed by the large investors.

A brief chronology of attitude towards regulations looks something like this:

- A. We hate regulators (*they have negative outlook on the market that is making all of us rich, they are bitter*)
- B. Regulators were right (*look at all these scams out there*)
- C. Let them regulate, they know their game (*prices went down they know something, let them deal with it*)

Right here we got tricked by a) conformity bias, where we took a position of laissez-faire to the ones who showed reliable knowledge on the issue and b) by doubt-avoidance tendency, where we ceded to question the fundamentals.

And this is where point D comes to the above-mentioned A, B and C. "D is the Status Quo". Not all regulations are created equal and wrong regulations do not align to fundamentals.

As of today I do not hold the same view. Because Chris Giancarlo is very enthusiastic and passionate crypto regulator doesn't mean his vision is beneficial in the long-term, or if it were, that he alone could push a right agenda. There will be a goat rodeo on crypto regulations soon, if you do not go slow by observing what happens and rush to regulate it. To explore this I'll need to go deeper

Market has subdued to the non-clarity, we read about "regulations" in every second article that tries to explain bear moves in the market, but reality is non-clarity is not an "event", it is a prolonged, continued state that if settles in will make bullish breakthrough a little bit hard to come by. I do not see much of technological advancements and progresses that would translate in the market price and take a note that these are the events that moved it last year more or less. The longer the regulatory uncertainty continues the bigger and splashier news the market will need to move up.

Monetary Regimes

Over the time we have agreed to believe in the promise that stable and rich financial markets of today are built not on commodity, but on sovereign developed economy, economy mostly denominated in US dollar and it took us time to move away from pegging mechanism.

I have to resort to cover few historic things and market infrastructures to provide a backdrop to emphasize the importance of the currency and commodity classification. The more the economy progressed over the time, the more the trades grew interconnected and the dependency to peg to one asset class became redundant, from gold standard to Bretton-Woods system and to the floating rate, we have witnessed the progress that free trade bears better fruits. I'm not in the best position to provide any in depth criticism or praise over the international monetary regimes, but it is obvious that avoiding standardized currency frameworks have put an interest of developing economies of sovereign states on a scale and test. Gold standard locked the sovereign flexibility and put a pressure on interconnectivity on the weak (developing) actors. Today those who introduce foreign currency in their states as legal tender, strip off independent growth because they can not be policy-makers in currency supply, while for rich countries fixing a currency brings trade stability, in order to do so country has to pay premium to keep the conversion in range, developing countries usually can not afford it, contributing to policy trilemma of incompatibility of free capital flow with monetary policy autonomy and a fixed exchange rate regime.

Ditching Bretton Woods and introducing floating rates have stripped off the importance of the commodity nature in currencies, in a way where currencies became more independent assets in international markets but prone to their respective economies' fluctuations. This should have put the bigger importance on the transparency of how currencies are issued as well.

From the big picture each currency is a private currency in a free market, if you look at currencies from this angle you will notice the importance of transparency. The absence of intrinsic value in fiat currencies requires a lot of information to be available in order to consider the currency that you trade healthy.

Because we have abandoned Bretton-Woods system now and fiat currency is based on the government backing and regulation, the nature of currency has changed. Prior affiliation to the commodity would help one to measure each currency to that said commodity. Now here is the difference in nature of the currency as a class. If currency is as fungible as commodity is, then it's procurement is more complex than that of the commodity. Issuing currency depends on economic performance, commodity does not, while commodity is something that does have utility value, currency's only utility value is that of a legal tender.

Currency / Commodity Question

Theory exists that government needs to force you the medium of exchange nature of the money, because in other case it will become store of value and slow down the economy.

If medium of exchange and store of value are the features of currency forced by governments, then the unit of account is as well its feature. Unit of account is the forced mental model of denomination. While unit of account when forced has subconscious imprint, medium of exchange when forced in transaction is conscious and cognitive. It is usually hard to change subconscious.

Because currency is government forced and it is illegal to not accept it as medium of exchange, or price products in other currencies, the sovereignty of the currency is by itself a regulatory statement. The issuer is a government or autonomous regulator not an S Corp who's transparency is demanded by regulation. We are forced to believe that government acts in its good faith, this is where the currency does not need regulation - its issuance level, on the trade level it is promises against future delivery of goods where CFTC can step in and it is AML/KYC regulation that helps to not channel the money to terrorists, apart from these whatever regulation is tied to a currency it is not a regulation but a fluid policy.

Thus important things to factor in determination of currency and commodity behavior are issuance, transparency and governance - they all have deterministic importance in how we trade the instrument and assess it.

Importance of this is emphasized by the availability of the Federal funds to the commercial banks through discount window. Only recently broker/dealer companies started to

participate in this program, but this brought regulatory backlash from commercial banks, who suggested that investment banks must be regulated the same way as the commercial banks are. Impasse happened where the investment banks raised concerns that there is a fundamental difference on the usage of the funds, one is where the customers are depositors and the other is where they're investors³¹. This is actually a distant subject but it shows where to draw the line in regards of the currency. Where depositors with commercial banks are users of legal tenders, users at the broker/dealers might be interested in vast spectrum of financial instruments and the entity that oversees the money supply historically preferred to differ these two fundamentally different institutions. Fiat currency is very specific class. Banks believe because they deal and see currency as legal tender, they must have a priority seat at the Fed table.

Now think about the complexity of each sovereign country, its economy and geopolitical situation, factor in its own monetary policy and international trade. You receive a very specific asset to trade internationally - a foreign currency. And if currency is a specific legal tender in jurisdiction where it is issued in most cases, then how to treat foreign currencies in international transactions, so far the reply to this is - treat them as commodities.

Geopolitician George Friedman wrote in his op-ed³² about the problem that he had with understanding what bitcoin really is asking *"my core question is this: Is bitcoin a currency designed to facilitate commerce, or is it a commodity that has intrinsic value, which rises and falls according to supply and demand?"* As a currency it is so volatile that each purchase is a gamble - this is not feature of a currency, and as a commodity it does not have use value except for the transactional one *"and the problem with bitcoin, unlike real estate or tungsten, is that it has no intrinsic value beyond people's confidence, and confidence is the most volatile of things"*. Bitcoin as a currency (unit of account) is a stronger sell, compared to any other possible commodity attributes of it. Currency is fungible exchange instrument. Now Friedman's concern is not defined by regulations, and I'd like to make a point that so far commodity factor of bitcoin in regulations is complicating things even further.

Commodity, due volatility, is not the best medium of exchange or unit of account, currency is. Foreign currencies are commodities, because sovereign countries distrust foreign jurisdictions, this is challenging for regulating international market and enabling multilateral trust. Lack of transparency and policymaking in other country's money supply is discouraging countries from deeming each other's currencies as medium of exchange or unit of accounts. Bitcoin as settlement is the innovation (medium of exchange nature of it), bitcoin can be an alternative settlement coexist with fiat (like gold, before it became inconvenient), it will need to overcome its hoarding issue and be used as medium of exchange, though gold apart from its high perceptive value (that results from centuries) has utility usage, bitcoin can champion its promise by being alternative medium of exchange.

³¹Investment Banks split over the fed funds <https://www.ft.com/content/occf5ec-2c2a-11dd-9861-000077b07658>

³² George Friedman - Why it matters if bitcoin is a currency or a commodity <https://www.marketwatch.com/story/why-it-matters-if-bitcoin-is-a-currency-or-a-commodity-2017-12-13>

Forex Hell

Forex trading is one of the largest trading market with around \$5 trillion trading during a day (BIS), it is also not regulated as tight as other markets are. Its actors are dual in nature - commercial and speculative. Currency trading in huge blocks is a privilege of governments, central banks and commercial banks, in a nutshell authorities who are entitled to our trust. Where the regulation might come in these trades is the speculative side of forex.

The driver and growing volume of speculative trade in foreign currencies raises the need for regulatory intervention. Because transactions have two natures they are intertwined and to regulate them it is better to distinguish their natures as well. The growth in forex market and speculation has been increasing recently, on-boarding even larger spectrum of participants including retail investors³³.

Transactions on these markets are not broadcasted like on National Securities Exchanges, usually large commercial banks and interbank systems are privy to them, this drives more risk of high frequency traders hijacking the speed and lack of transparency puts average investor in a blind position where he can not rely on market information but on news headline or feeds that his brokers can provide him.

Because each currency in each jurisdiction is representing each sovereignty, regulating the forex would mean regulating the global trade. What first started as instrument for banks to offset risks in currency trades, turned out to be a huge decentralized foreign currency market with brokers and all kind of institutions playing in it, alluring retail investors to join. While large players and retail banks have resources to keep main pairs move slowly, the bad actors and their dishonest trades can have more serious consequences on fragile currencies that might get hijacked easily³⁴.

CFTC was able to set a bar on the leveraged forex transactions and allowed NFA to regulate all dealers dealing with forex and retail investors, but due to the interbank nature of forex, banks have the biggest say on the market and banks are regulated by OCC (Office of Comptroller of Currency). What you deal with when you are trading forex electronically is not an access to the exchanges but an access to your dealers book where dealer gives you quotes. To retail investors these are all parts of a deal and how to protect them is a challenge. The larger fishes are institutional investors who participate in forex, their fundamentals are not speculation per se, they need to settle transactions and hedge risks. They are as well influenced by speculative nature of the retail forex trading, where they need to offset speculative volatility and be aware of the potential currency crisis due to their badly placed bets.

The nature of the forex trade and its infrastructure is important. One, participants are both institutional and retail investors, compared to securities and futures exchanges that are

³³ Forex regulations <https://www.investopedia.com/articles/forex/041613/why-its-important-regulate-foreign-exchange.asp>

³⁴ Asian crisis of 1997 https://en.wikipedia.org/wiki/1997_Asian_financial_crisis

classical markets (digitized today), forex market is built upon big commercial banks with their dealers granting access to retail investors. Infrastructure nature poses regulatory oversight disruption and nature of trades does not favor all participants by nature due to the infrastructure being not regulated. What institutions do know, retail do not, market data is not consolidated and presented live to retail investors, retail investors do not know what is going to happen as fast as institutional traders. But then again by non regulating forex we give advantage to largest players to proceed in their business dealings as usual without more paperwork and compliance and mostly we avoid the complex topic of international trade and currency sovereignty. What we instill upon the retail investor is the disadvantage of the market which, due to the infrastructure and as well regulatory fragmentation, gives forex brokers ability to advertise advantages of forex trade compared to stock markets, even with as low as \$200 deposit and large gain - retail investors buy in.

So we have 2 types of transaction natures: speculative and commercial and we have 2 types of actors retail and institutional and they do not marry each other well. To recap we can say that speculative nature of trade represents 87% and commercial represent 13%, while retail investors represent 5% and institutional represent 95%³⁵.

Because currency is privy to government regulation and foreign currency trade encompasses multiple of governments, thorough international regulation on the issuer of currency is irrelevant for floating system. Infrastructure of the trade must encompass the protection of average investor. This way currency acting like commodity is not the optimal as well. Commodity's factor of independent procurement plays a big role, its loose disclosure and procurement are not registered so it's not fully transparent, currency is stabilized by economic factors in this case, it as well affect purchasing power of average citizen not that of institutional investor. Due to this to define nature of forex trade is important. Should an average investor be able to trade on forex? That is when you bet for or against the company's stock, you bet against or for its management, market conditions and business environment, while in forex trade, retail investor is trading on macroeconomic factors that he's not completely aware of due to lack of enforced transparency.

Tobin Tax can work to circumvent rampant speculation by a) taxing short term flipping and b) taxing the size of the trade. Banks' nature of forex trade is settlement and due to this it can do so in large chunks, while small traders can be considered speculators and taxing their activities can discourage them from trades or we can apply tax to the registered broker firms who cater to retail investors, broker/dealers can be taxed and they will project their tax cost in the trades. Third option does bring another possibility, the brokerage already conveys the nature of the transaction, banks transacting on their behalf will not incur the tax as their nature is commercial rather than speculative. Per Tobin Tax you'd tax spot transactions, this way avoiding to tax the hedging instruments in currencies, you'd be able as well to offset small retail spot conversions by taxing large sums and demanding identity provision for those who'd game

³⁵ Triennial Survey from Bank for international settlement <https://www.bis.org/publ/rpfx16.htm>

the regulation by splitting their transactions in small chunks. These different scenarios provide a room for deliberation on the speculative nature of forex trades, but they are far from satisfying the market players.

The decentralized nature of forex trade, the underlying assets that are currencies and players that are large banks, lurking retail players constitutes a great recipe for a goat rodeo. Maybe we can look at this decentralized market that trades foreign currencies as an example of how asymmetrical its nature is and how currency transforms into commodity due to the hurdles of jurisdiction, trust and lack of coordination, that by itself is the fruit of the free market.

Current regulatory support of bitcoin as commodity

Now I'm well over-complicating things here, but this is exactly my intention and job. I do not try to simplify and condense something, condensing and simplifying is for people who pitch solutions and I'm concerned that complications of today's market are not addressed in full in any of the solutions that are on the table. And I'm not saying that claiming bitcoin is a commodity is a crime against the nature, I see very well how it can evolve and help market to gain some regulatory certainty, but I will avoid this narrative because this is the narrative that is persistent today, that is cheered and lauded. What I want to provide is the cascade of information that should be accounted for, that should make market players and technology evangelists question the current state. Where's the promise of a currency? Why we're not clear on it from regulatory perspective?

Normal course of regulatory action must look something like this: a) bitcoin is a commodity; b) commodity leads to derivatives such as futures and c) options; d) these contracts stabilize the market volatility through price discovery and e) we are able to implement ETF and other retail grade products and finally f) we can live in a decentralized future. As a side note we'd ideally add spot market oversight just to be sure. Now what does timeline for this course of action can look like is beyond my understanding, but it sure can iron out some uncertainties and deliver an outline for the future.

It's ironic how we got tricked by regulatory steps, first we hated regulators, then we subdued to them to take an action. Now while above mentioned course does look valid and good, it doesn't represents the entire crypto market and it doesn't deliver on bitcoin as a cryptocurrency promise and does not represent international outlook. Most of the above mentioned is derived from the store of value nature in regulations and not the medium of exchange.

Rosenblum in his House hearing recommended multiple times not to craft regulations now. I share this opinion, regulations that take over the transactional nature of crypto assets are early, what is not early though is to implement investor protection and disclosures. Due to the current stance on cryptocurrency there is already a wave of opinions that are layering over the "bitcoin is commodity" decision, burying the opportunity to question it even more. Bear in mind

that if an asset is a commodity (we seem to will largely view it as such) we'll risk to apply all commodity rules to it in case risks arise.

For example comments for Proposed Rule 82 FR 60335³⁶ on “commodity delivery” are not exciting. These comments could look like twitter feed to reflect the market, but they don't, because commenting on proposed rules are not exciting and are knowledgeable to U.S citizens mostly. Few interesting comments are:

- a. Praises over Giancarlo³⁷, they came after Senate Hearing and are appreciative of chairman.
- b. Coin Center's Peter Van Valkenburgh provides lot of clarification on the term, but never questions the commodity nature ³⁸
- c. dY/dX explains their business infrastructure because this rule directly applies to how the operate and deliver³⁹
- d. NFA mostly endorse the rule⁴⁰

These texts are the status quo - they do not challenge the statement, they further endorse it.

In early march Judge Weinstein ruled in favor of CFTC⁴¹. In case where Coin drop markets were charged with fraudulently offering customers virtual currency trading advice⁴², judge made clear that CFTC had a broader leeway in commodity regulation. Ruling read “virtual currencies can be regulated by CFTC as a commodity” in a case where CFTC brought fraudulent charges against Coin Drop Markets. This is interesting case because it challenged if without federal law the CFTC was able to make crypto fall under its oversight and it appears so far that yes. What McDonnell (the owner of Coin Drop Markets did. was that he branded himself as crypto investment expert, solicited money with promise to a serious gain and then misappropriated the funds - this is definitely a fraud).

This case and comments on the proposed rule, both show how strong current opinion over the definition of bitcoin as “commodity” is. In the ruling of the judge although fraudulent activity was present and the ruling was to protect investors. It could have been done as well without bringing up directly the authority of one federal agency's jurisdiction, if investor

³⁶ Comments for Proposed Rule 82 FR 60335 regarding clarification on “commodity delivery” term concerns the correct description of commodity delivery. Financed, margined commodity trades are futures contracts on delivery. https://comments.cftc.gov/PublicComments/CommentList.aspx?id=2851&ctlo0_ctlo0_cphContentMain_MainContent_gvCommentListChangePage=9_50

³⁷ Giancarlo's Praise example <https://comments.cftc.gov/PublicComments/ViewComment.aspx?id=61550&SearchText=>

³⁸ Coin Center's Peter Van Valkenburgh providing more clarification over the proposed rule <https://comments.cftc.gov/PublicComments/ViewComment.aspx?id=61592&SearchText=>

³⁹ dY/dX provides their business description and how they fit in the proposed rule <https://comments.cftc.gov/PublicComments/ViewComment.aspx?id=61586&SearchText=>

⁴⁰ NFA endorses proposed rule <https://comments.cftc.gov/PublicComments/ViewComment.aspx?id=61591&SearchText=>

⁴¹ US Federal district court Judge upholds 2015 CFTC commodity decision https://www.scribd.com/document/373196920/Memorandum-Order#from_embed

⁴² We will discuss this further in this paper, Series 3 license would apply here in normal world then

protection was implemented through disclosure mechanisms. This point is made to show that investor protection can be implemented and enforced without active engagement of crypto regulation that would define crypto asset classes.

Worst thing we can do to crypto is to "status-quo" it in its early infancy, it's still operating in an uncharted waters. Challenging its concepts and opinions today doesn't mean you're a hater, it means you care for it to deliver on its promise, which is to be an alternative currency. Bitcoin as a commodity might work out nice in the end, but fundamentally we reject its main promise and building regulations upon this, risks to stifle the promise.

Meanwhile there are ton of new ICO guidances around the world which is pretty flawed and untimely. Discussing ICO is very 2017, it must be clear that most current offerings took form of PPM. Discussing how to regulate ICO is just a pure avoidance of the bigger question - first you need to classify the major existing crypto assets, rethink models and regulation, but this is a daunting job and very polarizing as well. What appalls me is that discussion should be championed by bitcoin maximalists and other believers and it is not, we blind ourselves by being comfortable in regulatory definition of today and we only criticize smaller projects built on Ethereum or Neo environment for example that scam people.

Governance through issuance and disclosure

One of the interesting and inherent questions to the bitcoin is the governance, we've covered how regulations work in currencies and foreign exchange market, how monetary policies affect them. They all are governed through government and federal agencies. Elected officials have a final say in lawmaking - this is something very traditional and defined for us, I'm not going to challenge or second-guess this procedure, this is something we know. Interesting here is that bitcoin is the first truly global currency and it does not have a central regulator. This is the benefit of technology that removes intermediaries, unsolicited surveillance over the funds and additional costs, but it has its downsides today - although we cherish the benefits of decentralized currency we do not know how to fairly govern decentralized assets and what "fairly" means at all? But again I'm not going to discuss the governance issues, per my taste current model is optimal and we'll know more as we grow. My concern is if we understand how important governance factor is in deciding regulatory framework. And until we achieve the most optimal model, if changes in governance will change the network and transactional behavior?

As in forex market, speculation in bitcoin market is paramount. If bitcoin is a commodity, how does governance factor in the deliberation of commodity/currency debate and what rules apply to commodities anyway? Currency is not like bitcoin, it's centrally owned, more regulated. Bitcoin is decentralized but as well governed by the rules of the community and it is simple that in case of an update or enforcement community must come to a consensus. Gold, wheat and oil do not have governance rules and they have utility (gold earrings and diesel cars) and they all are store of value and in dramatic cases can be used as medium of exchange. Medium of exchange is a feature, store of value is contract with future necessity out of expected

need or a fear. Commodity might be defined as a fungible good, but this good must have implied utility, this utility factor derives various features.

Now because we discuss commodity / currency let's apply governance to it. Because most of the commodities are natural resources we let general population to procure them, some require intensive capital deployment some not so much. By governance I do not imply the safety regulations on production sites, licenses to procure and regulations and certificates to trade these products, these do not change the nature of a commodity, here I imply the governance that has the ability to alter the essence of the product. Bitcoin's governance gives network power to do so, while in gold or oil we do not alter the product through governance.

I like to look at governance not from the wide-angle of its lifecycle, because it should be flexible and it is very hard for me to say what is the best and most optimal model for governance during the lifecycle of the product, but to look at governance at the issuance moment because it defines disclosure enforcement mechanism. This comes handy because we look at the very beginning of the lifecycle of the product and it is relevant as well in a commodity / currency debate. Let's see how.

Central banks govern the issuance of the currency, how much disclosure is put on this or how is it even enforced is up to a debate. We always question the fundamentals behind any policy moves because we don't believe in radical transparency in government agencies unless Comey⁴³. In regards of the commodity, commodity is not issued but procured, it is a natural resource and we can not control who procures what and how many. Because it is a natural resource the features of the commodity are well-known, defined and can be attested in various certificates, you would not change the function and feature of a commodity, thus its issuance is less regulated. When you trade commodity futures, enforced disclosure is, as Dr. Brummer said during House hearing, more "buyer-beware" rather than stringent disclosure of securities. Now because issuance of securities is completely derived from man-made product (companies), the issuance is regulated, managers are observed and liable and disclosure of the issuance is more thorough. It all comes down to how things are made and are we transparent about them - the disclosure enforcement is just that. Governments control issuance of currency and securities but enforces transparency in form of disclosure over securities and commodities, because they're third party, and it treats all of them differently because they are all mix of different features. Government's oversight and AML procedures and as well certifications are just the way to control the circulation and quality of these assets. What government lacks tremendously in regards of cryptocurrencies is control and oversight of their issuance models and by saying it is a commodity it leaves it open to modeling.

The only thing worth enactment is transparency, which shows intention and nature of the trade. Markets might be hit hard at some point and be volatile, they might diverge from

⁴³ Former FBI director James Comey, previously worked at Bridgewater's Associates, known for radical transparency <https://www.politico.com/magazine/story/2016/07/fbi-director-james-comey-house-of-representatives-investigation-hillary-clinton-emails-chaffetz-hedge-fund-214018>

equality and inclusion, but through transparency, necessary future regulatory enactments can be detected. It is important to locate where there is a need for transparency in a way that it does not harm the overall policy of the underlying asset and actors dependent on it. Dr. Brummer as well has outlined the need for a specific disclosure mechanism in cryptocurrencies, but he didn't look at them through classification. I think that bitcoin as a currency might need different disclosure compared to tokens that behave like equity. But when implementing disclosure mechanism we should not think that once done, everything is good, it was pointed during Senate Hearing that disclosures risk not to be read in hot markets and thus be completely useless. Senators can not say it's our fault if we didn't read 100 pages document, if they know that people might not read it and still consider it law and investor protection, this is just avoidance of the problem. This might be a reason then to create Self-Regulatory Organization (SRO), but this will be addressed at the later stage.

Bitcoin as Digital Bretton-Woods

If bitcoin is to be considered and regulated like gold or other commodity, while at the same time being digital currency, it is most likely to serve as a reserve currency for other digital assets. This way we're not getting a decentralized promise, but digital Bretton-Woods for digitally scarce assets. Decentralized promise can live on in other assets, but it will be stifled by the investment rather than what technology initially promised us. It will also be lesser of an experiment in economics, it is going to be just a new asset for investors the first, and technology the second. Trustlessness is going to be a feature not the essence in this kind of structure. The bigger experiment would be to make a universe of trustless digital assets that float independently, that are legitimized for what they represent on fundamental level. Bitcoin as a reserve currency for other non-currency type digital assets will only lock overall market correlation and there's even more to this pair paradox⁴⁴, e.g. if decentralized assets had more fiat pairs, overall crypto assets today would be less correlated.

We moved from gold standard to Bretton-Woods to finally arrive at floating exchange rate. Float is belief in others but firstly it is belief in yourself and your responsibility, belief in your economy. It moved markets from forced stability to natural "stability". Bitcoin being a currency is a continuation of this progress and belief, it although questions what a fiat currency is, more importantly how a fiat in one jurisdiction is a currency and in a global decentralized exchange market a commodity? I like using bitcoin as a currency to challenge these thoughts. And this leads me to a thought where bitcoin and its regulation might finally challenge if we need free market and if we can sustain it and if yes in what forms. Through questioning our fundamentals with bitcoin we have opportunity to really arrive at bigger conclusions and not just at mere regulatory frameworks that should be applied to the markets.

Bitcoin's value should be transactional, otherwise it is going to be a hard-sell in the long-term. An asset that is a commodity, but was destined to be a currency is a goat rodeo in itself. I

⁴⁴ Aleksandr Bulkin's tweet about pairs is relevant here https://twitter.com/coinfund_al/status/973402504590438400

think at this stage any form of regulatory certainty will improve the market and make it move up but its utility value, the one that is of a currency, if it doesn't become the main driver, then it might become just a store of value. It is arguable for me that a commodity that is store of value can survive in the long-run while striped off of its fundamental value. It might serve then as a reserve currency for other digital assets but then we give up low correlation of assets and I don't believe that trade volume of reserve currency can sustain the long-run demand of store of value as well. It matters to be medium of exchange to capitalize on the decentralized nature of system. The essence of the commodities trade (apart from speculation and hedging feature) in the futures market is the illustration that you will need that commodity at some point in future and you prefer to pay the price that you deem reasonable in the future. You will have urgency to supply oil at specific price in Q4 for example, is there the same fundamental for the bitcoin?

Speculation over Medium of Exchange

Bitcoin looks a lot like forex in its speculation and commercial nature. Although compared to forex markets there are lot of hoarders in bitcoin, who buy and wait for the value to surge. They deprive asset from its utility value and medium of exchange, I doubt that they completely understand that its store of value can increase without asset being used as medium of exchange. People either hoard, trade or settle in bitcoin and this is where it looks much like forex market, but forex is dealing with currencies that have utility value as legal tender, if you want to hoard USD you can open savings account within a bank, so speculation in forex market for the tradable asset is justified alternative, whether speculation in bitcoin, where asset's value is bloated by belief it will go up because it did in 2017 and the utility value of the asset is constantly overshadowed by hoarding is not completely justified and it doesn't seem to withstand in the long-run. If bitcoin becomes "internet money" whatever this means, it can have utility value. But I want to be clear here that "internet money" seems very blunt, we have hardly understood what money means with introduction of cryptocurrencies, now we want to invent a new class of money and call it internet money, legally it has no meaning to me now, because it can mean many things. And even though I am supportive of this chain of thought, I still think that making bitcoin "internet money" does not do it justice, bitcoin has the power to question many things and be more than millennials' means of paying for Spotify. I like this idea although because it encloses utility of bitcoin within a confined but vast space, but reason I am doubtful is that calling it "internet money" does not answer questions but rather poses new ones.

Another thing that makes forex market interesting in the context of cryptocurrency is how a fiat currency in one place becomes a commodity in the global trade. It shows the flexibility of currency's asset classification, in regards with bitcoin although this state should not change once assigned, I see this as more of an example for maybe interledger compatibility in regards of regulation, but not for the token itself, at east at this stage.

Vlad Zamfir has tweeted⁴⁵ regarding security/commodity question *“We should replace the whole question of “when does a token go from being a security to being a commodity?” with “is this token being bought/sold as a security or as a commodity?” for every individual sale/purchase basis”*. His point can be used as an emphasizes for how important is the nature of the trade. This is relevant in forex and this is relevant as well in the cryptocurrencies. Where the asset classification is fluid, the intention of the trade plays an important role.

Regulators must take a look at the current decentralized foreign exchanges and fiat currencies and think about bitcoin as a currency traded on transparent regulated exchanges, decentralized or not. If commodity class provides one set of inherent risks, foreign currency markets now provide another, and deconstructing the systems brings a chance to look and create a better environment. Because bitcoin in case of a currency is not yet sovereign or deeply interconnected to anything else, there is still a good chance to reap benefits from this thinking pattern. Offsetting commodity volatility and offsetting current forex infrastructure to create more transparent environment.

Stability Factor in Bitcoin

Forex (subject to pairs) is less volatile than commodity, bitcoin is more of a currency, but none would legalize it. We can debate if forex is less volatile due to loose regulation or not, but bitcoin, as it is in its infancy, is volatile and fragile organism, not interconnected (interconnection creates strength and stability - see the graphene structure⁴⁶). We need regulation so an asset is stabilized and not taken advantage in the form of “store of value” because digital store of value that’s based on public key cryptography, as good as it can be, is still very hard to grasp. By deeming bitcoin a commodity we remedy its fundamentally taken advantage nature (store of value/speculation), while if what we do is to legitimize it as a n alternative currency we would drive it further to a better adoption, decreased volatility and eventually bring more usability. This scenario is still sci-fi to me but that’s what is fundamentally right, I do not support bitcoin free anarchy, but just acknowledgement of it as a currency. Unfortunately nobody will pass those sweeping changes unless big pain demands it. And in this scenario where bitcoin is a currency we again enforce the question of the free market, are we afraid of it, is it sustainable. I think that we can live in economy where bitcoin has a place as fully fledged currency and not only digital reserve currency of “internet money”.

Commodity has higher volatility than major foreign currency pairs, and we need more stability in the cryptocurrency to deliver on decentralized promise. If bitcoin is going to be internet of money, then it is good to think that the first digital currency must have its value stabilized and not stretched between \$19k to \$7k within a quarter. Futures introduction has brought price discovery, what would be good now is to further push stabilization by providing more clear regulatory outlook for the future, not regulating it now, but providing an outlook -

⁴⁵ Vlad Zamfir tweet about security / commodity nature of tokens <https://twitter.com/VladZamfir/status/977446845776510976>

⁴⁶ Graphene <https://en.wikipedia.org/wiki/Graphene>

there's big difference between these two and this difference is big because market is still young. Sovereign currency volatility is based on broader fundamentals and is more interconnected, compared to crypto, which is out into the wild. Nobody cares about the price of crypto as much as the price of fiat currency, in crypto you must care about the promises, about the technology, unless you make it interconnected to other instruments you must stop being so price sensitive. Deeming bitcoin a currency would bring back its fundamental promise at least.

Bitcoin taxed as property - hurdle to medium of exchange

If previously I wanted to dive into the topic why classifying bitcoin as a commodity will hurdle its adoption as medium of exchange, here I would like to briefly cover bitcoin's current taxation nature - that of a property⁴⁷. I am in no position to give any tax advice to anyone, but the mere outlines from IRS already show some hurdles to bitcoin's adoption as medium of exchange and I would like to address those. This issue is not out-of-sight, many people discuss it now seen that it's a tax season. People are questioning their choices and are in position where they need to decide to realize losses, which as well can reflect itself in crypto-to-fiat sell-off on the market.

I will give myself the joy of describing taxation from theoretical point of view as well. I need it because whatever hypothesis I want to build around taxation, I first need to have a relevant ground for it. So let's Dig Down⁴⁸.

Theory of taxation

Taxation is the very complex channel of government's ideology. Tax code is the political tool, a channel if you wish, which is utilized by governments to convey their ideology. Because tax codes are very complex and require legislative bodies or referendums to change them, governments are usually limited in their options if their views differ from what tax code says. A tax code is the expression of rate of equality policy (wealth or opportunity) and encouragement of expenditure, it can explain the course of nation that it has taken. The code is complex, technical and ambiguous and at any given time it must be flexible and cater to all the ideologies that its citizens might have. At the very basic level code translates views on property rights, with extreme views being that property is an absolute right of an individual, or that a state is the guarantor of the wealth accumulation by providing legal framework and justice system to sustain the progress. Most of the codes fall in between these two with varying bias towards one or another. Cryptocurrency viewed as property by IRS should generally be more enraging to the bitcoin anarchists on ideological level. Seen what tax code and property is, deeming cryptocurrencies as property can spark very acute debate between cryptocurrency holders, but it is yet to come. Cryptocurrency and taxation is a very different discussion and implies too many ambiguous thoughts and current policies. My point is simple - in legal parlance no word is a word for sake of being a word, each word carries a philosophy behind it, it might be open and free to be challenged and reversed, or it might be cuffed by legal workings to its originality, whichever it is, you have to understand the context behind it to a) predict its future course and b) to importantly contribute to its development. This is why it is important for fund managers

⁴⁷ IRS 2014 guidance on cryptocurrency taxation <https://www.irs.gov/pub/irs-drop/n-14-21.pdf>

⁴⁸ Muse Dig Down performing live at Nashville TN, I just like the song and there's no reason for it to be here, enjoy <https://www.youtube.com/watch?v=aLXTXgXe5tc>

and policy makers to read between the lines of tax code and understand the underlying meaning, policy and philosophy of why your property is being taxed this way and not the other way, or why it is considered as property in the first place. This is daunting thing to do which I'm not in a capacity of doing.

Benjamin Franklin's famous quote about taxes reads: "Our new Constitution is now established, and has an appearance that promises permanency; but in this world nothing can be said to be certain, except death and taxes." Since then, nation has been through a lot of thought about how taxation should work. As I've said before it is a burden to choose between equality of wealth or opportunity but this is how it is fundamentally structured. In an enclosed and absolute situation fair distribution can be assigned to effort and luck to first come first serve, but society and population is not enclosed and absolute, it is fluid and generational, due to this fair distribution must account for equality. Equality can be need-driven or outcome-driven. What we think is fair distribution is dependent on our scope of knowledge. We can distribute by need to our friends (because we care for them, we know their story), and we decide to distribute by merit to those we do not know. The difference here is the transparency, with *honest, full transparency* we can apply need-based distribution for larger circle, but this can result in privacy breach and first of all we can not know everyone who is in need, due to this we transfer the burden of this decision to regulators who set rules. United States and other developed capitalist countries use distribution through equality of opportunity. This policy is tightly connected to the level of solidarity⁴⁹. This is philosophical question, society is not unanimous in understanding equal distribution, but in order for government to function and meet its duties, it has to stick to one policy and not to destabilize government functioning by updating tax codes frequently, which it might desire to do to please its voters. While the issue of distributing services is complicated so is the issue of collecting and we have two different approaches: one where citizens with equal revenues are required to pay same taxes or people consuming equal government services should pay same taxes. Historically it is the former that governments do. It endorses the right of equal opportunity for everyone. This is further complicated now by deciding what tax brackets should look like. This has nothing to do with you doing your taxes now, but this gives pretty good picture to understand that cryptocurrency can benefit in developing fairer tax mechanism in distant future.

Crypto as property tax

IRS has deemed bitcoins as property, not currency. This ruling provides some navigation to any holders of cryptocurrencies who are eager to pay taxes. As a property and if you have been holding your cryptocurrency for over a year you will be taxed at your applicable tax bracket rate plus long-term capital gain - which is favorable. In case you are active trader your capital gains will be taxed as short-term capital gains triggering higher rates.

⁴⁹ We will discuss this in more details in last section SRO is RYP

IRS requires that you report fair market value of your crypto assets on the date you received these assets. You need to resort to a system where you state fair market value of your transactions and keep them consistent within your filing. You must not abuse the market quotes in your filing, like stating the higher price for an asset when you purchased it and stating a lower price when you sold it. You must be consistent within the fair market value.

Another risk viewed from the taxation perspective is the improper registration of exchange of crypto assets between each other. Most of the assets qualified as like-kind can be argued seen that they widely differ in nature and are not all currency related (bitcoin to ethereum). But IRS is not in power to invent new asset classes. Difference between registering as donation or income have different consequences as well.

The longer your bitcoin is unrealized, the better rate you are going to get from a long-term perspective. You need to register fair value of the bitcoin same way consistently throughout your reporting. In case you are a business conducting the sales in bitcoin or any other cryptocurrency you need infrastructure that will right away convert them to the USD, you will not hold them short/long term and the instant change in the conversion should importantly reduce the capital gain/loss incurred within the transaction. This is important point to consider if you want to conduct your business in bitcoin, because you do not want to get taxed additionally on the nature of the sale of your product. This is important because internal accounting of a brick-and-mortar business will provide insight into the operating goals of the business where a) you want to expand your customer-base, b) you want to make money on the sides or c) of course the both. With no clear goal and without proper planning running a business will be very hard. If as a consumer you purchase every other product in bitcoin, it might be too hard to differentiate between transactions in order to have short term/long term classification of the coins that you hold and spend - a wallet with built in reporting would help. FIFO and LIFO methods to calculate consumer tax rate is also implemented in some of the exchanges when realizing gains.

Most countries consider Bitcoin and cryptocurrencies as capital assets, and so any gains made are taxed like capital gains. If you make profits from selling your coins, those profits are taxed. If you make losses, you may be able to deduct the losses and reduce your taxes. What is pretty much global, is that buying bitcoin or any other cryptocurrency is not itself taxable. However, you are likely to be taxed when you sell or even spend those coins and make a profit. Earning of cryptocurrencies as a barter transaction or payment-in-kind leads you to being taxed as if you had been given the equivalent amount of your country's own currency (this is where IRS like it as currency of course).

Current taxation approach is not the best one for bitcoin to be stipulated as a medium of exchange. This is why - because IRS sees bitcoin as a property it must be taxed as capital gains. This now leads to creating 2 transactions when you transact in bitcoin, one is selling property (with either capital gain/loss), the other one is purchase transaction. Both are taxable. Capital

gain for long term is 15%, although short term gain (below 12mo. period) can be anything up to 39.6%. And these on top of the sales Tax.

Because bitcoin blockchain is a public ledger, IRS might be looking and tracking any large purchases that are not reported to it (FYI only 802 bitcoin reports were made in 2015 within IRS but in 2017 it is estimated that much higher rate will report their taxes). If you are seen as having huge transaction on the bitcoin blockchain network, IRS will come to you⁵⁰. You can still ignore reporting of your transactions for the small purchases, but you must know that most of your crypto events are taxable. IRS demanded from Coinbase to provide them with over 15,000 accounts that they hold, the ones that exceed in \$20,000 in any kind of operation (sell, buy). Coinbase shrugged it off, claimed as intrusion into their business but eventually Coinbase lost the appeal. There's court solicitation for Coinbase to comply (United States VS. Coinbase⁵¹), Coinbase will now provide its customers with forms to fill in if they fall under the IRS specified category.

This is nothing more than the wrong classification that harms overall adoption of bitcoin, if these approaches are not challenged or reversed then building the decentralized infrastructure as the original papers purports them will risk to be flawed. Incentives within infrastructure itself are not enough, so far bitcoin purchases are disincentivized in real world.

It is definitely hard to keep track of transactional behavior for bitcoin in case you spend it as medium of exchange, while for investment goals taxation seems familiar. Taxing bitcoin transaction as property brings two hurdles to its medium of exchange adoption 1) it is complicated for the consumer to keep track of the double-taxed event transaction and wallet must recognize which coin was acquired and spent when, lets say you might spend \$500 from the mixing coins you received both 2 weeks ago and year and a half ago, 2) it does not incentivizes merchants to offer purchases in bitcoin further complicates their tax exposures by offering crypto settlements, taxing cryptocurrency as property means that small businesses will look at crypto settlements from the perspective of capital gain, this is not the best practice to run a business of selling lemonade.

If we take taxation bill in Germany your crypto won't be taxed when you pay for coffee and this comes from the EU VAT directive. If you purchase goods with bitcoin it is considered that crypto is used as medium of exchange as "legal tender", but if you are using it for the purposes other than that different rules will apply and will as well take into account whether you do it for yourself or are conducting a business transaction. This is friendlier regulation and it corresponds to what I have mentioned in the previous section - the nature of transaction is of a paramount importance. Of course it might be hard to justify all sorts of transactions we do but simple, smaller consumer transactions that are not taxed as capital gains should pave the way

⁵⁰ Silk Road Investigation story with IRS investigator tracking Ross Ulbricht <https://arstechnica.com/tech-policy/2016/08/stealing-bitcoins-with-badges-how-silk-roads-dirty-cops-got-caught/>

⁵¹ United States Vs. Coinbase <https://drive.google.com/file/d/1hqq44CIWF05iHY5GWP2UN67cVw5NWO2F/view>

for bitcoin to be used more as medium of exchange (again subject to less volatility, I don't think you would rush to buy a coffee with an asset as volatile as it is today).

In his 1955⁵² closing remarks Randolph E. Paul said *“The perpetually changing economic problems of modern life call for a flexible attitude which looks analytically at the past, realistically at the present, and hopefully toward the future with the knowledge that there must be constant adaptation to the new necessities of an expanding economy.”* Nevertheless what Paul's greater implication and context was, it is a reminder that taxation must not be static, it must be adapting to current needs, we might be applying and trying to look at new assets through the familiar angle but we must also be open to a change. These digital assets do not yet appear worthwhile looking and thinking in the context of proper taxation, but once they start to become stable assets, largely represented in economy, bringing new tax laws and exemptions to help economy flexibly navigate will become harder, and it will become part of the agenda.

⁵² William and Mary Annual Tax conference 1955 Randolph E. Paul address <http://scholarship.law.wm.edu/tax/646/>

Token Instruments

Two major concerns in prior sections were a) is bitcoin commodity or currency and what consequences this might have and b) how taxing bitcoin as a property by IRS might stifle its adoption as a currency. These previous two sections are interrelated and important primers. If they become clear over time they will solve lot of upcoming issues and will provide more clarity. Now I'd like to go through various implications that tokens have as financial instruments. Some are well-known and some are really brief because they are not yet fully implemented. Again lot of information to digest, but this is exactly the point, we do not deal with well defined assets and market, the more things I cover the better I paint the chaotic picture that I think we have.

Classification and Licenses

In section “Commodity class of bitcoin - hurdle to stability” I’ve tried to mainly cover bitcoin and how currency, foreign currency and commodity notions are intertwined. This debate seems to be more interesting and harder to move a needle, while the topic of security/commodity seems to be mentioned in every second tweet and federal report. It is true that ICO bonanza of 2017 has put security or not question on top of SEC’s agenda and I love this discussion when it implies some unique approaches. For example discussing if a token can be a security at some point and at some point not is still relevant, a question what disclosure mechanisms should be built in is as well relevant and how these tokens should be issued, regulated and traded all seems very interesting from regulatory perspective because it concerns securities regulation which is thorough and considers lot of risks. Still I will not provide at this stage how Howey Test works because Coincenter and Coinbase did an outstanding job in covering this⁵³, so did SEC in its investigation report over DAO tokens⁵⁴. It should be clear by this time that easiest way to raise money in token sale is by filing Form D⁵⁵ and by following SAFT⁵⁶ (although recently as rumored some SAFT projects were subpoenaed by SEC we’ll get to that later).

The whole conundrum from regulatory standpoint is that of classification, it the source of all “uncertainty”. I would like to point to one interesting observation that might be indicative of how cryptocurrencies might be treated and that is following “seized cryptocurrencies”. There were multiple instances where U.S. have seized bitcoins from civil forfeiture or criminal prosecution, unfortunately (because this is not interesting) they were of course auctioned. Who seized the coins is important as well, because if it was a federal agency they have to auction

⁵³ *A Securities Law Framework for Blockchain Tokens by Coin Center, Coinbase, USV and Consensus* <https://www.coinbase.com/legal/securities-law-framework.pdf>

⁵⁴ *Report of Investigation Pursuant to Section 21(a) of the Securities Exchange Act of 1934: The DAO* <https://www.sec.gov/litigation/investreport/34-81207.pdf>

⁵⁵ *Form D is a form that is required to be exempt from registration by Regulation D rule 506* <https://www.sec.gov/fast-answers/answers-rule506htm.html>

⁵⁶ *Simple Agreement for Future Tokens* <https://www.investopedia.com/terms/s/simple-agreement-future-tokens-saft.asp>

them, but in case it was your local sheriff who seized your digital assets following civil forfeiture, then unfortunate things can happen⁵⁷. Now if you keep an eye on seized digital assets and if any of the federal agencies puts them at official use⁵⁸ once they are seized, it can indicate how assets might get regulated.

Why classification is important? Classification of assets leads to acquiring proper licenses. For example if you want to advise someone on a non-commission basis regarding investments you must acquire Series 65 license, if you are a hedge fund manager with AUM over \$30 million you need to register⁵⁹ and have a license. If you want to trade futures contracts you need to acquire Series 3 license and if you want to buy and sell securities on behalf of customers you need general securities representative (GS) license that is Series 7. All these licenses are administered by FINRA. It is common sense actually, if you want to deal with substantial amount of capital on behalf of somebody and if you want to provide financial advices that you need to prove your proficiency in a given field. And each class or activity requires its separate license (as of October 2018 there will be one consolidated license⁶⁰). We have already seen that CFTC sued companies that provided these kinds of services without acquiring licenses, I doubt that there are many people who exclusively deal with crypto and have their licenses in place, unless you manage a large hedge fund. But this is as well understandable because there is no much clarification, if we can not decide what class bitcoin is, we are not going to settle on what type of license we will need to execute trades. In future if FINRA and NFA add cryptocurrency topics, they will help general broker/dealers and CPO/CTA exam takers know about these assets, further validate and expose cryptocurrencies to general public. Investment advisor can help to tell you where to put your money, based on basic rules, he 's not welcome to make you invest in a volatile token if you're retiring for example etc. Moreover your investment advisor will be in fiduciary duty with you and will be liable for breach of rules in you relationship.

I like the licensing approach for financial professionals, because compared to lawyers who must provide their J.D degrees from law schools or proof of reading the law, financial professionals might come from various backgrounds, prepare and understand the basic workings of the financial instruments they want to trade and start right off. This is an example of a founder who studied comparative literature at Yale - go ahead and figure out how his brain is wired⁶¹.

⁵⁷ John Oliver's Last Week Tonight episode regarding civil forfeiture <https://www.youtube.com/watch?v=3kEpZWGgJks>

⁵⁸ The Attorney General's Guidelines on Seized and Forfeited Property, July 1990 <https://www.justice.gov/archives/ag/attorney-generals-guidelines-seized-and-forfeited-property-july-1990#forfeited>

⁵⁹ Subject to different state regulations and exemptions

⁶⁰ Securities Industry essentials license - general license to acquire <https://www.investopedia.com/professionals/securities-industry-essentials-exam-sie/>

⁶¹ How amazon can blow up asset management <https://jirisancapital.com/amazon-can-blow-up-asset-management/>

ICO

Here I'd like to cover some of the current topics and some that are interesting observations in my opinion. I am not going to cover security-or-not issue regarding ICOs, I think Senate and House hearings as well as loads of content on that topic is pretty much extensive for somebody to form an opinion. I'd only say at this stage I support Howey Test approach, but yes, generally speaking most of the funds raised through ICO risk to fall under security umbrella but this is not generally applicable to *all* the cases, and not only this but "airdropping"⁶² as well is considered to be securities offering at some instances. On the debate of security/commodity in a lifetime I'd rather leave the ball to likes of Santori and Rosenblum, until I am able to develop my own opinion.

I will start with Swiss ICO guidelines⁶³, out of all the jurisdictions that claim to have figured it out, or created sandboxes, Finma has provided most concise guidelines to assess digital tokens. It must be mentioned that Swiss financial market and US financial markets widely differ by size, legal approach and complexity of regulations. I am not going to say I know Swiss securities regulation, but I'm pretty sure it might not be as stringent as one from SEC. The guidelines from Finma reads in a nutshell as: a) Payment tokens must comply with AML and are not securities; b) Utility tokens are not securities as long as they have actual utility and c) Asset tokens are definitely securities and have to fully comply with regulation. I like this guidance as a starting point, but would like more legal prose to elaborate on what constitutes utility token, is it a commodity per se or is the payment token equivalent and alternative to the legal tender? Once these are cleared then we will move to the waters where we will debate whether this specific token is a security or a commodity, but let's postpone this deliberation for the next time, it's early for that.

What ICO have done is that it have equipped general audience with fundraising minutiae. Although white papers are much lower in quality compared to PPMs and they serve different goal in their essence, they still educated buyers to be aware of risk disclosures, to look into teams behind the products and to follow market trends. I would say that this is a decent upgrade from millions pouring into kickstarter pitch pages that provided video and some formatized information about projects. Slowly, but we make wide audience literate in interpreting financial instruments. Now the downsides are of course big. I like to say that white papers are now prospectuses. I would like to make my case here based on the TON⁶⁴ leaked white paper. According to solicited investors their SAFT PPM is more detailed with over 100 pages, but their white paper initially and ambitiously set a goal to raise over \$1 billion, according to current subscriptions it subscribed even more than this. Now I'm not trying to be harsh, but based on the leaked white paper with almost non-existent technical specifications, delivering on its ICO is too much to ask. I'd suggest the reader to think if these 23 pages of white paper are

⁶² What is airdropping and concerns [https://en.wikipedia.org/wiki/Airdrop_\(cryptocurrency\)](https://en.wikipedia.org/wiki/Airdrop_(cryptocurrency))

⁶³ FINMA of Switzerland issued its guidance on ICOs in February of 2018 <https://www.finma.ch/en/-/media/finma/dokumente/dokumentencenter/myfinma/1bewilligung/fintech/wegleitung-ico.pdf?la=en>

⁶⁴ Telegram leaked white paper (primer) https://drive.google.com/file/d/1ucUeKg_NiR8RxcNAonb8Q55jZhao3WCoO/view

justifying a billion U.S. dollar round and to think about what your average investor would demand. Telegram initially pumped the rumors of its high ICO and what it actually does now is that it shops the private investors with seemingly neglected its initially announced minimum \$20 million buy-in, asking any accredited investor to join. Telegram is being blunt in its discounts for pre-sales, ranging from 30 to 80 percent discounts while it provides multiple offers it also confuses investors all along (*If you're offering SAFT that trades on the secondary market, there are the questions to be asked*). During SEC's enforcement wave, it is interesting if Telegram will pause for the public sale and prefer to stick with SAFT (which itself came under scrutiny last month). This is not a critique of a project, because I'm not familiar with details, this is a critique of the form of a document through which cryptocurrency projects raise funds that we consider admissible today. Even though I mentioned that ICO phenomena raised our awareness towards investment contracts, we still see poor examples that are reflective of the hype. Telegram's white paper is the sales paper per MIT research team of white papers.

For this reason I think crypto markets will benefit from the similar standard as Red Herring Prospectus and Gray Markets. Red Herring⁶⁵ administered (until clear regulations are set) under SRO (that yet has to be designed and approved) will enable investors to read standardized filings with necessary information, while existence of the gray market (like in Eurobonds) will provide issuer / underwriter with the ability to validate the price. I'm not saying none of this happens right now, because it does, whenever I'm dealing with large amount of capital, I try to test the price, try to get ahold of the draft offering, but issue here is that none of these are standardized, none of these are regulated, because we do not have clear guidance of what we are dealing with, we know don't who to address in case of a manipulation. You'd notice I've put few conditionals in brackets, this is to indicate how far we are from this needed scenario.

Regarding the SAFT instrument, last month SEC subpoenaed⁶⁶ few dozen of token issuers, though it stays unclear whether they were investors, issuers or lawyers. General consensus is that SEC went after fraudulent issuers, while some sources provided information that SEC might be after SAFT (filecoin and other big name ICO projects, mostly those who complied with SEC through Reg D, Telegram included) and this is due to the fact that SEC might be considering tokens to be both securities and utilities, with a promise that token will bring utility to the platform later and that it was initially sold on the premise of increased value on it. This is interesting take from SEC, something similar was heard earlier from other federal agency commissioner Brian Quintenz⁶⁷ from CFTC. It is interesting how SEC will decide upon this approach. This approach has been humming in the crypto space for a while by various stakeholders and as well challenged by the others.

⁶⁵ SEC and Free securities market, Commissioner McEntire's Address <https://www.sec.gov/news/speech/1947/011547mcentire.pdf>

⁶⁶ WSJ article regarding SEC looking into SAFT instrument <https://www.wsj.com/articles/sec-launches-cryptocurrency-probe-1519856266>

⁶⁷ Brian Quintenz about token's security/commodity nature <https://coincenter.org/entry/the-saft-is-a-symptom-of-regulatory-uncertainty>

According to the source, subpoenas were very detailed. Upon the final ruling of SEC token issuers will be able to negotiate with SEC or go to court. Both will result in public disclosures. Negotiations can result in issuers to comply with the securities law while cases that will go to court might not satisfy SEC's requirements at all. During these times investors should not be scared if SEC is coming after SAFT it is because they must understand that if anything is on the agenda of the SEC it is investor protection (subject to Senator Elizabeth Warren's believes). SEC will not step away from situations where people give promises and raise large sums of money. In my opinion subpoenas from SEC might be in part related to tZero filing for ATS⁶⁸, because per tZero filing they mainly deal with SAFT tokens, if this is the case, we'll soon see an Alternative Trading System (registered with SEC) that will list SAFT tokens. This is positive outlook for the subpoenas, on a grimmer note, it might mean that some of the landmark projects that propelled crypto in 2017 to the great highs will come crushing by regulatory enforcement.

Another concerning statement came from FinCEN regarding ICOs. What at first struck me as a panic due to how the news were framed by Coincenter, it seemed that doom has come and the most unpleasant and hellish regulation in crypto up to date known as MSB were to be exerted toward ICOs as well. Peter Van Valkenburgh published this report⁶⁹ where his opinions raised concerns about the regulator (FinCEN) who indicated need to of applying MSB licensing to ICO issuers (state-to-state licensing requirement to operate as money transmitter), but his opinion is itself an edited understanding of the FinCEN letter⁷⁰ itself. In the letter there was no direct warning and even the definition of a token seller was left blunt, preceding with "Generally" with whatever followed as the definition of issuer. It was omitted in the Coincenter's report, but in legal terms "generally" does not imply the totality and imminence, it leaves the room for additional interpretation. The ICO expletive paragraph was even followed by the one where it clearly said that in cases where "Token Sales" constituted sale of securities, SEC's oversight should be observed and not theirs. FinCEN would definitely abide to the prior SEC's definition which said that most ICOs are securities, otherwise it would bring even more contradiction to the market by fragmenting agencies' visions. This way FinCEN is just wiping its hands on the SEC in these regards and this is completely understandable, government agency would not jump out and preach a new concept when token classifications are not even its business.

Peter goes even further and brings the case whether the agency has the authority to be so indicative in a letter. Coincenter later provides a well elaborated distinction between "administrators" and "exchangers" and the proof of why miners and developers must be considered exempt from the MSB. It is obvious that FinCEN letter provides more ambiguity on this matter, but it does not indicate any enforcement or any strict position from the agency,

⁶⁸ tZero (subsidiary of Overstock) filing with SEC for ATS <https://www.sec.gov/Archives/edgar/data/1130713/000113071317000045/pressreleasetzeroico.htm>

⁶⁹ Coincenter report regarding FinCEN letter considering ICO licenses <https://coincenter.org/link/fincen-raises-major-licensing-problem-for-icos-in-new-letter-to-congress>

⁷⁰ FinCEN letter to Senator Wyden <https://coincenter.org/files/2018-03/fincen-ico-letter-march-2018-coin-center.pdf>

through its language the letter is mostly a nod to SEC. As previously stated by FinCEN, miners are not transmitters so as investors, but unfortunately it did not raise the question of developers doing ICO, this letter mostly prompts to put ICO issuers under MSB, but saying they are under SEC ruling (securities case) clears FinCEN's authority. Coincenter published in 2017 a great guide⁷¹ that goes deeper into the topic of administrator, exchanger and user with bringing definitions and limits of the guidance from FinCEN. It is clear that exchanger must be "business" and must buy and sell convertible virtual currencies to persons. Users who buy goods with convertible virtual currencies are not doing business, Miners who mine and put out their mined token to the network are not required to comply with MSB, because they benefit from the decentralized network and get rewards by contributing. Centralized administrators might be the issuers who have the right to issue and redeem their token, if you issue a token and do not have the right to redeem it then you're exempt. But this is the most ambiguous guidance regarding the new issuance and this is where it became more ambiguous this week with the FinCEN's letter. Although apart from having "user" as the most ambiguous definition in FinCEN guidance, administrator is also pretty much vague, because one can argue about the power of the decentralized network and its ability to redeem tokens back. Main concern is that previous guidance although left some ambiguities, was still practicable, this letter has one paragraph that questions one of the exemption, but not imperatively. Letter as well provides enough context not to interpret it as an enforcement but rather a nod to another agency. Now why this incident took my interest is because even a small letter that was addressed to the Senator from one regulatory body could be interpreted in multiple ways, and even though the letter did nothing but brought more ambiguity, its wide interpretation could be less panicky. These small incidents that are caused by small regulatory noises do play a role in the market and their interpretation must be done with a lot of care.

Non-Fungible-Token

Another subject I'm eager to address in this section is the noise around Non-Fungible-Tokens, which gained lot of traction⁷², excitement and support in the form of crypto-kitties. Lot of people provided insights and said that NFT is going to boom. I think we're pretty early in widespread NFT adoption in consumer grade products (we don't have any blockchain consumer grade products) and I don't think that we must veil NFT as collectibles, art ownership and game item ownership. NFT token at its low level is your identity on blockchain, your ticket to the concert or anything that can not be substituted by another asset. I think NFT is not revolutionary, but it is a perfect feature of blockchain assets, its usability just got a little bit shadowed by all the praise for fungible tokens. I think that NFT tokens until they achieve collectible stage, should satisfy identity management on blockchain and maybe lately somebody will as well find application of NFT in fragmenting art. I still see no point in owning 1 cm² of a

⁷¹ Coin Center -The Bank Secrecy Act, Cryptocurrencies, and New Tokens: What is Known and What Remains Ambiguous <https://coincenter.org/entry/aml-kyc-tokens>

⁷² Todd Goldberg tweet <https://twitter.com/todddg777/status/965797072652795904>

painting, it might be relevant for the ownership rights in Kodak One token, but it is not relevant in digitizing ownership of already existing artwork.

I think that NFT is the way to tokenize assets digitally, but first we have to fundamentally address the question of what we want to digitize and what will have a value once digitized. We do not have to rush and tokenize everything, it must not as well have a goal of trade or exchange, NFT must serve a goal first, like certificates, identity and contractual ownership. If we arrive to a point where the sole idea of tokenizing collectibles is to trade then we achieve a) highly liquid market and b) fundamentally not valuable asset. And in case a and b are true then regulators will start questioning how different are the rights attributes to these collectibles, if they are expressed through different contractual rights of holding an asset than these assets are different, but if the market is liquid and assets are easily tradable, if creation of these assets do not hold any other value rather than trade I don't see why it should not be regulated as financial instrument.

Security Token

First I'll note that it took a while for Twitter, Google and Facebook to acknowledge that companies purchasing CPC for ICO ads could be interpreted by SEC as Investment Company advertisers⁷³, what I find hard to believe is that advertisement prohibition over the internet channels could hit the market as much as analysts would say during the recent weeks. I would like to point that such actions are more of a side-effects of general consensus that most of the tokens raised through ICOs are securities, they are not the drivers.

If you need to register ICO as a security - this is IPO, your security is represented as a token that's it. One of the most interesting parts of security token can be that the company can raise funds through these tokens, do the due diligence and comply with registration and do not target to deploy underlying blockchain infrastructure at all. We might see established companies trying to supplement "security token" to diversify their capital acquisition plans contributing to the token economy after all. In order to implement this although there will be a need for relevant ATS to exist or current NSE to support trade of the security tokens. TZero plans to have such an environment, to provide a place where investors can buy security tokens. This is a timely thing, seen that most of the large ICO were conducted a year ago and so far none of the security tokens were registered with SEC and were issued through Reg D exemption, making them unregistered securities with obligation of holding for a specific period of time, meaning that by the time tZero is launched these exempted security tokens can circulate on tZero (I'd still leave circulation question open and see how exchange of such securities is regulated, because holder won't be considered as issuer anymore).

Legal ICO is nothing but an IPO tokenized and administered through a central exchange with prior registration. I will not draw the differences between ICO and IPO, these should be

⁷³ SEC Amendment to Investment Company Advertising Rule https://www.sec.gov/rules/final/33-8294.htm#P75_8815

clear to the most by now at the high level at least. I will not as well get into details on the subject matter of when a token is a security and when it is not. I will say that as discussed previously in this paper knowing the nature of the transaction might help (this is something that was supported by Vlad Zamfir as well). If we achieve to have a ledger where we indicate and disclose transaction natures, maybe we can then implement the regulatory triggers that will reflect whatever the market nature of token represents at the moment of transaction, but then as Rosenblum said we'll need homogenous regulation to accommodate smooth transitions. As good as this might sound, he also said that drawing the lines between these two will be difficult in a fluid market and when you factor tail aspects that follow the nature of transaction (such as taxation) you begin to question if this can work at all.

Deployed Capital (ETF, Interval Funds, Index, IRA, Endowments)

I'll cover few interesting aspects of how crypto capital can be deployed and what consequences each of these might have. I will omit describing crypto hedge funds that we now have, because hedge fund was the most flexible fund structure to deploy and attract investors in 2016/2017 and because most of the hedge funds are private funds it is hard to assess either their impact on the market or their health.

One of the most interesting investment vehicle so far for crypto is ETF (exchange traded fund). We've seen Winklevoss twins struggle to push their ETF through, we've seen GBTC trading with exorbitant premiums and we've seen reality shares ETF that promises to include blockchain-based digital assets in its portfolio through proprietary revenue-based algorithm on blockchain assets. There was a lot of chatter prior to SEC's rejection of proposed ETF by Winklevoss, providing insights why investors would buy into the trust with quite logical reasoning for its press time (that said when prices were surging). But SEC rejected Winklevoss ETF on following grounds⁷⁴: lack of regulatory clarity over the assets and liquidity management issues. It is important to understand that the more filings and commentary over rejections from SEC we see, the more regulatory clarity we are getting. ETFs in general are weird investment vehicles for SEC, it was brought up during a speech from SEC commissioner Kara Stein in 2015 where she underlined the abnormal behavior of ETFs during flash crash compared to the overall stock market⁷⁵. Although after SEC's rejection there were significant moves in the market congressional hearings shed a little bit of light on regulatory sentiment, CFTC approved DCO (Derivatives Clearing Organization) LedgerX that clears bitcoin options, CME and CBOE introduced bitcoin futures contract - that should have given CFTC clearer picture over the spot market trades. These things might positively contribute to future ETF approval.

I see Bitcoin ETF coming soon already, step by step there are regulatory moves that should be paving its way for such product to be listed. For me main concern apart from liquidity

⁷⁴ Article from law360 *Cryptocurrency ETFs Not Ready For PrimeTime, SEC Says* <https://www.law360.com/articles/1003851/cryptocurrency-etfs-not-ready-for-prime-time-sec-says>

⁷⁵ SEC Commissioner Kara Stein's remarks at Harvard Law School's Fidelity Guest Lecture Series <https://www.sec.gov/news/speech/surfing-wave-technology-innovation-and-competition-remarks-harvard-law-schools-fidelity>

and manipulation at this stage would be if at any time of the listing, the demand will be as high as in 2017's march where we waited for Winklevoss ETF ruling. By the time SEC will grant ETF permission to be listed, retail investors will become more rational (post-bear cycle), CFTC will have clearer picture over the spot market oversight and overall there would be more clarity. I guess that SEC might look into the general rules that applies to ETF trading (which are those of mutual funds with added exceptions or exemptions to facilitate trades). But even though that ETF products might be coming to the market, I think it might be early. Retail and institutional investors who do not want to expose themselves to direct bitcoin custody will opt to purchase ETF. Trust will hold large chunk of underlying digital asset, bitcoin market will become liquid through it, added to this fact that futures contracts are trading as well price discovery can finally stabilize fluctuations. My main concern for early introduction of ETF products falls again under classification issue. Introducing Bitcoin ETF to the market will further anchor its class as that of a commodity and commodity being considered as the most volatile asset, I do not think its introduction will straighten its fluctuating curve and lead to bitcoins adoption as medium of exchange, quite the contrary, it will enhance the "hoarding" phenomenon, locking out cryptocurrencies and further moving prices up without much solid reason behind it.

I would dedicate another discussion to ETF and digital assets, because it is pretty large concept affecting digital assets in serious ways. Above I've only covered ETFs with underlying asset that of bitcoin, but if market demand grows for different digital assets we can see ETFs based on ERC20 tokens and other vast array of ETFs.

Apart from ETFs that are traded on exchanges like stocks, I am looking into if there are any interval funds registered with SEC. Interval funds⁷⁶ seem to be a good match at this stage, they provide transparency, give access to all types of investors. You can avoid 2-20 fee rates of hedge funds, cater to non-sophisticated investors while preserving specific repurchase schedule to manage your liquidity and at the same time keep offering subscriptions. This kind of investment vehicle seems to be less utilized until recently in U.S although it makes sense to not jump right away at ETF listing but to start with interval funds, it will give SEC a sneak preview into how investors and fund managers react to market fluctuations, what repurchases look alike. This is a compromise between crypto hedge funds and ETFs that we want to see. But it surely provides SEC with some valuable information, I am surprised that I have not seen such implementations yet. Another thing market is seeing right now is a rush of Crypto Index Funds that cater to accredited investors. Coinbase asset management for example that rebalances annually (passive investment) adjusts to coin issuance/inflation and lists tokens per GDAX listing guidelines⁷⁷ (under certain limitations). It is a cheaper option (2% management fee and no performance fee) than buying into hedge fund but exposure is limited and less versatile. At this stage, when crypto options are not yet prevalent with broker/dealers, taking a plunge in Crypto Index Fund might seem reasonable. Buying-in into the fund is starting at \$10,000. Offer

⁷⁶ SEC about Interval Funds (short description) <https://www.sec.gov/fast-answers/answersmfinterhtm.html>

⁷⁷ GDAX token listing criteria <https://www.gdax.com/static/digital-asset-framework-2017-11.pdf>

is done through PPM and custody is supposedly managed through Coinbase cold storage system. The offering is made available through Regulation D - overall this is very neat product.

All of the above instruments need to hoard cryptocurrencies either through active or passive management. Passive management funds will lock their assets for a longer period, active will rebalance more often. But it is exactly this activity that will make crypto market appealing to investors during the bull cycles. How locking large sums will project itself on market prices is yet to be seen or how prices will react when funds exit large positions, for this to happen without lot of noise market needs more activity. Another interesting trend that implies locking crypto funds for even longer period was detected last Summer and that is Individual Retirement Account (IRA). Bitcoinira provides IRA to its clients with IRS' tax deferred status, so if you are eager to hoard your cryptos until you retire you can do so without accruing capital gain tax, until you start withdrawing when you reach you retirement age. Now this is obviously risky and this is obviously a trend coming from younger generation during the bull cycle, but good thing with this is that its long-term capital commitment can withstand bear cycles. This will lock crypto for even longer periods of time and what is interesting here to me personally is that if this trend gathers momentum, will it be able to raise serious questions regarding insurance of these accounts. As of now none are insured by FDIC or SIPC (because classification), but once they become hot and in demand we might be able to see discussion regarding custodianship and insurance to revive pushing clarity in classification if it's not set by that time. The usage of crypto in IRA is nothing but a positive step for overall health for crypto market. This is although a herd trend and needs to be addressed with the reasoning and counter regulation (disclosures would help). One reason for herding is because tax-breaks and limits compared to 401k are lower in IRA although compound interest of crypto asset itself in IRA can outperform regular 401k). This is an interesting trend because it counters the "tokenize all for the sake of instant-liquidity". Some things are better kept for what they were created for - longer liquidity and it appears that the young US generation is leveraging that, making IRA products hot.

What is yet to come to the industry are the crypto endowment funds, these might lock up chunk of capital and in bull cycles can be truly useful for the institutions using above principal gains. As of now most endowments serve educational purposes, but it would be interesting to see crypto endowment funds and foundations serving the goals of those unbanked. I assume there's a long way to that and maybe the next bull cycle will reanimate greed in endowment managers to resort to crypto asset investing. Another hurdle for endowments to participate in crypto is ethical and cultural standpoint, investing in highly risky asset in endowment is a bold statement to its donors that might need rigorous justification from managers.

As a side note, while deploying long-term capital on the market, it will be important to manage proper KYC policy in case we ever transform to fractional reserve banking in crypto space. Consequences to faulty deployment of KYC can be for example surprise U.S. national

indebtedness⁷⁸, currently foreigners hold \$1 and U.S. hold against it 0.89 cents. Because U.S. puts its investments in higher yield instruments, and foreigners invest their money in secure U.S. instruments, this leads to U.S. getting higher returns on the shorter periods of time. In case there is FRB in crypto and KYC is not properly in place there will be a hard time to figure out the indebtedness of the certain population in crypto. This is far fetched prognosis, but avoiding things like proper KYC can lead to unexpected results for overall economic health. If government doesn't know its position of indebtedness how should it plan its policies. The longer we deploy the capital to work for us, the bigger the temptation to implement credit product is, which can lead to FRB, and thus role of KYC will come handy, it is not only a tool that we hate to mention and love to avoid, but it is a tool to prevent economic downturns.

Derivatives

Derivatives were introduced as bitcoin futures contracts in 2017 by CME and CBOE, through self-certification process. For some reason it was anticipated that they would jack up prices even further, with anticipated liquidity inflow, but what eventually happened was that with introduction of bitcoin futures prices fell and suddenly confined their movements within 20% band limit that is set on the futures contracts to prevent critical price movements. What it brought as well was the asymmetry of understanding the price. Maybe futures contract enable price discovery but users of cryptocurrency, who are used to track spot prices now had to find ways to find publicly available futures contract expiration dates. I'm doubtful that large portion of bitcoin holders, or those who are eager to enter the market for short-term trade look at the delayed quotations provided by CME and CBOE. This is where the commodity classification of bitcoin should have brought more stability to it and had to be useful, so far after introduction of futures contracts market has been mostly in bear cycle and is still volatile, although it must be noted that no above 20% fluctuations appear to be as frequent as they were before.

Introduction of futures tamed bitcoin prices within the range of \$10,000 and was well tested, market didn't move two and threefold further with futures contracts. But what happened next is confusion, where futures traders need know to find the sources of information that will drive their prices forward. Futures traders look at bitcoin as financial instruments, spot traders look at it (apart from sudden investment gain) as a technological tool, both need to come to terms to understand the asset in one similar way and express their views then.

Crypto has introduced and challenged the asset class paradigm, while CFTC deemed bitcoin as the commodity and commodities are too volatile, building ETF over such a volatile asset in its infancy is a risk. Bitcoin is perceived as the cryptocurrency by many as well, currency being the least volatile of assets is the groundwork for building a transaction, not an ETF right away. Thing is we want from bitcoin both investment instrument and transactionality but with our current form of regulatory and asset class understanding it is not easy. Decreased volatility

⁷⁸ Paul Krugman's op-ed in New York Times regarding national debt <https://www.nytimes.com/2012/01/02/opinion/krugman-nobody-understands-debt.html>

will enable better adoption on the overall market, with implementation of much better instruments such as proper and affordable shorting, better derivatives as well as better currency ETFs (subject to how bitcoin will be perceived overall).

Being commodity with implied high volatility makes it hard to build better investor products with it. The stability must be brought into the market naturally as it grows. Futures introduction stipulated this through price discovery. But it as well brought another problem that is market psychology of participants. Many of the traders are not well versed in how futures can contribute to the pricing of an asset. Liquidity flow over long-term is not guarantee that price will skyrocket, but nevertheless that was the exact expectation. It is paradoxical for newly initiated traders to look at the tokens, see their price decline from the highs. Paradoxical in the way they love the assets they trade, it made them rich and they start to hate the decreased volatility. Bitcoin price gained some stability in mid-10 thousands for some time, and this is much better for the future of the asset, more stability in bitcoin will make it better medium-of-exchange, it will anchor itself as the stable currency on the market and it will force the regulators to look at it as such and not a commodity. But in order for institutional investors to fulfill their bets an options market needs to be developed, as well by opening bets to non-US players because there are holders of wealth overseas who must have their say in the crypto market.

We have yet to see bitcoin options being offered in a regulated environment, this should further stabilize the market and provide better hedging tools to investors. With LedgerX being DCO, it seems possible that we'll see wider and more accessible options trading coming this year. As of this moment your trades on LedgerX must be collateralized at 1:1 ratio, this way avoiding credit risk. You will be able to write an option (put/call, covered not naked) and sell it. It will be interesting to see how options will behave, are they going to be left non-executed, expired, are they going to be sold or executed?

Another aspect of derivatives is tail-classification, for example Coinbase considered Bitcoin Cash as derivative of Bitcoin and listed it on the grounds that fork was considered derivative of the main chain, same goes to the Ethereum Classic. This is neat reasoning to list any forked asset, but forks might start to differ widely from their main blockchain and this formula might not be applicable to each and every forked blockchain. But I have to admit that this made a lot of sense and gave flexibility to Coinbase to enhance its digital asset listing.

Now I invite you to look at weird history of derivatives regulation. Onions are the only agricultural product that was delisted from commodity futures in late 50s due to what was then called Great Chicago Onion Ring, where onion traders manipulated the market by owning almost all onions, dictating the price of the contracts, shorting them and then finally dumping the market with their onions to realize gains on short positions.

CFTC removed onion but what did they implement as measure to prevent this from happening to other commodities, still is a question to me. This does not seem as a preventive comment but as a remedy to the manipulation. Various researches were conducted after this

event happened to see how commodity futures contract affected asset's volatility. Results were unfortunately divided with some saying that with delisting onion futures, the onion prices were less volatile while others concluded that onion prices were less volatility when contracts were trading on the futures exchange. During the hearings, the Commodity Exchange Authority stated that it was the perishable nature of onion which made them vulnerable to price swings. Now bitcoin is not perishable, but the nature of bitcoin, private cryptography (secrecy) and small market (compared to other markets) makes it more susceptible for someone to corner the market. Now this is a feature of commodity (perishable plays a role), while in interconnected system with medium of exchange this could not happen. Today you might not be able to do it so publicly and you would not hold 98% of bitcoin, but by observing the volume and circulating supply, you can take the futures position with substantial power, enter and exit your positions and definitely affect the market intentionally or unintentionally.

Look out, onions are not the only exception, so are the the futures contracts for movie receipts from overseas. Prior to Dodd-Frank Act being passed two exchanges were ready to list DBOR (Domestic Box Office Receipts) contracts on futures exchanges. Hardly lobbied by Majors, MPAA and producers, senate banned listing of those contracts. Although this would highly benefit some unpredictable Hollywood box offices, producers became nervous that they would be prone to manipulation and insider trading from this product. Please take a note of the power of lobbying here as well.

Proof-of-Stake triggers new regulations

While everybody is interested in how Proof-of-Stake will work out, I have not yet seen a regulatory opinion over this type of consensus. PoS would trigger another regulatory sentiment towards the cryptocurrencies. As of now prevailing regulatory philosophy is that of an investor protection but in case of Proof-of-Stake we will move into the Regulation E⁷⁹ and Regulation DD⁸⁰, where philosophy will be bank-thinking based, thus focused on soundness and safety of the deposit funds⁸¹.

These two regulating arms are very different and require different mindset, while one regulates investments, the other regulates soundness of deposits. Once we move towards these waters we will see more of Feds enforcement and we might start to see discussion between Federal Reserve and other federal agencies debating whether bitcoin is a currency or not. Because once we move to PoS and substantial funds are deployed in order to mine blocks, we will have to admit that we moved away from security and commodity debates towards deposit debates. This will require thorough analysis of Federal Reserve's opinion but this will definitely usher crypto regulations towards a new direction. And what is even more interesting it will

⁷⁹ Regulation E - electronic fund transfers https://www.ecfr.gov/cgi-bin/text-idx?SID=5dd5fc774f9f78400e11a05bef3eef88&mc=true&node=pt12.8.1005&rgn=div5#se12.8.1005_11

⁸⁰ Regulation DD - truth in savings <https://www.ecfr.gov/cgi-bin/retrieveECFR?gp=&SID=4dbccaecaefa7e1acd877026e358000&mc=true&n=pt12.9.1030&r=PART&ty=HTML>

⁸¹ "Aspects of U.S. Securities Regulation" - *International Finance: Transactions, Policy, and Regulation* by Hal S. Scott, Philip A. Wellons

decouple Ethereum from Bitcoin because not only there will be difference by consensus, there will be difference by regulatory treatment.

Exchanges and Brokers

In previous sections I tried to cover important topics that were related to the cryptocurrencies statically, from within. I'm sure I've left more ambiguity and questions rather than answers there. In this section I am going to cover everything that is exchange and broker related. As much ambiguity as cryptocurrencies might have within themselves, when they trade and constitute exchange or market they are even more vulnerable to interconnectedness that is defined by nonexistent regulatory enforcement. I will try to cover topics that are less regarded or again boring with some regulatory updates and infrastructural descriptions. Hold tight.

SEC Statement

SEC has finally issued non-ICO statement⁸², where it clearly tells us that we trade on unregistered exchanges that are in business of trading securities. As a general rule you are protected when trading on ATS (Alternative Trading System), or through broker-dealer or on national securities exchange. But guess what, in crypto you're not. This statement came after Circle has purchased Poloniex⁸³, so either lobbyism or not, SEC seemed triggered to address exchange issue finally. It was a pleasant surprise to learn that Circle has plans for Poloniex to become ATS (although this raises questions because Poloniex has extensive listing with some tokens that definitely will fall under securities and to enter Poloniex you need to purchase USDT, which is even more shadier). I see word exchange taken too lightheartedly, thrown here and there, sometimes people approach me for opinion regarding building crypto exchange in eastern Europe and most of the time what they pitch is a brokerage service. It is a simple truth that none of exchanges serve us the same way and are overseen in the same way as SEC registered ones do.

The statement was very concise and thorough, giving average crypto investor the scope of what SEC registered exchange can provide to him - mostly these are oversight and control of fair trade, knowing what kind of asset is being traded on the platform, how platform is wired and how does it display information. Although there were no U.S crypto exchange hacks that would leave investors with nothing, this statement still appears to be late. It shows how much effort was put into ICO name calling by SEC that it didn't leave a room for other dialogue. It also shows efficiency, due to ICO stance the number substantially decreased over the time once SEC started to alert people. Now if crypto exchanges and brokerages will resort to registering their businesses we will further legitimize the industry and bring more confidence to the retail investors. Exchanges can do anything today with your funds and this is baffling.

⁸² *Statement on Potentially Unlawful Online Platforms for Trading Digital Assets* <https://www.sec.gov/news/public-statement/enforcement-tm-statement-potentially-unlawful-online-platforms-trading>

⁸³ *Circle press release upon Poloniex purchase* <https://blog.circle.com/2018/02/26/circle-acquires-poloniex/>

Registering as national securities exchange is no candy for sure, seen that how many crypto exchanges we have, once SEC goes after them we will definitely get fewer of those. What most of the exchanges and brokers can do now is to register as ATS (for example Poloniex) or as Broker/dealer (for example Coinbase)⁸⁴. Registration will put you under SEC oversight, will require you to comply with liquidity, custody and customer protection rules among others - this in turn anchors company as more legitimate and is going to appeal to wider consumer base. What you can not do although is to list unregistered securities and sell them, unless exempt by Regulation D or sold through Rule 144⁸⁵.

I want to make it clear that I'm not pro-regulation for everything and I do understand and love that blockchain is on a mission to remove as many of these regulations as it can. The reason that I keep coming to regulation is that it portrays our contemporary times and it delivers us a message that general audience is yet early in the game of trustlessness and that unless good self-regulation principles are in place, we'll get hammered by bad actors, we can't afford that as well.

Alternative Trading System Evolution

I consider that it is important to look at the evolution of Alternative Trading System regulation, because it definitely gives us a sneak peak at some technological developments in the exchange market, it illustrates the complexities that arise through technological developments and through the market needs. I consider this important because it will show us the path that SEC takes whenever tackling exchange regulatory issues and most importantly describes the challenges that any other exchange, decentralized or crypto would stumble upon. We do not solve all the problems through DLT introduction because actions of a man in the market are evasive in nature at some point and we have to account this factor. So far the best default rule in producing the fair environment is the disclosure mechanism, by enforcing the transparency we oblige parties to provide honesty in their behavior, upon which we can facilitate fair transactions. This is easier to say than to execute, but I think we lack the meaning of this statement when we want to overhaul the market with technological approach. I'd point to few issues of my interest while describing ATS and refer to some comments and thoughts made during regulation NMS⁸⁶ and its European buddy MiFID II⁸⁷.

Dark pools⁸⁸ (ATS) were operating by exemption to prior act and regulation but due to the increase of technological advancement the need to add more regulations arose. What happened is that institutional investors needed dark pools to trade large blocks of stocks without

⁸⁴ Coinbase in talks with SEC <https://www.wsj.com/articles/cryptocurrency-firm-coinbase-in-talks-to-become-sec-regulated-brokerage-1523043315>

⁸⁵ SEC summary of rule 144 sale of restricted securities <https://www.sec.gov/reportspubs/investor-publications/investorpubsrule144htm.html>

⁸⁶ Regulation NMS <https://www.sec.gov/rules/final/34-51808.pdf>

⁸⁷ EU's Markets in Financial Instruments Directive II <https://www.esma.europa.eu/policy-rules/mifid-ii-and-mifir>

⁸⁸ SEC on shedding the light over Dark Pools https://www.sec.gov/news/statement/shedding-light-on-dark-pools.html#_edn1

affecting the market by broadcasting their position and providing their identity. A number of ATS at that time lured institutional investors through privacy features and as well by removing HFT⁸⁹ (High Frequency Trading) from their platforms. HFT in normal set-up could anticipate purchase of any given stock at any given price and resell it at higher price to the bidder or to put it short HFT could detect any move and game it in its favor. Dark Pools excluded HFT, but some ATS cheated and did installed their own HFT algorithms and in some instances blocked these algo's reach to their large investors, this made these markets distorted and unfair. But there is a reason why ATS had to resort to this kind of operation, it was in order to offset the liquidity problem that it inherited due to the nature of its business. SEC eventually imposed stricter regulations over ATS in the forms of disclosures and customer privacies through regulation NMS. Dark pools were the results of demanded anonymity for the large block trading by large investors, but it inherited held the liquidity problem for the ATS, leading them to cheating.

Transparency question of traded stocks on exchanges (regulation NMS) was covered in comments of Reg NMS proposal, one research firm said that 69% of NYSE traded company executives were not happy with how their stocks were traded, requiring more transparency. This is interesting in the future application of the decentralized structure, because there are no company executives, there are developers and communities and yes speculators and unregulated exchanges can manipulate and distort their fair prices and values, hell knows maybe even corner them like Kosuga cornered Onion Futures market.

It is important to understand that by introducing Regulation NMS, SEC did not in any manner shattered HFT. Some think that HFT provides liquidity to the market, but truth be told they already trade on the liquid markets, trades are executed when you initiate the order and because it's faster than you, it can do latency arbitrage and resell your desired stock for higher price that you put in order at first place. HFT changed the nature of stock markets by making renting out spaces for HFT more lucrative and that is the concern from critics saying that by doing so exchanges compromise on market integrity and inclusion. From a technological standpoint it makes us to rethink about the importance of latency in the network and how essential it is for the markets to be fair. It further stimulates speculation on the markets rather than capital raise. It resembles LTCM model in a sense, where HFT does a portion on the penny of its trades, in case of HFT speed is its LTCM's leverage. Because SEC did not enact any new regulation that would kill HFT in the markets, a demand for slower exchange grew and resulted in IEX (investors exchange) that promises to execute trades fairly. Apart from this NYSE as well have implemented so called "speed bumps" that would slow down trades by a fraction of a second. Do not mix "speed bumps" with either trading halts⁹⁰ or exchange circuit breakers⁹¹ that are company or market demanded.

⁸⁹ About HFT and flash crashes <https://www.worldfinance.com/markets/controlling-high-frequency-traders-can-it-be-done>

⁹⁰ Trading Halts <https://www.sec.gov/fast-answers/answerstradinghalt.htm>

⁹¹ SEC investor bulletin in regards of volatility control and circuit breakers <https://www.sec.gov/oiea/investor-alerts-bulletins/investor-alerts-circuitbreakersbulletin.htm>

I wonder if crypto exchanges globally can achieve this level of complexity. Market definitely becomes overwhelmed by number of regulations which complicates it further, but it does so to provide fair participation and not to stifle competition or freedom. We do not have any of these in crypto markets as of now, because they are not registered as ATS and because they are free to either implement thorough rules or run away with our money. My main concern is that it seems, that by removing intermediary costs through DLT we would remove the revenue that market participants generate through speed and efficiency⁹² of the centralized infrastructure and this equation might not at all favor us. Where we think that we'll decrease intermediary costs and will provide speed, exchanges would see the high opportunity cost demonstrated in HFT outflow.

What Followed Reg NMS approval

Regulation NMS had intention to make markets more open and transparent, it has further put legitimacy through fragmentation by giving ATS SEC reviews. Now ATS could have level playing field with exchanges and they actually did so by increasing their overall market share in NMS stocks trading. It gave flexibility to the market in a sense that it can cater more specific investor needs and operate in a more competitive environment.

What Reg NMS did not tackle was the HFT controversy, which was followed by allowing speed bumps on national exchanges and by finally green lightning IEX - Investors Exchange that removed HFT from its exchange by channeling trades through 38 mile long fiber-optic cable. To understand the scale and efficiency of HFT I'll quote founder of Tradebot who said that he "typically held stocks for 11 seconds and had not had a losing day in 4 years".

Apart from giving exchanges like IEX a shot, another breed of ventures started to show up. LTSE (Long-Term Stock Exchange) - a proposed exchange that changes listing requirements with tenure voting, broader disclosure and flexibility to avoid activist investor intrusion is one of them. While LTSE is only available through synthetic listing on IEX for now it plans to get registered with SEC.

This might seem like a small effort, but how I actually see this is that through Reg NMS SEC made it possible for entrepreneurs to think about bringing innovation to the exchanges market infrastructure. It is ambitious thought but in the wake of technological upheaval it is worth the effort. Regulation-wise supported, move towards digitization of the market, we would eventually reap more technological benefits, for now we see IEX combating HFT, later we might see LTSE combating old-school wall street activist investors wishing to take over future FAANG and I like this trend a lot. It humanizes capital markets, it democratizes participation and it shows that SEC does not want to stand against blocking out-of-the-box thinking (well a bit of lobbying and load of cash will help as well⁹³).

⁹² This is what speed looks like at the current exchanges (**A must watch**) https://www.youtube.com/watch?v=NRUCWIoSL_k

⁹³ John Oliver episode over congressional fundraising, this is relevant because it manifests power and necessity of money in government <https://www.youtube.com/watch?v=YlomyjAw9HK>

Now why this is relevant to me, because this gives a room for crypto exchanges to get registered as ATS, this gives a room to a competition even between the registered crypto exchanges. But of course first thing to ask is what are they going to trade, which is a token-centric question, but once that part is clear, we are definitely going to see an increase in crypto ATS, which in turn will highly increase liquidity of the the market. My only concern is that crypto exchanges, mostly decentralized ones are focused on providing better infrastructure and more controls while omitting realities that current systems have. Eventually today's exchanges (ATS) go way beyond 20 page concept submissions and prototypes. The whole exchange is nothing but a set of thousand rules facilitated through infrastructure, once again to seep this reality in I'd recommend re-watching this video⁹⁴.

DCM Architecture

In the above subsections I've covered exchange environment through SEC angle, but there are as well CFTC exchanges that trade futures and options. Sometimes exchanges are registered within both federal agencies (stock options for example). In the following subsection I will cover how CFTC's exchange infrastructure is built and what are crypto developments there.

In the world of commodity futures, exchanges are called DCM or Designated Contract Makers, meaning they can list new products through self-certification or through voluntarily seeking CFTC board approval. DCM must prove in self-certification that its product's rules, terms and conditions comply with CEA. Most of the product/contract listing on DCM happens through self-certification. As far as contracts comply with CEA they can be listed on DCM. Self-certification must be provided to CFTC 1 business day prior to the listing. CFTC is limited in making DCMs to change the terms of the contract if it complies with CEA. In case of bitcoin futures, DCMs provided self-certifications earlier in July and October to cover the possible issues that could arise with these new products. Major thing that CME and CBOE did was to consider the margin requirement rule change following the CFTC recommendation during their self-certifying process.

I have following concerns - first is that the provision of providing self-certification 1 day prior to listing might lead to some complications in these kind of futures products, it was still good that DCMs took time before listing them, but still 1 day is very short notice, second is that self-certification would benefit market if it were more open to the public and transparent, so that it would make bitcoin futures more appealing to the general public and it would educate crowd about developing bear views and how to correctly trade futures instruments.

CFTC has a dedicated CFTC Lab that was created in early 2017 with the goal to improve CFTC's general policies in fintech and crypto and to provide in-house knowledge and groundwork to its divisions for the future rule-makings. CFTC agrees that bitcoin is used as

⁹⁴ *Extreme trading in Blackberry (this is 10 seconds of trading slowed down)* https://www.youtube.com/watch?v=NRUCWtosL_k

commodity (gold, oil), as store of value but that primary idea of bitcoin was to be used as settlement instrument (medium of exchange). From CFTC perspective, governance is risky and questionable in bitcoin, because there is no way if community comes to a harmful consensus for investors to reverse it. Another risk is the custody as we currently know it, custodianship of assets on blockchain does not have retrieval possibility, which is challenging to the current regulations. These risks make bitcoin a unique commodity. Nobody votes and changes the nature of gold or oil and because the commodity is not tangible its custodianship is less understood in the digital age. My following concern here is that this is an indication towards the fact that there is still a room to work on how to classify bitcoin correctly. This is further enhanced in this section by understanding that classification defines who is going to oversee and register exchange that you want to trade on, in case of Security it is SEC, in case of a commodity futures it is CFTC.

In CFTC, division of clearing and risk oversees clearing houses or DCO (Derivatives Clearing Organizations) which actually are Central Counterparty Providers between 2 futures contract participants. Clearing at this stage is risk management, which ensures that futures commission merchants can withstand a shock from volatility. DCO in crypto is represented through LedgerX. It went through a thorough registration, LedgerX is fully collateralized, thus it bears operational risks only and not the credit risks. It went through its operational workflow tests prior to the certification. CME is DCO and DCM at the same time so it doesn't need a filing for the clearing, it clears its bitcoin futures itself. CME margin on S&P 500 is around 5%, while for bitcoin, at initial offer to CFTC it envisioned margin to be 27%, but after consultations with CFTC, increased to 35%. Although DCM does not need any regulatory oversight it still addressed CFTC in order to better understand how to manage risks in these new products.

Division of market oversight oversees the rules following in derivatives markets, it reviews DCM and all new products that it enlists as well existing products and rulebooks it keeps so that they are all in compliance with CEA. In case where and when it's necessary it provides help in drafting recommendations, which was the case in bitcoin futures where division advised to increase margin requirement. Division of market oversight is not overseeing cash-markets for bitcoin, this was stated lot of different times in lot of different settings. They do not have authority in spot markets, unless there is a fraud or manipulation to detect.

Broker-Dealer and crypto exposure

It is not that straightforward and easy today to get sophisticated exposure towards crypto assets. Most assets do not enjoy regulatory clarity, there is a lack of regulated exchanges and these shortcomings have consequences. If investor is interested to get exposure to crypto assets he'll have to relinquish his traditional safeguards. Some unregistered brokers are offering crypto options and/or futures, almost none of the registered brokers offer exposure except for futures contracts. It is worth following developments in regulatory field because it will indicate when these registered brokers might be able to list crypto related products. Chances are with CFTC

giving green light to LedgerX to clear derivative transactions, the rising tide of self-certified futures contracts traded on CME and CBOE will follow soon, we'll soon see major brokers introducing these options.

There are lot of shady options in crypto derivative space now, the safest brokers appear to be U.S based, ones with concise disclaimers and insurance, while others, even those based out of U.K do not provide sufficient information to consider them worth the shot.

If you want exposure through options contracts and you look for a broker service that offers them and is reliable and secure, has acceptable limits and fees and is regulated, then your chances of finding one is very low or non-existent. But as mentioned before you can gain exposure through registered brokers offering you CME, CBOE futures or by picking ETFs that have crypto as underlying assets.

Exchange Auditing

It is important to understand what the word audit means, not to drop it here and there and to know which audit applies to which circumstances. The importance and knowledge of this subject will make your judgement more rational when you will be inquiring whether or not any entity has audits. For more in-depth and philosophical understanding behind the reason of the audit you must read some legal history, but for now we'll cover basics.

In crypto we often hear phrase security audit, these are related to the assessment of the underlying tech and per se they are not regulated, rated, mandated. These so-called security audits are related mostly to the technology, ICO project and usually smart contracts. When reading through security audits conclusions, you better check the background of the auditor, through his experience you can then proceed with your own assessment of the conclusion if auditor is credible or if auditor is a fraud. Andreas Antonopoulos shares the similar view that audit is not a word to be used interchangeably and that the domain where third party audits must be done to crypto exchanges will arise. It will need security experts, it will need CPAs, good accountants and technologists all brought together. A proper audit is anything that takes from one month onward and that is done on a repetitive basis. Andreas has done a reserve audit back in 2014 for Coinbase, he provided a snapshot at a time that Coinbase held its bitcoin reserves as promised and didn't run on fractional reserve as Mt. Gox did⁹⁵.

Financial audited reports are conducted by certified auditors, who pass exams, climb the auditor ladder and tie their reports to the reputation of the companies that employ them. These are strictly overseen by regulators and must meet lot of criteria set out by tax codes and other.

Very simply put, your uncle who has worked at a software company can be asked to audit his neighbor's tech project and he can deem it "secure". If the project fails your uncle stays at

⁹⁵ Mark Karpeles using customer's bitcoins to pay whore <https://www.japantimes.co.jp/news/2017/07/10/national/crime-legal/mt-gox-ceo-mark-karpeles-braces-bitcoin-trial-japan/>

home, will be probably yelled at, hated on but consequences are informal. Now your uncle has a small audit firm, he does cheap audits, has CPA license. He audited his neighbor's business, stating that all financial reporting and bookkeepings were correct. Later it turns out that neighbor had a ponzi scheme, now your uncle has more inconvenience to deal with at to say the least.

Financial reporting and audit may have multiple reasons to exist, depending on your inquiry and perspective. Audit is to see if you are compliant with applicable rules, that you do not perform shady business follow accounting principles and do your taxes. For a business, especially exchanges, this is not the same as BSA, that forces businesses to do AML/KYC. There is a general misconception in U.S. that crypto exchanges that flaunt their licenses are "audited", these licenses do not comply neither with SEC liquidity or disclosure rules, nor can they claim that exchange is somehow audited. What exchanges usually show are the AML/KYC state licenses. Having one of these does not mean that exchange have 1:1 ratio of your cryptocurrency to USD, it does not alert public if they run on fractional reserves. These things are not audits in any form, because audits are not created with ideology to serve BSA. You do audited report into your financial condition to see and say that the company is dutifully conducting its business. In a nutshell the purpose of audit and government is following: IRS will privately examine your tax filing, while SEC will publicly disclose the information. The reason why the SEC reports are made public is logical, although income-tax returns not being public is up to a debate. Even U.S. publicly traded companies do not disclose their tax reports, because Nixon and abuse. Companies argue that their returns contain vital information for their businesses, while others argue that tax return can not contain recipe for Coca-cola, or a proprietary line of code of Google algorithm.

A financial and operational report form must be completed by all dealer-brokers registered with the SEC. SEC form X17A-5 consists of three parts, including an annual audit that must be performed by a certified public accountant (CPA). This report is used to determine the dealer-broker's financial condition. Section 17 of the Securities Exchange Act of 1934 Rule 17a-10(a)(1) requires all broker-dealers to file Form X-17A-5. The idea behind this report is for exchange audits to disclose their assets. Once we have registered crypto exchanges, or broker services this will become compulsory, this is where I lost it when Bruce Kleinman was claiming that he looks into crypto exchange audits⁹⁶ to assess them. The only annual audited report from the exchange that was easily available to the public was one of the Genesis Global done by Friedman LLP⁹⁷.

A report conducted by the auditing company might contain or not the full data that you are interested to look at. There are many categories that X-17a-5 report covers, the most interesting being the opinion by the auditor about the general financial condition of the

⁹⁶ Bruce Kleinman - bitcoin you're holding may be derivative <https://hackernoon.com/bitcoin-youre-hodling-may-be-a-derivative-77bf1a1qfdb2>

⁹⁷ Genesis Global X-17a-5 https://drive.google.com/file/d/1RZ3v4MPLILPskCGtWqDbcq_FszsxvO1o/view

company, but if any additional information is there like SIPC supplemental report (in case of brokerage) or computation of net capital or statement of cash flows, they all can be helpful, otherwise a look at the statements attached and opinions expressed should be enough. There are cases that confidential information will not make it to the public pages as well and this is why the reputation of the audit firm is important. Big 4s will not risk their reputation to audit shady bookkeepings⁹⁸. The report must also contain an oath or affirmation that validates the responsibility of the auditor towards the company it audited.

The following report is interesting because it looks into the auditor's assessment of the the company that transacts/trades digital currencies. Genesis Global is the Authorized Participant⁹⁹ of the Grayscale (private bitcoin trust company) whose shares traded by premium of 35% at specific times. Apart from this, this report provides, a first in such case, sneak peak into the reporting of digital currency exchange. It covers the reasoning behind valuations, it provides taxation outlook, fair value analysis, assets that exchange holds and exemptions towards the liquidity ratio set by SEC if any, it also provides from where exchange takes quotes on currencies it trades, risks that it can have and etc. The previous audit reports were conducted by the Ernst and Young, but the companies decided to part their ways, no disagreements were disclosed for the partition. When you look for the FDIC or SIPC sign in future, do as much as you can to understand what is insured by the company, usually digital assets are not insured while cash reserves are. Friedman LLP is an audit and advisor firm that provides audit and consulting to various sectors and firms. It is a well established firm overall, and it pioneers itself in providing audits to cryptocurrency companies. It does an annual financial audit to Genesis Global and was doing audit to the Bitfinex until they suspended their relationship in early 2018.

In recent years there were few other publicly circulating audits. For example the audit that Kraken conducted focused on how many bitcoins the exchange possessed, and how many it owed to customers. In a legitimate exchange environment, the former should be greater than the latter. This sort of audit called "proof-of-reserve"¹⁰⁰ became popular and it helps exchange customers to verify that exchange does not run on fractional reserves. Another example is a high level internal audit performed by again Friedman LLP over Tether¹⁰¹ and this letter was also considered relevant back in 2014¹⁰², we definitely have come a long way, but there are still mountains to climb and deliver audited reports that level up to the current ATS and broker-dealer published ones, fortunately transparent blockchain exchange can provide customers with enough assertion. Being in exchange business means to be receptive to the exterior events and to develop along with them and not to be enclosed within ones self. To see how far traditional exchange has moved I'd just bring up that terrorism financing was not even a topic in early 2000s casebooks, while last editions are detailing its challenges to financial sector. I find that

⁹⁸ Enron Scandal https://en.wikipedia.org/wiki/Enron_scandal

⁹⁹ Authorized participant is the main liquidity provider for the ETF, he controls the creation/redemption of the units

¹⁰⁰ Kraken Proof-of-Reserve audit <https://www.kraken.com/security/audit>

¹⁰¹ Friedman LLP audit over USDT <https://tether.to/wp-content/uploads/2017/09/Final-Tether-Consulting-Report-9-15-17-Redacted.pdf>

¹⁰² Firestarter report over Bitstamp https://www.bitstamp.net/s/documents/Firestarttr_DD_Letter_for_Bitstamp.pdf

successful exchange business is less narcissistic and more focused on entourage. ATS development is as well testament to that.

Insurance

“A fiduciary is held to something stricter than the morals of the marketplace.” - Justice Cardozo

Crypto market lacks insurance mechanisms and before they are in place it is hard to think of any retail ready financial product for investor. The question of exchange is interesting because it entices various views on how immature crypto regulation is. It's early for ETF, it's early for brokerage, for custodial services and each and every of these lacks classification definition to have a proper oversight. One of the examples is the definition between commodity/security et al. once there is more guidance on this, more products will follow and probably SIPC coverage can be thought of to be applied to some crypto assets, with these in place we'll see appropriate exchanges with respective assets being registered and listed on them and finally insured.

Due to the lack of regulation and clarity over the crypto exchanges, honest players have hurdles in providing the insurance such as FDIC and SIPC that brokerage firms do to their clients. This became even more apparent during the Senate hearing where more uncertainty showed up. The state licenses route, that businesses have chosen to follow, does not provide an understanding on federal frameworks and these businesses do not benefit in any way from insurance instruments, even more these two things are not related and serve different goals.

When insurance mechanisms become widely adopted, bullish players would move with even more confidence and more conservative investors would enter the market. Jumbo players such as Coinbase, Gemini, Circle are insured, subject to the type of their operations. Also crypto exchanges are not the exchanges such as CME, Nasdaq and they (crypto exchanges) within themselves provide the brokerage-type accounts. If an entity says it's legally compliant today you must assume that they went through a thorough state-by-state licensing and what they mean is that they are compliant with FinCEN. You must give them a credit for it, for taking up this cost and complex route to keep money launderers off their platforms. But this is not a compliance that assures you as a customer that your funds are there and that you do not deal with a shady business.

We not only need the BSA implementation to offer insurance, we also need to understand what are the underlying tokens that we need to insure. Are they securities, commodities, currencies or something else. With this acknowledgement comes the regulatory oversight, with regulatory oversight comes the security in form of insurance. It is easy to say that today classification of any token is up to a debate, at some point we lean to the old regulations, refusing to outright ban them, but we might as well resort to drafting new regulations and challenge our beliefs in order to adapt to the new changing nature of our economy.

So far we can say that SEC deemed most ICOs to be securities, the most widespread and apparent way to raise funds and then enable the secondary market for these securities to trade can be the dark pool (ATS) then. Even though dark pools did have some backlash from the industry, the model at this stage can be well fitted for the crypto space. The uncertainty of the regulatory oversight and the current circulating SAFT proposal is an exact fit for the dark pool type of an exchange, we have tZero, and it offers securities trading, due to the current lack of regulation and classifications we can't say we can have properly regulated spot markets for bitcoin, unless manipulation and fraud are detected there.

Compliance and slow step-by-step approach is what players like Coinbase do to get along and attract more people they are a good starting point for newly initiated, because of platform's simplicity and integrity they offer new technologies to conservative investors, all while staying conservative in their operations themselves. Traditional market implementations must not be done through overriding decentralized promise and Coinbase is walking this line carefully.

In order to create safe crypto asset we can tolerate the high volatility of an asset deemed a "security", but we must not tolerate of one deemed a commodity that is medium of exchange. Safe crypto asset implies it has stability (not enforced by third party token), then we must determine what forces in the market are manipulating its price (seen there is manipulation on exchange levels). Because its price discovery is left to the open market and because it is built on the dream of decentralization, the forced solution of stability of a token is only complicating the process and per se rejecting the compliance mechanisms. If price discovery is thought to be left open based on the free market principle, then stability must not be enforced on the asset that is fairly new. The stability must be brought into the market naturally as the demand on the asset grows. Stability is praised in up and coming entrepreneurs and token messiahs, but what they try to do is to remedy time of free market with a forced solution. Being commodity with implied high volatility makes it hard to build better investor products for it. The stability must be brought into the market naturally as it grows. Decreased volatility will enable better adoption overall, with implementation of much better instruments such as affordable shorting, better options and ETFs among the others.

We've seen importance of compliance for exchanges, speed bumps and privacy and SIPC. Insurance on the accounts is in some sort the door to the derivatives, which itself is the door to secure asset. A number of exchanges in the United States are now offering FDIC-insured dollar deposits, which should help to bring more credibility and stability to the entire bitcoin ecosystem. If individuals are going to interact with the exchange and other platforms dealing with bitcoin, then they need to at least be assured that their dollar deposits are not going to disappear. Merchants that hold accounts in both bitcoin and fiat within Coinbase can benefit from dealing with one entity, transact in bitcoin and have their fiat accounts insured. FDIC insurance has become available for bitcoin exchanges through partnering banks. At this moment there are FDIC insured bitcoin exchanges but there is a lack of FDIC insured bitcoin deposits (which comes in the form of a wallet), but assessing the risk associated with a lost or stolen

bitcoin wallet it is still a work-in-progress for most insurance providers. SIPC Insures up to first \$500,000 on one brokerage account. These funds are recovered in case firm goes bankrupt, it does not pay off your bad bet. The SIPC although is challenged by the new custodial paradigm that crypto assets introduce. If the assets are more stable and the rate of their appreciation is projected for long-term, people will start to stack it, in which case demand for the insurance will grow. Custodianship in crypto assets means a new user interface for crypto assets, which is more secure, but as well makes moving in and out of it a little bit more complex due to its decentralized nature. SIPC coverage targets: stocks, bonds, mutual funds, notes, other investment company shares, and other registered securities. It does not cover instruments such as unregistered investment contracts, unregistered limited partnerships, fixed annuity contracts, currency, and interests in gold, silver, or other commodity futures contracts or commodity options. Insurance means that counter-party who holds your assets has something at stake as well.

One of the important issues before anything is decided in how crypto assets must be insured is how custody will work. There are lot of institutional custody products such as XAPO, Coinbase and BitGo, but they are generally accessible to the large investors. The issue of custodianship for smaller investors is by its nature more political. Specific asset inclusion in insurance program might determine policy of an agency, due to custody specifications. Let's say that a token with poor PKI might benefit custodianship, but a token that provides full ownership control to its holder might have issue to comply with traditional SIPC, due to funds irretrievability. Another question is if insurance covers asset classes by default how will it cover bitcoin? In a scenario where bitcoins are currencies then should it trigger FDIC mechanism? This is very unlikely and just one more reason to see how hard it will be for bitcoin to be a currency.

Observations and comments

My main observation in regards of exchanges and brokers is that they are very undeveloped. It is crazy to see importance of exchanges, how much disruption technology can bring to them and after all these years still see (and one major exchange crash) that we have not advanced much further. Although compared to scammish token sales, exchange business works, if you are able to put basic orderbook and lure market maker you can profit well, meaning incentives to provide fair services are there. Apart from disrupting technology and ideas that blockchain can bring, exchange is an existing and regulated concept, even though transactions might seem simple, compliant exchange requires far more effort and capital commitment from teams behind. One such exemplary team to me is Coinbase, which amid all the backlash it recently had still delivers transparent, regulated and forward-thinking products. By the end of 2017 and start of 2018 we've seen it was followed by other larger players such as Square, Robinhood and Circle. Robinhood, Square and Circle all offer zero-fees on trades to counter Coinbase, this is of course great and you can put this as a headliner, but we miss out the spreads, market quotes and states served, apart from other costs that each exchange/broker might

impose. Circle had lot of activity apart from Circle Invest (that lets you purchase crypto assets) it has purchased Poloniex, some people consider that Goldman purchased the Poloniex, which is a wrong statement. In other news it is considerable that exchanges started to lower their fees for example Kraken and CEX both lowered their fees in the same time in 2018.

How much lower fees are reflective of market maturity is difficult to understand because recently the market has been in its bear cycle, apart from prices falling from January highs, the daily trade volumes subdued as well and hover around \$12 billion daily, another visible point is how much assets in the market are correlated. As Bulkin has said “If we had more USD pairs we’d be seeing less correlation. Just a hypothesis.” This is a point of consideration, the more fiat pairs cryptos have, the more independent they seem, this is the side effect of immature market although and this negates digital Bretton Woods.

Markets have been declining for a while and the only news that drives the price seems to be regulatory, which turns out to be more negative overall compared to the previous year-end period where technological developments and speculation overshadowed other things. I think market is in disbalance towards the signals and it needs a lot of fine tuning. One of these fine tunings I think are simple quarterly reports that we demand from listed stocks. This might seem as a small nuisance to some in the grander scheme of things, but these obligatory details drive the market and set impulses right. Now in crypto’s decentralized networks, who must be in charge and require these reports is not totally obvious but at this stage developer community can be in charge, again standardizing this would be prerogative of an exchange or SRO and there is definitely such a need in the market. Reporting timeline might be as well redefined, seen that crypto markets move way much faster than traditional stock markets, this should be accounted as well. As of now uneventful, “uncertain” market that is in hibernation mode and do not provide obliged quarterly reporting just shakes off on-boarded enthusiasts, thus such an obligation creates productivity growth. This of course is early to determine, we yet have to see in what secular cycle the market is, bear or bull but implementing milestones in achieving productivity growth would benefit market participants to be kept in check. You might have lost \$4 thousand or more, but price signal is different than the excitement that crypto asset can evoke.

Another side effect of being unregulated in crypto is the tolerated risk of delisting. For example Bittrex is delisting 80 tokens. This of course will have consequences and this news should affect the market. Where is standardized delisting mechanisms or listing mechanism? Nowhere, the only guidance so far that I’ve seen thoroughly explained (except gimmicky polls) was provided by GDAX, but then again its transparency is not enforced and we are asked to believe the listing policy. This is a risk we all bare and with us the whole market. Listing is the result of thorough issuance, while delisting is the result of non-activity, we have to define these notions as well in crypto to start applying them.

This year (or by the end of it) I think we'll see USDT fall^{103,104}. Tether is ugly when used to avoid AML/KYC procedures and used for illicit funding, but it's useful tool on Poloniex and alike exchanges to secure crypto gains and then re-enter the market when there is a dip, all while avoiding withdrawal fees. Now this can be done with fiat currency, but in this case I'd personally prefer then exchange to insure my cash deposit while I hold it. Bitfinex'ed is very vocal actor in regards of Tether and I see as Poloniex will seek to get ATS registration we will see more enforcement directed towards this currency, OAG's initiative can accelerate this process too. Now I'm not in position to analyze Tether fully, but in case it goes bust consequences can definitely stifle further market moves, because many exchanges rely on USDT as of now. In case you are interested to read more about war on USDT, Bitfinex'ed provides extensive writing on topics around it¹⁰⁵.

And finally as to what is left for decentralized crypto markets, I would suggest that we first look at Forex market problems, how asymmetric their nature is, what is the nature of their decentralization, what loose regulations mean to them and beyond that, the asset that these markets trade is interesting as well, are all markets treating these assets in the same fashion, otherwise I think more time must be dedicated to thinking how decentralized exchange can interact with outside world, events and demands, how it can accommodate things that we expect from centralized and regulated exchanges. It is a good thing to look at IEX rulebook¹⁰⁶ and compare it to say OMG white paper. I am not rushing DEX teams to think and implement these things and I love Omise project, what I try to do is to point general public to a direction ahead., these rules are there for a reason, and this reason is the evolution and observation of the market. We must not reinvent the wheel when there are obvious things to consider. Another open question that I have is how DEX are going to circumvent HFT issues that might arise? We might need another SRO or better yet read and adopt MiFID II like rules. At the end of the day these rules will be translated into protocols, if not, then into support tickets (in case of DEX another question it is) and at some point decision must be taken and if we reject HFT completely, will there be incentive for traditional large traders to participate in DEX markets.

¹⁰³ *New York Attorney General's office has launched Virtual Markets Integrity Initiative where he required 13 exchanges to provide in writing clarity around various subjects of interest, one of exchanges as well was Bitfinex, more on this here <https://ag.ny.gov/press-release/ag-schneiderman-launches-inquiry-cryptocurrency-exchanges>*

¹⁰⁴ *Bitfinex'ed hired DC lawyer to fight tether*

¹⁰⁵ *Bitfinex and Tether are unauditabile <https://medium.com/@bitfinexed/bitfinex-and-tether-is-unauditabile-why-they-will-never-do-a-real-audit-3324e002b185>*

¹⁰⁶ *Investors Exchange Rulebook <https://iextrading.com/docs/Investors%20Exchange%20Rule%20Book.pdf>*

Goat Marathon

I had to provide too much information because we are not living in a sterile vacuum. You must get overwhelmed by all the interconnections, regulations, ambiguity and questions that are left open. The mess in the head becomes unbearable. Up until this section things were more combed. Here and afterwards I want to include things that didn't make the cut for specific topics but which are current and interesting issues. In Goat Marathon¹⁰⁷ I'd cover scattered things that are indicative of market players and situations that we should take a note of.

Inspiration: "Method is much, technique is much, but inspiration is even more." - another quote by Justice Cardozo that I think describes and fits state of crypto community and regulators. Both sides are strongly focused on method and technique, but by following the herd we start to lack inspiration, and it is not ungrounded, looking at regulatory agenda weighting over the technological promises, it takes its toll on diminishing inspiration, while few regulators are inspired by bringing inspiration to technology as well.

I'd bring up Coinbase example for this. During all the turmoil that Coinbase recently faced: class action lawsuit, insider trading probe, Robinhood competition, IRS taxation handling, VISA technical issue, Ripple trade rumors and CFPB with 2200 complaints, it still is the largest industry player providing easy access to cryptocurrencies, it produced great talents for the industry and it is not afraid to move slowly by working with regulators, further legitimizing cryptocurrencies and pushing new products all along.

Market and Regulations: With so many news from regulators the market will continue to bleed hard, until technological issues overtake, or regulatory signals are interpreted differently, the longer market is vulnerable to regulatory news, the bigger and stronger the technological breakthrough should be. Large wave of investors already seems to be bought into crypto, low daily volumes are no indication to buying the dip, because dip subdued to the bear cycle and in bear cycle the only instrument that you can get ahold of institutionally is the futures contract. With current hibernated attitude where obsolete regulators do the talking and wise men observe¹⁰⁸, we risk to see market going down further. Those who hold crypto assets for their fundamentals will keep holding them even in regulatory uncertainty, fundamental believers will start questioning when technological fundamentals will be questioned. I found a tweet from

¹⁰⁷ If Goat Rodeo is a polite way of saying clusterfuck, Goat Marathon is similar, instead of a rodeo although it's collective slow, long race and all the things that happen on the road

¹⁰⁸ Quote from french film *La naissance de l'amour*: " - Personne ne sait ce qu'il se passe aujourd'hui parce que personne ne veut qu'il se passe quelque chose. En réalité on ne sait jamais ce qui se passe, on sait simplement ce qu'on veut qu'il se passe. C'est comme ça que les choses arrivent. En 17, Lénine et ses camarades ne disaient pas "nous allons faire la révolution parce que nous voulons la révolution". Ils disaient "toutes les conditions de la révolution sont réunies, la révolution est inéluctable". Pour faire une révolution qui n'aurait jamais eu lieu s'ils ne l'avaient pas faite et qu'ils n'auraient pas faite s'ils n'avaient pas pensé qu'elle était inéluctable uniquement parce qu'ils la voulaient. Chaque fois que quelque chose a bougé dans ce monde ça a toujours été pour le pire. Voilà pourquoi personne ne bouge ; personne n'ose provoquer l'avenir. Faudrait être fou pour provoquer l'avenir. Faudrait être fou pour risquer provoquer un nouveau 19, un nouveau 14, un nouveau 37...

- Alors il ne se passe jamais plus rien ?

- Si, parce qu'il y aura toujours des fous et des cons pour les suivre et des sages pour ne rien faire."

Charles Hoskinson¹⁰⁹ indicative to this sentiment *“I rarely comment on price, but I will say this about the market. The price collapse you are seeing across all crypto is coming from fear over a regulatory crackdown, whales taking massive profits, thin markets, and inexperienced retail investors. No one can change or stop this”*. I have a feeling this will eventually lead to a more sane and stabilized market, no need to see 500% gain in a month, something that is moving within double digit pace over a longer period seems okay.

Passing the bills: Regarding how things look between two parties in Congress - there is a sentiment that crypto will have sort of a bipartisan leaning bill to offer the congress, where both democrats and republicans are supportive to introduce regulation said Bart Chilton (ex CFTC commissioner now Omega One advisor). This gives an outlook that when elected officials will try to review any crypto bills coming to their offices, bill might not spark a fierce debate between free market supporters and Krugman-like preachers. Although crypto contagion neighboring industries might become a concern to any elected representative who will then push hard on regulations and this will result in bipartisan a.k.a status quo enactment. But you can not urge these Senators and Representatives to give these bills fair share of attention, when they have more pressing and populist topics to address including FCC, trade, immigration, agriculture and wars among others.

Litigations: Now I want to bring up Tezos litigation example that seems to be over. I find that it is very interesting in the light of few factors, one that it has raised record amount of money, another that project wants to introduce governance model in blockchain and third the fact that this project was stalled by litigation. To summarize the story Breitmans (husband and wife behind Tezos) won over chairman (who conducted Tezos sale) of nonprofit foundation by settlement where chairman stepped down from the foundation. \$232 million raised during ICO were frozen, no beta, not even tokens were distributed to the investors. Now with new chair Tezos project must start gaining more momentum. Fight started by the foundation chairman raising concerns that Breitmans tried to exert power over foundation. Now as things have cleared, Tezos is hiring and moving ahead with team of ex Goldman, Morgan and Bridgewater. I'm generally interested in how project moves ahead and if it is able to provide a governance framework, but these things aside in future we should see more of a core teams breaking up, leaving projects and moving from one project to another. Most of the time big projects heavily rely on the founders and their vision and we vest our trust into their honesty to move these projects ahead. Of course some projects enjoy high participation and will withstand outflowing founder but in case of Tezos we see that some structures that can be legally binding between the founding parties can result in litigations that can stall promising projects, this further raises my concerns regarding what is the best legal structure to launch a project. I admit that we do not see this too often but this is a precedent and I'm taking a note of it.

Another piece of litigation news that caught my interest was that of Craig Wright (self-proclaimed Satoshi) or \$10 billion worthwhile lawsuit. In this case, Wright is being sued by

¹⁰⁹ Charles Hoskinson tweet from 03/18/18 https://twitter.com/iohk_charles/status/975410658723459072?lang=en

Kleiman's estate (deceased partner of Wright) for IP and bitcoin appropriation. Seemingly fake signatures left Kleiman's estate out of \$5.5 billion in bitcoin ownership rights. Compared to Tezos litigation where this one will lead is hard to say, from the examples of Tezos and Wright, the ideology of founder anonymity in such decentralized networks prevails above mentioned risks, but the risk that it creates is that projects usually need a leader to move ahead, if they do not have such a leader they should be outstanding and disruptive projects as bitcoin was. Paying attention to who's the author in a mediocre project is important, because a great leader might push the project, these kind of projects do not need anonymous founders. Widespread great projects that started dispersed and do not identify with a leader will be led by collective motivation, you can consider them as anonymous, by taking out central figures and legally binding relationship between founders, we remove risks of them running through disputes.

Twitterverse: Now the thing that seems most disturbing is the twitterverse of crypto nutheads. It looks like a pure kool-aid-drinking experiment, it is represented on almost all sorts of discussions and in tweet-tones, I'd rather see tweets that question grounded concepts, rather than a contest of the cynicism and wit. Another phenomena are twitter's cryptolawyers who downplay serious topics due to their agenda or on the contrary spike up a mere news apocalyptically, there is no distanced approach that would provide an in depth analysis and that would challenge both regulators and crypto community to rethink their established models (like it's been there for generations). Don't believe anything you read unless you dedicate time and do the research around the issue, there are lot of publishers who are of a poor quality and who are widely followed, I've seen large number of people who read onion-like news and take their statements as truth, if we have fake news in broad media, imagine how distorted the news are in the community where redditors are the newsmakers. If you master the skill of DYOR (Do Your Own Research) you'll end up in great places and I'd attribute DYOR skills to the way news around crypto are channeled - you always have to pull a thread, pick trusted resource and dig into the fundamentals. We don't get bored by twitter people, we get bored by the herdism they represent, and we do not seek a new luminary, we are just looking for a fresher perspective.

Blitz news: three jurisdictions with quick approaches to crypto: Israel told commercial banks that they *should not* discriminate crypto businesses and onboard them, Lichtenstein bank decided to offer you crypto and provide custody with it, Austria might move worryly towards crypto and regulate it as gold. As far as SEC's enforcement actions go they halted arisebank ICO that did raise \$600 million and scammed people in claiming they would buy FDIC-insured banks, many are still for some no apparent reason waiting for central banks to unveil "fedcoins" and lastly Salt's loan demand being far bigger than what they offer.

Do you believe in crypto hippie fable that goes like this - Final step to anchor crypto's position will be its full integration to the derivatives market. A roadmap will be - crypto IRA accounts, clearer regulations, bubble period past, insured accounts and ETF product offerings. Through derivative market crypto assets will finally stabilize to the point where stable coins and scammers will have no say, where price volatility won't force honest players to move

out benefiting hard core speculators, where spoofys won't be able to work, because in a deep market, price discovery will be more efficient and not easy to manipulate. By decreasing volatility and making crypto a boring next door asset, we will read headlines about daytraders purchasing water futures contracts¹¹⁰, shorting regions by megaliters at a time, while shorting bitcoin will not be exotic and prices will move more homogeneously, the hippie fable of free market and banking the unbanked will be in full action. There are just so many things that can go wrong.

¹¹⁰ *Water as a financial instrument* <https://www.investopedia.com/articles/06/water.asp>

SRO is RYP

In this section I will set myself loose and cover thoughts and possibilities that do not yet stand a legal or scientific ground. These are like puzzle pieces from different sets and that I like to put together and experiment with, so what follows is theoretical approach and not factual in nature.

I would like to discuss the possibility of Self-Regulatory Organization (SRO). There are talks about it in crypto, some notable mentions coming from Brian Quintenz (CFTC commissioner), Winklevoss twins mentioning it recently and Ryan Selkis who actively works on Messari. SRO would enable a fair framework and bring some transparency and standards that community will follow. This is helpful during the period where regulators are not able to enforce transparency due to regulatory vacuums. I consider that SRO can go even further. If we put in place right guidelines and establish right governance then decentralized economy might function without further intrusion of federal and other government agencies. Good SRO might coordinate globally with governmental agencies and as well provide network integrity and directly take into account global nature of cryptocurrencies from the beginning, rather than fragmenting network through various jurisdictions. SRO examples that we have today, among most notable ones include FINRA (Financial Industry Regulatory Authority, previously NYSE regulatory body and NASD) that was established under SEC rule and NFA (National Futures Association) that was established along with CFTC. FINRA and NFA can increase market oversight or change its policy either by posting new rules of conduct or by Congress passing new acts like Dodd-Frank (blanket for SRO). N.B: SRO is not regulation haven or sandbox, it is rather flexible industry oriented actor.

SRO was first mentioned in Securities Exchange Act of 1934 (this is some serious forward thinking in regards of market oversight and freedom 80 years ago). Today SROs are not only in financial sectors, they appear wherever there is a loose end from regulatory perspective that as well can benefit from markets self-regulation. SROs are usually established by governments or agencies and they are comprised of a diverse boards. Agency then cedes its oversight to SRO which oversees rules and conduct of SRO members.

Proper SRO can be incarnation of governance in crypto economy. Again I don't think we'll be able to achieve completely fair self-regulating rules, but this is not the issue that decentralized network can solve, this is governance issue that is prevalent everywhere. SRO can exert its authority over its industry members only and not on outside parties. At first SRO might seem appealing because it is distanced from regular government agencies but it has its pitfalls, some accuse the growing authority of SRO leading to corruptive behavior, while others doubt its efficient enforcement over the frauds¹¹¹. What is good with SROs though is that it can be more

¹¹¹ SEC Commissioner's remarks over *The Need for Robust SEC Oversight of SROs* <https://www.sec.gov/news/public-statement/2013-spch050813la.htm>

flexible for the markets and industries that are about to grow bigger, its board can consist of a wide range of stakeholders in the industry, but this still doesn't marry well with decentralized promise, absolute ownership and freedom. I'd argue it is still most favorable form to provide framework for the market that can range from anywhere between \$300 billion to \$800 billion in a span of 3 months. And I believe we are not at the stage where crypto market would self-regulate in a way that would be harmful, this is a loud market with lot of participants, and will of course require offsetting risks of large actors, as well as considering voice of smaller players.

For SRO to operate efficiently we'll need to decide and relinquish part of decision making. If we want SRO to stand a chance and have lawful enforcement, it should be structured under some government mandates, have rules and governing board composed of lawmakers, technology advocates, network and product engineers and investors among others who are necessary. I don't think that every forked blockchain must abide to its rules, it better give a substantial freedom to developers until network usage and market capital achieves a point where enforcement should benefit honest network participants, although it might set set-up standards and provide transparency. SRO should not meddle inside separate blockchain governance and protocols, its mandate should be to legally harmonize digital asset economy with real-world regulations. I don't think that rushed SRO will solve short-term problems, on the contrary a rushed movement to self-organize might result in government taking action first, thus it must be a synthesis between all stakeholders.

I like a lot how Ryan Selkis has described his Messari a.k.a. open source crypto EDGAR, in a proposed draft rules it will consist of: a) curated list; b) will be open to public; c) where token holders could vote to put upcoming tokens on the list; d) token holders would be hedge funds, institutions and mostly all the major stakeholders in the industry; e) token holders would be kept responsible for green lightning the projects they enlist; f) criteria would be provided to public at large. These rules are simple and manageable to start with, they provide a framework for transparency and standardization. In current market examples you can think of the power of CME and other futures exchanges that can introduce futures contracts through self-certification process - a crypto SRO must achieve something of this amplitude. As for other examples I'd suggest not to think about SRO as a legislative act, but more like the self-organization against certain events that we historically had, one example can be G10 summit on banking, story of Basel Committee or even creation of IMF as a result of Bretton-Woods system, these all are the results that came into existence because there was a need to self-organize at the first place¹¹² and resolve the issue. It is questionable yet, if with cryptocurrencies we are resolving obvious, real-world issues, unless majority suffers from current systems that are in place, we won't know, what we know though is that we are challenging current system by removing actors with concentrated powers.

¹¹² Hal. S Scott and Philip A. Wellons *International Finance - Transactions, policy and regulation "Emerging Financial Markets" and "Reform of the International Financial System"*

Self-organization that has to provide sustainable environment for fair market execution and behavior is subject to micro-governance and results in self-regulating organization. If self-organization is an effort, SRO is its sustainable result. It comes with issues and inefficiencies, depending on the industry and the final product. It is inefficient in case the object of self-regulation is not covered under the government law, this environment then creates free-riders (those who benefit of the industry regulation, but are not members and thus do not pay fees), breach of SRO rules that might not be adequately punitive, SRO that is not a blanket regulator for the industry and if not under direct mandate of a government agency, SRO might operate in shadow and be corrupt. Thus for self-regulatory organization to be efficient it must first operate in a regulated environment, where it has oversight, authority to certain market movements and enforcement and membership of which must be compulsory by law. What SRO creates is an enclosed environment, facilitated by speed, adaptability and ethics enforcement. With SRO we avoid risk of spiteful lawmakers, biased by political agenda to regulate or stall the market, these lawmakers being accountable not only to the market players but to population at large, in SRO we are given certain freedom, price and oversight board that is accountable to the market participants only, it has more flexible structure to detect and remove parasites, because its board do not hold elected offices and is not accountable towards thousands of populist topics. At the end of the day rules that regulate anything are burden to the absolute freedom, these rules have a goal to create fair and equal environment, which are human made notions, it doesn't mean that this is bad, just not what ideal free market is. SRO is not the remedy to regulatory trilemma of effectiveness, responsiveness and coherence¹¹³, it embraces first two with ease, coherence comes unfortunately with more state regulations.

SRO is a cultural phenomenon as well. A specific culture must be present to make it possible. Apart from culture it has ethics requirement as well. It is a system that encourages (regulates) certain social behavior by a collective (self) in order to avoid direct state intervention (regulation).¹¹⁴ Self-regulation starts from within and reaches the outer, while making the initiator liable for non-obedience. The goal of SRO is not to impose chaos and to be governed by a free-market, but to chip in for the good behavior, reject the bad one by castrating bad actors from the collective interest (with possibility to impose penalties).

This kind of Self-Regulating Organization will be defined by solidarity levels and ethics. Emile Durkheim has described well such connections between solidarity, law and division of labor in his book "division of labor in society"¹¹⁵, later with his legal opinions analyzed in "Durkheim and law"¹¹⁶ by Steven Lukes and Andrew Scull. According to Durkheim there are following correlations: mechanical solidarity resulting from dominance in criminal law that brings low division of labor and organic solidarity resulting from dominance in civil law that

¹¹³ Christine Parker and John Braithwaite - *the Oxford handbook of legal studies "Regulation" (2005)* <http://www.oxfordhandbooks.com/view/10.1093/oxfordhb/9780199248179.001.0001/oxfordhb-9780199248179-e-007>

¹¹⁴ CFA Institute "Self Regulation in today's securities markets" ISBN 978-1-932495-71-3

¹¹⁵ Emile Durkheim "Division of labor in society" <https://www.amazon.com/Division-Labor-Society-Emile-Durkheim/dp/1420948563>

¹¹⁶ Steven Lukes and Andrew Scull "Durkheim and law" <https://www.amazon.com/Durkheim-Law-Steven-Lukes/dp/0312222653>

brings high division of labor. Through this angle SRO can be formed reflective of crypto economy itself. It will require us to look into community of investors, developers and other stakeholders and by setting standards and rules of SRO (civil leaning or criminal leaning) we'll move the course of SRO to the level of division of labor that decentralize infrastructure strives to achieve. This will put potentially bigger importance on the board but this will make Self-Regulatory organization as well more flexible. Now this is a nicely lit hypothesis but all three components (law, solidarity, division of labor) seem to be necessary for a long-term SRO that will ignite the industry towards harmonization, where white and blue collars could merge.

Durkheim might have been looking at how law affects and is reflective of collective behavior in mechanical solidarity, but what is interesting is that organic solidarity and high division of labor were discretely the fruits of enlightenment. The society organizing through high efficiency increases division of labor, it is more interconnected, but this linkage is only possible if majority of efficient actors are vested with full trust towards the others and while others are responsible for their honest behavior. This is a description of high individuality, of faith in other for the common good, this is what democratic states have build their constitutions on. Durkheim has a point where he determines the two solidarities as pre-modern and modern, the further in evolution we have gone the higher the division of labor we have. This is as well why more advanced societies, democratic states with organic solidarity implement taxation based on fundamentals of equal opportunity. Measuring the division of labor through regulations (civil and criminal) leads us to the concept where the more advanced we are the more organic solidarity we have and the more forgiving. We are moving away from incriminating others and reducing division of labor, ideally this leads to higher contribution (employment) and this propels to the economic progress.

This tool helps when I need to think about all the promises that decentralized infrastructure is about to bring. Promise of disrupting economy through decentralization by giving power back to the people is a very loud statement, this process of formation a new economy is where this tool helps to understand the fundamentals of it. Any such new formation will be challenged by law, solidarity and division of labor. I will lean towards adopting a better division of labor and organic solidarity, I think most of the actors in this community are also hopeful towards efficiency of these two possible outcomes, where opinions get divided is the size of regulatory intrusion. Lot of actors in crypto space are free market preachers, but they are not the only ones, others such as young liberals enjoy the decentralized promise but would prefer higher role of regulation in the market. To address this I will resort to the theory of 3-tier law, where 3 very general types of law concepts are put into hierarchy.

First is: code is law, which had its meaning distorted by many in crypto space. They try to remedy bad behavior and to provide animalistic spirit as the reasons behind it, anarchy as the order, their motive is to show off that "(computer) code is superior to regulations". They have distorted understanding of the statement, which actually tries to translate how computer code can be instrumental to social interactions, behavior and control. Lessig has provided these two

quotes to counter anarchistic free market, “*So obsessed are we with the idea that liberty means "freedom from government" that we don't even see the regulation in this new space*”¹¹⁷ and then “*My claim is that we should focus on the values of liberty. If there is not government to insist on those values, then who?*”. This points to our immaturity, it is a fact that we’re still very excited by computer code and this excitement has to recede first, once the excitement has receded it can be implemented and the regulation can become a code. For its original meaning (Code is law) we still have a long road to go, for its arrogant current application in crypto it’s just wrong.

Second is: law is law. Now this statement is countered in crypto community by those who want to shut down the arrogance of “code is law” tribe. If “code is law” is a futuristic statement, then “law is law” is that of a current times. Simply put we live in a society where if you break the law you are going to be punished by these very laws and not by a computer code. I’d avoid providing further context to the statement law is law, because rule of law traces back to ancient times. I’d rather introduce other two notions that I’d use in further analysis. First is that rule of law and its enforcement is a testament to the *intellect* that is privy to humans and which results in self organization. Second is the variations of common law and civil law. In Durkheim’s solidarity model one might argue that his proposed model is a better fit for the civil law structure rather than common law, because it provides more coherent framework to distribute fair rule of law, but I’d argue that common law structure will enhance the progression and evolution of organic solidarity, if law is unbiasedly self-amending. Maybe civil law provides precision, but common law provides more moral understanding that is favorably required in high division of labor, a *compassion*, sort of.

Third is: nature is law (such as laws of physics, thermodynamics etc). As we’ve moved further into the layers, we’ve have also moved deeper. We started from future and we arrived to the most basic layer of law. Nature is governed by these laws, laws of physics and thermodynamics which on their part govern biological processes. Although these laws do evolve and we perfect our understanding of them over the time, they still provide basic evidence as to how observable universe works. We do not exert power on these laws, quite the contrary, this is why their function is not only important for universe to sustain life, but to understand how their function helps us to understand the fundamental human¹¹⁸ inclination towards self-organization and *survival*.

Humans are not ants or mice, we have *intellect and compassion (tier 2)* and we have *survival mechanism (tier 3)*. In a free market at some point we’d tend to organize eventually, because in an unobserved environment natural selection (tier 3) will produce vulnerable actors, vulnerability will trigger *survival mechanism*, which will trigger *compassion* towards other vulnerables in order to organize and grow to achieve higher fitness. Collectively they will impose

¹¹⁷ Lawrence Lessig in Harvard Magazine <https://harvardmagazine.com/print/29>

¹¹⁸ Human body until completely discovered is not a natural law <http://law.emory.edu/elj/content/volume-62/issue-3/articles/law-of-the-body.html>

rules and demand justice - a result of *intellect*. This process naturally elevates market nature from tier 3 to tier 2. At first we see solidarity as a result of a survival instinct at the very primitive level, the more we advance, the more organic the solidarity becomes. To understand that self-organization is result of tier 3 we look at ants, who might lack organic solidarity (tier 2) but who would organize for efficiency¹¹⁹ and survival (tier 3), what they don't have though is intellect which they could use for the execution of rule of law. All free market is organized and will eventually organize, because self-organization is embed in law of nature, which with the help of intellect translates into rule of law. What cryptocurrencies do is they test current systems to reboot and see the level of organization, this might be a free market test and exclusion of alternative currencies does not propel us forward. Inclusion of alternative currencies does not mean that free market will prevail, it means that it will factor in how we'll further self-organize.

Self-organization is the characteristic of tier 3, especially in thermodynamic systems. I'll bring myself a joy of making links to few of the hypothesis here. In thermodynamics we have three types of systems: isolated, closed and open. The nature of these system governs the exchange of matter and energy. In isolated system the entropy of that system only increases that is second law of thermodynamics, meaning that energy and matter does not enter or leave the system. Entropy in that system is the measure of disorder (non-useful energy). Observed universe is an isolated system. Our biosphere is not an isolated system though. In biosphere we have living organisms (a.k.a life) Schrödinger in his "What is life"¹²⁰ tried to decipher how life came to exist, because life is a sustained order. Difference between matter and living organism is the metabolism process, but this is not what makes order sustained. Schrödinger tried to explain that how the living organism sustains order in biosphere was through the negative entropy, which is reverse entropy (increasing the entropy output to the outer universe, by preserving order in our system). This is called Schrödinger's paradox and it does not contradict to the second law of thermodynamics because entropy increase does not happen in an isolated system. Following Schrödinger's "What is life", James Lovelock has built upon the Gaia theory¹²¹, which was further explaining that Earth was self-regulating organism that enabled matter and living organisms to co-exist and decrease entropy. This theory of self-regulating earth appealed to some and is still appealing, but was further countered with Gibbs Free energy¹²² to explain further how we sustain order in our biosphere and still conform to the second law of thermodynamics, Gaia theory also does not conform to the thermodynamic systems. Gibbs free energy provides availability of the energy through observation that the conditions in these systems are constant (temperature and pressure), presence of these constants provides reversal for energy to organize. Earth is biosphere that is open because it takes the energy emit from the sun and outputs infrared waves into space- high entropy is exported to keep our entropy low. To increase complexity on earth, sustain order, we take energy from the sun and our net disorder

¹¹⁹ *Ants self-organization* <https://www.theguardian.com/science/2014/apr/11/ants-self-organization-quanta>

¹²⁰ *Erwin Schrödinger What is life* <https://www.amazon.com/What-Life-Autobiographical-Sketches-Classics/dp/1107604664>

¹²¹ *James Lovelock Gaia: A New Look at Life on Earth* <https://www.amazon.com/Gaia-Earth-Oxford-Landmark-Science/dp/0198784880/>

¹²² *Gibbs Free energy* https://en.wikipedia.org/wiki/Gibbs_free_energy

output to the universe is greater than the order we gain on earth. Now where does the maximum entropy leads the isolate system? It leads to the thermodynamic equilibrium which results in heat death of universe. This is when all energy is converted, randomized, spread out and useless. In an isolated system, thermodynamic equilibrium is maximum entropy and entropy tends to increase. In biosphere this is when metabolic processes stop.

Now back to markets. U.S. markets are considered open markets in two ways. One is that they enable retail investors to participate in them (open system) and the second is that market input and output produces results in other markets and in economy overall (metabolism). These two statements enable me to assume that market behaves like a biosphere (living organism). But market alone is not a global economy. Market is one participating system, thus it is an open system that is part of one global economy that can be considered as an isolated system. Activity on the market is metabolic, it encloses itself (becomes isolated) on global economic level that is sum of all activities, thus its entropy is increasing resulting in productivity growth¹²³. Biosphere that self-regulates (pressure and temperature) is tier 3 law that keeps life sustainable in open system. Market looks like a living organism, it does not have set expiration date, it is a system and it is growing through inputs and outputs making it an open system, making it metabolic and a living system. Because it is a living organism it has a room for negentropy, which in economy is represented as business cycles, resulting in contractions and expansions. But as biosphere has its isolated system, so does markets have it and it is represented in ever-growing productivity growth that is overall global economic output.

We described the market as open system, global economy as an isolated system and observed their behaviors, now let's see reasons for market to self-regulate. Because we have a system of living organism in an isolated system it results in the presence of intellect, compassion and survival. Survival (result of living organism) leads to self-regulation. Survival ("what is life?" by E. Schrödinger) explained through thermodynamics leads to sustained order tendency. This tendency is possible through Gibbs Free energy that provides controlled environment that of constant temperature and pressure, these rules are needed for survival. Now we try to maintain these controlled environment parameters to sustain orderly life in our open system, we do this through adding more complexity to our open system. Eventually to preserve survival we need to expand the observable isolated system to the larger isolated system, by doing this we preserve open nature of our system, we preserve the complexity of outputting disorder, by preserving order in the system we operate. We self-regulate to preserve survivability in the system, because in case we find ourselves in an isolated system the disorder that we will output to the exterior system, to sustain order (life) in ours will only increase until it achieves thermodynamic equilibrium - state of non-activity. Think about subprime mortgage crisis with deleveraging of toxic assets. To say it bluntly entropy in isolated system is the irreversible process of increase in disorder¹²⁴ resulting in thermodynamic equilibrium.

¹²³ Ray Dalio - How economic machine works <https://www.valuewalk.com/wp-content/uploads/2014/10/ray-dalio-how-the-economic-machine-works-leveragings-and-deleveragings.pdf>

¹²⁴ Muse - unsustainable <https://www.youtube.com/watch?v=KYHLar--tac>

Crypto market looks more like isolated system in that it is not yet complex, it doesn't output disorder to the neighboring systems to sustain order in itself and it needs to do so to survive, otherwise if it stays isolated, the disorder in it will result in useless energy being fully spread out within the system itself. As loud as it might sound, yes SRO is a mechanism to introduce survival mechanisms to the system..

So no matter if we say “code is law”, or “law is law”, or “laissez-faire” is the law, we are humans with intellect, compassion and survival mechanism and in order to survive, we'd resort to self-regulation either through natural selection or through thermodynamics. This is our human nature¹²⁵ with bad actors both in free market and in government. Survival rules imposed by government are the result of our self-regulation, be it free market we'd arrive to the same system.

“Code is law” can happen in SRO with solidarity model of civil law (contrary to criminal law), structured through common law system that self-amends depending on inputs, that have basis of our natural behavior. This is valid because as part of natural law we eventually tend to self-organize and enact rules.

To understand that how monetary governance, purchasing power of a currency is important in structuring our societal behavior and self-organization I'll bring Alan Greenspan's quote “*At root, money - serving as a store of value and medium of exchange - is the lubricant that enables a society to organize itself to achieve economic progress*”¹²⁶. This is why acknowledgment of bitcoin as either currency or commodity is important, it challenges decentralized promise at its very core level, if we are able to pass this bar, then we are able to proceed further with decentralized promise.

If core fundamentals of decentralized promise are based on the currency/commodity issues and exchange issues (because decentralized promise provides economic incentives at its very basic level) then the further development of this promise is based on decentralized internet thesis. Both of these movements intend to organize us better, to move us towards more efficient economy and society. Bitcoin itself is a result of a collective thirst to bring order and solidarity. Challenge is upon us - are we ready to expand our system or not.

Remove Yourself from Power.

¹²⁵ Dr. Manhattan from Watchmen <https://www.youtube.com/watch?v=afFutavJeyc>

¹²⁶ Alan Greenspan's address at At the Annual Dinner and Francis Boyer Lecture of The American Enterprise Institute <https://www.federalreserve.gov/BOARDDOCS/SPEECHES/19961205.htm>