



Article

The Elephant in the Dark: A New Framework for Cryptocurrency Taxation and Exchange Platform Regulation in the US

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Abstract: The proliferation of cryptocurrencies and the remarkable expansion of novel economic practices associated with them pose an unprecedented challenge to established norms of taxation and market regulation. Drawing on two years of fieldwork, surveys, as well as big data analysis of the most valuable 100 cryptocurrencies' white papers and the terms of service agreements of all cryptocurrency exchange platforms, this paper proposes an evidence-based framework to design a novel regulation and taxation approach to cryptocurrencies and their markets by using the US as case study. This new framework calls for approaching cryptocurrencies as data money. Drawing on the material political economy of new digital financial practices, the paper locates the universe of taxable events and invisible/vague regulation areas by approaching exchange platforms as stacked economization processes. We need to make sense of these new economic spaces in order to imagine more effective regulative instruments addressing questions of economic actor protection and efficiency. The paper concludes by proposing a new instrument of taxation (Data Money Tax) and a dynamic regulative approach to cryptocurrency exchange platforms (Stack Regulation).

Keywords: cryptocurrency; markets; exchange; platform; taxation; regulation; US



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1. Introduction

World economies revolve around 180 fiat currencies issued by states and marketed by banks. Since 2008, cryptocurrencies have been forging a parallel monetary economic universe that needs neither states nor banks for printing and transferring monies and assets (DuPont 2019). In 2022, more than 16,500 cryptocurrencies are being exchanged in more than 40,000 cryptocurrency markets and barter places globally, operated by 451 centralized exchange platforms; this renders them the most varied money and most rapidly emerging market form in history (Caliskan 2020). Academic research and regulatory imagination have been slow in responding to such economic proliferation, imagining a limited intervention opportunity structure swinging between bans and misunderstandings (Middlebrook and Hughes 2014; Massad 2019).

Two developments are changing the world of finance for good. Exceeding 98 percent of the world's national economies, cryptocurrency market capitalization reached USD 2.9 trillion by December 2021. Operating thousands of markets that are open 24/7, cryptocurrency exchange platforms now envelope the global financial universe with an unparalleled reach. These two developments pose a historical challenge to social scientists and regulators. Reminiscent of the parable of the blind men and the elephant, we seem to approach cryptocurrencies from a variety of vantage points and propose different accounts to describe the same thing.

For social scientists, a cryptocurrency is digital cash, an electronic currency, a crypto asset, or virtual money (Dodd 2018; DuPont 2019; Swartz 2018; Rella 2020; Brunton 2019). For the Securities and Exchange Commission (SEC), it represents a digital asset that behaves similar to a security.¹ For the Commodity Futures Trading Commission (CFTC), it is a commodity.² For the Internal Revenue Service (IRS), it is a property.³ For legal scholars,

it is money (Alkadri 2018), not money (IFRIC 2019), fiat currency (Nelson 2020), not fiat currency (Cvetkova 2018), or a pseudo-currency (Hewitt 2016).⁴ Like in the parable, it seems that we are attempting to comprehend the shape of an elephant in the dark.

Such a rich perceptive variety in approaching cryptocurrencies in the social sciences and law creates new opportunities for making sense of new monies, their emergent communities, and the proliferation of their markets (Katsiampa 2017; Westermeier 2020; Breidbach and Tana 2021; Caliskan 2021a). However, the same wealth of definitions also contributes to a confusion of regulation and a variety of missed opportunities for taxation when these conflicting approaches are deployed in designing policies that (fail to) govern crypto economies. Never has there existed another taxation and regulation theme creating a wider spectrum of policy implementation and disagreement in the world than cryptocurrencies. Most countries deploy regulative instruments that fall within one of the following categories: There are countries choosing to implement no action in cryptocurrency regulation, while many choose to tax without regulating their markets. Others ban or limit their trading or mining, whereas a few do not even recognize their existence as money.⁵ China banned using, investing or mining them across the board. El Salvador implemented a cryptocurrency as its legal tender when its government chose Bitcoin as its national currency.

Yet, none appear certain about which approach to take with cryptocurrencies and their markets. This confusion gives birth to varying, or at times even conflicting definitions of cryptocurrency in different regulatory institutions, even within the same country, as we see in the US.

How to address this problem? By drawing on the US as a case study, this paper argues that we can benefit from the variety in social scientific perspectives to imagine a unitary and more effective framework to approach the regulation of crypto-economies and taxation of income accruing from cryptocurrencies. Most confusion regarding the nature of cryptocurrencies emerge from a lack of acknowledgment of their specific and novel material ontology.

Drawing on research regarding the white papers of those cryptocurrencies that carry more than 99 percent of market capitalization of today's crypto-economies (Caliskan and Birbil 2020; Caliskan 2020), this paper locates the historical and material specificity of cryptocurrency with the concept of *Data Money*. Following metal and paper, data present the third hegemonic materiality of money in history. With cryptocurrencies, we monetize the right to send data privately and to register these transactions on blockchains without the need for banks and states. The intangible yet material nature of such money production and accounting technology creates fundamentally new economic opportunities and thus leads to new regulation and taxation challenges. Overlooking the materially novel universe of data monies, most approaches draw on old regulatory frameworks to address the challenges of new economic realities. As result, instead of designing a new approach to emergent economic realities, these approaches expect novelties to fit into regulatory regimes designed to address old problems in the first place. Therefore, a cryptocurrency is viewed as a commodity by the CFTC, a security by the SEC, and a property by the IRS.

This first weakness of the analogical approach gives birth to another and more serious problem. The cryptocurrency exchanges are also understood to represent a new version of old markets, this time imagined as entailing two-sided or multi-sided exchange relations (Rochet and Tirole 2003, 2006). Based on research that analyzed all cryptocurrency markets' terms of use agreements and ethnographical fieldwork in one exchange (Caliskan 2021a; Birbil and Caliskan 2020), this paper argues that these exchange platforms extend beyond market relations in that they fulfil a multiplicity of functions—such as banking, exchange infrastructuring, minting, payment system maintenance, software development, security, and centralized extra-blockchain accounting. Proposing “stack” as a theoretical construct to qualify a new socio-digital economization process taking place in these data money exchanges, I argue that these exchange platforms can best be understood as economization stacks of multiple interactive layers with a supporting relationship. This is because they

deliver an empirically observable range of economic functions, all of which forge or take place in taxable events and thus need to be scrutinized from the perspective of regulation for the common good.

Data money exchanges are not mere markets. I have been studying exchanges for the past twenty years and have never seen an exchange that mints its own money. I propose that we leave behind older and under-developed conceptualizations of markets and embrace the concept of *stack economization* in order to locate and analyze mutually supporting platform-based exchange, production, barter, and representation processes. Unlike under-digitalized economic relations that draw on the unitary exchange infrastructures of auctions, out-cries, computerized transfers, and the like, hyper-digitalized crypto-platform work takes place in digital socio-technical spaces where users and makers simultaneously imagine, build, operate, and invert stack economization with invisible taxable events and under-regulated yet substantial economic activities.

These two novel economic concepts, *Data Money* and *Stack Economization*, can help us to more effectively address contemporary challenges associated with the new economies based on cryptocurrencies. First, stack economization allows us to locate taxable events more easily and accurately, by making visible all economic activities that take place on an exchange platform. Such an enrichment of perspective renders it possible to *stack-regulate* a platform's economic activities. Furthermore, limiting our analysis to a two-dimensional demand-and-supply universe also limits our imagination to taxation only in the moment when data monies and all other economized assets, properties, and commodities are cashed and transferred to fiat currencies. As we will see below, such a limitation decreases net tax revenues, complicates taxation processes in the name of simplifying them, and prevents regulatory agencies from effectively addressing consumer–investor protection issues without curbing innovation. By taxing data monies in terms of the same materiality of money, taxation authorities can simplify tax compliance, increase their revenue, make visible a more comprehensive taxable event portfolio, and, finally, foster new crypto-economic innovation.

Would this lead to a declining importance of fiat currencies in world economies and the undermining of states' democratically accountable governance of economic life? Data suggest that the proliferation of crypto-economies did not curtail, but rather foster the Dollarization and Euroization of trade (Caliskan 2021a, p. 131). Furthermore, the platformization of crypto-economies in centralized exchange contexts surprisingly undermined blockchain accounting systems and began relying almost solely on double-entry book-keeping. Third, the very organization of seemingly decentered and disintermediated blockchains is based on centralized economic and political relations that are governed by new intermediary institutions (Rella 2021; Golumbia 2015; Dodd 2018). We are witnessing an order-creating economic innovation, not an anarchic one. Finally, various fiscal logics are already embedded in blockchain considerations and their design, making them more ready for regulation than many observers expect (Christians 2019).

We live in an age that witnesses an explosion of network effects in platforms, an expansion of data money relations, and an unprecedented stacking of economic relations—to such an extent that even millennium-old definitions of corporeal and non-corporeal property are changing. A webpage, an exchange platform, a universe in the metaverse, or a header space on a webpage are all intangible yet can be observed and sensed. The very platforms that economize these new spaces—from online bidding to cryptocurrency trading on centralized and decentralized platforms—now constitute colossal economic growth that requires a new perspective of platform regulation.

The paper concludes by discussing concrete taxation and regulation instruments as well as examples of their deployment on the ground. The emergence of data monies and the platformization of their economic treatment has blurred the boundary between commodities, properties, inventories, capital assets, and securities, on the one hand, and exchange, barter, rent, and production relations, on the other hand. Our taxation philosophy and regulation perspective were built from and mobilized by the building blocks of the

pre-digital economic age. Therefore, neither the SEC nor the CFTC bear the jurisdiction and power to regulate the entire universe of cryptocurrency markets, as both of their chairmen confessed in 2018 in their testimony to the Senate's Committee in Banking, Housing, and Urban Affairs.⁶ Following the proliferation of digital materialities and the hybridization of economic relations around us, we also need to hybridize, enrich, and reform our understanding of taxation and regulation. We cannot continue to address new economic problems with political solutions that were designed for the pre-digital economic age.

2. The Emergence of Data Money and the Working of Exchange Platforms

The materiality of money matters. From clay tablets to cigarettes, the materials through which monies can be imagined are limited only by the boundaries of the human imagination (Zelizer 2017; Bandelj et al. 2017). Despite such a well-documented and rich universe of money forms, however, there have been only three hegemonic materialities of fiat currency used within and across politically defined boundaries: metal, paper, and data (Caliskan 2020). Metal fiats emerged in today's Anatolia (Turkey) around 550 BC, at the hands of the Lydians (Aglietta 2018, p. 89). This first legal tender was heavy and difficult to mint, imitate, spend, and steal. Today's metal monies still are. This new money and its material configured the ways in which taxation and pre-modern financial regulation took place. Still being used today, one of the most valuable metal fiats in the US is the quarter. Since it is also the heaviest US coin, USD 1 million equates to more than 11 tons of quarters.

As a result of the material limitations that metal imposes on monies, all metal fiats have been represented by other things, such as paper or a promise, eventually giving birth to the second materiality of money—that is, paper. Since the thirteenth century, when Kublai Khan started printing on pieces of paper for use as fiat currency, paper monies have proven to be the most common, valuable, and popular materiality of money globally (Desan 2014). Being 60 percent lighter but 1000 times more valuable than a dime, one 100 US dollar bill weighs only 1 g. With 10 kg of 100-dollar bills, one can carry one million dollars in a backpack. This practical new materiality of paper also came with its own limitations: For the transfer of 1 billion, one needs a truck.

Since the 1970s, monies have mostly been represented not by metal alloys or paper, but digitally (Swartz 2020). As the use of paper money historically declined, we have increasingly observed fiat currencies being digitally represented, transferred, and exchanged around the world. Yet, whether in the form of cash or a number on a screen, digital money still remains a computational representation of sovereign fiat currencies *originally* in metal and paper, or their representations imagined as debt.

The appearance of Bitcoin in 2009 marked the emergence of the third hegemonic materiality of money—that is, data. Whenever one owns a quarter or a 100-dollar bill, one also owns the material that carries its imagined value. Yet, Bitcoin is not merely a passive data entry in one's computer or cell phone. It is the exclusive *right* to send data through a new accounting technology called blockchains. When transferring a Bitcoin to someone else, one sends the right to transfer data from one location to another. This transfer of ownership is registered on the blockchain without the need for a bank or a state.

This historical novelty is often overlooked, and such an oversight leads to confusing data monies with mere electronic cash, digital monies, and virtual currencies, all of which can represent actual fiat currencies such as the USD or EUR. Data money is not digitally *represented*, but computationally *constructed* in the socio-technical universe of a blockchain. It is as material as metal and paper monies, yet intangible when compared to other money types. It is not a memory entry in a memory device. Computers are essential for these monies to exist, but they are not sufficient. What makes these data monies new is not that they are created with data, but that they are imagined *as the right to send data*. Since digital objects are easy to copy and paste, it is impossible to monetize digital objects if they are not rendered unique in order to prevent double-spending or the irreversibility of a transaction.

Blockchain accounting infrastructures solve these two problems and make it possible to monetize data.

Surprisingly, however, the trading practices in most cryptocurrency exchanges do not draw on blockchain accounting at all. My research suggests that less than 10 percent of Bitcoin transactions are now registered in blockchains and that the ratio of such a register has been declining (Caliskan 2020). In other words, more than 90 percent of Bitcoin globally owned are not registered in personal accounts, but instead kept as custodian assets in centralized exchanges. It seems that centrally organized markets have proven to remain hegemonic over blockchains. Yet, these data money exchanges do not work like others exchanges in the world. They are categorially different.

Exchange platforms work as stack economization processes. Empirical studies of cryptocurrency platforms have demonstrated that the economic practices mobilized in data money exchanges entail a spectrum of unprecedented economic events and practices. Such multi-functionality is constructed as result of the material opportunities that have given birth to the possibility of stacking economic relations in the socio-digital universe of data things. On these platforms, one can build one's own market infrastructure, borrow money to trade, receive and give gifts, exchange USD for ETH, buy or hire security services, subscribe to a trading algorithm, and, if necessary, even bypass the organized market with an OTC (over the counter) trade, if one is a special platform customer.

Designers Stephen Johnson and Lauren Stobierski have illustrated the workings of a cryptocurrency exchange by collaborating with me on visualizing a description of a cryptocurrency exchange platform, based on fieldwork that I conducted in their offices among their 200 office workers, engineers, administrative personnel, and traders (Johnson and Stobierski 2021). X Exchange, a pseudonym I employ to ensure the anonymity of the company that runs one of the largest twenty exchanges in the world, operates six main and categorially different businesses on its platform. All these six areas of interaction that mobilize an assortment of economizing practices generate substantial income or support the income-generating activities of the platform.

2.1. Market

As one of the central parts of the platform's modular architecture, the marketplace organizes the practices that entail the selling of data monies in exchange for fiat currencies. To be able to purchase a Bitcoin, one has to transfer USD to X Exchange. Since it takes time for banks to transfer the amount, the exchange bears the risk and allows the consumer to immediately buy data monies. Alternatively, the consumer can also send their data monies to the exchange and begin trading them there. This space is the only place where we can observe on cryptocurrency platforms a market relationship appearing neo-classical in nature, i.e., displaying a supply and demand mechanism.

2.2. Barter

Consumers can barter their data monies with each other. The exchange decides which cryptocurrencies can be traded or bartered on its platform. Cryptocurrency exchanges charge an entry fee for cryptocurrency projects to be traded. According to the economic actors whom I interviewed within a community-data-money-making project, these fees can be as low as USD 10,000 for insignificant exchanges and can rise as high as USD 10 million for significant exchanges. In one of the negotiations that I observed between the community representative of Electra Protocol and a cryptocurrency exchange platform, the platform representative requested USD 75,000, only to decrease the amount after a few rounds of meetings (Caliskan 2021b). Bartering gives the platform a series of economic advantages. The platform can require the consumer to buy its own token, X Token in the case of X Exchange, to barter a pair of cryptocurrencies. Hence, it incentivizes the usage of its own money and creates a competitive advantage for its valuation. If users buy or use this X Coin, the fees that they pay for using the platform decreases significantly.

2.3. Gift-Giving

In addition to barter and market exchange, X Platform employs gift-giving as an economic practice, in two ways. By means of occasional airdrops of X Coin, it distributes a gift money to its users to incentivize both the usage of its own platform and the money minted on the platform. Second, the platform gives away free money, either in terms of X Coin or a small amount of Bitcoin, such as USD 10 worth of it, so as to attract trading from people who are not (yet) members of the platform.

2.4. Banking

Data monies are based on transferring the right to send data. Such rights transfers take place when users exchange private keys. To be able to send the private key, however, users must be able to use an interface which also requires passwords that may be as long as an entire paragraph. Data monies operate on very effective materials to harbor value; theoretically speaking, one can place all monetized value in the world into only two digital wallets (one needs at least two users for data monies to work). As result, if one manages to figure out the private key and login on the interface, one can steal all the data monies from a single account. This explains why more than 90 percent of the data money trade in Bitcoin is not registered on blockchains and instead remains as custodian assets in the exchange. The users “deposit” their monies in the exchange, making it possible for the market to operate like a bank.

Technically, then, the exchange keeps the money and issues a digital certificate to the users so that they can trade the amount that they own on the platform. In reality, users do not see a certificate, but only a number in their account balance. In theory, however, this same data money can be used infinitely by the exchange in a variety of ways—from staking, which earns interest, to trading on a platform, including their very own. Furthermore, many exchanges lend money to other traders if they desire leverage to increase the data monies involved in a trade beyond the actual money that they possess. Finally, much like central banks, platforms also mint money—that is, their own native coins. These coins can be blockchain-based or plainly accounted for in the double-entry book-keeping of the exchange.

The world’s most valuable platform coin, Binance (BNB), was trading at USD 646, with a market capitalization of USD 104 billion at the time of editing this paper in December 2021, following Bitcoin and Ethereum. It is a telling fact that, among the top five most valuable data monies in the world, only two—namely, Bitcoin and Ethereum—are community monies employing open-accounting public blockchains. USDT and USDC are “stable coins” whose value is based on the power of the USD. In addition, BNB is a platform coin, issued by the Binance Corporation, the world’s largest data money exchange in terms of trade volume.

2.5. Arbitration

Many terms of service agreements locate the exchange itself as the main arbitration house for disagreements among customers (Birbil and Caliskan 2020). Such a function of arbitration is also a paid and required service of the platform. Arbitration decisions cannot be appealed in most exchanges and may result in the termination of service agreements with customers whom the exchange locates as pursuant of a compromised relationship. This arbitration function of the exchange represents one of the most contentious and opaque areas in platform operation. The arbitration processes of many platforms are so arbitrary that I failed to observe even a single written document about them. Especially at times of price volatility, when platforms can choose to halt trading a number of cryptocurrency pairs, arbitration issues skyrocket, and it is up to the platform’s discretion whether to open a case or not. Most of the time, cases remain unopened. At such times, one cannot even reach a single person in the exchange over phone.

2.6. Software and Data Services

Platforms facilitate barter and exchange, but only after they fulfill their computational industrial production. The design, manufacture, and maintenance of a platform software consists of a meticulous process, the success of which is the ultimate guarantee for the platform's success. Customers of the platform can use these trading devices for a variety of purposes. Many platforms operate twin systems. For the everyday small trade or barter practices of a large group of users, platforms make available simple yet more expensive digital tool kits. The fees for using simple versions are always higher than those of more sophisticated trading tools that are usually called "pro." Yet, because more experienced traders trade and barter more often, the platforms' overall per-capita income from these "pro traders" is always higher.

Finally, the exchange provides software and data support to customers, either in terms of a sale or a subscription. Such data analysis toolkits are vital for understanding the movement of data money prices. Yet, no platform that I know makes visible all the data available, since the comprehensive future order books represent the future making of prices better than any other indicator. Only a handful of individuals who own and manage the platform can see these essential data.

It is true that markets are never just markets. Conventional organized exchanges, such as spot and derivative commodity markets, also entail a multiplicity of functions. Yet, their multi-functionality remains within marketization limits and never constitutes a domain of practice that engulfs the commodity exchange itself. On platforms such as data money exchanges, we observe a *categorical* multiplication of economization modes and their deployment, not merely a variation of marketization.

Another reason why platforms cannot be viewed as mere markets lies in the fact that one is more concerned about the quality and price of their services and products. With a platform, one is concerned about the quality of the platform itself, where one engages in various economization activities, from barter to gift-giving, from production to exchange. Users choose platforms first, and only then comes the rest of the economic practices.

Approaching platforms as stack economization processes has two advantages. It allows us to isolate layers of economic interaction in their enframed platform universe and to study the making and deployment of their technical operations on the ground. Researchers can focus on various forms of infrastructure, agencies, and devices that allow platforms to function, instead of focusing on each as a defining variable and then discuss platforms in reference to that variable—for example, as a mere market (Rochet and Tirole 2006), technology (Evans and Schmalensee 2005), a device (Ambrus and Argenziano 2004), or a framework (Gawer 2009).

Platforms are not merely markets for purchasing this and selling that with network effects in an ecosystem, as we can clearly see in cryptocurrency exchanges. By approaching platforms as stack economization, we can isolate the consequences of these network effects. We cannot carry out such an analysis by imagining an externally appropriated *endogenous* effect, but by focusing on concrete practices that can undermine economization practices *exogenous* to the platform under consideration. For example, here I have shown that an endogenous development which fosters cryptocurrency usage in centralized data money markets has been undermining the blockchain networks themselves, while at same time contributing to the dollarization of economic relations. Second, approaching platforms as stack economization processes may inform a more nuanced research agenda that can isolate specific threads and functions in platform works and study their consequences. Such a new perspective bears the potential to inform social policy, regulation, and taxation more effectively.

3. Old and New Ways to Tax Cryptocurrencies

How to tax these categorially novel monetary developments and regulate cryptocurrency platforms? Currently, the US is leading the world in the global crypto-economy in terms of ATMs per person, institutional acceptance, government regulation, transparency,

cryptocurrency spending, and the banking sector's acceptance of cryptocurrency.⁷ This leadership position brings with it an irony. Government agencies that are supposed to be regulating and taxing cryptocurrency economies are not certain on how to regulate crypto-economies, let alone what exactly a cryptocurrency is (Bal 2018).

The IRS deploys a limited and analogical approach to data monies and treats cryptocurrencies as "virtual currencies" that are assumed to be operating like a property (same as Note 3). Pursuing the analogy of property, the IRS defines two different types of such property ownership: "Individuals who hold cryptocurrency as a capital asset and are not engaged in the trade or business of selling cryptocurrency"⁸ have to report cryptocurrency income if they keep it for 366 days or more. Income generated by these cryptocurrencies is treated as a long-term capital gain and 0–20% of this income should be paid as tax depending on the taxpayer's ordinary income tax rate. If cryptocurrency is sold before 366 days from the time of buying, the income, if there is any, is treated as short term capital gain and is taxed between 0–37% depending on the underlying volume of the gain. Companies or real persons who engage in cryptocurrency business as their primary business are treated differently: their crypto assets are treated as inventory.⁹

However, there are exceptions. If one receives cryptocurrency as payment for a service provided, one has to report it as monetary income by calculating the USD equivalence of the payment one received (same as Note 3). The amount of cryptocurrency that a taxpayer receives as payment for goods or services is calculated vaguely, by depending on "the fair market value" of the virtual currency in USD as of the date of receipt. The IRS chooses to depend on the receiver's subjective judgement of fairness. However, if one keeps the cryptocurrency for the following tax year, the cryptocurrency becomes property again and can only be taxed when one converts it to USD.

The IRS's detailed account of crypto taxation masks an irony. Its logic draws on a false analogy as cryptocurrency is not a property, even when using a very broad definition of such. The philosophy of taxing properties draws on the high transaction cost of corporeal and real properties. Corporeal properties are defined as visible, tangible, and thus perceptible by the senses, such as touch or sight. Real properties are also immovable, such as a house or land (Penner 1997). Since it is very difficult to move these tangible things, their transaction costs are high. A cryptocurrency is not a corporeal and real property. As we saw previously, data monies are intangible yet material; they consist of the right to transfer data privately on a public accounting system called a blockchain.

However, the IRS may have incorporeal properties in mind, defined as bearing a legal right over things that cannot be seen or handled, such as a trademark (Penner 1997). Still, these things over which actors have a claim need to be non-fungible for their right to be seen as a property. Owning a fungible USD 1 as paper money or BTC 1 as data money is distinct from owning an incorporeal property. It is the ownership of money itself. Hence, data monies are neither corporeal nor incorporeal properties. Yet, non-fungible tokens (NFTs) that are essentially data certificates or titles of ownership, can operate in relation to intangible yet material properties that are produced and exchanged on metaverse and non-metaverse webpages such as Decenterland and Somnium Space. Yet IRS does not make any distinction about digital properties and their new corporeal characteristics.

The IRS's decision to treat data monies as property is informed by the legal universe in reference to which they design their position. Bound by the federal government's assumption that only metal and paper monies and their digital representations can be accepted as fiat currency, they have to treat data monies and currencies *not* as monies or currencies. The irony of not accepting cryptocurrency as a currency emerges from this legal constraint.

Avoiding the challenge of reforming our legal framework as we are dealing with new economic realities, we are currently addressing economic novelties by inviting them to fit into our old legal frameworks. This is not very different from insisting on taxing paper money income with metal monies in Kublai Khan's era in the thirteenth century. There

exists an alternative based on a precedent. Much like taxing paper money with paper money, data money income can be taxed with data money. But how?

There are two methods in which one may carry out such a task. The first way draws on legitimizing cryptocurrencies as *non-sovereign fiat currencies* and thus treating them much like other foreign currencies, such as the Euro in the US context. One may argue that the volatility of cryptocurrencies would not render them suitable for treatment as foreign currencies. It is true that many cryptocurrencies are volatile, but many fiat currencies are even more volatile than Bitcoin—for example, the Turkish Lira, the Venezuelan Bolivar, or the Lebanese Lira in 2021. We cannot infer that cryptocurrencies are volatile simply because they are not produced by states. As community monies, their value depends on the ways in which their communities value and make them. By treating cryptocurrencies as non-sovereign fiat currencies, the IRS can locate an entirely new universe of taxable events. Pioneering legal scholars such as Nelson have already proposed the validity and the historical legitimacy of treating data monies as non-sovereign fiat currencies and called for taxation and regulation agencies to start imagining the design of new frameworks (Nelson 2020). Similarly, for Kalbaugh, cryptocurrency is foremost a currency (Kalbaugh 2016).

The second way—that is, taxing data money with data money—is simpler, but requires the Federal Reserve to take a radical step. The IRS can use the USD form of a Central Bank Digital Currency (CBDC-USD) as a benchmark to locate the taxpayer's gain and loss, without expecting a formal sale of a cryptocurrency as though it were a corporeal and real property. Thus, a novel form of Data Money Tax can be collected, without treating cryptocurrencies as properties and without necessarily waiting for the taxpayer to “sell” them. If a taxpayer holds 100 various data monies that are worth CBDC-USD 10,000 in March 2021, when the time comes to pay taxes and if their position rises to CBDC-USD 12,000, their tax basis is CBDC-USD 2000. In this way, the IRS can locate income without tracing the currency source of income. Much like with stock-agnostic security income taxation, as long as income can be monitored by a data money form, the IRS will be in a position to more accurately locate taxable events.

Currently, in the absence of a Fed-issued CBDC-USD, the vacuum is filled with imitations of USD Data, i.e., “stable coins” such as USDT, USDC, and the like. The problem with these monies is that they use the credibility of the USD without sharing the cost of maintaining such credibility and that they enjoy colossal market capitalizations by using the trust that people have in the USD (Arner et al. 2020). Their large-scale adoption creates systemic risks for fiat currencies (Massad 2019), since a currency that mimics its original is a derivative instrument that has to be regulated. If not, it may destabilize the currency on which it depends. As the USD is a sovereign fiat currency, it can only be legitimately derived by a sovereign intervention. The USDT or USDC are nothing but data money imitations of the USD's metal and paper versions, and their issuers' claims that they deposit an equal amount of USD to back and “stabilize” their imitation of the underlying fiat currency does not change the reality of imitation. More importantly, for some, these imitations can also be regarded as blockchained collateralized forgeries. The Federal Reserve has already started to ideate and prototype its own CBDC-USD,¹⁰ which would stabilize the dollarization of world trade, control the possible adverse effects of USD-based stable coins, economize the minting of USD, and finally help increase the federal government's income by implementing tax collection via a central bank data money.

4. Stack Regulation of Cryptocurrency Exchange Platforms

The IRS does not regulate economic relations; it imposes taxes on income that accrue from those relations. The two agencies that can regulate data money markets are the SEC and the CFTC, neither of which seem to be certain about how to deal with cryptocurrencies. Economic relations that take place around the exchange of securities are regulated by the SEC. Since the famous Supreme Court case known as SEC vs Howey¹¹, a three-step Howey Test is applied to see whether an asset is a security: if money is (1) invested in

a common enterprise, (2) with the expectation of a profit, (3) which emerges from the economic activities of a third party, then an investment is regarded as a security. For example, buying a company stock is to buy a security. Buying gold is not; it is buying a commodity. What about buying data monies?

If a data money is proposed as an Initial Coin Offering (ICO), it can be regarded as a security, for it is bought with money, with the expectation of profit, and the management of the organization that offers the ICO is carried out by others. However, not all cryptocurrencies are ICOs; all ICOs together comprised only 2.8 percent of the 2021 cryptocurrency market capitalization. As of January 2021, 5728 ICO projects raised, USD 27 billion, making them a mere drop in the sea of all cryptocurrencies' centralized exchange economy worth USD 1 trillion (Karpenko et al. 2021). It seems that the ICO hype is over. The SEC's decision to use ICO as a form a security to regulate cryptocurrencies is not only radically limited, but it also misses a great majority of crypto-economic activities that need to be regulated.

Furthermore, and more importantly, data money is not a security because when one purchases Bitcoin, the profit does not originate from (if it ever does) the managerial effort of an organization that supplies Bitcoin. First, there is no company, and second, no managerial practice is associated with the Bitcoin supply. This is why the SEC is correct to have second thoughts about its willingness to regulate cryptocurrency markets, except when they are framed as ICOs.

In contrast to the vagueness of the SEC regarding the nature of cryptocurrencies, the CFTC claims to know what a cryptocurrency is—namely, a commodity. The CFTC draws on the Commodity Exchange Act (1936), which does not define, but list commodities:

The term “commodity” means wheat, cotton, rice, corn, oats, barley, rye, flaxseed, grain sorghums, mill feeds, butter, eggs, *Solanum tuberosum* (Irish potatoes), wool, wool tops, fats and oils (including lard, tallow, cottonseed oil, peanut oil, soybean oil, and all other fats and oils), cottonseed meal, cottonseed, peanuts, soybeans, soybean meal, livestock, livestock products, and frozen concentrated orange juice, and all other goods and articles, except onions . . . and motion picture box office receipts (or any index, measure, value, or data related to such receipts), and all services, rights, and interests (except motion picture box office receipts, or any index, measure, value or data related to such receipts) in which contracts for future delivery are presently or in the future dealt in.¹²

Needless to say, the list does not include cryptocurrency. In 2015, the CFTC decided to view cryptocurrencies as commodities, not due to any intrinsic quality of data monies that would render them commodities, but because economic actors began to plan offering derivative instruments that mimic Bitcoin's price movements. One those of those actors, Coinflip, experienced a controversy with one of its customers regarding a Bitcoin derivative. Issuing an order on this controversy, the CFTC wrote: “Section 1a(9) of the Act defines ‘commodity’ to include, among other things, ‘all services, rights, and interests in which contracts for future delivery are presently or in the future dealt in.’ . . . Bitcoin and other virtual currencies are encompassed in the definition and properly defined as commodities.”¹³ This definition is so broad that only onions and movie tickets were specified to remain outside of its definition. It is this legal *fait accompli* that included Bitcoin in the CFTC's jurisdiction, not a philosophical definition, nor a serious legal argumentation. Pork belly, or Bitcoin . . . They have futures, so they should be commodities. Interestingly, the CFTC's chairman who pulled data monies into the CFTC's jurisdiction in 2015 argued in one of the best articles on cryptocurrency regulation that cryptocurrencies should most likely be regulated not by the CFTC, but by the SEC, for they did not elicit commodity properties (Massad 2019).

Yet, the CFTC bears an interesting jurisdictional limitation. It cannot regulate spot commodity markets, but only contains the power to regulate the trading of any instrument that is derived from a commodity, such as a cotton or oil futures (Dewey 2019). Showing exceptional institutional creativity and choosing to approach the nature of cryptocurrency from its derivatives, the CFTC ruled that cryptocurrency *futures* fall under their regulative

authority. This is not different from arguing that money may not be a commodity, but its future contract is.

Thus, we arrive at a fascinating bureaucratic mega crack, or perhaps a canyon. The SEC can regulate cryptomarkets if they behave like securities, as in the case of ICOs. But ICOs are no longer significant. The CFTC can regulate cryptocurrency markets only when they trade futures contracts, leaving aside actual spot markets. The result is that cryptocurrency markets in the US are not regulated at all at the federal level. With their USD 2.9 trillion global capitalization, this regulatory void might be among the largest in recent economic history.

Seeing this gap, many state regulators have intervened. Wyoming and Illinois are working on a new legislative framework. Ohio experimented with receiving state tax in cryptocurrency in 2018, but then discontinued the experiment the following year. Hawaii decided to curb crypto-markets by asking them to collateralize the USD equivalent of all the cryptocurrencies that they traded. This was akin to asking banks to actually own all the USD that they lend. Exchanges left Hawaii. New York took another route, as its Department of Financial Services issued a virtual currency regulation under the New York Financial Services Law. Instead of legally defining cryptocurrency, they defined market activities that drew on cryptocurrencies and defined those practices as follows:

Receiving virtual currency for transmission or transmitting virtual currency, except where the transaction is undertaken for non-financial purposes and does not involve the transfer of more than a nominal amount of Virtual Currency; storing, holding, or maintaining custody or control of Virtual Currency on behalf of others; buying and selling Virtual Currency as a customer business; performing Exchange Services as a customer business; or controlling, administering or issuing a Virtual Currency.¹⁴

This innovative move made it possible to regulate cryptocurrency cash markets for the first time, albeit for New York City residents only. Furthermore, the regulation is not being tested in the Supreme Court yet because the markets that facilitate cryptocurrency trading in the city have been supporting and welcoming regulation since their inception and openly cooperated with the state legislature (Feinstein and Werbach 2021). They knew that the legitimization of cryptocurrencies as financial instruments would increase their chances of profiting from it.

The SEC and the CFTC cannot regulate crypto-economies, not because of failing to perform their job, but precisely because they perform their job well. They are not designed to operate in this novel geography. The SEC works with securities, while the CFTC focuses on commodity derivatives. In order to be able to do anything about cryptocurrencies, they have to treat them either as a security or as a commodity derivative. And so they did.

The time has come to name the baby. A cryptocurrency represents a money form with a new materiality: data. This paper has shown that data monies should be treated as non-sovereign fiat currencies and approached as such. Yet, this is not sufficient for regulation. Owing to the data materialities' innate material characteristics, these new monies create a broad economic opportunity infrastructure on which diverse financial and economic architectures can be built. Thus, it is only when we incorporate an analytical tool to illustrate such economic richness that we can start to locate the spaces for platform regulation.

Stack regulation may provide the answer. Instead of treating platforms as mere markets, stack regulation can locate all platform businesses that an organization manages within a single frame of analysis. Figure 1 summarizes the variety of economic functions and practices that centralized cryptocurrency exchanges organize in six major areas of interaction. Once made visible, these areas help us to locate economic events that require regulation. It is impossible to list all the activities that should be regulated on a cryptocurrency exchange platform in a single paper; yet we can still locate several rules of thumb to imagine a general framework for regulation design.

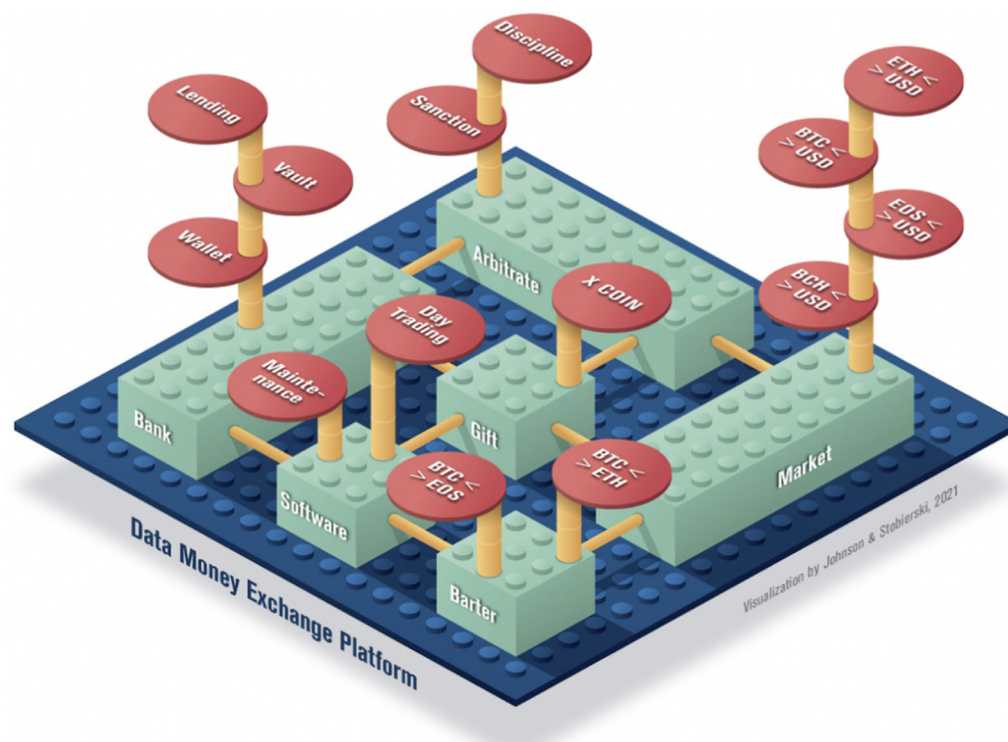


Figure 1. X Exchange Platform as a Stack and Modular Economization Process.

Exchanges operate similar to banks, running substantial custodial services as their customers deposit USD billions worth of data monies. This service creates two crucial risks for economic actors. First, in case of a hack, the exchange can lose all the data monies with which customers have entrusted them. In such a case, the terms of service agreements do not specify any legal obligation for the exchange to pay back the customers' data monies. Unlike banks that keep customers' monies and whose security is guaranteed by the state, exchanges operate similar to banks without promising customers a guarantee. Second, because exchanges technically and practically control the data monies that their customers buy from them and in exchange provide them with in-exchange rights to trade with them, these exchanges can also trade with the money that is entrusted to them (Eigelshoven et al. 2021). Data monies are fungible; therefore, they can be traded at will and for very short periods of time, as short as a few seconds in the case of flash-lending. There is no rule or regulation that would render trading with customers' data money impossible. For every person who makes money, there is another who loses it, and exchanges are no exception, for they lose, too. As it previously happened to many other exchanges such as QuadrigaCX or Bitfinex, these platforms at times fail to send the data monies that they claim to keep on their customers' behalf. An organizational intervention with a precedent can address these problems of security and market ethics.

Until the late 1960s, stock trading took place by transferring paper stocks of companies between traders. These paper stocks were then sent to the buyers' physical addresses. When trading volumes increased, material limitations began to constrain the trading activities themselves, to the extent that exchanges had to close one day a week for purposes of book-keeping. The solution was to digitally represent all paper stocks and keep them in a single place. The new Depository Trust & Clearing Corporation (DTCC) began to serve as the custodial clearing house for all paper stocks, and the federal government guaranteed their integrity and security. This move also prevented these same stocks from changing hands without authorization.

Drawing on the precedent of the DTCC, a Central Cryptocurrency Depository (CCD) can supply the customers with a custodial service that secures the crypto assets, while at the same time providing security services to customers who chose not to withdraw their

crypto assets into their own wallets. In this way, cryptocurrency exchanges can be under public guarantee, and their customers would feel safer when platform trading. One can object to this idea in that it undermines the very definition of blockchains. This is correct, but blockchains are already being undermined by the central authority of cryptocurrency exchanges. Customers are choosing to hold their money in the exchange, now without security and guarantee. With the CCD, these assets will be under public protection. Furthermore, the CCD would also contribute to greater transparency regarding the movements of data monies.

Another advantage of the CCD is to prevent exchanges from using their own or customers' data monies in trading. Exchanges usually deny that they trade on the platforms they operate. My fieldwork and interviews suggest the opposite. When asked whether they trade on their own platform, almost all my respondents deny that they do (98 percent). When asked what percentage of other platforms' representatives trade cryptocurrencies with or without their customers' data monies, all traders stated that all other trading platforms trade on their own platforms.

The CCD may address the question of security but cannot address possible problems regarding trading ethics. For this and other issues, a new regulation agency is needed. Instead of mobilizing an analogical approach to cryptocurrencies or enlisting agencies that are designed to regulate other things such as securities and commodity derivatives, Congress should start working on designing a commission that aims at regulating cryptocurrency exchange platforms. The Data Money Exchange Commission (DMEC) may serve as the only organizational solution to the problems that emerge from a regulatory great canyon that cannot be covered by existing agencies. Cryptocurrencies are data monies and need to be regulated as such.

Currently, data money exchanges operate like banks and lend money for trading. They also mint their own money and incentivize using their own monies in trading, thus creating unfair competition for other community or corporation data monies. This is not very different from operating an exchange while at the same time trading in it. Such a clear conflict of interest also reduces trust in exchange institutions and decreases their long-term income as a business.

Moreover, the DMEC can work to regulate the financial bridges between centralized and decentralized exchanges (DEX). Centralized Exchanges (CEX) sell data monies by accepting fiat currencies and thus contribute to the dollarization and euroization of trading. Decentralized exchanges such as Uniswap do not accept fiat currencies and only allow for bartering an assortment of data monies among each other. However, it is possible to purchase data money such as Ethereum from a CEX and barter it for other data monies at a DEX. In this way, users can continue to profit from their Ethereum and keep it outside the regulatory and taxation domain, yet at the same time enjoy all the benefits of a working financial and economic universe that allows for DEXs in the first place. The DMEC can also address this invisible regulatory gap by bringing DEXs into the formal economies' regulatory framework.

Laying down all the details of a regulatory framework for cryptocurrency exchanges and the taxation of cryptocurrency income extends beyond the objectives of this paper and should be prioritized by Congress in collaboration with industry actors, the Federal Reserve, the SEC, and the CFTC. But before such work can begin, we have to acknowledge that we witness a historically new and materially novel money form. Cryptocurrencies as data money provide economic actors with the opportunity to engage in innovative economic practices that hybridize barter, trade, and gifting, in centralized institutional settings that hybridize banking, exchanging, and minting. This paper has argued that we have to design our regulatory approach to mimic the innovative economic stacking that we observe in exchange platforms. Furthermore, stack regulation of cryptocurrencies and their economic institutions can only function if we tax them with the money material that they produce and use—that is, data money. The Data Money Tax can be deployed with or without a Federal Reserve Data Money, the CBDC-USD. With the Fed's contribution, such a taxation

practice would increase the government's regulatory capacity and economize a taxable universe more effectively. Without the Fed's stable coin, however, the Data Money Tax is still possible, yet in a more complex regulative environment and with more organizational and financial cost to the government.

5. Conclusions

It is no longer possible to view crypto-economies as weak and transitory formations organized by nerds with strange ideals, used for speculation and illicit economic affairs. In the second decade of data monies, it is time to acknowledge that they are produced and valued by people and institutions who monetize the right to send data among each other. These people are not necessarily technology enthusiasts. They are corporations, cooperatives, fund managers, teachers, students, farmers, accountants, white- and blue-collar workers. They produce and trade data monies. They account for their transactions. Institutionally, their exchange relations have already accumulated almost half a century of crypto trading when compared to conventional bourses.¹⁵

Understanding the data materiality of cryptocurrency opens an entirely new way to make sense of, benefit from, and regulate data monies. Comprehending their accounting systems on blockchains and of the ways in which their exchanges operate facilitates a more accurate understanding of their economic universe, in addition to more effective methods to regulate them. Regulators face two failures, both resulting from analogical thinking. First, they treat data monies as commodities, securities, or properties. This paper has shown that a cryptocurrency represents a new form of money that is produced by monetizing the right to send data. It is not money made of data, for all digital monies are produced with data anyway. Thus, it has to be treated as such if we do not want to perpetuate the irony of arguing that a cryptocurrency is not a currency. Second, regulators approach exchanges as mere markets. However, cryptocurrency exchanges are not markets. These exchanges stack various economization practices and businesses on the platforms which they operate. For us to be able to regulate them effectively, we need to stack our regulative capacity and mobilize a dynamic stack regulation.

Deploying the concepts of data money and stack economization as scientific tools and organizational devices addresses the colossal regulatory gap in the US. The taxation of data monies can be carried out with the data monies themselves. Taxation can be performed with or without USD-CBDC. If the Federal Reserve joins the rest of the world by minting USD as data money, it would create a revolutionary regulatory and taxation instrument, in addition to economizing and updating its own money-making process. Hence, the IRS would be able to collect taxes that it fails to locate and better economize its taxation practices. Furthermore, a new regulatory agency that Congress can design, the Data Money Exchange Commission, could collaborate with the industry, the SEC, and the CFTC to propose design principles for formalizing decentralized and centralized exchanges, and for bringing them into the modern regulatory universe of contemporary economies.

This paper has shown that a cryptocurrency represents more than a mere digital currency. It is data money. The specific intangible materiality of this new type of money defines a new spectrum of economizing behavior for actors. Actors can monetize non-sovereign fiats without a central authority; they can tokenize almost all human practices from art to politics, from accounting to social movements; they can account for these economization practices by using blockchains; they can bypass these blockchains and trade cryptocurrencies without registering them on blockchains, by leaving them to the custodial services of exchanges; they can give gifts, barter, track, and exchange them and their copies; and they can transform art forms into registered and account-trailed non-fungible data monies such as NFTs. This is an expanding and novel economic world. We have failed to regulate and make sense of this new world with old concepts.

At the most general level, this paper has proposed a meta policy change on regulation and taxation in relation to data money economies. Drawing on an analysis of the historically novel materiality of data money and its new accounting infrastructures on blockchains,

the paper has shown that platform economies work as stack economization processes. These new economization practices are made possible by the new materialities of data monies and computational industries. In terms of regulation, such a change requires us to imagine stacked forms of regulation that target various economization relations on exchange platforms in a *separate* yet interrelated manner. This is because these exchange platforms extend beyond being mere marketization relations. Regulation has to be in rapport with the empirical nature of platformization. We cannot regulate platforms as though they were mere markets. Regulation should be stacked.

This change in strategy bears two advantages. First, it avoids the flattening effect of seeing platforms as markets and opens up the regulatory imagination to a series of new contributions that are keyed to the nature of whatever is aimed to be regulated. Second, stack economization allows regulators to empirically map numerous functions of cryptocurrency exchanges and clearly mark areas of regulation, such as the minting of new data monies. Currently, one can purchase Ethereum to the tune of several million USD from an under-regulated market in the US, then send it to an address where it can be changed to any fiat anywhere in the world. Refusing to acknowledge the stacked nature of data money markets, China decided to ban them. This led to an increase in Bitcoin adoption, pushing the data money's value up, and transferring data money industries outside of China.

Another possibility is to incorporate data monies in our current regulatory framework, with an introduction of the Central Cryptocurrency Depository (CCD) that can operate as a state-regulated and secured constellation of digital wallets. Such a reform would entail imagining economic agency not in terms of individuals or legal entities, but also as digital wallet groups that are registered under the name of real persons or organizations. Therefore, income can also be located in terms of data money, and financial transactions can be regulated and controlled without necessarily limiting data money movements. A practical application of such an approach could entail associating digital wallets with tax identification or social security numbers, so that unique economic persons can be identified for bringing all crypto economic activity within the reach of regulation and, thus, at least in democratic countries, under the control of democratically elected agencies and their appointed representatives.¹⁶

Such a shift in the regulatory mindset would address societal needs more properly, in addition to helping us imagine new forms of taxation such as the Data Money Tax. This paper has proposed that approaching platforms as stack economization processes can help the public conceptualize new forms of taxation. Currently, taxation draws on digital representations of metal and paper money. We do not tax (with) data money. This is comparable to taxing exclusively with metal money in the thirteenth century, at a time when many other economic actors had already begun using paper monies.

Since regulators register income only in terms of fiat currency, they need economic actors to sell their assets and return them to fiat to locate taxable income. Such an insistence narrows regulation options to a spectrum between two extremes: either banning all usage of crypto assets or closing certain economization functions of exchange platforms. Yet, there is another approach. If regulators imagine tax collection in terms of data monies, they can still register income without a necessary conversion to fiat.

We live in an economic era where all our economization activities are hybridized with digital materialities. From cryptocurrencies as non-sovereign fiats to the platformization of exchanges, we are witnessing a stacking of business functions, at times by introducing banking to trade relations via cryptocurrencies. The time has come to be as innovative as the economic life that surrounds us. The time has come to stop treating new economic phenomena with analogical thinking, as though they were a version of old things, and instead to analytically design tools for their proper characterization and regulation in a new taxable events universe.

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Notes

- 1 The former president of the SEC, Jay Clayton, declared that “every ICO I’ve seen is a security” and ordered the SEC to go after every company that sold cryptocurrency. <https://www.nytimes.com/2018/02/28/technology/initial-coin-offerings-sec.html> (accessed on 15 December 2021).
- 2 https://www.cftc.gov/sites/default/files/2019-12/oceo_bitcoinbasics0218.pdf (accessed on 15 December 2021).
- 3 <https://www.irs.gov/pub/irs-drop/n-14-21.pdf> (accessed on 15 December 2021).
- 4 For a more comprehensive review of how data monies are seen in other legal contexts and countries see (OECD 2020; Solodan 2019).
- 5 It is beyond the objectives of this paper to present a comparative study of cryptocurrency regulation in the world. For a comprehensive review see (Cvetkova 2018; OECD 2020; Dewey 2019; Massad 2019).
- 6 For SEC Chairman Jay Clayton’s testimony, see <https://www.banking.senate.gov/imo/media/doc/Clayton%20Testimony%20-6-18.pdf>. For CFTC Chairman J. Christopher Giancarlo’s testimony, see <https://www.banking.senate.gov/imo/media/doc/Giancarlo%20Testimony%20-6-18b.pdf> (accessed on 15 December 2021).
- 7 <https://coincub.com/country/usa/> (accessed on 15 December 2021).
- 8 <https://www.irs.gov/businesses/small-businesses-self-employed/virtual-currencies> (accessed on 15 December 2021).
- 9 <https://www.irs.gov/individuals/international-taxpayers/frequently-asked-questions-on-virtual-currency-transactions> (accessed on 15 December 2021).
- 10 <https://www.federalreserve.gov/newsevents/pressreleases/other20210520b.htm> (accessed on 15 December 2021).
- 11 SEC v. W.J. Howey Co., 328 U.S. 293 (1946).
- 12 <https://www.law.cornell.edu/uscode/text/7/1a> (accessed on 15 December 2021).
- 13 https://www.cftc.gov/sites/default/files/idc/groups/public/@lrenforcementactions/documents/legalpleading/enfcoinfliplr_order09172015.pdf (accessed on 15 December 2021).
- 14 https://www.dfs.ny.gov/apps_and_licensing/virtual_currency_businesses/bitlicense_faqs (accessed on 15 December 2021).
- 15 Data money exchanges are operational 168 h a week, whereas conventional bourses are usually open less than 40 h per week.
- 16 However, in competitive or fully authoritarian contexts, such a measure would increase the repressive capacity of the state and would most probably receive resistance, for legitimate reasons, from actors on the ground.

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