

ESG-In-DeFi , Inequality And Problems Inherent In Regulation Of DeFi, Web5/Web3, CryptoCurrencies, DCCs/DFPCs, And NFTs/Fractional-NFTs¹.

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Abstract.

This article builds on Nwogugu (2020) which introduced some new criteria for determining the optimal Regulatory-Regimes for Mutual Funds, ETFs and Auction Rate Securities. Around the world, the regulation of *Blockchain Economy Products* has presented a critical regulatory/policy and Sustainable Growth dilemma. In some countries such as the USA, different federal government agencies have publicly issued conflicting opinions and regulations, and different legislators have issued conflicting statements. In this context, DeFi-products (“*DeFi Products*”) specifically refers to: i) *DeFi loans* that are secured by pools of cryptocurrencies and or NFTs; and ii) *DeFi Staking* (or Yield-Farming) wherein persons temporarily lend or “stake” their cryptocurrencies or NFTs to a “Pool” in exchange for periodic interest payments. The main findings of this study are as follows: i) properly designed and regulated DeFi and cryptocurrencies can facilitate economic development, Sustainability and Inequality-reduction; ii) DeFi and cryptocurrencies are poorly understood and ineffectively regulated around the world, and thus pose Financial Stability risks and Systemic Risks; iii) three new *Theories-Of-regulation* were introduced herein; iv) the energy consumption concerns about cryptocurrencies and rumors of the worthlessness of “mined coins” maybe un-justified; v) this article analyzes and critiques the actual and “possible” Regulatory-Regimes for *Blockchain Economy Products* (cryptocurrencies², Fractional-NFTs, NFTs (non-fungible tokens), DeFi-Products/Yield-Farming,

¹ This chapter contains substantial excerpts from the following article:

Nwogugu, Michael C. I. (Aug. 2017). *International Capital Flows, Complexity and the Illegality of the 'Sharing Economy' and Digital Currencies*. Available at SSRN: <https://ssrn.com/abstract=3015529> or <http://dx.doi.org/10.2139/ssrn.3015529>.

² See: “*Cryptocurrencies, Digital Dollars, and the Future of Money - The dizzying rise of Bitcoin and other cryptocurrencies has created new challenges for governments and central banks. Some are responding by introducing their own digital currencies*”. Written By Anshu Siripurapu. Updated September 24, 2021. <https://www.cfr.org/backgrounder/cryptocurrencies-digital-dollars-and-future-money>. This article stated in part: “.....In the span of a few years, cryptocurrencies have grown from digital novelties to trillion-dollar technologies with the potential to disrupt the global financial system. Bitcoin and hundreds of other cryptocurrencies are increasingly held as investments, and they are used to buy everything from software to real estate to illegal drugs. To proponents, cryptocurrencies are a democratizing force, wresting the power of money creation and control from central banks and Wall Street. Critics, however, say the new technology is wildly unregulated and is empowering criminal groups, terrorist organizations, and rogue states. Electricity-guzzling crypto mining is also harmful to the environment, they argue. Financial regulators are now scrambling to respond. Regulations vary considerably around the world, with some governments embracing cryptocurrencies and others banning or limiting their use. Central banks around the world, including the U.S. Federal Reserve, are considering introducing their own digital currencies to compete with the crypto boom.....”.

See: Standard & Poors (July 13, 2022). *Regulating Crypto: The Bid To Frame, Tame, Or Game The Ecosystem*. [https://media-exp2.licdn.com/dms/document/C4D1FAQH-RvYf614jOg/feedshare-document-](https://media-exp2.licdn.com/dms/document/C4D1FAQH-RvYf614jOg/feedshare-document-1)

Tokenized Stocks/Bonds, DCCs/DFPCs and DAOs) with the objective of clarifying critical regulatory factors that can significantly affect Sustainable Growth, ESG, Cost-of-Capital, Access-to-Capital for SMEs, Interest Rates and Inequality.

[pdf-analyzed/0/1658297180314?e=1658966400&v=beta&t=XkQpqr6CFkTplmsWVQI3EsujqFM7obOo2HXHj5nedw.](https://www.spglobal.com/ratings/en/research-insights/special-reports/digitalization-of-markets#:~:text=The%20Digitalization%20of%20Markets%20%2D%20A,that%20are%20integral%20to%20it)

See: Standard & Poors (Sept. 16, 2021). "*Digitalization Of Markets: Framing The Emerging Ecosystem*".

[https://www.spglobal.com/ratings/en/research-insights/special-reports/digitalization-of-markets#:~:text=The%20Digitalization%20of%20Markets%20%2D%20A,that%20are%20integral%20to%20it.](https://www.spglobal.com/ratings/en/research-insights/special-reports/digitalization-of-markets#:~:text=The%20Digitalization%20of%20Markets%20%2D%20A,that%20are%20integral%20to%20it)

See: Standard & Poors (June 15, 2022). "*Stablecoins: Common Promises, Diverging Outcomes*".

<https://www.spglobal.com/ratings/en/research/pdf-articles/220615-stablecoins-common-promises-diverging-outcomes-101562202>

See: US Federal Reserve (May 2022). *Board of Governors of the Federal Reserve System: Financial Stability Report, May 2022*.

See: The US Government (President Biden, Whitehouse) (March 2022). *Executive Order on Ensuring Responsible Development of Digital Assets, March 2022*.

See: Board of Governors of the Federal Reserve (Jan. 2022). *System: Money and Payments: The U.S. Dollar in the Age of Digital Transformation, Jan. 2022*.

See: Board of Governors of the Federal Reserve System (Jan. 2022). *Stablecoins: Growth Potential and Impact on Banking, Jan. 2022*.

See: U.S. Department of the Treasury (Nov. 2021). President's Working Group on Financial Markets Releases Report and Recommendations on Stablecoins, Nov. 2021.

See: Cornerstone Research (Jan. 2022). SEC Cryptocurrency Enforcement: 2021 Update.

See: American Bar Association (Dec. 2020). *Digital and Digitized Assets: Federal and State Jurisdictional Issues*. Prepared by: The American Bar Association Derivatives and Futures Law Committee's Innovative Digital Products and Processes Subcommittee Jurisdiction Working Group, Dec. 2020.

See: IOSCO (March 2022). "*IOSCO Decentralized Finance Report*".

<https://www.iosco.org/library/pubdocs/pdf/IOSCOPD699.pdf>.

See: BIS Working Papers No 973, *What does digital money mean for emerging market and developing economies?*, Oct. 2021. Bank For International Settlements.

See: European Union (June 2022). *Provisional agreement between the Council and European Parliament on Markets in Crypto Assets regulation, June 2022*.

See: China (Chinese government) (Oct. 2021). *Joint Statement from 11 Government Agencies: Notice on Further Preventing and Dealing with the Risk of Speculation in Virtual Currency Transactions*, Oct. 2021.

See: China (Chinese government; PBOC) (Oct. 2021). *PBOC: A discussion on virtual currency transactions with banks and payment companies, June 2021*.

See: Revised Payment Services Act (Japan). (implement from June 2023), June 2022.

See: UK Government (May 2022). *Managing the failure of systemic digital settlement asset (including stablecoin) firms: Consultation, May 2022*.

See: UK Government (April 2022). *U.K. regulatory approach to crypto assets, stablecoins, and distributed ledger technology in financial markets. Response to the consultation and call for evidence, April 2022*.

See: UK Government (Jan. 2021). *U.K. regulatory approach to crypto assets and stablecoins: Consultation and call for evidence, Jan. 2021*.

² See: Dewey, J. (2020). *Blockchain And Cryptocurrency Regulation – 2020 (USA)*.

<https://www.globallegalinsights.com/practice-areas/blockchain-laws-and-regulations/usa>

See: Charles Schwab & Co., Inc. (August 17, 2015). *Comment Letter on Exchange-Traded Products*. www.sec.gov/comments/s7-11-15/s71115-28.pdf.

² See: FinCEN (2019). *Application Of FinCEN's Regulations To Certain Business Models Involving Convertible Virtual Currencies*.

Keywords: Regulation; DeFi; Web3; Financial Innovation; ESG/Sustainability; Financial Stability; Systemic Risk; Economic Development.

Introduction.

Most countries including the United States don't have a comprehensive or efficient system of regulation for Cryptocurrencies, Fractional-NFTs, NFTs, Tokenized Stock/Bonds, DeFi-Products and DCCs/DFPCs. In the USA, the US SEC³, the US CFTC, the US IRS and FinCEN⁴ have issued conflicting guidelines and regulations for Cryptocurrencies and DCCs/DFPCs, and NFTs and FNFTs are not regulated (as of 2022). Hu and Morley (2018) made the following comments about ETFs which ironically, were also applicable to Cryptocurrencies (and their regulation by the US SEC and US CFTC) during 2017-2022:

“.....Despite their economic significance and distinctive risks, ETFs remain a regulatory backwater. The United States has neither a dedicated system of ETF regulation nor even a workable, comprehensive conception of what an ETF is..... Other regulatory constraints center on a process of discretionary review that generally allows the Securities and Exchange Commission (“SEC”) to assess the merits of each proposed ETF on an ad hoc, individualized basis. This process of review is opaque and unfocused. It is also inconsistent over time, with the effect that older funds often operate under lighter regulation than newer ones. And because it has its roots in statutes originally designed for other kinds of vehicles, the regulation of ETFs fails to address the ETF’s distinctive characteristics. Rooted in a disclosure system largely designed for mutual funds, the SEC’s disclosure mandates for ETFs fail to comprehend the significance and complexities of the arbitrage mechanism and often require no public disclosure of major breakdowns in the mechanism’s workings.....”.

In terms of size, an increasing number of Cryptocurrencies are as big as, or bigger than many mid-cap operating companies when measured by assets and or market value. In today's circumstances and for regulatory, Sustainability analysis and economic-policy purposes, it is critical to statutorily distinguish among the following: 1) investment vehicles (Mutual Funds, Structured Products Vehicles, ABS/MBS Trusts and ETFs); and 2) Cryptocurrencies; 3) traditional operating companies; and 4) financial services companies (banks, insurance companies, finance companies, payments companies and transaction processing companies); 5) specialized financial instruments such as Auction-Rate Securities (ARS); 6) commodities.

As of 2022/2023, the companies in DeFi, Web5/Web3 and the Metaverse included infrastructure companies, Access/Interface companies, Fintech/payments and Economic-Infrastructure companies, Blockchain companies, AI companies, Cloud-services companies, AR/VR/Virtual-World companies, Virtualization companies; etc.. See Table-1 below which categorizes companies that are building DeFi, the Metaverse and Web5/Web3. Table-2 compares Crypto-DeFi, Tokens and CBDCs. Table-3 lists the number of Games that are supported by each of the top blockchains (as of July 2022).

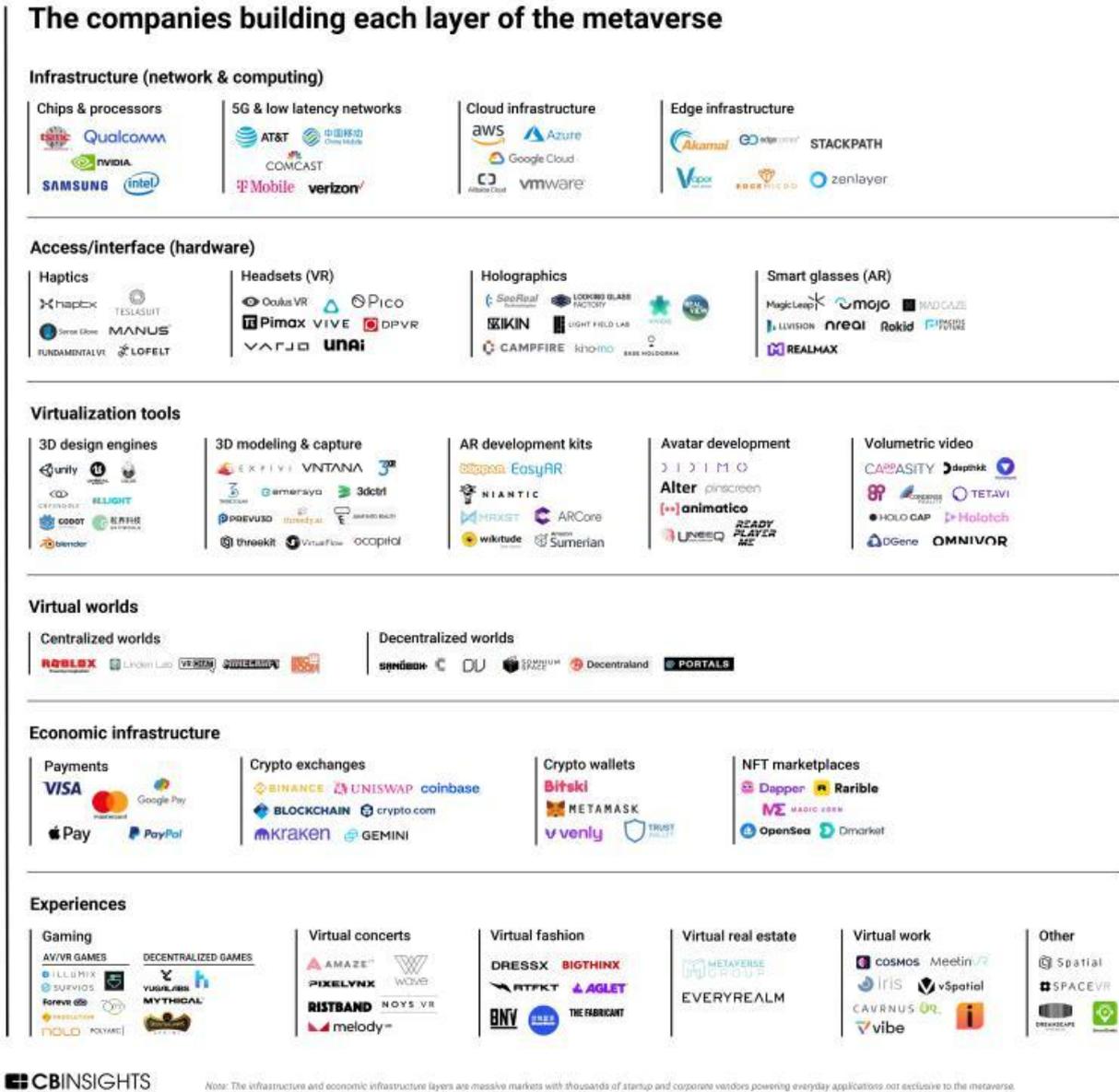
³ See: Dewey, J. (2020). *Blockchain And Cryptocurrency Regulation – 2020 (USA)*.

<https://www.globallegalinsights.com/practice-areas/blockchain-laws-and-regulations/usa>

See: Charles Schwab & Co., Inc. (August 17, 2015). *Comment Letter on Exchange-Traded Products*. www.sec.gov/comments/s7-11-15/s71115-28.pdf.

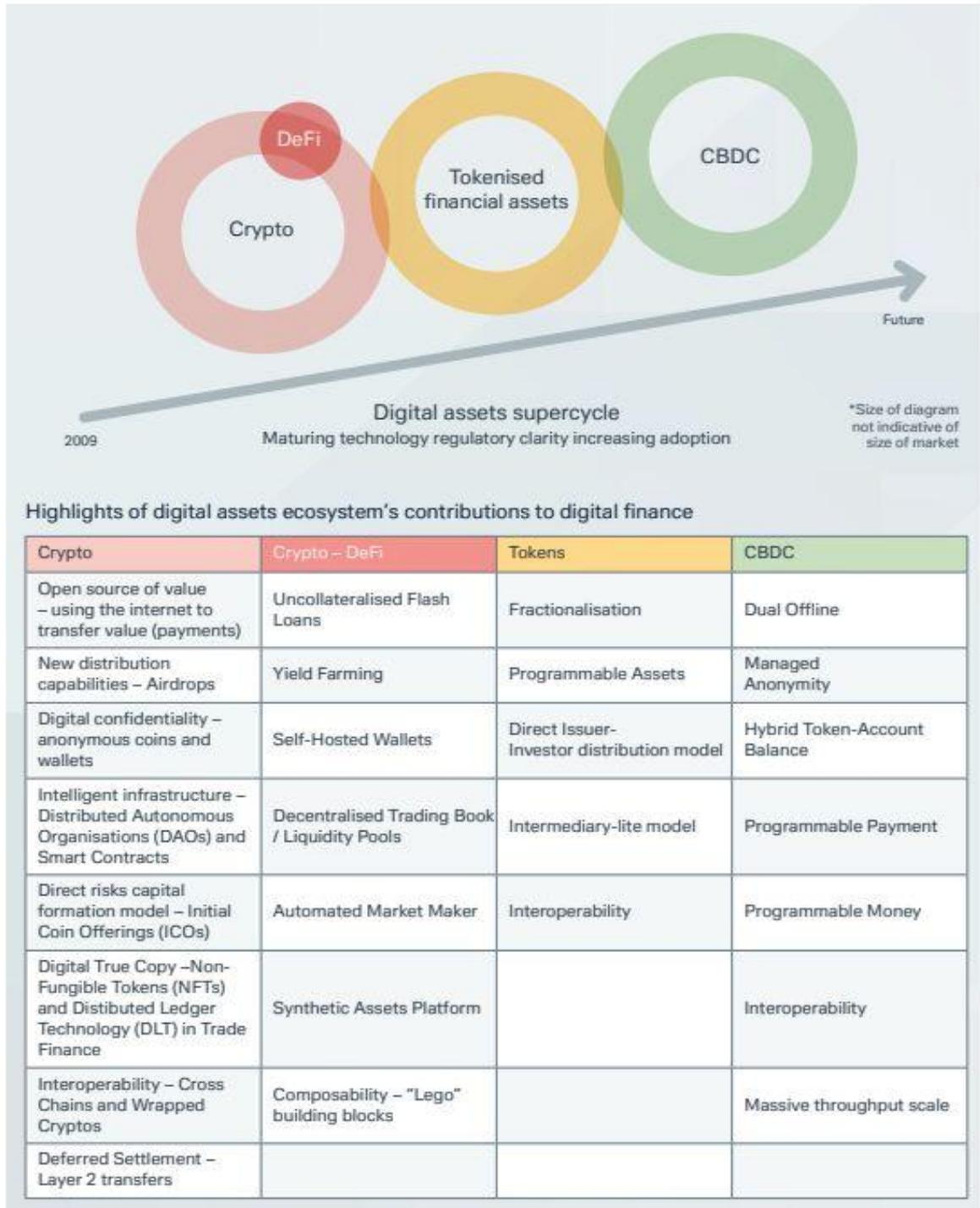
⁴ See: FinCEN(2019). *Application Of FinCEN’s Regulations To Certain Business Models Involving Convertible Virtual Currencies*.

Table-1: Companies That Are Building The Metaverse, Web5/Web3 And DeFi⁵.



⁵ See: “The Metaverse Could Be Tech’s Next Trillion-Dollar Opportunity: These Are The Companies Making It A Reality”. April 13, 2022. <https://www.cbinsights.com/research/metaverse-market-map/>.

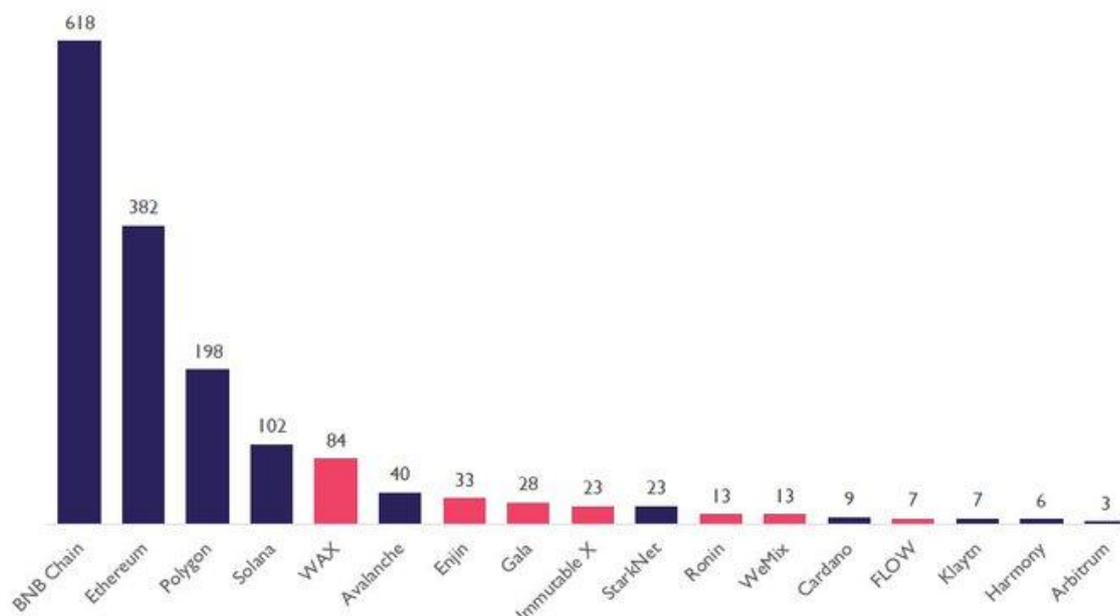
Table-2: Comparisons Of Crypto-DeFi, Tokens And CBDCs.



Source: Deutsche Bank

Table-3: The Number Of That Are Games Supported By Each Top Blockchain (As Of July 2022).

Number of Games by Chain



Data as of July 8, 2022

Source: playtoearn.net, Big List of Blockchain Games, Swagtimus Substack

1. Existing Literature.

Hu (2018) argued for better regulation and disclosure standards for CDS (credit default swaps); and Hu (2014) argued for better disclosure regulations and securities laws. Nwogugu (2008a;b) argued for better and new regulations and disclosure standards for asset securitizations (ABS/MBS trusts). Nwogugu (2007c), Nwogugu (2014a) and Nwogugu (2008c;d) argued for better regulation and disclosure standards for REITs. The principles/theories and entity/product governance issues that these articles discussed also apply to DCCs/DFPCs and Cryptocurrencies and FNFTs. Also see the comments in Cheng, Massa & Zhang (2018) which have implications for regulation.

WTO (2019) and World Bank (July 2019) discussed International Trade and GVC (Global Value Chain) issues. Nwogugu (2017b; Revised 2019) analyzed the legal liabilities of Sharing Economy firms (especially companies such as Uber, Lyft, Airbnb and Homeaway). Nwogugu (Revised 2018) discussed Value-Drivers in the Sharing Economy and Digital Currencies and associated Alternative-Risk Premia. Baccini (2019) discussed *Preferential Free Agreements*, which affect MNCs and SEOs.

There is a growing academic and practitioner literature on the economics and regulation of SEOs⁶ and DCCs/DFPCs but most of the studies (eg. Edelman & Geradin (April 2016a;b); Edelman (2015; 2017))

⁶ See: US Federal Trade commission (2016), Rauch & Schleicher (2015), Koopman, et. al. (2015), Bond (2015), Rogers (2015), Eckhardt & Bardhi (2015), Edelman & Geradin (April 2016a), Edelman (2015), Edelman & Geradin (April 2016b), and Edelman (June 2017)

See: “*Disruptive Innovation: Application Of Competition Law In The Sharing Economy In The Year Ahead*”. Freshfields Bruckhaus Deringer, London, UK. <http://antitrust.freshfields.com/disruptive-innovation>.

didn't develop comprehensive criteria for optimal Regulatory-Regimes or theories of liability for claims against SEOs and DCCs/DFPCs and didn't address some macroeconomic issues (such as international capital flows and structural changes which are intertwined with legal and antitrust issues). Similarly, most studies of digital currency markets have not developed theories of liability.

Nwogugu (2012) analyzed Constitutional Law and Administrative Law problems, introduced new *Takings* (constitutional law) theories; surveyed the negative effects of loans/mortgages on households (which often forces them to share their homes, boats and cars); developed new psychology theories about the housing industry; and introduced new and more efficient housing finance, consumer finance, pension/retirement and “*mortgage-alternatives*” products that can significantly reduce poverty, mental illnesses, stress, portfolio-costs, transaction-costs, and the need to share homes and cars.

Nwogugu (2016) discussed some problems in, and introduced new theories (about global online filesharing networks) which apply to both SEOs, Blockchain Economy Products and digital currency markets – such as the “*Normality And Authority-Deficit Effect*”; the “*Reflection/Reassurance Effect*”; the “*Favorable Risk-Reward Profile Effect*”; the “*Time-Price-Travel Sensitivity Effect*”; the “*Moneyless Trading Bias*”; the “*Choice-Based Irrationality Effect*”; the “*Collector Bias*”; and the “*Cost Structure Effect*”.

Furthermore, given that most SEOs, DFPC (Digital Financial Products Companies; creators of DeFi Products and or cryptocurrencies) and DCCs/DFPCs knew or should have known that they were violating statutes, and that the SEOs/DCCs/DFPCs could have developed legal business models, and that most of the profits and “benefits” generated by SEOs/DFPCs accrue primarily to their shareholders and executives (and for DCCs/DFPCs, the initial/original coin-investors), DFPCs can be deemed to be “*Coordinated Profits Protests*” against the existing global monetary system and profits generated by regular banks and “*Informal Economy*” participants in both developed and developing countries. See the *Profits Protest Effect* in Chapter-2 in Nwogugu (2016). The *Informal Economies* in most countries are characterized by tax evasion and low compliance with statutes (and sometimes commodities trading) and they exist even in large modern cities (eg. Tokyo in Japan; Johannesburg in South Africa; Singapore; and Upper Manhattan, Bronx and Brooklyn in New York City; and Houston in the US).

In most countries (except El Salvador and Central Africa Republic as of July 2022), Cryptos are not legal-tender, but governments have refused to prosecute persons that formally or informally use cryptos as a type of payment⁷.

See: European Commission – Press release: “*A European Agenda For The Collaborative Economy*”. http://europa.eu/rapid/press-release_IP-16-2001_en.htm.

See: Russo, F., “*Defining The Relevant Market In The Sharing Economy*”. Available at: <https://policyreview.info/articles/analysis/defining-relevant-market-sharing-economy>.

⁷ See: “*Putin Signs Law Prohibiting Crypto Payments In Russia*”. By Mariella Moon. July 16, 2022. <https://www.yahoo.com/finance/news/putin-law-prohibiting-crypto-payments-russia-125015139.html>. This article stated in part: “.....People in Russia will soon no longer be allowed to use digital assets as a form of payment. Russian president Vladimir Putin has signed a bill into law prohibiting the use of digital assets, such as cryptocurrency and NFTs, to pay for goods and services. In addition, as Protocol notes, the new law also requires crypto exchanges and providers to refuse transactions in which digital transfers can be interpreted as a form of payment. The new law states:

"It is prohibited to transfer or accept digital financial assets as a consideration for transferred goods, performed works, rendered services, as well as in any other way that allows one to assume payment for goods (works, services) by a digital financial asset, except as otherwise provided by federal laws."

As a New York Times report said earlier this year, US authorities believe that some Russian companies affected by sanctions imposed against their country after its invasion of Ukraine could be using cryptocurrency to circumvent those limitations. The value of Bitcoin even surged for a few days after the invasion started in February. That said, Russian authorities aren't quite keen on digital assets: The Central Bank of Russia called for an outright ban on cryptocurrency. That most likely didn't happen, because Russia's Finance Ministry was opposed to the idea and believed it was necessary to allow crypto technology to develop. In ten days' time, the law will take effect and will make paying with crypto illegal in the country. According to Decrypt, though, Russians can still invest in cryptocurrencies like Bitcoin and presumably continue mining them as well.....”.

The second major problem inherent in Cryptos is that the ownership of the top ten coins/tokens (by market value) is concentrated among relatively few individuals (these include BTC, ETH, BNB, USDT, BUSD, etc.). Also many crypto market participants still don't know or understand the differences between tokens and coins.

On Mechanism Design and *Platform Economies*, see the articles cited in Chapter-1 in Nwogugu (rev. 2022). On examples of “platforms” that have affected national economies, regional economies and the World Economy, see: Korula, Vahab & Nazerzadeh (2016).

2. The “Cyber-Platform-And-Attention Socialist-Capitalism” Element Inherent In Cryptocurrencies And DCCs/DFPCs.

The *Socialist-Capitalism* element exists because while there is “capitalism”:

- i) there is significant government spending and subsidies support many sectors of the national economy (eg. Healthcare, housing, transportation, food, defense, education, social services, R&D, technology, etc., in the USA and many developed “capitalist” countries), and without such government spending, there wouldn't be any or much economic growth;
- ii) in most capitalist or democratic countries, governments bear the cost of inefficiencies and losses incurred (by customers, the general public and DCCs/DFPCs) in the cryptocurrency markets - in the form of under-taxation of DCCs/DFPCs (DCCs/DFPCs should bear a much greater percentage of losses and inefficiencies that they cause or amplify), government benefits (healthcare, housing, transportation, food, etc.), loans to distressed banks and companies, other types of bail-outs, etc.; in man.

3. All Mined Cryptocurrencies Are Stablecoins, And Concerns About Environmental Pollution In Crypto-Mining May Be Exaggerated.

Contrary to many academicians, industry professionals and legislators, all mined cryptocurrencies (eg. Bitcoin, Ethereum, etc.) have intrinsic value which is equal to the *Implied Floor-price* and is the sum of the following:

- i) the average cost that miners incur to mine/produce one coin (such as randomly-used or competition-based labor/Computer/electricity/bandwidth/equipment costs, owned/rented real estate costs, fees, admin costs, licensing costs; etc.; and which constitutes the miner's investment) plus
- ii) an adjustment for the time-value of money and inflation/deflation/stagflation;
- iii) the implied/imputed costs of Good-Deeds (Proof-Of-Good), Proof-Of-Stake (randomly-assigned use of resources), Proof-Of-Work (competition-based use of resources) and other similar procedural costs.

Each Non-Mined-crypto (such as Bitcoin and ETH) has an *Implied Floor-price* and intrinsic-value which consists of:

- i) the average ICO/IDO cost for one token, plus
- ii) the pro-rate share of value of any underlying asset, plus
- iii) the pro-rata share of the value of any rights attached to the crypto-asset (such as revenue-sharing, dividends, rights to cashflow); plus
- iv) an adjustment for the time-value of money and inflation/deflation/stagflation;
- v) the implied/imputed costs of Good-Deeds (Proof-Of-Good), randomly-used labor/Computer/electricity/bandwidth costs (Proof-Of-Stake), competition-based labor/Computer/electricity/bandwidth costs (Proof-Of-Work) and other similar procedural costs.

On the valuation of Digital Goods, see Nwogugu (2016). This *Implied Floor Price* is similar to the Intrinsic Value inherent in the underlying assets of NFTs and Stablecoins because all of them require capital inputs (labor, Good-Deeds, assets, cash, equipment, and or Intellectual Property and or real property). Its notable that some cryptocurrencies have explicitly programmed-in Floor-prices, and that the process of “burning” coins creates evolving floor-prices.

The reality is that the existing methods for creating “mined” cryptocurrencies (distributed-computing with built-in liquid-incentives) is legal and relatively efficient (except for low energy efficiency)

and takes advantage of cost differences across countries/regions. As the number of blockchain transactions and contracts continue to increase, more cryptos will be produced, and how to regulate and manage the inherent processes and products will increasingly become National Security, Monetary Policy, Social Policy and Foreign Policy controversies.

4. Energy Use In CryptoCurrency Mining⁸.

Separately, governments' and public concerns about energy use in the mining processes are probably exaggerated because more companies are developing new energy-efficient blockchain technologies. These companies include Tezos (www.tezos.com), Casper Labs and Devvio (www.devv.io), each of which has developed blockchain technologies that consume one thousand to two million times less energy than traditional blockchain mining processes. The main problem is that miners and DCCs/DFPCs aren't adopting these new and efficient technologies quickly enough. Thus, governments' and Special Interest Groups' efforts should be directed towards incentives and penalties to compel DCCs/DFPCs to use these new and more energy-efficient crypto-mining technologies.

5. Central Bank Digital Currencies And The Rationale For "Private" Cryptocurrencies (And Other Digital Assets Such as Digital Trading-Cards And NFTs): Is There Any There Any Need For Private-Sector Cryptos ?

The following are notable:

- 1) As of 2020, the Tunisian government had launched the "Virtual Dinar" (the cryptocurrency version of its national currency).
- 2) As of 2020, Venezuela had launched the cryptocurrency version of its national currency.
- 3) As of 2020, Thailand banks and other financial institutions were still banned from directly dealing with cryptocurrencies.
- 4) As of 2020, Singapore government had created the "Virtual Dollar" (the cryptocurrency version of its national currency).
- 5) In Senegal, Banque Régionale de Marchés (BRM) announced that it partnered with eCurrency Mint Limited (eCurrency) to provide a digital currency in the WAEMU. BRM has issued the digital legal tender (eCFA), in compliance with e-money regulations of BCEAO.
- 6) As of 2020, the national governments of Estonia, Japan, Palestine, Russia and Sweden were working on launching their own national government cryptocurrencies; and the UK⁹ and Canada¹⁰ were researching the feasibility of launching their own national government cryptocurrencies.
- 7) As of 2022, Nigeria, Phillipines and China and other countries had launched their CBDCs.
- 8) As of 2022, El Salvador and Central African Republic (CAR) had formally declared that Bitcoin was a Legal Tender.

These foregoing government-issued Digital Currencies render domestic cryptocurrencies (in their counties) meaningless because government-issued Digital Currencies have similar features as, and can fulfil

⁸ See: "New York Bill Banning Proof-of-work Crypto Mining Poised to Advance - New York's crypto mining moratorium bill is one step closer to advancing to the state Assembly". By Casey Wagner / April 25, 2022. <https://blockworks.co/new-york-bill-banning-proof-of-work-crypto-mining-poised-to-advance/>.

See: Senate Bill S6486D (2021-2022 Legislative Session) - Establishes a moratorium on cryptocurrency mining operations that use proof-of-work authentication methods to validate blockchain transactions. <https://www.nysenate.gov/legislation/bills/2021/s6486>.

⁹ See: Bank of England (March 12, 2020). "Central Bank Digital Currency: opportunities, challenges and design". www.bankofengland.co.uk/paper/2020/central-bank-digital-currency-opportunities-challenges-and-design-discussion-paper.

¹⁰ See: Darbha, S. & Arora, R. (June 2020). "Privacy in CBDC technology". Bank of Canada. Working Paper. www.bankofcanada.ca/2020/06/staff-analytical-note-2020-9/.

most of the purported “functions and benefits” of non-governmental cryptocurrencies. Also its likely that in the future, such national governments will introduce new laws to ban non-government cryptocurrencies.

The following are some of the “positive” rationales for cryptocurrencies, and regardless of whether or not they are correct, they should be fully addressed in government policy-making around the world:

1) Well-designed Cryptocurrencies and NFTs can help reduce the significant and rapidly increasing *Inequality* in most countries (ie. Wealth Inequality, Income Inequality, Housing Inequality, Pay Inequality and Gender Inequality). Inequality was addressed in Nwogugu (2020). Cryptos and NFTs can serve as effective *Gifting Mechanisms* to directly and indirectly transfer wealth from the rich to the poor. In Indirect transfers, wealthy persons/companies can buy large amounts of cryptos/NFTs and the resulting price-increases and price-validation benefits the poor and extremely-poor that own cryptocurrencies. In direct transfers, DAOs and crypto exchanges can decide to grant cryptocurrencies to groups of members and crypto holders. Cryptos and NFTs can be issued to poor persons in exchange for completing online tasks. In many countries, growing numbers of families/people cannot afford to rent or buy houses and are sharing housing units. Historically, government interventions in housing markets haven’t been effective or efficient, and private sector interventions in Affordable Housing have been relatively very limited given the scope and severity of the housing problem. Well-designed Cryptocurrencies and NFTs can enable the private sector and governments to provide direct or indirect housing subsidies to households and to provide incentives to companies to grant housing allowances to, and to build housing units for their employees.

2) Cryptos and NFTs can serve as stores-of-value. There is a significant worldwide need for alternative stores-of-value which can be met by NFTs, digital trading cards and crypto-assets. Gold, stocks, commodities, bonds and alternative-assets are not suitable for all investors, cannot be purchased by all investors (too expensive for some), are subject to inflation/deflation/stagflation, and are increasingly volatile and may be deemed “*opaque*” by some investors. Gold, stocks, commodities, bonds and some alternative-assets require market-knowledge that many people don’t have, and they are not willing to trust and or cannot afford brokers. The various announced reports of manipulation of various asset markets (eg. LIBOR manipulation, Indices manipulation, stock-trading frauds, bond market manipulation, earnings management and accounting fraud; etc.) and associated prosecutions may have reduced the general public’s faith in “*traditional assets*”. Cryptocurrencies and NFTs can help reduce effects of, and hedge the loss of *Financial Market Credibility*, wherein investors are increasingly skeptical about company financial statements and disclosures, and there is rampant fraud-on-the-market, some (or a lot) of which isn’t prosecuted in courts and government agencies.

3) Given the foregoing, Cryptos and NFTs can help reduce the adverse effects of continuing and significant involuntary Currency Devaluations and *US Dollar Dominance* in most countries – such as significant and continuing Asset-devaluations, inability to manufacture or import basic necessities (such as equipment, technology, software, vehicles, food, medicines, and household durables) and inability to transfer technology/knowledge, all of which have wreaked havoc on household savings, credit ratings/scores, sustainability and overall economic growth. Nwogugu (2021) analyzed these issues. Cryptocurrencies, Trading Cards and NFTs can help ameliorate some of these problems by providing Alternative Investments that are less sensitive to government policies and financial market dynamics.

4) Cryptocurrencies, Trading Cards and NFTs can be deemed to be solutions to the ongoing global protest against traditional financial products, the structure and inadequate regulation of the global financial services industry and their criteria for transactions. This protest has been loudly manifested in various forms such as increased political lobbying, the number and volume of new financial regulations in various countries during 2006-2022, the volumes of prosecutions for financial crimes in various countries, the number of public protests (eg. the “Occupy Wall Street” protests in New York City), etc.. Cryptocurrencies and NFTs can help reduce the problems of lack of access to financial services in most countries, low trust in financial services professionals, and grossly inadequate knowledge of investing and financial products. Many of the affected persons can’t hire and are not profitable for investment advisors.

5) Well-designed Cryptocurrencies and NFTs can help increase *Savings Rates* in many countries, and solve the *Global Pension Crisis* (in many countries, the majority of citizens aged fifty-years and

above don't have sufficient retirement assets), by providing low-cost financial services and Alternative Investments. Many people in many countries still live on less than US\$1 dollar per day and cannot afford and don't understand traditional investments like stocks and bonds.

6) In many countries, SMEs lack access to capital, and even in developed countries, venture capital funds reach less than ten percent of SMEs and startup companies that need it (the "*Capital Access Problem*"). Compliant and registered ICOs and IDOs (and the associated de-centralization of processes, investors and investment decisions) can help solve the *Capital Access Problem*.

7) Properly-designed Crypto-asset processes and technology can be used in settlements of securities trades (in order to avoid costs, risks and delays incurred by movements of large amounts of cash and securities certificates).

8) Perhaps "non-stablecoin" Cryptocurrencies and NFTs answer the question of whether there is a need for "*Digital Sentiment Assets*" in the positive. *Digital Sentiment Assets* are a relatively new class of digital assets that: i) are heavily influenced by investor sentiment, *herding*, Affinity-Groups (eg. DAOs) and emotion, ii) have no or very low intrinsic value, iii) have low or no utility value, iv) have some features of collectibles, v) have some features of commodities. *Pure Sentiment Assets* are financial assets that: i) typically traded on financial exchanges and are heavily influenced by investor sentiment, *herding* and emotion, ii) track indices but otherwise, have no or very low intrinsic value, iii) have some features of collectibles, iv) have some features of commodities. As of 2022, there were relatively few effective and accurate *Sentiment Assets* (eg. some Indices and ETFs).

9) Cryptocurrencies and NFT exchanges offer convenience, speed (same day or instantenous transactions), no/low transaction-costs and 24-hour operations. Many payment systems are slow (1-3 days to process a transaction) and expensive (1%-3% of the transaction amount). Similarly, many money transfer systems are slow (1-3 days) and expensive (1.5%-6% of transaction amounts), and operate mostly during working hours.

10) Cryptocurrencies and NFTs can serve as a hedge against declining *Business Confidence*, *Consumer Confidence* and "*Government Confidence*".

11) As technology advances and as the number of analytical tools and types of financial products increases, both retail and institutional investors will likely continue to seek new types of financial products and new hedges (the "*Tech-advancement Product Diversity Theory*"). Such trends can significantly increase the demand for cryptocurrencies and other digital assets.

12) Advances in technology and changes in customers' needs seem to have outpaced the traditional payments methods and transaction recording methods. Traditional payment systems are not suitable for everyone and for example, in the US, many immigrants use cryptos to send money to their families Latin America - in such cases, customer needs for speed, low-transaction costs, 24-hour operations, etc., are not met by traditional payment methods. Secondly, asset trading in fast markets requires real time or near real-time updated records which can be provided by blockchains underlying cryptocurrencies.

13) Given the analysis of US Dollar Dominance and US MNC Dominance in Nwogugu (2021), Cryptocurrencies have the capacity to change the dynamics of the global currency markets and US Dollar Dominance, in ways that can help Emerging Markets countries, while reducing volatility in developed countries.

14) Cryptocurrencies can help reduce problems associated with inefficient taxation of financial instruments and capital gains, which frustrates investors and causes them to seek Alternative Investments.

15) Demand for Cryptocurrencies can arise from inefficient Incentive Mechanisms at companies and in government agencies and the resulting "*Perceived Compensation Inequity*" Its mostly senior executives that take the majority of corporate incentives; and in low-cost developing countries such as China, India and ASEAN countries, foreign companies make substantial profits from local production/services that they export to other countries.

16) The rapid growth of the collectibles and digital art markets, and markets for other digital assets, all of which are increasingly being linked/connected to Cryptocurrencies and NFTs (non-fungible tokens) creates demand for cryptocurrencies and NFTs. In many of these markets, illiquidity and provenance remain significant problems, all of which can be resolved or reduced by Cryptocurrencies and NFTs.

17) Because of their prices and structures, Cryptocurrency offerings can increase and sustain Financial Inclusion/Participation and Savings-Rates of lower-income and indigent persons. Poverty alleviation remains a major problem in Emerging Markets countries, and increasingly in developed countries.

18) Properly-designed Cryptocurrencies can be used as hedges against Inflation, Deflation, Stagflation and Currency Devaluations, all of which are significant problems in Emerging Markets countries.

19) In many countries and partly due to Currency Devaluations, Inflation, Stagflation and Corruption, government Monetary Policies have been increasingly ineffective and un-trustworthy (*Government Policy-Credibility* may be declining in many countries), and cryptocurrencies can be good way for households, investors and companies to address such declines of *Policy-Credibility*.

20) Technological advances and the growth of “*legal digital assets*” (such as digital-art, digital-coupons, digital-vouchers, digital trading cards, digital entertainment/films/videos) as recognized and distinct asset classes may have increased the acceptance and demand for cryptocurrencies.

21) Legal and illegal online filesharing have created a global psyche and patterns of online transactions, free/low-cost digital assets and “*online-gratification*” that supports and perhaps warrants the use of cryptocurrencies. See Nwogugu (2016). As of 2022, more than 35% (thirty-five percent) of worldwide internet traffic consisted of illegal online filesharing. Cryptocurrencies can provide online gratification due to its low transaction costs, convenience, 24-hour markets, prices, etc..

22) The inability of many investors to quickly, cost-effectively and tax-effectively re-balance their asset/investment portfolios, can be reduced/resolved using Stablecoins and Cryptocurrencies that track financial indices.

23) Properly-designed Cryptos can be used to make many illiquid assets much more liquid (eg. vehicles, real estate, art, collectibles, digital-content, etc.).

24) Multi-level/bi-cameral financial regulation (at the state and federal levels), other *Regulatory-Fragmentation*, *Regulatory-Capture*, legislative inefficiency and inaccuracy (the length of time it takes to enact financial regulations and the efficiency of such regulations), low/sloppy enforcement and perceived lack of adequate regulation of the financial services industry remain major problems that make investors lose confidence in traditional financial markets, and to seek “Alternative Investments”.

25) Traditional Alternative Investments (structured products, real estate, commodities, currency products, etc.) have proven to be difficult to manage and or cyclical and or illiquid (illiquidity has a greater-than-normal negative effect on prices). Cryptocurrencies (and especially stablecoins) can provide easier-to-manage investment opportunities.

26) Properly-designed Cryptocurrencies can be used in Interbank Settlements (in order to avoid costs, risks and delays incurred by movements of large amounts of cash).

27) Contrary to most existing research, each Mined-crypto (such as Bitcoin and ETH) has an *Implied Floor-price* and intrinsic-value which is the sum of the following: i) the average cost that miners incur to mine/produce one unit of the coin (such as randomly-used labor/Computer/electricity/bandwidth costs (*Proof-Of-Stake*), competition-based labor/Computer/electricity/bandwidth costs, real estate costs, admin costs, etc.; and which constitutes the miner’s investment) plus ii) an adjustment for the time-value of money and inflation/deflation; iii) the implied/imputed costs of Good-Deeds (*Proof-Of-Good*), randomly-used labor/Computer/electricity/bandwidth costs (*Proof-Of-Stake*), competition-based labor/Computer/electricity/bandwidth costs (*Proof-Of-Work*) and other similar procedural costs. Each Non-Mined-crypto (such as Bitcoin and ETH) has an *Implied Floor-price* and intrinsic-value which consists of: i) the average ICO/IDO cost for one token, plus ii) the pro-rate share of value of any underlying asset, plus iii) the pro-rata share of the value of any rights attached to the crypto-asset (such as revenue-sharing, dividends, rights to cashflow); plus iv) an adjustment for the time-value of money and inflation/deflation; plus v) the implied/imputed costs of Good-Deeds (*Proof-Of-Good*), randomly-used labor/Computer/electricity/bandwidth costs (*Proof-Of-Stake*), competition-based labor/Computer/electricity/bandwidth costs (*Proof-Of-Work*) and other similar procedural costs.

28) Cryptocurrencies can serve as quasi economic/financial indicators (*quasi-Indices*):

- a) Non-stablecoins can serve as indicators of Inflation/deflation, *Herding* and investor-sentiment.
- b) Stablecoins can serve as indicators of inflation/deflation and the prices and volatility of the underlying assets.
- c) Both Non-stablecoins and Stablecoins can serve as indicators of the rate and volumes of dissemination and processing of information in capital markets and asset markets.

In such circumstances, cryptocurrencies represent a cheap way to buy and sell such “*quasi-Indices*”.

29) Crypto-assets and NFTs inherently build social networks and online/offline communities; and are also access-keys (to events, promotions and gifts).

30) Crypto-assets and NFTs facilitate much needed *Talent-Discovery* around the world. The worldwide search for various types of talent and the development of Human Capital often omits poor people but remain key requisites for the development of national and regional economies. C Crypto-assets and NFTs enable smart, talented but poor people to have a chance at making money and or generating savings.

31) Around the world, Cryptocurrency facilitates much needed *Price-Discovery* for the following: i) the cost of mining cryptocurrencies and similar distributed-computing processes, ii) the price of inflation/deflation, iii) the price of arbitrage/speculation; iv) in the case of Stablecoins, the value of the underlying assets. Around the world, NFTs facilitate much needed *Price-Discovery* for the following: i) the cost of minting NFTs and similar distributed-computing processes, ii) the price of inflation/deflation, iii) the price of arbitrage/speculation; iv) the value of the underlying assets (such as art, collectibles, real estate, Intellectual Property; etc.).

6. The Rationale For DeFi Products (Yield-Farming, Pooling And Lending).

The following are some rationale for DeFi products (such as Staking, Farming, coin/token lending, token/coin Futures; etc.):

- 1) The historically very low interest rate environment of 2015-2022 and the much higher interest rates offered by DeFi products.
- 2) Risks inherent in IPOs are significant. DeFi products can help reduce low *savings rates* in many countries, and the *Global Pension Crisis* (in many countries, the majority of citizens aged fifty-years and above don't have sufficient retirement assets), by providing low-cost financial services and Alternative Investments. Many people in many countries still live on less than US\$1 dollar per day and cannot afford and don't understand traditional investments like stocks and bonds.
- 3) Rising documented-Inflation and Un-documented-Inflation in many countries during 2010-2022.
- 4) DeFi products (savings/income, liquidity, etc.) and Cryptocurrencies can help reduce the significant and rapidly increasing *Inequality* in most countries (ie. Wealth Inequality, Income Inequality, Housing Inequality, Pay Inequality and Gender Inequality). Inequality was addressed in Nwogugu (2020). Cryptos can serve as a store-of-value. Cryptos can serve as an effective *Gifting Mechanism* to directly and indirectly transfer wealth from the rich to the poor. In Indirect transfers, wealthy persons/companies can buy large amounts of cryptos and the resulting price-increases and price-validation benefits the poor and extremely-poor that own cryptocurrencies. In direct transfers, DAOs and crypto exchanges can decide to grant cryptocurrencies to groups of members and crypto holders. Cryptos can be issued to poor persons in exchange for completing online tasks. In many countries, growing numbers of families/people cannot afford to rent or buy houses and are sharing housing units. Historically, government interventions in housing markets haven't been effective or efficient, and private sector interventions in Affordable Housing have been relatively very limited given the scope and severity of the housing problem. Cryptocurrencies can enable the private sector and governments to provide direct or indirect housing subsidies to households and to provide incentives to companies to grant housing allowances to, and to build housing units for their employees.
- 5) Properly designed DeFi products, Cryptocurrencies can help reduce the adverse effects of continuing and significant involuntary Currency Devaluations and *US Dollar Dominance* in most countries – such as significant and continuing Asset-devaluations, inability to manufacture or import basic necessities (such as equipment, technology, software, vehicles, food, medicines, and

household durables), all of which have wreaked havoc on household savings, credit ratings/scores, sustainability and overall economic growth. Nwogugu (2021) analyzed these issues. Cryptocurrencies, Trading Cards and NFTs can help ameliorate some of these problems by providing Alternative Investments that are less sensitive to government policies and financial market dynamics.

6) DeFi products, Cryptocurrencies, Trading Cards and NFTs can be deemed to be solutions to the ongoing global protest against traditional financial products, the structure and inadequate regulation of the global financial services industry and their criteria for transactions. This protest has been loudly manifested in various forms such as increased political lobbying, the number and volume of new financial regulations in various countries during 2006-2022, the volumes of prosecutions for financial crimes in various countries, the number of public protests (eg. the “Occupy Wall Street” protests in New York City), etc.. Cryptocurrencies and NFTs can help reduce the problems of lack of access to financial services in most countries, low trust in financial services professionals, and grossly inadequate knowledge of investing and financial products. Many of the affected persons can’t hire and are not profitable for investment advisors.

7) In many countries, financial-inclusion and very low savings-rates remain major problems and SMEs lack access to capital, and even in developed countries, venture capital funds reach less than ten percent of SMEs and startup companies that need it. Compliant and registered ICOs and IDOs in combination with DeFi products (and the associated de-centralization of processes, investors and investment decisions) can help solve the capital-access, financial-inclusion/savings, price-discovery and liquidity-maximization problems.

8) Properly-designed DeFi products, Cryptocurrency processes and technology can be used in settlements of securities trades (in order to avoid costs, risks and delays incurred by movements of large amounts of cash and securities certificates).

9) Perhaps DeFi products, “non-stablecoin” Cryptocurrencies and NFTs answer the question of whether there is a need for “*Digital Sentiment Assets*” in the positive. *Digital Sentiment Assets* are a relatively new class of digital assets that: i) are heavily influenced by investor sentiment, *herding*, Affinity-Groups (eg. DAOs) and emotion, ii) have no or very low intrinsic value, iii) have low or no utility value, iv) have some features of collectibles, v) have some features of commodities. *Pure Sentiment Assets* are *financial* assets that: i) *typically traded on financial exchanges and are heavily influenced by investor sentiment, herding and emotion*, ii) *track indices but otherwise, have no or very low intrinsic value*, iii) have some features of collectibles, iv) have some features of commodities. As of 2022, there were relatively few effective and accurate *Sentiment Assets* (eg. some Indices and ETFs).

10) DeFi products, Cryptocurrencies and NFTs can serve as a hedge against declining *Business Confidence*, *Consumer Confidence* and “*Government Confidence*”; and they offer convenience, no/low transaction costs and 24-hour operations.

11) There is a significant worldwide need for alternative stores-of-value which can be met by NFTs, DeFi products (especially liquidity products), digital trading cards and crypto-assets. Gold, stocks, commodities, bonds and alternative-assets are not suitable for all investors, cannot be purchased by all investors (too expensive for some), are subject to inflation/deflation/stagflation, and are increasingly volatile and may be deemed “*opaque*” by some investors. Gold, stocks, commodities, bonds and some alternative-assets require market-knowledge that many people don’t have, and they are not willing to trust and or cannot afford brokers. The various announced reports of manipulation of various asset markets (eg. LIBOR manipulation, Indices manipulation, stock-trading frauds, bond market manipulation, earnings management and accounting fraud; etc.) and associated prosecutions may have reduced the general public’s faith in “*traditional assets*”. Cryptocurrencies and NFTs can help reduce effects of, and hedge loss of *Financial Market Credibility*, wherein investors are increasingly skeptical about company financial statements and disclosures, and there is rampant fraud-on-the-market, some of which isn’t prosecuted.

11) As technology advances and as the number of analytical tools and types of financial products increases, both retail and institutional investors will likely continue to seek new types of financial products and new hedges (the “*Tech-advancement Product Diversity Theory*”). Such trends can significantly increase the demand for cryptocurrencies, DeFi products and other digital assets.

12) Advances in technology and changes in customers' needs seem to have outpaced the traditional payments methods and transaction recording methods. Traditional payment systems are not suitable for everyone and for example, in the US, many immigrants use cryptos to send money to their families Latin America - in such cases, customer needs for speed, low-transaction costs, 24-hour operations, etc., are not met by traditional payment methods. Secondly, asset trading in fast markets requires real time or near real-time updated records which can be provided by blockchains underlying cryptocurrencies.

13) Given the analysis of US Dollar Dominance and US MNC Dominance in Nwogugu (2021), Cryptocurrencies and DeFi products (especially liquidity-products) have the capacity to change the dynamics of the global currency markets and US Dollar Dominance, in ways that can help Emerging Markets countries, while reducing volatility in developed countries.

14) DeFi products can help reduce problems associated with inefficient taxation of financial instruments and capital gains, which frustrates investors and causes them to seek Alternative Investments.

15) Demand for Cryptocurrencies and DeFi products can arise from inefficient Incentive Mechanisms at companies and in government agencies and the resulting "*Perceived Compensation Inequity*". Its mostly senior executives that take the majority of corporate incentives; and in low-cost developing countries such as China, India and ASEAN countries, foreign companies make substantial profits from local production/services that they export to other countries.

16) The rapid growth of the collectibles and digital art markets, and markets for other digital assets, all of which are increasingly being linked/connected to Cryptocurrencies and NFTs (non-fungible tokens) creates demand for DeFi products. In many of these markets, illiquidity and provenance remain significant problems, all of which can be resolved or reduced by DeFi products.

17) Because of their prices and structures, DeFi product offerings can increase and sustain Financial Inclusion/Participation and Savings-Rates of lower-income and indigent persons. Poverty alleviation remains a major problem in Emerging Markets countries, and increasingly in developed countries.

18) Properly-designed DeFi products can be used as hedges against Inflation, Deflation, Stagflation and Currency Devaluations, all of which are significant problems in Emerging Markets countries.

19) In many countries and partly due to Currency Devaluations, Inflation, Stagflation and Corruption, government Monetary Policies have been increasingly ineffective and un-trustworthy (*Government Policy-Credibility* may be declining in many countries), and cryptocurrencies can be good way for households, investors and companies to address such declines of *Policy-Credibility*.

20) Technological advances and the growth of "*legal digital assets*" (such as digital-art, digital-coupons, digital-vouchers, digital trading cards, digital entertainment/films/videos) as recognized and distinct asset classes may have increased the acceptance and demand for DeFi products.

21) Legal and illegal online filesharing have created a global psyche and patterns of online transactions, free/low-cost digital assets and "*online-gratification*" that supports and perhaps warrants the use of DeFi products. See Nwogugu (2016). As of 2022, more than 35% (thirty-five percent) of worldwide internet traffic consisted of illegal online filesharing. Cryptocurrencies can provide online gratification due to its low transaction costs, convenience, 24-hour markets, prices, etc..

22) The inability of many investors to quickly, cost-effectively and tax-effectively re-balance their asset/investment portfolios, can be reduced/resolved using DeFi products that track financial indices.

23) Properly-designed DeFi products (staking, Farming, liquidity products, etc.) can be used to make many illiquid assets much more liquid (eg. vehicles, real estate, art, collectibles, digital-content, etc.).

24) Multi-level/bi-cameral financial regulation (at the state and federal levels), other *Regulatory-Fragmentation*, *Regulatory-Capture*, legislative inefficiency and inaccuracy (the length of time it takes to enact financial regulations and the efficiency of such regulations), low/sloppy enforcement and perceived lack of adequate regulation of the financial services industry remain major problems that make investors lose confidence in traditional financial markets, and to seek "Alternative Investments".

25) Traditional Alternative Investments (structured products, real estate, commodities, currency products, etc.) have proven to be difficult to manage and or cyclical and or illiquid (illiquidity has a

greater-than-normal negative effect on prices). DeFi products (and especially stablecoins) can provide easier-to-manage investment opportunities.

26) Properly-designed DeFi products (staking, Farming, and liquidity products) can be used in Interbank Settlements (in order to avoid costs, risks and delays incurred by movements of large amounts of cash).

27) Contrary to most research, each “Mined Coin” (such as Bitcoin and ETH) has an *Implied Floor-price* and intrinsic-value which is the average cost that miners incur to mine/produce one unit of Bitcoin or ETH respectively (and which constitutes the miner’s investment) plus an adjustment for the time-value of money and inflation/deflation. As mentioned above, the *Implied Floor-price* consists of the costs of Good-Deeds (*Proof-Of-Good*), randomly-used labor/Computer/electricity/bandwidth costs (*Proof-Of-Stake*), competition-based labor/Computer/electricity/bandwidth costs (*Proof-Of-Work*) and other costs such as owned/rented real estate and administrative expense incurred to mine one unit of cryptocurrency.

28) DeFi products can serve as quasi economic/financial indicators (*quasi-Indices*):

a) Non-stablecoins and associated DeFi interest rates can serve as indicators of Inflation/deflation, *Herding* and investor-sentiment.

b) Stablecoins and associated DeFi interest rates can serve as indicators of inflation/deflation and the prices and volatility of the underlying assets.

c) Both Non-stablecoins and Stablecoins can serve as indicators of the rate and volumes of dissemination and processing of information in capital markets and asset markets.

In such circumstances, DeFi products represent a cheap way to buy and sell such “*quasi-Indices*”.

29) DeFi products inherently build social networks, communities and access-keys (to events, promotions and gifts) all of which are relevant components of Economic Development and Inequality-reduction.

30) DeFi products facilitate much needed *Talent-Discovery* around the world. The worldwide search for various types of talent and the development of Human Capital often omits poor people but remain key requisites for the development of national and regional economies. The launch, analysis and invest of DeFi products enables smart, talented but poor people to have a chance at making money and or generating savings.

31) Around the world, DeFi products directly/indirectly facilitate much needed *Price-Discovery* for the following: i) interest rates, ii) risk-taking; iii) the price of inflation/deflation, iii) the price of arbitrage/speculation; iv) in the case of Stablecoins, the value of the underlying assets.

7. Recent Developments In The Regulation Of Digital Currencies¹¹, Most Of Which Confirm That CryptoCurrencies And DCCs/DFPCs Are Still Misunderstood And Poorly Regulated.

¹¹ See: Boar, Holden & Wadsworth (Jan. 2020), Qian (2018) and Qian (2019).

See: Shaurya Malwa, “*People’s Bank of China Recommends Yuan-Pegged Stablecoin*”. CryptoSlate, October 12, 2018. cryptoslate.com/peoples-bank-of-china-recommends-yuan-pegged-stablecoin/. However, note the sharp declines in the prices of UST and LUNA coins (both of which were developed and maintained by Terraform) during May 2022.

See: Allen, S., Grimmelmann, J., et. al. (July 23, 2020). Prasad, “Design choices for central bank digital currency”. *Upfront* (blog) on The Brookings Institution. www.brookings.edu/blog/upfront/2020/07/23/design-choices-for-central-bank-digital-currency/.

See: *Cryptocurrency Investors Should Be Prepared To Lose All Their Money, Bank Of England Governor Says*. May 7, 2021. By Ryan Browne. <https://www.cnn.com/2021/05/07/bank-of-englands-bailey-crypto-investors-risk-losing-all-their-money.html>. This article stated in part: “.....Asked at a press conference Thursday about the rising value of cryptocurrencies, Bailey said: “They have no intrinsic value. That doesn’t mean to say people don’t put value on them, because they can have extrinsic value. But they have no intrinsic value.” “I’m going to say this very bluntly again,” he added. “Buy them only if you’re prepared to lose all your money.” Bailey’s comments echoed a similar warning from the U.K.’s Financial Conduct Authority. “Investing in cryptoassets, or investments and lending linked to them, generally involves taking very high risks with investors’ money,” the financial services watchdog said in January..... Bitcoin is up over 90% this year, thanks in part to rising interest from institutional investors and corporate buyers such as

See the comments above about the rationales for existence of cryptocurrencies.

The arguments for regulating cryptocurrencies as securities¹² don't make any sense because of the following:

- i) The CFTC's regulatory position on Mined-Cryptocurrencies is valid.
- ii) As explained in this article, the US SEC and similar regulatory agencies in other countries don't have jurisdiction over DFPCs and Mined/Non-mined cryptocurrenncies. Cryptocurrencies aren't securities or investment contracts and/or notes.
- iii) Misconduct in cryptocurrency spot markets can be prosecuted under common-law and or statutory Contract, Tort and Antitrust law claims (without invoking securities law statutes).
- iv) There are or can be significant adverse political ramification for granting regulatory authority over cryptocurrenncy sport markets to securities or commodities regulatory agencies, such as: 1) increased corruption and bribery; 2) increased litigation volumes and costs; 3) increased Harmful Political Lobbying; 4) ; 5) ; 6) .

Tesla. The electric car firm bought \$1.5 billion worth of bitcoin earlier this year, and the value of its holdings have since risen to nearly \$2.5 billion.....Proponents of bitcoin see it as a store of value akin to gold because of its scarce supply — only 21 million bitcoins can ever be minted — arguing that the cryptocurrency can act as a hedge against inflation as central banks around the world print money to relieve coronavirus-battered economies. However, skeptics view bitcoin as a market bubble waiting to burst. Michael Hartnett, chief investment strategist at Bank of America Securities, said bitcoin's rally looks like the “mother of all bubbles,” while Alvine Capital's Stephen Isaacs said there are “no fundamentals with this product, period.”..... Alternative digital currencies have made even larger gains than bitcoin. Ether, the native token of the Ethereum blockchain, has seen returns of more than 360% year to date, while meme-inspired crypto dogecoin is up a whopping 12,500%. Analysts have attributed dogecoin's rise to tweets from celebrities like Tesla's Elon Musk and Mark Cuban, as well as retail investors buying the token on the free-trading app Robinhood. David Kimberley, an analyst at U.K. investing app Freetrade, described the dogecoin rally as “a classic example of greater fool theory at play,” referring to the practice of selling overvalued assets to investors who are willing to pay a higher price. At the same time, central banks are considering whether to issue their own digital currencies. Last month, the Bank of England launched a joint taskforce with the Treasury aimed at exploring central bank digital currencies, or CBDCs. Such a currency would exist alongside cash and bank deposits rather than replacing them, the bank said.....”.

¹² See: “*Congress Should Grant the SEC Oversight of Digital Asset Spot Markets*”. By Lee Reiners April 21, 2022. The Columbia law School Blue Sky Blog. This article stated in part: “.....The Commodity Futures Trading Commission (CFTC) has classified Bitcoin and Ether – and by extension other cryptocurrencies that are similarly structured – as commodities (courts have also upheld this classification). While the CFTC regulates commodity derivatives, they do not regulate commodity spot markets, although they do have enforcement authority for fraud and manipulation in commodity spot markets. The practical effect of this structure is that cryptocurrency exchanges in the U.S. are not regulated at the federal level (they are required to register with the Financial Crimes Enforcement Network (FinCEN) and obtain state money transmitter licenses). This glaring weakness in digital asset regulation, and the need to address it, has been acknowledged by Securities and Exchange Commission (SEC) Chair Gensler, CFTC Chair Behnam, the digital asset industry, and members of Congress. The threshold question however, is which agency should be given oversight of digital asset spot markets, and what should be the extent of their authority? Here, there are no shortage of proposals, however, a consensus has yet to emerge..... that the Supreme Court's 1946 Howey Test – saying an investment contract exists when there is the investment of money in a common enterprise with a reasonable expectation of profits to be derived from the efforts of others – further clarified when an investment contract exists. Were it not for the “efforts of others” prong of the Howey Test, the majority of digital assets would qualify as investment contracts..... Of course, most financial assets are digital these days, so the definition of digital assets must be precise enough to exclude existing securities, like stocks and bonds, yet broad enough to incorporate cryptocurrency as well as current and future cryptocurrency offshoots (DAOs, non-fungible tokens (NFTs), etc.). One potential definition is found in the Infrastructure Investment and Jobs Act: “‘digital asset’ means any digital representation of value which is recorded on a cryptographically secured distributed ledger...”.....”.

- v) Both Mined and Non-Mined cryptocurrencies don't pass the US Supreme Court's Howey Test. Furthermore, the Howey Test isn't the only relevant US Supreme Court test and there are the Marine Midland Tests and the Joiner Tests (both of which are analyzed herein), under which Mined/Non-Mined Cryptocurrencies aren't securities or investment contracts and/or notes.
- vi) Classifying Mined/Non-Mined Cryptocurrencies as commodities provides sufficient regulatory oversight for monitoring Financial Stability, Systemic Risk and Investor Protection. In the US, the CFTC has been quite capable in regulation and enforcement.
- vii) Most financial assets are used, traded and stored in digital contexts. Thus creating a new regulatory agency for digital assets is economically, operationally and politically inefficient.

If all cryptocurrencies must be regulated by a government agency, the more feasible alternative is to grant commodities regulatory agencies (such as CFTC in the US) the authority to regulate digital asset spot markets.

7.1. New Statutes – Trends.

As of, and during 2022, in addition to the many lawsuits filed by national governments against DCCs/DFPCs, the following events confirmed the invalidity and illegality of cryptocurrencies/DCCs/DFPCs:

- i) During 2020, the South Korean legislature enacted comprehensive statutes for the regulation of cryptocurrencies¹³. During 2016-2019, the South Korean government cracked down on the booming cryptocurrency sector in South Korea which was riddled with illegal activities. South Korea is notable because it has been at the forefront in accepting cryptocurrencies and has many SEOs.
- ii) The Chinese government introduced the “Digital Yuan”¹⁴ (the digital version of the Chinese Yuan also known as “*Digital Currency Electronic Payment*”) which was in the testing phase as of

¹³ See: *South Korea Passes One Of The World's First Comprehensive Cryptocurrency Laws*. Danny Crichton. March 5, 2020. <https://techcrunch.com/2020/03/05/south-korea-passes-one-of-the-worlds-first-comprehensive-cryptocurrency-laws/>. This article stated in part: “.....The South Korean National Assembly passed new legislation today that will provide a framework for the regulation and legalization of cryptocurrencies and crypto exchanges. In a unanimous vote during a special session of the legislature convened amidst the country's worsening novel coronavirus situation, the representatives passed an amendment to the country's financial services laws that would authorize Korea's financial regulators to effectively oversee the nascent industry and develop rules around anti-money laundering among other processes. South Korea has been on the forefront of the cryptocurrency boom and bust over the past few years, and it's one of the few countries with wide-scale adoption of the technology. Surveys at the height of the crypto craze in 2017 showed that more than a third of the country's workers were active investors in cryptocurrencies, like Bitcoin, Ethereum and other systems. The country's largest city, Seoul, led a government initiative to introduce its own cryptocurrency — S-coin — that was designed to capture the zeitgeist of the frenzy. During that period, South Korea's government moved quickly to push new regulations and clamp down on the spread of blockchain, which caused large gyrations in the price of Bitcoin as investors observed how the country's investors would react.....”.

See: “*Passing the Special Law on "Institutionalization of Cryptocurrency Transactions"*”. Sejin Kim. March 5, 2020. <https://news.v.daum.net/v/20200305173114246>.

¹⁴ See: “*One Day Everyone Will Use China's Digital Currency*”. By Danny Vincent, BBC News, Hong Kong. September 24, 2020. <https://www.bbc.com/news/business-54261382#:~:text=China%20began%20testing%20the%20digital,make%20transactions%20and%20transfer%20money.&text=Observers%20say%20China%20wants%20to,can%20compete%20with%20the%20dollar>

See: Zhang, Z. (Dec. 7, 2020). “China's Digital Yuan: Development Status and Possible Impact for Businesses”. *China Briefing*. December 7, 2020. Zoey Zhang. <https://www.china-briefing.com/news/china-digital-yuan-status-roll-out-impact-businesses/>.

See: “*China Central Bank's Draft Law Provides Legal Basis For Digital Currency, Outlaws All Digital Tokens*”. 24-Oct-2020. <https://news.cgtn.com/news/2020-10-24/PBOC-draft-law-provides-legal-basis-for-digital-currency-URaFFN37IA/index.html>.

December 2020. The Digital Yuan renders Chinese¹⁵ cryptocurrencies meaningless because: 1) the Digital Yuan has similar features as, and can fulfil most of the purported functions of

See: Fanusie, Y. & Jin, E. (Jan. 2021). *China's Digital Currency - Adding Financial Data to Digital Authoritarianism*. Research Report, CNAS, USA. <https://s3.us-east-1.amazonaws.com/files.cnas.org/documents/CNAS-Report-Chinas-Digital-Currency-Jan-2021-final.pdf?mtime=20210125173901&focal=none>.

See: "Digital Yuan Trials For Hong Kong, JD.com: Blockheads". Dec. 8, 2020.

<https://technode.com/2020/12/08/digital-yuan-trials-for-hong-kong-jd-com-blockheads/>.

See: "Fintech Will Be the Commanding Heights of Global Financial Competition in Future: PBOC Vice-Governor Fan Yifei". *China Banking News*, November 29, 2019, www.chinabankingnews.com/2019/11/29/fintech-will-be-the-commandingheights-of-global-financial-competition-in-future-pbocvice-governor-fan-yifei/.

See: Kania, E., Sacks, S., et. al. (Sept. 2017). "China's Strategic Thinking on Building Power in Cyberspace". *New America*, September 25, 2017. www.newamerica.org/cybersecurity-initiative/blog/chinas-strategic-thinking-building-power-cyberspace/.

See: Hoffman, S., Garnaut, J., et. al. (October 2020). "The flipside of China's central bank digital currency". Australian Strategic Policy Institute. www.aspi.org.au/report/flipside-chinas-central-bank-digital-currency.

See: People's Bank of China, Payment and Settlement Department, "2019年支付体系运行总体情况 [2019 Overview of Payment System Operation]". People's Bank of China. www.pbc.gov.cn/zhifujiesuansi/128525/128545/128643/3990497/index.html.

¹⁵ See: "What the Chinese Bank Crackdown Means for Crypto Investors". by Emma Newbery. May 20, 2021. https://www.fool.com/the-ascent/buying-stocks/articles/what-the-chinese-bank-crackdown-means-for-crypto-investors/?source=epthyolnk0000202&utm_source=yahoo-host&utm_medium=feed&utm_campaign=article. This article stated in part: ".....Chinese regulators tightened up crypto regulation this week. Regulatory bodies issued a joint statement yesterday that banned China's financial institutions from offering any crypto-related services. They warned that cryptocurrencies are not "real currencies," and so cannot be used in the market. The news was a big blow to cryptocurrencies like Bitcoin, and prices plummeted on the news. It's not the first time China has acted to curb Bitcoin's growth.

- In 2013, authorities initially authorized cryptocurrencies as legal tender. Later that year, China banned banks from providing certain cryptocurrency services.
- In 2017, the country stopped local crypto exchanges from swapping fiat (traditional) currencies for crypto and banned Initial Coin Offerings (ICOs).
- In 2019 it said it would also restrict access to international cryptocurrency exchanges.

Earlier this year, the Chinese central bank seemed to be softening its stance, stating that crypto assets were an "investment alternative." But it looks like China's crypto caution will continue -- for now, at least.....".

See: "China vows to crack down on bitcoin mining, trading activities". May 21, 2021.

<https://finance.yahoo.com/news/china-says-crack-down-bitcoin-145443522.html>. This article stated in part: ".....China will crack down on bitcoin mining and trading activities as part of efforts to fend off financial risks, the State Council's Financial Stability and Development Committee said on Friday. The country will also clamp down on illegal activities in the securities market, and maintain the stability of stock, bond and forex markets, the committee said in a meeting chaired by Vice Premier Liu He. The statement, which comes just days after three Chinese industry bodies tightened a ban on banks and payment companies providing crypto-related services, marks a sharp escalation of moves against virtual currencies. Liu is the most senior Chinese official to publicly order a crackdown on bitcoin, and it is the first time the state council has explicitly targeted crypto mining activities. Bitcoin prices fell sharply again on the news and are on course for weekly losses of more than 15%, as is Ethereum. Investor protection and prevention of money laundering are particular concerns of governments and financial regulators who are grappling with whether and how they should regulate the cryptocurrency industry.....".

cryptocurrencies; 2) in 2020, the PBOC drafted new regulations that when enacted, will outlaw/invalidate all other cryptocurrencies in China.

iii) Several countries introduced or announced plans to introduce their own Central Bank Digital Currencies (CBDCs)

iv) Around September 2020, the Indian central government¹⁶ announced that it planned to introduce new laws to ban cryptocurrency trading.

v) During 2020, the UK Financial Conduct Authority¹⁷ banned the sale of cryptocurrency derivatives to retail consumers.

vi) In April 2018, the Japanese government enacted a new law recognizing bitcoin as legal tender. The public press also reported that a consortium of Japanese banks were working on launching a national digital currency (“J-Coin”).

vii) In December 2020, the German¹⁸ government cabinet enacted new legislation that permits “*all-electronic*” securities to be recorded using blockchain technology. This new German law effectively eliminates the need for “cryptocurrencies” (most of which are currently based on blockchain technology, and are regulated primarily as securities in many countries; and to a lesser extent, as commodities). Current permitted and “conforming” cryptocurrencies are essentially all-electronic securities in many countries. In the US, the US SEC requires that all cryptocurrencies comply with federal securities laws pertaining to the issuance and trading of securities.

7.2. New Statutes: The 2021 German Statute¹⁹ That Permits German “SpezialFonds” To Invest Up To Twenty-Percent Of Their Assets In Cryptos Is Unconstitutional.

¹⁶ See: Chaudhary, A. & Singh, S. (Sept. 17,2020). “India Plans To Introduce Law To Ban Cryptocurrency Trading”. *Economic Times Of India*.

<https://economictimes.indiatimes.com/news/economy/policy/government-plans-to-introduce-law-to-ban-cryptocurrency-trading/articleshow/78132596.cms>.

See: *India To Propose Cryptocurrency Ban, Penalising Miners, Traders - Source*. By Aftab Ahmed and Nupur Anand. March 15, 2021. <https://finance.yahoo.com/news/india-propose-cryptocurrency-ban-penalising-234811711.html>. This article stated in part: “.....India will propose a law banning cryptocurrencies, fining anyone trading in the country or even holding such digital assets, a senior government official told Reuters in a potential blow to millions of investors piling into the red-hot asset class. The bill, one of the world's strictest policies against cryptocurrencies, would criminalise possession, issuance, mining, trading and transferring crypto-assets, said the official, who has direct knowledge of the plan. The measure is in line with a January government agenda that called for banning private virtual currencies such as bitcoin while building a framework for an official digital currency. But recent government comments had raised investors' hopes that the authorities might go easier on the booming market. Instead, the bill would give holders of cryptocurrencies up to six months to liquidate, after which penalties will be levied, said the official, who asked not to be named as the contents of the bill are not public. Officials are confident of getting the bill enacted into law as Prime Minister Narendra Modi's government holds a comfortable majority in parliament. If the ban becomes law, India would be the first major economy to make holding cryptocurrency illegal. Even China, which has banned mining and trading, does not penalise possession.....”.

¹⁷ See: “*FCA bans the sale of crypto-derivatives to retail consumers*”. UK FCA. Press Releases. 06/10/2020. <https://www.fca.org.uk/news/press-releases/fca-bans-sale-crypto-derivatives-retail-consumers>.

¹⁸ See: “*Germany Legalizes Electronic Securities On The Blockchain*”. Tanzeel Akhtar (CoinDesk). Dec. 16, 2020. <https://www.nasdaq.com/articles/germany-legalizes-electronic-securities-on-the-blockchain-2020-12-16>.

¹⁹ See: “Germany’s New Law Means 4,000 ‘Spezialfonds’ Can Now Invest In Bitcoin: Landmark legislation comes into force in Germany today, giving institutional investors permission to hold crypto assets”. By Adriana Hamacher. Jul 1, 2021. <https://decrypt.co/74957/germanys-new-law-means-4000-spezialfonds-can-now-invest-in-bitcoin>. This article stated in part: (“.....Germany’s ‘Fund Locations Act’ came into force today, meaning that thousands of institutional investment funds will now be eligible to invest in Bitcoin and

The new German law (henceforth, the “SpezialFonds Crypto Law”) is unconstitutional for the following reasons:

- i) Burden On Interstate Commerce
- ii) Equal Protection Doctrine
- iii) Right-To-Contract

7.3. Government Bans/Prohibitions And Prosecutions.

As of 2020, countries that had absolutely/expressly banned cryptocurrencies included but were not limited to the following: Algeria, Bolivia, Egypt, Iraq, Morocco, Nepal, Pakistan, United Arab Emirates, Zimbabwe and Vietnam. As of 2020, countries that had implicitly banned cryptocurrencies included but were not limited to the following: Bahrain, Bangladesh, China, Colombia, Dominican Republic, Indonesia, Iran, Kuwait, Lesotho, Lithuania, Oman, Portugal, Qatar, Spain, Saudi Arabia, Serbia, South Africa, Taiwan and Thailand. Macau (China) has also implicitly banned Cryptocurrencies.

Appendix-2 in Chapter-___ in Nwogugu (rev. 2022) lists cryptocurrency regulations around the world as of March 2020. Kindly note the following:

- i) As of 2021, the US government agencies were increasing their prosecutions of DCCs/DFPCs²⁰.
- ii) In January 2021, the Russian central government²¹ (Russia's Ministry of Labor) banned all Russian government staff from owning cryptocurrencies and mandated such staff to dispose of their then-owned cryptocurrencies by April 2021. In 2020, Russia²² enacted laws for Cryptocurrencies.

other crypto assets for the first time. Spezialfonds are favored by institutional investors and the new law allows fund managers to allocate up to 20% of a Spezialfond to crypto-assets. Interest is exploding, according to market experts, who anticipate that the new regulations could unleash significant investment in the crypto market.....Sven Hildebrandt, head of Hamburg blockchain consultancy DLC Distributed Ledger Consulting, told Decrypt that he projects a theoretical inflow in the order of €350 billion (\$415 billion) into crypto assets. That's a significant amount, and "damn huge," according to Hildebrandt, considering that the current market capitalization of Bitcoin is \$632 billion. His calculations are based on estimations that around €1.87 trillion (\$2.2 trillion) is tied up in approximately 4,000 spezialfonds. "This won't happen overnight, but we are talking about the largest investment vehicle that we have in Germany—literally all the money is in there," said Hildebrandt.....”).

²⁰ See: “*Largest Ethereum-based Decentralized Exchange Delisting Tokens*”. By Michael Cohen. July 25, 2021. <https://www.yahoo.com/finance/news/largest-ethereum-based-decentralized-exchange-185831503.html>. This article stated in part:

“.....**What happened:** The largest Ethereum-based (CRYPTO: ETH) decentralized cryptocurrency exchange has delisted several tokens ahead of anticipated regulatory scrutiny. Uniswap has removed Tether Gold and tokenized stocks from crypto derivatives platforms like Synthetix. The move by Booklyn-based Uniswap Labs is in response to US laws preventing the company from selling certain investments.

Why it's important: The delistings come after an international crackdown on Binance, the world's largest crypto exchange, which had to suspend trading of its tokenized stocks after regulatory officials in the U.K, Hong Kong, Germany and Italy said they could constitute securities. Decrypt reports that since Uniswap is a US-based website, company officials are anticipating increased scrutiny from the US Securities and Exchange Commission into company operations. Last week, a cease-and-desist order was filed against crypto lending platform BlockFi by the Texas State Securities Board, over the alleged sale of unregistered securities.

What's next: SEC Chairman Gary Gensler, says he's keeping a close eye on “stock tokens” and legal action against token issuers has already been taken, and more is being considered. He says “these platforms—whether in the decentralized or centralized finance space—are implicated by the securities laws and must work within our securities regime.”.....”).

²¹ See: “*Russia Prohibits Government Officials From Owning Crypto, Must Dump Holdings by April*”. By Kevin Helms. Jan. 26, 2021. <https://news.bitcoin.com/russia-prohibits-government-officials-owning-crypto-dump-holdings-april/>.

- ii) During 2020, both the US CFTC and the US SEC filed major lawsuits against BitMex²³ for operating an illegal and un-registered cryptocurrency trading platform.
- iii) During April 2020, two US law firms filed eleven class-action lawsuits against various DCCs/DFPCs²⁴ in a New York federal district court (USA).

See: Putin Signs Russian Crypto Bill Into Law. By Anna Baydakova. Jul 31, 2020.

<https://www.coindesk.com/putin-signs-russian-crypto-bill-into-law>. This article stated in part: “.....Russian President Vladimir Putin signed the first of two bills on digital assets into law on Friday, according to Russian media.

- The bill, approved by the country's parliament last week, says companies can issue digital securities on a blockchain if they are properly registered with the Bank of Russia as issuers and satisfy certain criteria.
- Decentralized cryptocurrencies are considered a type of property, which should be reported for tax purposes and cannot be used to pay for goods and services.
- A more detailed law regulating crypto-related businesses is expected to be passed later this year, although no timeline has been disclosed.
- The previous version of that bill, which has been introduced to the Russian parliament, would make it illegal to issue and trade crypto on Russia-based infrastructure.
- The draft generally reflected the skeptical stance of the country's central bank.
- It provoked an outcry from the crypto community and criticism from both Russia's Ministry of Justice and Ministry of Economic Development.....”.

²² *See: Putin Says Russia Must Stop Illegal Cross-Border Crypto Transfers.* By Anna Baydakova. Wed, March 17, 2021. <https://finance.yahoo.com/news/putin-says-russia-must-stop-170337080.html>. This article stated in part: “.....Russian President Vladimir Putin called for closer attention to the illicit use of digital assets during his meeting with the attorney general's office on Wednesday. Putin said Russia needs to “take additional measures to prevent illegal cross-border transfers of digital assets,” according to the transcript published on the president's official website. “Criminal elements are using digital assets more and more often, and this what you should pay closer attention to, together with your colleagues from other law enforcement agencies, including Rosfinmonitoring,” Russia's anti-money laundering agency, Putin said. Russia's law on digital assets was signed in July and took effect in January 2021. It describes how digital tokens run by centralized entities must be issued. It also designates decentralized cryptocurrencies as property, which must be reported for tax purposes. Russian civil servants have been explicitly banned from owning crypto, according to the order issued by the country's Ministry of Labour in January. The legal guidelines regarding crypto-related services has proven inconsistent in Russia, with the courts occasionally banning crypto-related websites, including the popular cryptocurrency exchange Binance. Russia's central bank, in the meantime, has been actively exploring the prospect of launching a CBDC.....”.

²³ *See: “US charges bitcoin exchange founders over money laundering: BitMEX executives accused of operating an unregistered trading platform”.* By Kadhim Shubber. Oct. 1, 2020.

<https://www.ft.com/content/1672e8fe-1072-448a-92e7-cde9cb6dce6f>.

See: “CFTC Charges BitMEX Owners with Illegally Operating a Cryptocurrency Derivatives Trading Platform and Anti-Money Laundering Violations”. US CFTC.

<https://www.cftc.gov/PressRoom/PressReleases/8270-20>.

²⁴ *See: “Lawsuits Filed Against Binance, Bitmex and Other Crypto Companies”.* April 07, 2020. By MD Rockybul Hasan. <https://atozmarkets.com/news/lawsuits-filed-against-binance-bitmex-other-crypto-companies/>. (“..... US law firm, Roche Cyrulnik Freedman and Selendy & Gay PLLC, recently filed eleven class-action lawsuits. The firm has targeted many members of the crypto industry. The company, which represents crypto investors, has targeted a total of 42 defendants. Lawsuits filed against some of the biggest crypto exchanges, including Binance and BitMEX, as well as their founders and other officials.Targeted companies operate in many countries around the world. This includes the United States itself, as well as Canada, China, Japan, Hong Kong, Switzerland, Israel and many others. The lawsuits also alleged that the defendants violated federal securities laws and misled investors by inducing them to buy

iv) During December 2020, the US SEC²⁵ filed a major lawsuit against Ripple Labs and two of its executives (a US company that developed the RippleNet platform and the XRP cryptocurrency),

unregistered assets. Defendants include crypto issuers and exchanges, including KuCoin, BitMEX, Bprotocol, Status, Block.one, Civic and Binance. The class action names executives such as Block.one CTO Dan Larimer and Binance CEO Changpeng Zhao.”).

See: “*Plaintiffs File a Slew of Cryptocurrency-Related Securities Suits*”. By Kevin LaCroix. April 7, 2020. <https://www.dandodiary.com/2020/04/articles/securities-litigation/plaintiffs-file-a-slew-of-cryptocurrency-related-securities-suits/>. (“..... The lawsuits, all of which were filed in the Southern District of New York, target four crypto-asset exchanges and seven crypto-token issuers. The four crypto-asset exchanges are: Binance (complaint here: http://securities.stanford.edu/filings-documents/1073/B0300_01/202043_f01c_20CV02803.pdf); Bibox (complaint here: http://securities.stanford.edu/filings-documents/1073/BGHL000_03/202043_f01c_20CV02807.pdf); KuCoin (complaint here: http://securities.stanford.edu/filings-documents/1073/K00_03/202043_f01c_20CV02806.pdf); and HDR Global Trading, Ltd., the operator of BitMEX (complaint here: http://securities.stanford.edu/filings-documents/1073/HGTL000_03/202043_f01c_20CV02805.pdf). The seven crypto-token issuers are: Tron Foundation (complaint here: http://securities.stanford.edu/filings-documents/1073/TF0300_01/202043_f01c_20CV02804.pdf); Block.one (complaint here: http://securities.stanford.edu/filings-documents/1073/B00_03/202043_f01c_20CV02809.pdf); BProtocol Foundation (complaint here: http://securities.stanford.edu/filings-documents/1073/BF00_03/202043_f01c_20CV02810.pdf); Civic Technologies, Inc. (complaint here: http://securities.stanford.edu/filings-documents/1073/CTI0300_03/202043_f01c_20CV02811.pdf); KayDex Pte Ltd. (complaint here: http://securities.stanford.edu/filings-documents/1073/KPL0300_03/202043_f01c_20CV02812.pdf); Quantstamp, Inc. (complaint here: http://securities.stanford.edu/filings-documents/1073/QI0300_03/202043_f01c_20CV02813.pdf); and Status Research & Development GmbH (complaint here: http://securities.stanford.edu/filings-documents/1073/SRDG00_01/202043_f01c_20CV02815.pdf)... In addition to the defendant companies, each of the complaints targets certain directors and officers of each of the defendant companies. All of the lawsuits were filed by the same two law firms, Selendy & Gay PLLC and Roche Cyrulnik Freedman LLP......”).

²⁵ See: *Securities & Exchange Commission vs. Ripple Labs, et. al.* (20 Civ. 10832; ECF Case; US District Court For The Southern District Of New York). <https://www.sec.gov/litigation/complaints/2020/comp-pr2020-338.pdf>.

See: “*The SEC’s Attack on Crypto in the United States*”. By Brad Garlinghouse. Dec. 22, 2020. <https://ripple.com/insights/the-secs-attack-on-crypto-in-the-united-states/>.

See: “*SEC vs. Ripple: The Cryptocurrency Trial Of The Century*”. Dec 29, 2020. By Roslyn Layton. <https://www.forbes.com/sites/roslynlayton/2021/12/29/sec-v-ripple-the-cryptocurrency-trial-of-the-century/?sh=452c4f7c5417>. (this article states in part: “.....the SEC filed a lawsuit against Ripple Labs Inc., alleging that it raised over \$1.3 billion through the sale and distribution of the digital assets of XRP without registering. Ripple, founded in San Francisco in 2012, operates the RippleNet and the XRP payment protocol, considered superior to bitcoin with its improved ledger, faster settlement speed, and digital wallet for international transactions across fifty-five countries. Ripple is one of the titans of the new crypto industry in the U.S., developing real-economy products from revolutionary technology. Ripple’s blockchain-like exchange network is claimed to be an efficient, inclusive, and low-cost supplement (some say alternative) to traditional payment networks like the *Society for Worldwide Interbank Financial Telecommunication* (SWIFT) and others. The SEC suit does not allege fraud but seeks unspecified damages and to ban Ripple’s executives from participation in digital asset market trades. More largely, the case reaffirms Clayton’s statement in which he claimed supreme SEC authority to regulate every digital asset imaginable, regardless of its design, intention or use. Following the suit, the price of XRP plummeted by 25 percent, and some trading has been halted. Ripple launched a vigorous response, calling the suit an attack on the emergent cryptocurrency industry at large. The case has interesting parallels to telecommunications in which regulators use obsolete laws to regulate new technologies, undermining U.S. competitiveness in innovation.”).

which accused the company of violating securities laws. Ripple Lab's XRP cannot be legally classified as a currency because that would violate US banking laws. The US SEC's lawsuit emphasizes the fact that DCC's are legally liable for creating, and or sponsoring and or promoting Cryptocurrencies that don't comply with securities laws and regulatory agency directives. Unfortunately, Japan, the United Kingdom, Singapore and other countries all classify XRP as a "utility" and not securities; and Mexicans in the US currently use XRP as a remittance platform to send money back to Mexico. These XRP-supporters completely misunderstand and underestimate the true nature, significant financial risks of, and the significant opportunities for anonymous/anonymized criminal activities (eg. money-laundering; illegal gambling; human-trafficking; terrorism, drug-dealing, etc.) created by cryptocurrencies²⁶, cryptocurrecy platforms and companies such as XRP.

See: "SEC Charges Ripple and Two Executives with Conducting \$1.3 Billion Unregistered Securities Offering".

US SEC, Washington D.C., USA. Dec. 22, 2020. <https://www.sec.gov/news/press-release/2020-338>. (this article states in part: ".....According to the SEC's complaint, Ripple, Christian Larsen, the company's co-founder, executive chairman of its board, and former CEO; and Bradley Garlinghouse, the company's current CEO, raised capital to finance the company's business. The complaint alleges that Ripple raised funds, beginning in 2013, through the sale of digital assets known as XRP in an un-registered securities offering to investors in the U.S. and worldwide. Ripple also allegedly distributed billions of XRP in exchange for non-cash consideration, such as labor and market-making services. According to the complaint, in addition to structuring and promoting the XRP sales used to finance the company's business, Larsen and Garlinghouse also effected personal unregistered sales of XRP totaling approximately \$600 million. The complaint alleges that the defendants failed to register their offers and sales of XRP or satisfy any exemption from registration, in violation of the registration provisions of the federal securities laws. ".....Issuers seeking the benefits of a public offering, including access to retail investors, broad distribution and a secondary trading market, must comply with the federal securities laws that require registration of offerings unless an exemption from registration applies.....", said Stephanie Avakian, Director of the SEC's Enforcement Division. "We allege that Ripple, Larsen, and Garlinghouse failed to register their ongoing offer and sale of billions of XRP to retail investors, which deprived potential purchasers of adequate disclosures about XRP and Ripple's business and other important long-standing protections that are fundamental to our robust public market system.".....The SEC's complaint, filed today in federal district court in Manhattan, charges defendants with violating the registration provisions of the Securities Act of 1933, and seeks injunctive relief, disgorgement with prejudgment interest, and civil penalties.....").

²⁶ *See: "GemCoin Founder Sentenced to 10 Years for \$147M Crypto Scheme".* Danny Nelson. Tuesday, January 12, 2021. <https://www.yahoo.com/finance/news/gemcoin-founder-sentenced-10-years-231228865.html>.

See: "Man Gets 6 Years for \$25M Diamond and Crypto Ponzi Scheme". By Jaspreet Kalra. Dec. 9, 2020. <https://www.coindesk.com/man-sentenced-to-six-years-in-prison-for-diamond-ponzi-with-crypto-token>.

See: "Bitcoin exchange owner who helped scam eBay buyers sentenced to 10 years in prison". By Mariella Moon. January 13, 2021. <https://www.yahoo.com/finance/news/bitcoin-exchange-owner-ebay-car-scam-sentenced-093009069.html>.

See: "Owner of Crypto Exchange RG Coins Gets 10 Years in Prison for Laundering \$5Million". By Sebastian Sinclair. January 13, 2021. <https://www.yahoo.com/finance/news/bitcoin-exchange-owner-ebay-car-scam-sentenced-093009069.html>.

See: "Centra Tech Co-Founder Handed Prison Term for \$25M Crypto Fraud". By Tanzeel Akhtar. Dec 16, 2020. <https://www.coindesk.com/centra-tech-co-founder-handed-prison-term-for-25m-crypto-fraud>.

See: "Criminals hide 'billions' in crypto-cash – Europol". By Shiroma Silva. 12 February 2018. <https://www.bbc.com/news/technology-43025787>.

See: Bitcoin: UK and EU plan crackdown amid crime and tax evasion fears. Julia Kollewe. 4 Dec 2017. <https://www.theguardian.com/technology/2017/dec/04/bitcoin-uk-eu-plan-cryptocurrency-price-traders-anonymity>.

See: “*Terrorist Use of Cryptocurrencies: Technical and Organizational Barriers and Future Threats*”. by Cynthia Dion-Schwarz, David Manheim and Patrick B. Johnston.
https://www.rand.org/pubs/research_reports/RR3026.html.

See: “*EU Nation at Center of Dirty-Cash Storm Cracks Down on Crypto*”. By Ott Ummelas.
June 11, 2020. <https://www.bloomberg.com/news/articles/2020-06-11/eu-nation-at-center-of-dirty-cash-storm-cracks-down-on-crypto>.

See: “*Cryptoqueen: How This Woman Scammed The World, Then Vanished*”. 24 November 2019.
<https://www.bbc.com/news/stories-50435014>. (“.....Ruja Ignatova called herself the Cryptoqueen. She told people she had invented a cryptocurrency to rival Bitcoin, and persuaded them to invest billions. Then, two years ago, she disappeared.....In early June 2016 a 36-year-old businesswoman called Dr. Ruja Ignatova walked on stage at Wembley Arena in front of thousands of adoring fans.....She told the cheering crowd that OneCoin was on course to become the world's biggest cryptocurrency "for everyone to make payments everywhere"..... OneCoin, Dr. Ruja told the Wembley audience, was the "Bitcoin Killer". "In two years, nobody will speak about Bitcoin any more!" she shouted. All over the world, people were already investing their savings into OneCoin, hoping to be part of this new revolution. Documents leaked to the BBC show that British people spent almost €30 million on OneCoin in the first six months of 2016, €2 million of it in a single week - and the rate of investment could have increased after the Wembley extravaganza. Between August 2014 and March 2017 more than €4 billion was invested in dozens of countries. From Pakistan to Brazil, from Hong Kong to Norway, from Canada to Yemen.....even Palestine.....The webinar hosts talked about Dr. Ruja's glittering background: Oxford University, a PhD from Konstanz, a stint with the respected management consultancy, McKinsey and Company.....A speech Dr. Ruja had given at a conference hosted by *The Economist* magazine was shown - and that's what clinched it for McAdam. "That ticked a box.....The power of the woman - well done! I felt proud of her."..... FBI records presented in court documents earlier this year indicate that on 25 October 2017, just two weeks after her Lisbon no-show, she boarded a Ryanair flight from Sofia to Athens. And then went completely off radar. That was the last time anyone saw or heard from Dr. Ruja.....”).

See: “*US charges bitcoin exchange founders over money laundering: BitMEX executives accused of operating an unregistered trading platform*”. By Kadhim Shubber. Oct. 1, 2020.
<https://www.ft.com/content/1672e8fe-1072-448a-92e7-cde9cb6dce6f>.

See: “*Over 13% of all Proceeds of Crime in Bitcoin are Now Laundered Through Privacy Wallets*”.
09 December, 2020. <https://www.elliptic.co/blog/13-bitcoin-crime-laundered-through-privacy-wallet>.

See: “*Ex-Microsoft Engineer Gets Prison Sentence For Bitcoin Tax Fraud*”. By Shehan Chandrasekera.
Nov 9, 2020. <https://www.forbes.com/sites/shehanchandrasekera/2020/11/09/ex-microsoft-engineer-gets-prison-sentenced-for-bitcoin-tax-fraud/?sh=656419c062cd>.

See: “*Top cryptocurrency scams of 2019 – and how most hackers got away with it*”. By Sophia Ankel and Prabhjote Gill. *Business Insider India*. Dec 27, 2019. <https://www.businessinsider.com/the-biggest-cryptocurrency-scams-and-arrests-of-2019-so-far-2019-8?IR=T>.

See: “*Romance fraud, cryptocurrency risks and money laundering in Asia Pacific*”. July/August 2019.
<https://www.fraud-magazine.com/article.aspx?id=4295006266>.

See: “*Crime And Punishment In The Cryptocurrency World*”. By Walter Pavlo. Feb 25, 2020.
<https://www.forbes.com/sites/walterpavlo/2020/02/25/crime-and-punishment-in-the-cryptocurrency-world/?sh=56a72ce148fe>.

See: “*Chinese cryptocurrency scam ringleaders jailed in US\$2.25 billion Ponzi scheme involving PlusToken platform*”. By Sidney Leng. Dec, 1, 2020. <https://www.scmp.com/economy/china-economy/article/3112115/chinese-cryptocurrency-scam-ringleaders-jailed-us225-billion>.

See: “*How Terrorists Use Cryptocurrency in Southeast Asia - The first transactions involving cryptocurrencies have been made recently by Islamic State-linked terrorist networks in the Philippines*”. By V. Arianti and Kenneth Yeo Yaoren. June 30, 2020. <https://thediplomat.com/2020/06/how-terrorists-use-cryptocurrency-in-southeast-asia/>.

See: “*SEC charges hedge fund manager for \$30M cryptocurrency fraud scheme - A convicted hedge-fund manager assumed a fake name and wore a disguise to lure investors into a \$30 million cryptocurrency fraud in New York*”. Pedro Gonçalves. January 2020. <https://www.internationalinvestment.net/news/4009306/sec-charges-hedge-fund-manager-usd30m-cryptocurrency-fraud-scheme>.

See: “*The hacker, bitcoin, the Proceeds of Crime Act and the Criminal Courts (Sentencing) Act*”.

8. Many DCCs/DFPCs And Cryptocurrencies Are Illegal/Criminal Activity.

The main legal problems inherent in the mining, sales and use of cryptocurrencies are as follows:

- i) Cryptocurrencies cannot be used as mediums-of-exchange (as legal tender) – ie. the use of cryptocurrencies to purchase goods/services is illegal in most jurisdictions.
- ii) Labelling cryptoassets as “cryptocurrencies” is a major problem and a misnomer. They are not currencies unless they are formally approved as such by the central bank of a country.
- iii) Most Cryptocurrencies are commodities in most common-laws jurisdictions (and are considered to be commodities in some countries) and thus must be either registered at appropriate securities or commodities regulation agencies, or must comply with an exemption from such registration.
- iii) Anonymity of Cryptocurrencies and their associated exchanges facilitates money-laundering, drug trafficking, human trafficking, etc.. Thus, Cryptocurrency creators and exchanges should regularly verify the identities of market participants and disclose the identities of executives, founders and board-members of crypto-issuers and DCCs/DFPCs.
- iv) Most cryptos including stableCoins are highly volatile and illiquid and are marketed and presented as being safe and appropriate – there are issues of deception and false/inadequate disclosures. It's not just enough to disseminate standard disclaimers and warnings to consumers and institutional investors about cryptos. Non-StableCoins are not backed by any assets and can be worth zero unless they are deemed to be collectibles and or commodities. In the case of StableCoins that are backed by assets: 1) there can be problems if the underlying assets are illiquid; 2) there can be problems if there are redemption clauses that permit coin holders to “redeem” coins from the issuer.
- v) CyberSecurity remains an issue, and there have been instances of outright theft of Cryptocurrencies from online wallets, and in some instances the creators/sponsors of a Cryptocurrency absconded with large amounts of that class of Cryptocurrency.
- vii) During a September 2017²⁷ press conference, European Central Bank President Draghi stated that no member state of the Eurozone can introduce its own digital currency (and the only legal tender in the Eurozone remains the Euro).
- viii) During 2020, the IMF found that the existing banking/financial/other laws of less than forty-five countries permit such countries to issue government-backed cryptocurrencies.
- ix) Some crypto-issuers promise new products, “Reflections”, “Burning”, dividends which they don't deliver as promised.

09 September 2019. <https://www.rahmanravelli.co.uk/articles/hacker-bitcoin-the-proceeds-of-crime-act-poca-criminal-courts-sentencing-act/>.

See: “Two Chinese Nationals Charged with Laundering Over \$100 Million in Cryptocurrency From Exchange Hack - Forfeiture Complaint Details Over \$250 Million Stolen by North Korean Actors”. US Dept. Of Justice. March 2, 2020. <https://www.justice.gov/opa/pr/two-chinese-nationals-charged-laundering-over-100-million-cryptocurrency-exchange-hack>.

See: “Insurance agent who posed as 'Lord Voldermort' jailed after demanding Bitcoin from clients”. By Lydia Lam. Jan. 9, 2019. <https://www.channelnewsasia.com/news/singapore/jail-for-insurance-agent-who-posed-lord-voldermort-11179786>.

See: “Singaporean man faces charges over alleged ‘sophisticated’ cryptocurrency fraud in US. By Nabilah Awang. October 10, 2019. <https://www.todayonline.com/singapore/sporean-man-faces-us-spore-charges-over-alleged-sophisticated-cryptocurrency-fraud-drug>

²⁷ See: Mario Draghi, President of the ECB, and Vítor Constâncio, Vice-President of the ECB, “*Introductory Statement*”. Frankfurt am Main, September 7, 2017. <https://www.ecb.europa.eu/press/pressconf/2017/html/ecb.is170907.en.html>.

The reality is that the significant hype about cryptocurrencies is un-warranted (and may be deemed to be criminal activity) because:

- i) All official national currencies are already being used in digital transactions wherein their government-authorized physical forms are formally and digitally represented and accepted as “*Digital Equivalents*” – in such existing digital form, they are traded and used as stores-of-value and mediums-of-exchange in the digital/virtual economy. As of July 2022, Cryptocurrencies were legally authorized as legal tender by national governments in only a handful of countries (specifically, El Salvador and Central African Republic).
- ii) As presently structured, cryptocurrencies don’t provide central banks and government agencies with the ability to effectively develop and implement monetary policies, fiscal policy²⁸ and currency operations. That is, most central banks and government agencies cannot effectively manage non-governmental cryptocurrencies (ie. valuation; supply; demand; volatility; fraud; counterfeiting and validity; sources of supply; outstanding volume; security; taxation; transparency; etc.) - and that presents un-acceptable significant Financial Stability risks and Systemic Risks.
- iii) As explained herein and above, DCCs/DFPCs (and their Cryptocurrencies) cannot be classified or regulated as “*utilities*”.
- iv) Most Non-CBDC Cryptocurrencies are not approved by national governments as Legal-Tender and are very unlikely to be approved as such by any government.
- v) Theoretically, Cryptocurrencies and their platforms can replace international payments systems such as SWIFT or IBAN but that may be difficult because of the following:
 - 1) Cryptocurrencies lack (and most probably cannot re-create) the structure, regulatory-support and functions of SWIFT and IBAN (ie. transparency; identity verification/management; accountability; secure transmissions; backed by international financial institutions and governments; etc.).
 - 2) Unlike cryptocurrencies, SWIFT and IBAN use permitted currencies (legal tender) and don’t claim to introduce new “currencies” or non-legal-tender means-of-payment.
 - 3) Non-recognition of cryptocurrencies as legal tender in many countries.
 - 4) Cryptocurrencies are securities (and or commodities in some countries).
 - 5) The relatively significant anonymity and lack-of-transparency of cryptocurrencies - which facilitates money-laundering, Corruption, terrorism-financing, human-trafficking, etc..

Legally (and in most common-law systems), persons that hype and promote illegal activity and or non-registered/un-authorized products are deemed to be perpetrators and or accomplices/co-conspirators of illegal activity for which they are legally liable. Part of the problem is that most governments are subjected to heavy political lobbying by DCCs/DFPCs (and their many supporters in the global financial services industry) and don’t have the resources and political-will to prosecute and discipline perpetrators. The promotion/hyping, sales and marketing of non-governmental cryptocurrencies meets most of the elements of criminal misconduct:

- 1) *Mens Rea* – this is reasonably inferable from the circumstances.
- 2) Intent - this is reasonably inferable from the circumstances.
- 3) Knowledge – DCCs/DFPCs and persons that promote/sell non-government Cryptos know or should have known that such cryptos are not legal-tender, have highly volatile prices and can’t be used as a store of value. In some cases, these persons also know or should have known that specific non-government cryptos were not issued properly (eg. don’t conform to securities laws).

²⁸ See: “*Illegal Online Gambling Proliferates In China's Digital Economy*”. By Kapronasia. <https://www.kapronasia.com/china-payments-research-category/illegal-online-gambling-proliferates-in-china-s-digital-economy.html>. December 1, 2020. (this article stated in part: “.....One key takeaway from the crackdown is that China's digital economy lacks sufficiently robust anti-fraud and anti-money laundering controls. Despite the widely touted technological capabilities of firms like Alipay and WeChat Pay, criminals appear to have moved massive amounts of illicit funds through the e-wallets with relative ease. Many of the suspicious transactions were somehow overlooked.....”).

- 4) Result - DCCs/DFPCs and persons that promote/sell non-government Cryptos know or should have known that their sales/promotion of non-government Cryptos as currencies or stores-of-value, and or sales/promotion of un-authorized cryptos were illegal, and could result in civil lawsuits and or criminal prosecution.
- 5) Violations of statutes – in most countries, there are banking and finance laws that prohibit the use of non-official currencies as legal-tender and or the use of unauthorized assets as legal-tender.
- 6) harm to the national economy and individuals.

Thus, it can be argued that there really is no economic or moral or psychological or social or political justification for private non-governmental “digital currencies”. Rare reasonable exceptions include instances where one country or many countries agree to create a formal new digital currency that will be officially exchangeable for their local-currencies, will be legally approved as legal-tender and will be jointly managed by the participating countries.

9. The “Deflationary Token” And “Inflationary-Token” Illusions.

Most *Blockchain Economy* participants have categorized tokens into groups based on their perceived inflation/deflation effects:

- i) *Deflationary-Tokens* – which are alleged to be “deflationary” and likely to continue to increase in price because the number of such tokens that can be minted/mined is either strictly limited or declines (eg. due to “burning” of tokens). Examples include Bitcoin, Spore (SPORE), SafeMoon, Sake Token (SAKE), Vanilla Network (VNLA), and YFDAI.Finance (YF-DAI) and “Bomb-Tokens”.
- ii) *Inflationary-Tokens* – which are alleged to be “inflationary” and whose prices are likely to remain stable or decline because there are no limits on the number of such tokens that can be minted/mined (eg. Ethereum).
- iii) *Mixed-Effects Tokens* – which can be deflationary or inflationary. Examples include Bitcoin.

The reality is that in the case of Deflationary-Tokens (such as Bitcoin), contrary to popular opinion, their values are not at all guaranteed to, or even likely to increase substantially over time because of the following reasons:

- i) Such tokens are mined or non-mined tokens. The demand for such tokens can vary directly or inversely with the adoption and volume-growth in the worldwide use of blockchains. Thus in some instances, as worldwide blockchain use-volumes grow and even with limited supply of Deflationary-Tokens, other new types of tokens (both inflationary, deflationary and mixed effects) will be created which will reduce the demand for, and prices of some Deflationary-Tokens. As of 2022, there were at least 11,700 coins in circulation, and the cryptocurrency market capitalization exceeded US\$2 trillion.
- ii) Many such Deflationary-Tokens are created with *supply-reduction mechanisms* such as the following: 1) voluntary issuer donations of the cryptos into one or more Liquidity Pools (eg. Pancakeswap, Uniswap or the issuer’s own Liquidity Pool) at or just before or after the crypto’s ICO/IDO; 2) smart contracts that require that percentages (typically 2%-10%) of that crypto that are used in any transactions must be donated to a Liquidity Pool or must be burnt. Other smart-contracts mandate issuer buybacks of the crypto using cash generated by the issuer. All these foregoing *supply-reduction mechanisms* don’t guarantee that the crypto’s price will increase because if the Liquidity-Pool is large enough (eg. at least 20% of the issued/outstanding cryptos in that series), any such supply-reductions won’t create the desired *Scarcity-Value* that is required to increase the crypto’s price (ie. the Liquidity-Pool will meet any demand for the crypto without any noticeable upwards price-impact). Similarly, all these supply-reduction mechanisms don’t guarantee that there will be a *price-floor* for the crypto’s price because the size of the Liquidity Pool doesn’t guarantee that there will be a price-floor, and large Liquidity Pools (eg. at least twenty-five percent of the issued/outstanding cryptos in that series) won’t create the desired *Scarcity-Value* that is required to maintain a price-floor for the crypto’s price (ie. the Liquidity-Pool will meet any demand for the crypto without always maintaining any *price-floor*). Thus for any given crypto series, when there is

a Negative Shock (economic, political, ESG or social shock), there will be cryptos available to buy, but that won't always prevent its price from declining drastically.

iii) Many such Deflationary-Tokens are created on specific blockchains, which can greatly limit their uses in the “mini-economies” created in other blockchains. Even with the growth of “bridging” technologies and “cross-chain” cryptocurrencies and DApps, the demand for, and prices of the “limited-supply” Deflationary-Tokens can still decline especially when: 1) other blockchain systems become hugely popular (eg. the growth of Ethereum, Ripple, etc.), or 2) when the cost of *bridging* and or cross-chain operations are deemed to be very high in terms of bandwidth, cryptos and electricity, or 3) when the ESG movement becomes pervasive and challenges the low energy efficiency of Deflationary Tokens or bridging.

iv) The values of Deflationary Tokens are directly linked to their actual and perceived liquidity. Such liquidity is also directly linked to the number and dollar volumes of cryptocurrency and NFT “Pools” (and Yield Farming, which are liquidity-providing mechanisms), and the interest rates and interest payments for such Yield Farming. Thus as overall interest rates rise and as alternative non-crypto interest rates and investment returns increase, the cost of operating Pools (and providing liquidity) will increase and demand for Pools will decrease, and liquidity and hence prices of Deflationary-Tokens will decline.

v) The values/prices of Deflationary Tokens are directly linked to, and can decline substantially when their actual and or perceived Transaction Volumes decline. One of the problems is that reported Transaction Volumes are based on only completed transactions and don't include un-completed transactions.

vi) By itself, the Scarcity-Values of Deflationary Tokens is heavily dependent on: 1) the volumes of both existing and new Tokens (deflationary and inflationary); 2) the change in volumes of blockchain transactions, 3) the change in volumes of ICOs and IDOs, 3) perceived liquidity, etc.. For most Deflationary Tokens all or most of these foregoing factors have to be in favorable “states” in order for their prices to increase substantially.

vii) Ethereum-based projects (and other Inflationary-Token based projects) sometimes use “deflationary” mechanisms such as “buyback-and-burn” and “transaction burning”, both of which typically vary directly with the volume of transactions in such projects. That mimics and can reduce the appeal (and demand) of Deflationary Tokens to un-informed and or low-skilled investors. Examples include Nuke Tokens.

viii) As explained herein, cryptocurrencies have an Implied Floor-price which is the cost of mining or minting one unit of cryptocurrency. Advances in technology are very likely to reduce the costs of components of the Implied Floor Price. The time-value-of-money component of the Implied Floor price will typically vary with prevailing interest rates.

ix) The “Speculation-Value” and “Arbitrage-Value” components of the market prices of Deflationary-Tokens may be negative or declining, and thus force down prices of Deflationary-Tokens.

x) In real life, Deflationary-Tokens can cause and or propagate inflation – eg. when the market-value of Bitcoin significantly exceeds its Implied-Floor-Price.

Contrary to popular opinion, the market-values of Inflationary-Tokens (such as Ethereum) are not at all guaranteed to, or even likely to decline over time because of the following:

i) Such tokens are mined or non-mined tokens. The demand for Inflationary-Tokens can vary directly or inversely with the adoption and volume-growth in the worldwide use of blockchains. Thus in some instances, as worldwide blockchain use-volumes grow and even with limited supply of Deflationary-Tokens, other new types of tokens (both inflationary, deflationary and mixed effects) will be created which will reduce the demand for, and prices of some Deflationary-Tokens. As of 2022, there were at least 11,700 coins in circulation, and the cryptocurrency market capitalization exceeded US\$2 trillion. Conversely demand/prices for Inflationary-Tokens can increase substantially due to Expectations and growth in blockchain transaction volumes.

ii) Many such Inflationary-Tokens are created on specific blockchains, which can greatly limit their uses in the “mini-economies” created in other blockchains. Even with the growth of “bridging” technologies and “cross-chain” cryptocurrencies and DApps, the demand for, and prices of the

Inflationary-Tokens can still increase especially when: 1) their blockchain system becomes hugely popular (eg. the growth of Ethereum, Ripple, etc.), or 2) when the cost of *bridging* and or cross-chain operations are deemed to be low or declining in terms of bandwidth, cryptos and electricity, or 3) when the ESG movement becomes pervasive and both the Inflationary-Token's blockchain system, its bridging technology and third-party bridging technologies are energy-efficient.

iii) The values of Inflationary-Tokens are directly linked to their actual and perceived liquidity. Such liquidity is also directly linked to the number and dollar volumes of cryptocurrency and NFT "Pools" (and Yield Farming, which are liquidity-providing mechanisms), and the interest rates and interest payments for such Yield Farming. Thus as overall interest rates rise and as alternative non-crypto interest rates and investment returns increase, the cost of operating Pools (and providing liquidity) will increase and demand for Pools will likely decrease, and the liquidity and hence prices of Inflationary-Tokens will decline. However, if the said increase in overall interest rates is accompanied by increases in transaction costs and monitoring costs of non-crypto investments, and or higher tax rates (income and capital-gains) for non-crypto investments, then demand for Pools can remain stable or increase, and liquidity and hence prices of Inflationary-Tokens can remain stable or increase.

iv) The values/prices of Inflationary-Tokens are directly linked to, and can decline substantially when their actual and or perceived Transaction Volumes decline. One of the problems is that reported Transaction Volumes are based on only completed transactions and don't include un-completed transactions. However, the opposite can occur (prices can increase when Transaction Volumes decline) when: 1) the volumes of un-completed transactions are high and are publicized/announced; 2) blockchain transaction costs are increasing; 3) investment returns for non-crypto investments are lower than or equal to investment returns for crypto; 4) there are technological advancements that increase the potential uses of blockchain and or cryptocurrencies (such as the Metaverse, Gaming, international payment systems, healthcare records, ERP/Inventory systems; etc.); 5) .

v) By itself, the Scarcity-Values of Inflationary-Tokens is heavily dependent on: 1) the volumes of both existing and new Tokens (deflationary and inflationary); 2) the change in volumes of blockchain transactions, 3) the change in volumes of ICOs and IDOs, 3) perceived liquidity, etc.. For most Inflationary-Tokens all or most of these foregoing factors have to be in favorable "states" in order for their prices to decrease substantially.

vi) Ethereum-based projects (and other Inflationary-Token based projects) sometimes use "Deflationary-Token" mechanisms such as "buyback-and-burn" and "transaction burning", both of which typically vary directly with the volume of transactions in such projects. That mimics Deflationary Tokens and can increase the appeal (and demand) of Inflationary Tokens to un-informed and or low-skilled investors.

vi) As explained herein, cryptocurrencies have an Implied Floor-price which is the cost of mining or minting one unit of cryptocurrency. Advances in technology are very likely to reduce the costs of components of the Implied Floor Price. The time-value-of-money component of the Implied-Floor-Price will typically vary with prevailing interest rates.

vii) The "*Speculation-Value*" and "*Arbitrage-Value*" components of the market prices of Inflationary-Tokens may be positive or increasing, and thus push-up prices of Inflationary-Tokens.

viii) In real life, Inflationary-Tokens can cause and or propagate deflation – eg. when the market-value of Ethereum is significantly below its Implied-Floor-Price.

ix)

10. Are DCCs/DFPCs Financial Exchanges (Such as NYSE And NASDAQ) That Are Subject To Securities Laws ?

There continues to be a raging debate and substantial litigation in the US about whether DCCs/DFPCs (that offer cryptocurrencies on their platforms) are regulated exchanges that must comply with securities laws (and regulations of agencies such as the US SEC)²⁹ .

²⁹ See: "Crypto Security Debate Goes to Court - Private lawsuits could help determine whether digital tokens should be treated as securities like stocks and bonds". *Wall Street Journal* (USA). By Paul Kiernan, May 26, 2022. <https://www.wsj.com/articles/the-crypto-security-debate-goes-to-court-11653518489>. This article

The main arguments are as follows:

- i) As explained in this article, Cryptosecurities (tokenized stocks and bonds) are securities (under US laws).
- ii) However, DCCs/DFPCs that operate crypto exchanges (Exchange DCCs/DFPCs) and don't transact directly with buyers/sellers (Type-1 Exchange DCCs/DFPCs), only provide a platform where: 1) buyers and sellers are matched, and 2) buyers and sellers are matched with "Liquidity Pools"; 3) customers can voluntarily participate in, and transact with Liquidity Pools; 4) that DCC/DFPC doesn't maintain any Liquidity Pool. Such Type-1 Exchange DCCs/DFPCs should not be classified as financial Exchanges.
- iii) Type-2 Exchange DCCs/DFPCs provide a platform where: 1) buyers and sellers are matched, and 2) buyers and sellers are matched with "Liquidity Pools"; 3) customers can voluntarily participate in, and transact with Liquidity Pools; 4) the exchange can transact with Liquidity Pools; 4) the Type-2 DCC/DFPC maintains its own Liquidity Pool that transacts with customers and other Liquidity Pools; 5) the Type-2 Exchange DCC/DFPC transacts directly with buyers/sellers. Such Type-2 Exchange DCCs/DFPCs can be classified as financial exchanges.

11. Possible Classification Regimes For Cryptocurrencies, FNFTs And Tokenized Stock/Bonds.

Given the foregoing discussion, its possible to have multiple regulatory regimes for crypto- assets in a jurisdiction. This section discusses the criteria for, and alternative regulatory regimes for cryptocurrencies (using US laws/statutes). Kohen (2019) summarized the state of US state regulations for DCCs/DFPCs and cryptocurrencies. Massad (March 2019) critiqued the inadequate regulation of, and enforcement deficiencies pertaining to cryptocurrencies and DCCs/DFPCs. The Russian federal legislature³⁰ (2020) has proposed new statutes for, and the South Korean legislature has enacted new statutes (2020) for cryptocurrencies.

stated in part ".....Investors are asking the courts to decide an existential question for the cryptocurrency industry: whether digital tokens are, for legal purposes, more similar to stocks or to gold. Attorneys for cryptocurrency-trading platform Coinbase Global Inc., filed a motion this month to dismiss a class-action lawsuit arguing that 79 of the tokens listed on the firm's platform are unregistered securities.Outside of enforcement actions, the Securities and Exchange Commission hasn't indicated which cryptocurrencies it considers to be securities." "The more money at stake, the higher the probability of litigation, and with the sharp downturn in crypto values, the incentives to litigate have turned up as sharply," said Joseph Grundfest, a former SEC commissioner who teaches law at Stanford University..... U.S. laws impose meticulous regulations and burdensome disclosure requirements on issuers and intermediaries that sell securities, a category of assets that includes stocks and bonds. They also create potentially crippling liabilities for anyone who skirts the law. Cryptocurrency platforms have sought to minimize headaches by arguing that the tokens they list in the U.S. are commodities, like gold, which have no full-time federal regulator. Coinbase's lawyers argue that its platform brings together buyers and sellers of cryptocurrencies, rather than transacting directly with users. For that reason, its lawyers argue, the firm wouldn't be liable as a seller even if the assets on its platform were deemed to be securities. Because cryptocurrency-trading platforms aren't supervised by regulators and clear transactions internally rather than on public blockchains, there is little transparency into how trades on Coinbase are executed, lawyers and SEC officials say. SEC Chairman Gary Gensler has alleged, without naming companies or going into further detail, that the platforms trade against their customers..... Cryptocurrency advocates say that once a token's underlying network becomes sufficiently decentralized, its value no longer depends on the efforts of an entrepreneur or manager, so it shouldn't be considered a security. But the line is often fuzzy and the facts unclear. Mr. Gensler has repeatedly said many of the assets traded on U.S. crypto platforms are likely securities. He has urged the firms to register with the agency as regulated exchanges akin to Nasdaq or the New York Stock Exchange.".

³⁰ See: *Russian Federation: New Bill Defines Cryptocurrency, Proposes Tax Regulations*. Jan. 11, 2021. <https://www.loc.gov/item/global-legal-monitor/2021-01-11/russian-federation-new-bill-defines-cryptocurrency-proposes-tax-regulations/>.

11.1. Some Criteria For Selecting Regulatory Regimes For Cryptocurrencies, DeFi-Products, Tokenized Stocks/Bonds And FNFTs.

The issue of whether or not Cryptocurrencies, DeFi-Products, Tokenized Stocks/Bonds, FNFTs And NFTs are securities and or commodities and or property and the appropriate Regulatory Regime for them has critical and global implications in several dimensions and including but not limited to the following criteria:

- 1) Enforcement costs; post-investigation litigation costs (private and public); and legal skills required.
- 2) Effects on transaction costs, hedging costs and compliance costs.
- 3) *Deadweight Losses* in prices/pricing of cryptocurrencies and financial instruments and in the demand/supply of enforcement and regulation under a given Regulatory Regime. The extent to which the regulatory scheme reduces *Deadweight Losses* both in trading of the financial instrument and in the demand for and supply of prosecution resources.
- 4) Psychological costs and effects.
- 5) “Substitutability” of financial instruments.
- 6) Reduction of harmful arbitrage and volatility.
- 7) The *Separation-of-Powers Doctrine*, *Equal Protection Doctrine* and *Procedural/Substantive Due Process* Doctrines (Constitutional Law) problems inherent in the concurrent legislative, adjudicatory and enforcement activities of government regulatory agencies such as the US SEC and the US CFTC – which were not fully or properly addressed in *Lucia vs. SEC*, 585 U.S. ____ (US Supreme Court case) and other court cases.
- 8) *Risk perceptions* of both regulators, standards-setting organizations, households and market participants.
- 9) The *deterrence effects* of the controlling regulatory regime; and perpetrators’ assessed *probability-of-detection* and *probability-of-prosecution*.
- 10) Compliance with “*suitability*” requirements.
- 11) Propensity for earnings management.
- 12) Industrial organization effects.
- 13) Effects on Social Capital, Political costs, Political Capital – of regulators/enforcers, politicians and market participants and prospective individual complainants.
- 14) Consumer Confidence, Business Confidence, Government Expenditures, Corporate Expenditures, and Household Expenditures.
- 15) Sustainable economic growth, and Sustainability (economic, financial, social and environmental sustainability).
- 16) Crash-risk in DeFi markets, digital-asset markets and financial markets.
- 17) Cost-of-capital, access to capital and perceived bankruptcy risk of companies.
- 18) Cryptocurrencies regulations are *Public Goods* –see: McCarter, Rockmann & Northcraft (2010).
- 19) Professional liability of secondary actors such as investment banks, lawyers and accountants, for accounting fraud and securities fraud under securities laws. See: *Stoneridge Investment Partners vs. Scientific-Atlanta*, 552 U.S. 148 (US Supreme Court).
- 20) Antitrust issues – clearly the US Supreme Court’s rulings in *Credit Suisse Securities (USA) LLC vs. Billing*, 551 U.S. 264 (that the securities markets are exempt from the scope of antitrust laws), were erroneous given past and ongoing anti-competitive misconduct in financial markets. See: Nwogugu (2008b).
- 21) Venue, choice-of-law and Jurisdictional issues – see: *Merrill Lynch, Pierce, Fenner & Smith Inc. vs. Manning*, 578 U.S. ____ (2016; US Supreme Court); and *Morrison vs. National Australia Bank Ltd.*, 561 U.S. 247 (2010; US Supreme Court cases).
- 22) Statute-of-Limitations issues – see: *Gabelli vs. SEC*, 568 U.S. 442 (2013; US Supreme Court case).
- 23) Theories of fraud and the requirements for “*materiality*” in financial fraud cases – see: *TSC Industries, Inc. vs. Northway, Inc.*, 426 U.S. 438 (US Supreme Court case); and *Janus Capital Group., Inc. vs. First Derivative Traders*, 564 U.S. 135 (2011; US Supreme Court cases).
- 24) Disclosures presented to prospective investors by cryptocurrency issuers – see: *Hagan vs. Khoja (Orexigen Therapeutics, Inc.)*, No. 18–1010 (2015; US Supreme court case); and *Omnicare Inc.*, 135 S.Ct. 1318 (2015; US Supreme Court case).

- 25) The processes, costs, *information-effects*, *Deadweight-Losses* and requirements for Class -Action lawsuits.
- 26) Trading rules, Margin costs and the costs of Repos and derivatives in cryptocurrency exchanges.
- 27) *Arbitrage Efficiency* (whether cryptocurrencies can be used for, or amplifies harmful arbitrage under a given Regulatory Regime).
- 28) “*Earnings Management Capacity*” (whether and the extent to which the cryptocurrency and the associated DCC can be used for, or amplifies earnings management, Asset-Quality Management and or Incentive-Effects management under a given Regulatory Regime).
- 29) “*Disclosure Efficiency*” (whether accounting disclosure of the cryptocurrency captures its true risks/behavior, and or causes harmful human behaviors/biases under a given Regulatory Regime).
- 30) International capital flows and international trade.
- 31) *Inequality Efficiency* (the extent to which the cryptocurrency and the associated DCC causes or propagates any type of *Inequality* under a specific Regulatory Regime).
- 32) *Negative Externalities Efficiency* – whether and the extent to which the cryptocurrency and the associated DCC causes or propagates *Negative Externalities* (such as pollution, climate change, extremely high housing prices, etc.) under a specific Regulatory Regime.
- 33) *Innovation Efficiency* (whether and the extent to which the cryptocurrency and the associated DCC will cause or influence or facilitate incremental harmful financial or technological innovation under a specific Regulatory Regime – previous harmful innovations include high frequency trading, and some types of financial derivatives).
- 34) *Regulatory Efficiency* (whether and the extent to which the cryptocurrency and the associated DCC reduces or increases investigation, compliance, transaction and enforcement costs under a specific Regulatory Regime).
- 35) Standardization of contracts.

In most countries/jurisdictions, classification of cryptocurrencies as securities or commodities triggers compliance issues pertaining to securities/commodities registration requirements, broker-dealer registration requirements, fraud liability, and disclosure obligations; and hence has important operational, compliance, and profitability implications. Many countries seem to be regulating cryptocurrencies as securities (eg. the USA). As written, the most reasonable interpretation is that cryptocurrencies are hybrid intangibles and or securities or commodities³¹.

Some alternative regulatory regimes for cryptocurrencies are as follows:

- i) Securities laws.
- ii) Commodities laws.
- iii) Personal Property laws.
- iv) Special hybrid “federal” statutes (that combine elements of securities laws and commodities laws).
- v) “Federal” Financial Instruments laws.

In *SEC vs. Joiner*, the US Supreme Court noted that “.....The test rather is what character the instrument is given in commerce by the terms of the offer, the plan of distribution, and the economic

³¹ See: *SEC vs. Life Partners*, 87 F3d 536 (CA9, 1996).

See: *First Financial Federal vs. E. F. Hutton Mortgage Corporation*, 834 F2d 685 (CA8, 1987).

See: *Revak vs. SEC Realty Corp.*, 18 F3d 81 (CA2, 1994).

See: *Banco Espanol De Credito vs. Security Pacific National Bank*, 973 F2d 51 (*cert. Den.*) 509 US 903.

See: *Perez-Rubio vs. Wyckoff*, 718 Fsupp 217 (1989).

See: *Developer’s Mortgage Co. vs. Transohio Savings Bank*, 706 FSupp. 570 (1989).

See: *Matell vs. Maturat*, 862 F2d 720 (CA9, 1988).

See: *Giuffre Organization vs. Euromotor Sport Racing*, 141 F3d 1216 (CA7, 1998).

See: *Klaers v. St Peter*, 942 F2d 535 (CA8, 1991).

See: *Peeves vs. Teuscher*, 881 F2d 1495 (CA9, 1989).

See: *SEC vs. ETS Payphone*, 408 F3d 727 (CA11, 2005).

inducements held out to the prospect. In the enforcement of an act such as this, it is not inappropriate that promoters' offerings be judged as being what they were represented to be.....”.

11.2. DCCs/DFPCs/Cryptocurrencies Cannot Be Classified Or Regulated As “Utilities”.

Many sharing economy organizations (SEOs) and digital currency companies (DCCs/DFPCs) have evolved into fintech because of the significant amounts of payments that they cause, handle or facilitate. SEOs and DCCs/DFPCs also create significant *Network Effects* that illegally entrenches them in industries. Many SEOs such as Airbnb, Ebay, Alibaba and Baidu merely re-distribute income rather than create value; and their operations cause significant *deadweight losses* in both prices of goods/services, and in the demand for, and enforcement of statutes. The large and prominent institutional investors who made significant investments in SEOs and DCCs/DFPCs may have indirectly or directly caused the surprisingly slow and relatively very limited regulatory responses to SEOs/DCCs/DFPCs in many countries. Some persons have filed lawsuits against SEOs/DCCs/DFPCs and some governments have enacted new regulations to curb their illegal activities.

There seems to be an issue of definition wherein some researchers claim that Uber and other SEOs are not true SEOs. In the context of SEOs, “sharing” refers to “collective participation-based cost reduction” (participants' costs are reduced by their participation in the platform) and sharing of both technology, time and resources.

Uber, Lyft and similar transportation software companies are *Technology SEOs* because:

- i) Consumers share their platforms and its resources.
- ii) Uber/Lyft drivers are private persons, most of whom are not licensed taxi drivers – and so they are effectively sharing their cars with strangers.
- iii) Some Uber and Lyft drivers illegally double-up, after the original ride but with the same customer.
- iv) The Uber and Lyft platforms can reduce consumers' transportation costs, pre-ride waiting-costs and ride-hailing costs (partly through the sharing functions of the platform).

Similarly, DCCs/DFPCs are SEOs because:

- i) Consumers share the DCC's platform and technology – without such sharing, the cryptocurrencies won't have any economic or utility value.
- ii) The cryptocurrency represents a sharing of beliefs and value inherent in the system/platform – without such sharing, the cryptocurrencies won't have any economic or utility value.
- iii) Consumers share the convenience, privacy and other benefits provided the crypto and the DCC's platform.

Appendix-1³² in Chapter-___ Nwogugu (rev. 2022) lists some types of SEOs and Sharing-Economy Apps; and the following are summaries of some classes of SEOs:

- i) Ebay and Alibaba (and similar ecommerce companies, and collectively, the “*Ecommerce SEOs*”) are a class of SEOs because: 1) their merchants share a common internet platform, common business-rules and payment-system and logistics; 2) their merchants implicitly share marketing/advertising expenses which the SEO (ie. Alibaba or Ebay) deducts from fees that it charges to them; 3) the SEO (ie. Alibaba or Ebay) can reduce or defer the merchants' shared transaction costs and customer-acquisition costs.
- ii) Similarly, the online app-stores that are operated by Facebook, Google and Apple iOS (and similar companies, and collectively, the “*App-Store SEOs*”) are a class of SEOs because: 1) their affiliated apps-developers share a common internet platform, common business-rules and payment-system and logistics; 2) their apps-developers implicitly share marketing/advertising expenses which the SEO deducts from fees that it charges to them; iii) the SEO (ie. Google or Apple iOS) can reduce or defer the apps-developers' shared transaction costs and customer-acquisition costs.
- iii) Whatsapp, Snapchat and Wechat (and similar online chat/messaging, and collectively, the “*Messaging SEOs*”) are a class of SEOs because: 1) their users share a common internet platform, common business-rules and payment-system; 2) the platform reduces the users' costs; 3) in some

³² See: <https://www.moneynomad.com/100-sharing-economy-apps-websites/>.

cases, the SEO platform serves as a common advertising platform through which users implicitly agree to receive “shared” advertisements.

iv) Online Concierge web platforms such as Task Rabbit, Air-Tasker and Proprrly are SEOs. Crowdsourced services platforms such as SupperShare (meals), Piggy Bee (package shipment), BoatBound (boat rental), RelayRides (car rental), Instacart (home delivery of goods) are also SEOs.

v) Space-sharing companies such as WeWork and ShareDesk are SEOs. Technology-only space sharing platforms such as LiquidSpace (which don’t lease/sublease space but only provide a matching platform) are also SEOs for the same or similar reasons that Uber and Lyft are SEOs.

Cryptocurrencies and DCCs/DFPCs cannot be classified as “utilities” and cannot be regulated as such because of the following:

- 1) The definition of “*utility*” is an entity that provides specific types of goods (such as electricity, telecommunications-connections or water) to the general public (or to a specific approved group of persons) mostly on a subscription basis, wherein such services (and associated products) are legal and approved by the government. The goods provided by “utilities” are “daily staples” (which households and companies/organizations need for their daily existence). There are usually few substitutes for such products provided by utilities.
- 2) The services provided by utilities are tangible physical services. The products provided by utilities are specific units of tangible products that are simultaneously purchased by many customers in a specific region (usually through periodic subscriptions – thus there are regular or quasi-regular repeat purchases by customers, which are usually daily purchases).
- 3) Existing money-transfer and payments companies (such as MoneyGram and Paypal) are not currently regulated as utilities in most countries.
- 4) Unlike traditional utilities, DCCs/DFPCs/Cryptocurrencies can significantly affect and weaken the transmission of monetary policy (money supply; liquidity; Inflation-targeting; money-laundering; etc.) and fiscal policy (taxation; etc.).

In most countries, DCCs/DFPCs and their platforms and cryptocurrencies don’t fit or conform to this foregoing reality and definition of “*utility*”.

11.3. Mined Cryptocurrencies (Bitcoin, Ethereum, etc.) And Other Cryptocurrencies As Securities.

A related issue is whether crypto-currencies are securities. The US SEC³³ noted that “.....Depending on the facts and circumstances of each individual ICO (initial coin offering), the virtual coins or tokens that are offered or sold may be securities. If they are securities, the offer and sale of these virtual coins or tokens in an ICO are subject to the federal securities laws.”. On July 27, 2017, the US SEC released the results of its investigation in which it found that some crypto-currencies were securities³⁴. More recently, the US SEC has extended securities law liability to third-party “promoters”³⁵ of cryptocurrencies (promoters that fail to disclose their compensation they receive for such promotions and or their ownership/participation interests in DCCs/DFPCs).

Under the principles enunciated in various US Supreme Court cases, Mined-Cryptocurrencies (eg. Bitcoin, Ethereum) and Non-Mined crypto-currencies aren’t securities or investment-contracts because of the following reasons:

³³ See: US Securities & Exchange Commission (July 25, 2017). “*Investor Bulletin: Initial Coin Offerings*”. https://www.sec.gov/oiea/investor-alerts-and-bulletins/ib_coinofferings.

³⁴ See: US SEC (July 2017). “*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>.

³⁵ See: Complaint in *Securities and Exchange Commission vs. McAfee* (US District Court for the Southern District Of New York, USA; Docket Number: 1:20-cv-08281; October 5th, 2020).

1) In *Securities and Exchange Commission vs. W. J. Howey Co.*³⁶, the Court established the main criteria for classification of a property as an investment contract: "the test is whether the scheme involves an investment of money in a common enterprise with profits to come solely from the efforts of others.....". Each of Mined and Non-Mined cryptocurrencies don't meet the criteria for classification as an Investment Contract because of the following reasons:

- i) The 'efforts of others' requirement isn't satisfied because: 1) the miners and creators of Mined/Non-Mined cryptocurrencies are often the majority holders of such cryptocurrencies in exchanges and secondary markets, and thus benefit greatly from their own efforts; 2) in many instances the DCC/sponsor/intermediary that does the ICO or IDO also manages the crypto exchange and the co- creators/sponsors also market/sell/advertise the cryptocurrencies.
- ii) As explained below, there isn't always *Vertical Commonality* or *Horizontal Commonality* (and in the case of both Mined and Non-Mined cryptocurrencies; and creation or "mining" of cryptocurrencies doesn't constitute a 'Common Enterprise');
- iii) Each of Mined and Non-Mined Cryptocurrencies don't result in 'profits' (or losses) from the conduct of business in the traditional sense of commerce and separate from trading of cryptocurrency.

However, cryptocurrencies appear to meet two of the "Investment-Contract Howey Tests" which are as follows:

- i) The cryptocurrency's terms (ie. mining, sales, trading, etc.) were clearly defined.
- ii) the cryptocurrency production involves 'investment of money' as defined by the courts. For both Mined and Non-Mined Cryptocurrencies, coin production/"mining" constitutes/involves investment of money, labor, Good-Deeds, Assets, and computers/equipment.

2) In *Securities and Exchange Commission vs. W. J. Howey Co.*³⁷, the Court established the main criteria for classification of a property as securities. The Mined and Non-Mined crypto-currencies satisfy a maximum of only two of the four *original "Howey Tests"* under *SEC vs. Howey*, 328 U.S. 293 (1946), for the following reasons:

- a) There is an "expectation of profit" because the crypto-currency (including Bitcoin and Ethereum) investors expect its price to increase, and or expect to use it to purchase services/goods.
- b) The "investment" test was satisfied because: i) their participation in the ICOs and the trading of crypto-currencies on exchanges/markets made the cryptocurrencies very similar to membership interests in mutual cooperative/insurance companies³⁸, ii) their method of procurement of Mined-Cryptocurrencies (Bitcoin, Ethereum) or other types of cryptocurrency (Non-Mined cryptocurrencies) constitutes "investment". In the case of Mined-Cryptocurrencies (eg. Bitcoin and Ethereum), the mining process constitutes an "investment" (of any of the following: skilled-labor, Good-Deeds, Assets, computers/equipment, electricity, rented/owned real estate, and bandwidth and administrative expenses), and the miners expect capital appreciation of their earned cryptocurrencies. In the case of other (non-mined) cryptocurrencies, the DCCs/DFPCs/sponsors made investments (of any of the following; cash, skilled-labor, Good-Deeds, Assets, computers/equipment, electricity, rented/owned real estate, and bandwidth and any underlying asset in the case of stablecoins) in order to create the cryptocurrencies.

³⁶ *Securities and Exchange Commission vs. W. J. Howey Co.*, 328 US 293 (1946).

³⁷ *Securities and Exchange Commission vs. W. J. Howey Co.*, 328 US 293 (1946).

³⁸ See: *Global Van Lines, Inc.*, SEC No-Action Letter (October2, 1979).

See: *Medical Device Mutual Assurance and Reinsurance Co., Ltd.*, SEC No-Action Letter (August31, 1979).

See: *Norcal Bowling Proprietors Mutual Insurance Co., Ltd.*, SEC No-Action Letter (December5, 1983).

See: *Podiatric Assurance Co.*, SEC No-Action Letter (February 19, 1985).

See: *Medmarc Insurance Company Risk Retention Group*, SEC No-Action Letter (October2, 1987).

See: *National Transport Assurance Alliance, Inc.*, SEC No-Action Letter (February 22, 1989).

See: *Construction Trade Purchasing Group, Inc. and Construction Trades Insurance Company*, SEC No-Action Letter (October 1, 1993).

c) There wasn't always *Vertical Commonality* or *Horizontal Commonality* in Mined Cryptocurrencies (Bitcoin, Ethereum) and Non-Mined or other types of cryptocurrencies:

- 1) In the case of *Horizontal Commonality*, the individual success of the cryptocurrency investors/miners didn't always correlate with either the success of other crypto-currency investors/miners. Similarly, the gains/losses of individual DCC (who execute ICOs/IDOs) shareholders who created/minted the Non-Mined cryptocurrencies don't always correspond. Similarly, the gains/losses of secondary market cryptocurrency owners (in the same cryptocurrency series) don't always correspond because of differences in transaction costs, bandwidth costs, electricity costs, etc. In one example, different miners in different countries face different costs (skilled labor, electricity, bandwidth, real estate, equipment, etc.).
- 2) In the case of *Vertical Commonality*, the individual success of the cryptocurrency investors/miners doesn't always correlate with the success of secondary market crypto investors. Similarly, the gains/losses of investors who purchased the crypto-currencies at similar prices in the ICO/IDO don't always correspond with the success of the majority of shareholders of DCCs/DFPCs that sponsor/execute the ICO/IDO. In one example, the DCC can make money from ups and downs of crypto prices, while the investors may lose money, and vice versa. In a second example, the crypto miners can make money from ups and downs of crypto prices, while investors may lose money, and vice versa.

3) Under *Marine Bank vs. Weaver*³⁹ and *International Brotherhood of Teamsters v. Daniel*⁴⁰, a fifth "Howey Test" was introduced, which is whether there is an alternative regulatory scheme that makes it unnecessary to apply federal securities law and US SEC jurisdiction. In this instance, the fifth *Howey Test* doesn't apply, and the existence of banking laws, currency laws and common-law claims (eg. Fraud, Conversion, Negligence, breach-of-Implied-Covenant-Of-Good-Fair-and –Fair-dealing, Deceit, Conspiracy; etc.) can serve as alternative regulatory/enforcement schemes (that also don't preclude the applicability of securities laws). Users of cryptocurrency can claim that they are not being used as Legal-Tender, but rather as commodities, collectibles and Barter-items and to access services/goods provided by the cryptocurrency sponsor.

4) The cryptocurrencies aren't securities and the US SEC doesn't have jurisdiction because:

a) The ICO/IDO process and the typical buy/sell processes in crypto exchanges doesn't result in a situation where all cryptocurrency were bought on the same terms – because of: 1) pre-mining profit-taking, 2) Airdrops, 3) differences in mining costs across regions/countries, 4) different ICO/IDO incentives that are usually offered to different groups, 5) significant differences in "Access Costs" (eg. bandwidth costs, cost of Good-Deeds, cost of assets contributed, electricity costs, computer/software costs, delivery/payment terms, etc.), 6) in many crypto markets (such as Binance), buy/sell transactions are P2P transactions which list often different prices and payment/delivery terms; etc.. In the case of Mined Cryptocurrencies (eg. Bitcoin and Ethereum), the mining process wasn't done on the same terms by all miners because the miners had different costs and constraints; and thus, each miner's contract was a quasi privately-negotiated "unique" investment contract. Thus, under *Marine Bank vs. Weaver*⁴¹, Mined Cryptocurrencies (eg. Bitcoin, Ethereum) and Non-Mined Cryptocurrencies aren't securities and the US SEC and state securities agencies don't have jurisdiction.

b) In *Marine Bank vs. Weaver*, the US Supreme Court also introduced two additional tests which are as follows:

- 1) The "Common Trading" Test – however, in the case of Mined Cryptocurrencies (eg. Bitcoin, Ethereum) and Non-Mined Cryptocurrencies, this additional test wasn't satisfied because:

³⁹ See: *Marine Bank vs. Weaver*, 455 U.S. 551 (1982) (an individually negotiated profit-sharing agreement that did not involve multiple investors was not a security).

⁴⁰ See: *International Brotherhood of Teamsters vs. Daniel*, 439 U.S. 551 (1979)

⁴¹ See: *Marine Bank v. Weaver (supra)*.

i) As explained above, each series of Mined Cryptocurrencies (eg. Bitcoin, Ethereum) and Non-Mined Cryptocurrencies don't always have equivalent values to most investors/miners in the same series.

ii) Although, each "series" of Mined Cryptocurrencies (eg. Bitcoin, Ethereum) and Non-Mined Cryptocurrencies are traded on public exchanges, the trading terms are not the same for each investor/market-participant due to: 1) significant differences in bandwidth costs, electricity costs, 2) Air-Drops, 3) pre-mining-creation profit-taking, 4) in many markets, buy/sell transactions are P2P transactions which list often different prices; etc..

2) The "*Debt Test*" - Each of Mined-Cryptocurrencies (eg. Bitcoin, Ethereum) and Non-Mined cryptocurrencies were not loans (or the equivalent of Certificates of Deposit - *see: Marine Bank vs. Weaver*) or securities because of the following reasons and because the majority of the *Howey Tests* weren't satisfied (and thus, the SEC does not have any jurisdiction):

a) Each of Mined-Cryptocurrencies and Non-Mined cryptocurrencies didn't have any mandatory redemption features – even where they are used to access/purchase goods/services offered by the cryptocurrency sponsor.

b) Each of Mined-Cryptocurrencies and Non-Mined cryptocurrencies are not similar to, and don't have the same payoff-features as any type of debt.

5) Under the *SEC vs. Joiner tests* (the "*Joiner Tests*"; derived from a US Supreme Court case), Mined and Non-Mined Cryptocurrencies are not securities because of the following reasons:

i) *What character is the instrument given in commerce by the terms of the offer ?* - in commerce, both Mined-Cryptocurrencies and Non-Mined Cryptocurrencies are not used as securities, but are more like collectibles and quasi-currency, commodities and stores-of-value.

ii) *The plan of distribution of cryptocurrencies ?* – most Mined Cryptocurrencies aren't distributed like ordinary securities (the miners just sell them on exchanges). Non-Mined Cryptocurrencies are usually distributed in ICOs/IDOs, which are similar to IPOs but without the auction-based book-building and regulatory constraints. In a relatively few instances, some Non-Mined cryptocurrencies are sold through pre-announced "drops" or "Air-drops" wherein the creator and sponsor (similar to a DCC) announce the planned sale of NFTs, buyers can sign up, and then the cryptocurrencies are sold.

iii) *The economic inducements held out to the prospect ?* – in reality, these vary widely from none to a myriad of incentives. Cryptocurrency ICOs and IDOs can differ significantly and are not entirely standardized.

iv) *The promoters' offerings should be judged as being what they were represented to be* – as mentioned, most cryptocurrencies are used and treated as collectibles and quasi-currencies and stores-of-value. Extremely few cryptocurrencies are represented to be securities by their promoters/sponsors.

6) The *Board Of Trade Tests* (derived from *Board Of Trade Of The City Of Chicago vs. Securities And Exchange Commission*, a US Court Of Appeals case) –

i) In *Board Of Trade Of The City Of Chicago vs. Securities And Exchange Commission* (CA7; No. 98-2923; August 10, 1999; <https://caselaw.findlaw.com/us-7th-circuit/1261082.html>), the US Court of Appeals vacated a US SEC order that ruled that futures exchanges should not trade futures contracts that were based on the Dow Jones Utilities Average and the Dow Jones Transportation Average both of which are major stock Indices (ie. the US SEC had ruled that such contracts were not futures contracts). Many cryptocurrencies are functional equivalents of "spot-market commodities".

ii) In *Board of Trade of City of Chicago*, 677 F2d 1137 (CA7; 1982), the US Court Of Appeals acknowledged that GNMA's are both "commodities" and "securities" (and noted that ".....None of the parties suggests that GNMA's are not "legitimate" commodities....."); and that GNMA options/futures are not securities. GNMA's are

structurally similar to some cryptocurrencies (eg. Cryptocurrencies/Stablecoins that are backed by assets).

Gordon (2011) discussed some relevant issues.

11.4. NFTs And Fractional-NFTs Are Not Securities.

NFTs are not securities because of the following reasons:

- i) NFTs don't meet most elements of the *Howey Tests* (US Supreme Court case law).
 - a) There isn't always any *Horizontal Commonality* – that is, for any transaction or group of transactions, any losses or gains incurred by any NFT creator (or primary market investor) doesn't always correspond to losses or gains incurred by other NFT creators respectively.
 - b) There isn't always any *Vertical Commonality* – that is, for any transaction or group of transactions, any losses or gains incurred by the NFT creator doesn't always correspond to losses or gains incurred by secondary-market investors respectively. In many cases, the NFT creator gets a royalty which is paid regardless of whether or not the NFT is sold at a gain or loss.
 - c) The “*from efforts of others*” test is not met.
 - d) There is no “*enterprise*” – the “underlying asset” (eg. Image, music-file, artwork, collectible, or other asset) from which the NFT is issued typically doesn't constitute a regular “business in commerce”.

ii) Under *Marine Bank vs. Weaver*⁴² and *International Brotherhood of Teamsters v. Daniel*⁴³, a fifth “*Howey Test*” was introduced, which is whether there is an alternative regulatory scheme that makes it un-necessary to apply federal securities law and US SEC jurisdiction. In this instance, the fifth *Howey Test* doesn't apply, and the existence of banking and currency laws and common-law claims (eg. Fraud, Conversion, Negligence, etc.) doesn't preclude the applicability of securities laws. Users/holders of NFTs can claim that they are not being used as legal tender, but rather as commodities, collectibles and for Barter.

iii) In *Marine Bank vs. Weaver*, the US Supreme Court also introduced two additional tests which are as follows:

- 1) First is the “*Common Trading*” Test – but this additional test wasn't satisfied because:
 - i) As explained above, each series of NFTs don't always have equivalent values to most investors/miners in the same series due to: 1) pre-minting profit-taking, 2) differences in effects of incentives attached to NFTs, 3) differences in “*Access Costs*” of different holders of NFTs (such as bandwidth, electricity, computer/software costs, delivery/payment terms, etc.), 4) in many markets, buy/sell transactions are P2P transactions which list often different prices; 5) Air-drops, etc..
 - ii) Although, each “series” of NFTs are traded on public exchanges, the trading terms are not the same for each investor/market-participant due to significant differences in bandwidth costs, electricity costs, Air-Drops, pre-creation profit-taking, etc..
- 2) Second is the “*Debt Test*” - Each NFT series were not loans (or the equivalent of Certificates of Deposit - *see: Marine Bank vs. Weaver*) or securities because of the following reasons and because the majority of the *Howey Tests* weren't satisfied (and thus, the SEC does not have any jurisdiction):
 - a) Each NFT series didn't have any mandatory redemption features – even where they are used to access/purchase goods/services.

⁴² See: *Marine Bank vs. Weaver*, 455 U.S. 551 (1982) (an individually negotiated profit-sharing agreement that did not involve multiple investors was not a security).

⁴³ See: *International Brotherhood of Teamsters vs. Daniel*, 439 U.S. 551 (1979)

b) Each NFT series were not similar to, and don't have the same payoff-features as any type of debt.

iv) The *SEC vs. Joiner tests* (the “*Joiner Tests*”; derived from a US Supreme Court case) are as follows:

- 1) *What character the instrument is given in commerce by the terms of the offer ?* - in commerce, NFTs are not used as securities, but are more like collectibles and commodities. NFTs aren't typically used as mediums-of-payment.
- 2) *The plan of distribution of cryptocurrencies ?* – in most instances, NFTs are not distributed like securities, but are just minted and listed on exchanges where they are sold. In a relatively few instances, NFTs are sold through pre-announced “drops” or “Air-drops” wherein the creator and sponsor (similar to a DCC) announce the planned sale of NFTs, buyers can sign up for the sale, and then the NFTs are sold.
- 3) *The economic inducements held out to the prospect ?* – in reality, these vary widely from none to a myriad of incentives. With respect to incentives, FNFTs are not standardized, and the effect of a given series-incentive can vary widely across FNFT-holders.
- 4) *The promoters' offerings should be judged as being what they were represented to be* – as mentioned, most FNFTs are used and treated as collectibles or commodities, and none of the promoters/NFT-Platforms/creators represented that NFTs were securities or financial instruments.

v)

In the case of Fractional-NFTs (“FNFTs”), the creator and the sponsor (equivalent of the DCC) pool together one or more NFTs in a “Pool” and then sell fractional interests in the pool. The FNFTs are typically listed in the sponsor's marketplace/exchange where they can be bought or sold. FNFT sponsors include Fractional.art and Unicity.

FNFTs are not securities because of the following reasons:

- i) FNFTs don't meet most of the elements of the *Howey Tests* (US Supreme Court case law):
 - a) There isn't always *Horizontal Commonality* – that is, for any transaction or group of transactions, any losses or gains incurred by any FNFT creator (or primary market investor) doesn't always correspond to losses or gains incurred by similarly situated persons respectively, because of: 1) pre- creation profit-taking, 2) differences in effects of incentives attached to FNFTs, 3) differences in “*Access Costs*” of different holders of FNFTs (such as bandwidth, electricity, computer/software costs, delivery/payment terms, etc.), 4) Air-drops, etc..
 - b) There isn't always *Vertical Commonality* – that is, for any transaction or group of transactions, any losses or gains incurred by the FNFT creator doesn't always correspond to losses or gains incurred by secondary-market investors respectively, because of: 1) differences in effects of incentives attached to FNFTs, 2) differences in “*Access Costs*” of different FNFT holder (such as bandwidth, electricity, computer/software costs, delivery/payment terms, etc.), 3) pre-creation profit-taking, 4) Air-drops; etc..
 - c) The “*from the efforts of others*” test is not met.
 - d) There is no “*enterprise*” – the “Pool” that issues the FNFTs doesn't constitute a regular business in commerce and exists only for issuance of FNFTs. The “*underlying asset*” (eg. Image, music-file, artwork, collectible, or other asset) from which the underlying NFTs are issued, typically doesn't constitute a regular business in commerce.
- ii) Under *Marine Bank vs. Weaver*⁴⁴ and *International Brotherhood of Teamsters v. Daniel*⁴⁵, a fifth “*Howey Test*” was introduced, which is whether there is an alternative regulatory scheme that makes

⁴⁴ See: *Marine Bank vs. Weaver*, 455 U.S. 551 (1982) (an individually negotiated profit-sharing agreement that did not involve multiple investors was not a security).

⁴⁵ See: *International Brotherhood of Teamsters vs. Daniel*, 439 U.S. 551 (1979)

it unnecessary to apply federal securities law and US SEC jurisdiction. In this instance, the fifth *Howey Test* doesn't apply, and the existence of banking and currency laws and common-law claims (eg. Fraud, Conversion, Negligence, etc.) doesn't preclude the applicability of securities laws. Users/holders of FNFTs can claim that they are not being used as legal tender, but rather as commodities, collectibles and for Barter.

iii) In *Marine Bank vs. Weaver*, the US Supreme Court also introduced two additional tests which are as follows:

1) First is the “*Common Trading*” Test – however, in the case of FNFTs, this additional test wasn't satisfied because:

i) As explained above, each series of FNFTs don't always have equivalent values to most investors/miners in the same series due to: 1) pre-creation profit-taking, 2) differences in effects of incentives attached to FNFTs, 3) differences in “*Access Costs*” of different holders of FNFTs (such as bandwidth, electricity, computer/software costs, delivery/payment terms, etc.), 4) Air-drops, etc..

ii) Although, each “series” of FNFTs are traded on public exchanges, the trading terms are not the same for each investor/market-participant due to significant differences in bandwidth costs, electricity costs, Air-Drops, pre- mining-creation profit-taking, etc..

2) Second is the “*Debt Test*” - Each FNFT series were not loans (or the equivalent of Certificates of Deposit - see: *Marine Bank vs. Weaver*) or securities because of the following reasons and because the majority of the *Howey Tests* weren't satisfied (and thus, the SEC does not have any jurisdiction):

a) Each FNFT series didn't have any mandatory redemption features – even where they are used to access/purchase goods/services.

b) Each FNFT series were not similar to, and don't have the same payoff-features as any type of debt.

iv) The *SEC vs. Joiner tests* (the “*Joiner Tests*”; derived from a US Supreme Court case) are as follows:

1) *What character the instrument is given in commerce by the terms of the offer ?* - in commerce, FNFTs are not used as securities, but are more like collectibles and commodities. FNFTs aren't typically used as mediums-of-payment.

2) *The plan of distribution of cryptocurrencies ?* – in most cases, FNFTs are not distributed like securities, but are just minted and listed on exchanges where they are sold. In a relatively few instances, FNFTs are sold through pre-announced “drops” or “Air-drops” wherein the creator and sponsor (similar to a DCC) announce the planned sale of FNFTs, buyers can sign up, and then the FNFTs are sold.

3) *The economic inducements held out to the prospect ?* – in reality, these vary widely from none to a myriad of incentives. With respect to incentives, FNFTs are not standardized, and the effect of a given series-incentive can vary widely across FNFT-holders.

4) *The promoters' offerings should be judged as being what they were represented to be* – as mentioned, most FNFTs are used and treated as collectibles or commodities, and very few or none of the promoters/creators/FNFT-platforms represent that FNFTs are securities or financial instruments.

v)

Kirk, T. (2015). Superior supererogation: Why credit default swaps are securities under the investment advisers act of 1940. *William & Mary Business Law Review*, 6, 237–257.

11.5. DeFi-Products Are Not Securities.

The main DeFi-Products analyzed here are *Yield-Farming* and *Collateralized-Loans* secured by cryptocurrencies and or NFTs. In the case of Yield-Farming, the creator and the sponsor (equivalent of the DCC) pool together one or more cryptocurrencies and or NFTs in a “Pool” and then sell fractional interests

in the pool. DeFi products are typically offered in non-standardized amounts/sizes. DeFi products aren't traded on exchanges and are very illiquid. DeFi-Products are typically listed in the sponsor's website where customers can join the pools or obtain the Collateralized-Loans.

11.6. Are Tokenized Stocks/Bonds Securities ?

The answer is yes.

11.7. Mined Cryptocurrencies And Non-Mined Cryptocurrencies As Personal Property.

In the USA, the US IRS treats cryptocurrencies as personal property⁴⁶ – which is a significant departure from the US SEC's and US CFTC's classifications of cryptocurrencies as securities and commodities respectively. Classification of cryptocurrencies as personal property is grossly inefficient and sub-optimal given the classification-criteria introduced in this article.

11.8. Mined Cryptocurrencies And Non-Mined Cryptocurrencies As Commodities.

In the USA and as of 2021, the US CFTC regulated cryptocurrencies as commodities – which is a significant departure from the US SEC's and US IRS's classifications of cryptocurrencies as securities and as personal property respectively. Lucking & Aravind (2020) explained the US CFTC's legal framework for cryptocurrencies. Several US federal legislators seem to support the classification of some cryptocurrencies as Commodities⁴⁷. McShane (2021) noted that:

⁴⁶ See: IRS Sends Fresh Round of Tax Warning Letters to Cryptocurrency Owners.

<https://news.bitcoin.com/irs-tax-letters-cryptocurrency/>.

See: US IRS (2020). *Virtual Currencies*. <https://www.irs.gov/businesses/small-businesses-self-employed/virtual-currencies>.

See: US IRS (2019). *Rev. Ruling 2019-24*. <https://www.irs.gov/pub/irs-drop/tr-19-24.pdf>.

See: US IRS (2014). IRS Notice 2014-21 (noting that: “.....For federal tax purposes, virtual currency is treated as property. General tax principles applicable to property transactions apply to transactions using virtual currency.....”).

See: US IRS (2014). IRB 2014-16.

See: US Internal Revenue Service (IRS) (2014). *IRS Virtual Currency Guidance: Virtual Currency Is Treated as Property for U.S. Federal Tax Purposes; General Rules for Property Transactions Apply*.

<https://www.irs.gov/newsroom/irs-virtual-currency-guidance>.

⁴⁷ See: McShane, A. (Nov. 2, 2021). “Senator Cynthia Lummis: Bitcoin Is A Commodity, Other Crypto Assets Are Securities - U.S. Senator Cynthia Lummis (R-WY) shared in an interview with CNBC on Tuesday that she believes Bitcoin is a decentralized commodity, and that the other crypto assets behave like securities”. *Bitcoin Magazine*. https://bitcoinmagazine.com/culture/senator-cynthia-lummis-bitcoin-is-a-commodity-other-crypto-assets-are-securities?mc_cid=9e851e707f&mc_eid=b8f88158cf.

See: “Congress Has Now Introduced 32 Crypto And Blockchain Bills”. By Jason Brett. April 28, 2020. <https://www.forbes.com/sites/jasonbrett/2020/04/28/congress-has-introduced-32-crypto-and-blockchain-bills-for-consideration-in-2019-2020/?sh=5d9617701d61>. This article stated in part: “.....While the prior bill looked to classify the offering of Libra as securities, the ‘Keeping Big Tech Out Of Finance’ Act as introduced by Representative Jesús “Chuy” García (D-IL), is much more direct in simply not allowing a large social media platform from engaging in financial activities. In addition, Garcia introduced another bill called the ‘Protecting Consumers From Market Manipulation Act’, that has an interesting approach to crypto regulation not seen before. The bill requires the Financial Stability Oversight Council (FSOC) to consider treatment of digital currencies as a ‘designated financial market utility’. In addition, it would require any non-financial company such as Facebook that enjoys a minimum level of profits from digital currencies, to become a Bank Holding Company supervised by the Federal Reserve.The *Crypto-Currency Act of 2020* was introduced by Representative Paul Gosar (R-AZ) as a way to regulate crypto by economic function while the *Token Taxonomy Act*, sponsored by Representative Warren Davidson (R-OH), focuses on a technological approach to regulation. Both of these bills look to divide up the responsibility of regulation

“.....U.S. Senator Cynthia Lummis (R-WY), one of the most outspoken political advocates for Bitcoin, shared in an interview with CNBC on Tuesday that she believes Bitcoin is a decentralized commodity, and that the other crypto assets behave like securities. When questioned whether and to what extent crypto assets outside of Bitcoin were “here to stay,” Cynthia Lummis responded, “I do think Bitcoin is here to stay,” the senator went on to say that she thinks the other cryptos are not. Among the merits of Bitcoin, and the advantages it has over every other asset, Lummis listed the fact that “Bitcoin is fully decentralized”, and that there are no pre-mined profits being enjoyed by the person or entities who created it, unlike the issuance of the other cryptos by centralized people or entities, who often take pre-mining profits. The pump-and-dump nature of the cryptos outside of Bitcoin are part of what casts them into the realm of securities. “Bitcoin is clearly a commodity. It is digital gold,” Senator Lummis stated. The Wyoming senator went on to advocate a regulatory framework within which the Bitcoin space can continue to innovate..... Senator Lummis concluded, “Bitcoin is the standard. Everything else has to be monitored differently, because they are created differently.” These comments come at a time when the majority of news outlets, politicians, and major voices in the Bitcoin and crypto space fail to differentiate between Bitcoin and other crypto's attributes at all, often using the two distinct classes interchangeably. Cynthia Lummis is sharing her understanding and clarifying the distinction between Bitcoin and crypto for many by advocating for clearer regulatory definitions. Bitcoin carries with it a fundamental guarantee to property. Cryptocurrencies do not.....”.

The above-mentioned position/contention is not entirely correct because of the following:

- i) Other Mined Cryptocurrencies (such as Ethereum) also carry a fundamental guarantee to property.
- ii) Mined and Non-Mined Stablecoins are supported by underlying property and also carry a fundamental guarantee to property.
- iii) To the extent that they represent interests in companies/entities or rights to cashflows of companies/entities, Non-Mined Non-Stablecoin Cryptocurrencies also carry a fundamental guarantee to property.

amongst a few different agencies, while the bill from Rep. García (D-IL) would essentially make the Federal Reserve as a sole regulator for cryptocurrencies.....”.

See: Kohen, M. (Aug. 29, 2019). State Regulations on Virtual Currency and Blockchain Technologies. Carlton Fields (US Law firm). <https://www.carltonfields.com/insights/publications/2018/state-regulations-on-virtual-currency-and-blockchain-technologies>. This article stated in part: “.....To use a pun those in the blockchain space should understand, there is a complete lack of consensus as to whether they do or not. This uncertainty is made all the more complicated by potentially contradictory guidance from the Federal government. For example, in March 2018 the Financial Crimes Enforcement Network (FinCEN) published a letter stating that token issuers were money transmitters required to follow federal money transmitter requirements. The letter came just two days after a U.S. District Court in New York accepted the understanding of the Commodity Futures Trading Commission (CFTC) that cryptocurrencies were commodities, a ruling that on its face appears to take the exchange of cryptocurrencies for fiat currency outside of the definition of money transmission under previous FinCEN and now questionable past guidance. See, e.g., Application of the Definition of Money Transmitter to Brokers and Dealers in Currency and other Commodities, FIN-2008-G008, Sept. 10, 2008..... There is a proposal pending within the NY State Assembly to replace the BitLicense with a more innovation-friendly framework, and indeed, many states are attempting to enact crypto-friendly regulations in an attempt to entice entrepreneurs to move to their state. Accordingly, in what is perhaps the most important state regulatory development in this Update, Wyoming enacted a series of regulations that, among other things, exempts "Utility Tokens" from state securities regulation and virtual currencies from state money transmission laws. Wyoming's law, at least with regard to its take on the application of state securities regulation, likely offers only theoretical comfort to those wishing to issue "Utility Tokens" through an Initial Coin Offering since Federal Securities Law (and the SEC's recent informal announcement that all tokens may, in fact, be securities), takes precedent over state law.....”

iv) While the issue of taking pre-mining/creation profits is important and can increase the possibility and occurrence of pump-and-dump schemes.
v) The “decentralized process” of creating Mined Cryptocurrencies (eg. Bitcoin and Ethereum) doesn’t have any meaningful impact on their classification as “securities”, primarily because of the following reasons:

1) The mining or creation process is an investment of competition-based labor/Computer/electricity/bandwidth costs (*Proof-Of-Work*), Good-Deeds for the benefit of others (*Proof-Of-Good*), randomly-used labor/Computer/electricity/bandwidth costs (*Proof-Of-Stake*), and other ancillary costs such as owned/rented real estate and administrative costs.

2) The fact that “Mined Cryptocurrencies are fully decentralized” (and at this time, Ethereum is also decentralized), and don’t involve “pre-mining profits” while other cryptos by centralized or decentralized people or entities involve taking of pre-mining profits, doesn’t affect the classification of Mined Cryptocurrencies as securities because the main questions are the elements of the *Howey Test* and whether there was an “investment” and a “common enterprise” (and as explained above, both Mined and Non-Mined Cryptocurrencies don’t satisfy the *Howey Tests* and the *Marine Midland Tests* and the *Joiner Tests*). Thus any securities-classification argument that is based on “pre-mining profits” seeks to introduce a brand new test for classification of securities that is outside permissible scope and contravenes US Supreme Court, lower US courts and the US SEC’s rulings.

Lower US federal and state courts have continued to issue conflicting rulings about the classification of Bitcoin, Ethereum and cryptocurrencies, and the debate hasn’t been resolved by the US Supreme Court. Several US Courts have ruled that US CFTC has jurisdiction over cryptocurrencies and that they are commodities⁴⁸. However, the critical issue in those cases seemed to be the distinction between the “futures” element of cryptocurrencies and commodities “spot markets” (non-futures).

11.9. The Case For Regulating Mined Cryptocurrencies And Non-Mined Cryptocurrencies As Commodities Or Contract Intangibles.

Even though most non-CBDC cryptocurrencies are illegal and there isn’t any economic or political justification for their existence in their current formats, there may be a case for regulating Cryptocurrencies as non-securities and perhaps as commodities and Contract-Intangibles, and for creating special statutes for them. Some of the issues are as follows.

⁴⁸ See: *Commodity Futures Trading Comm’n vs. McDonnell*, 287 F. Supp. 3d 213 (US District Court For the Eastern District Of New York, USA). (“Virtual currencies can be regulated by CFTC as a commodity.....”).

See: *In re BFXNA Inc.*, CFTC Docket 16-19, at 5-6 (June 2, 2016) (“.....Virtual currencies are encompassed in the [CEA] definition and properly defined as commodities.....”).

See: *In re Coinflip, Inc.*, CFTC Docket No. 15-29, at 3 (Sept. 17, 2015).

See: *CFTC vs. My Big Coin Pay Inc.*, 2018 WL 4621727 (Jan. 16, 2018; US District Court For the District Of Massachusetts, USA).

See: *Commodity Futures Trading Comm’n vs. My Big Coin Pay, Inc.*, No. CV 18-10077-RWZ, 2018 WL 4621727 (D. Mass. Sept. 26, 2018). <https://www.cftc.gov/sites/default/files/2018-10/enfmybigcoinpayinmemorandum092618.pdf>.

See: Sheppard Mullin Richter & Hampton LLP (October 10, 2018). “CFTC Cryptocurrency Enforcement Receives Further Judicial Support”. *National Law Review*. <https://www.natlawreview.com/article/cftc-cryptocurrency-enforcement-receives-further-judicial-support>.

See: Giancarlo, C. (Oct. 2018). *Remarks of J. Christopher Giancarlo at the Economic Club of Minnesota: Regulatory Enforcement & Healthy Markets: Perfect Together!*. <https://www.cftc.gov/PressRoom/SpeechesTestimony/opagiancarlo56>.

As interpreted by the US Supreme Court and US Federal Appellate Courts, Bitcoin, Ethereum and Cryptocurrencies comply with many requirements for the classification of a Financial Instrument as “securities”. However, the past and current statutory definitions⁴⁹ of “securities” and “futures” are grossly inadequate and perhaps misleading. With the advent and growing popularity of the Internet, disintermediation and many new financial products (i.e. derivatives; cryptocurrencies; etc.), US securities laws have become increasingly and un-constitutionally vague and obsolete as applied – and the *Void-For-Vagueness doctrine* of constitutional law applies in the case of criminal securities law claims and US CFTC claims. See the comments in Hu & Morley (2018) about the lack of proper statutory definition of “futures” and “securities” in US Law. Kirk (2015) argued that the Dodd Frank Act changed the definition of “securities”.

As mentioned herein and above, in *Board Of Trade Of The City Of Chicago vs. Securities And Exchange Commission* (CA7; No. 98-2923; August 10, 1999; <https://caselaw.findlaw.com/us-7th-circuit/1261082.html>), the US Court of Appeals vacated a US SEC order that ruled that futures exchanges should not trade futures contracts that were based on the Dow Jones Utilities Average and the Dow Jones Transportation Average both of which are major stock Indices (ie. the US SEC had ruled that such contracts were not futures contracts). Many cryptocurrencies are functional equivalents of “spot-market commodities”. Also in *Board of Trade of City of Chicago*, 677 F2d 1137 (CA7; 1982), the US Court Of Appeals acknowledged that GNMA's are both "commodities" and "securities" (and noted that “.....None of the parties suggests that GNMA's are not "legitimate" commodities.....”); and that GNMA options/futures are not securities. GNMA's are structurally similar to some cryptocurrencies (eg. Cryptocurrencies/Stablecoins that are backed by assets).

A significant portion of US securities laws (and by extension, those of the many countries that copied US securities laws) were enacted during 1920–1960 which was a very different era (in terms of technology, transactions, regulation, financial innovation; capital flows and compliance, and the structure of both the US economy and the global economy). Some of the new and relevant events/changes are as follows:

1. The creation and rapid growth of cryptocurrencies, new types of Swaps/derivatives, and new investment vehicles (such as hedge funds, ETFs and Structured Products Vehicles); CDS; and significant increases in the popularity of cryptocurrencies, ETFs and Structured Products.
2. Technological advancements; and changes in patterns of innovation; the Internet and the rapid growth of online news media and online social networks.
3. Changes in international capital flows and international trade; increased volumes of cross-border investment; and the rise of BRICS countries as technological, military, financial and trade/economic powers.
4. Changes in Corporate Governance standards and regulations in many countries; and global convergence of accounting regulations, *Corporate Governance standards* and securities laws (many countries copied US laws and corporate governance standards) and “*Regulatory Contagion*” (wherein many countries copied US law/statutes during 1980–2019)
5. The rise of the US dollar (and since 2017, the decline of the US dollar) as the dominant currency in international trade and finance.
6. The significant growth of foreign operations of Multinational Corporations (MNCs) around the world which propagates *Corporate Governance Contagion*, *Regulatory Contagion* and often negative *Spillover Effects*.
7. Globalization, outsourcing, the movement of jobs to Mexico and Asia, and associated trade wars; each of which can cause/propagate *Corporate Governance Contagion*, *Regulatory Contagion* and often negative *Cross-border Spillover Effects*.
8. Economic/financial crisis and financial/earnings-management scandals around the world.

⁴⁹ Hu and Morley (2018: 868; Footnote-91) stated in part: “Section-1 of the *Commodity Exchange Act* defines the word ‘commodity’ to include any good or article. 7 U.S.C. §1(a)(9) (2012). Note that although futures contracts on equity securities tend to be defined as securities, rather than commodities, futures contracts on indexes of equity securities are commodities. Section 2(a)(1) of the Securities Act of 1933, for example, defines the term ‘security’ to include a future on a security but not a future on an index of securities. 15 U.S.C. §77b(a)(1) (2012)”.

9. Structural Changes in many countries.
10. COVID-19 Pandemic of 2019-present.
10. Changes in demography and the nature of investment needs of households.
11. High Frequency Trading; and changes in the trading rules of financial and commodity exchanges (ie. Changes in margin requirements, Repo-markets, trading rules and Market Microstructure around the world).
13. Increased volumes of GDRs/ADRs and cross-listed shares around the world.
15. Clearly, “Self-regulation” by the securities industry is inefficient and has failed as evidenced by the number of arbitration claims and lawsuits against, and by the types of offences/misconduct perpetrated by securities professionals around the world.
16. The significant increases in volumes of Stock-Repurchases around the world; and changes in the capital structures and dividend policies of non-financial operating companies; and changes in their financing terms (terms for loans, trade credit, commercial paper, etc.).
17. As mentioned above, there are *Separation-of-Powers* and *Procedural/Substantive Due Process* (Constitutional Law) problems inherent in the concurrent legislative, adjudicatory and enforcement activities of regulatory agencies such as the US SEC and the US CFTC – which were not fully or properly addressed in *Lucia vs. SEC*, 585 U.S. ____ (US Supreme Court case) and other court cases.
18. There has been rapid growth of joint ventures, franchising, distribution agreements, R&D partnerships and strategic alliances around the world, which expands the “*scope-of-the-firm*” and significantly changes the risk, perceptions, solvency and profitability of operating companies (Mutual Funds, Structured Products Vehicles, Hedge Funds, ABS/MBS Trusts and ETFs are corporate entities that typically don’t do such transactions and thus should be subject to different regulatory regimes). Advances in the *Theory-of-the-Firm* have further confirmed the operating and risk differences between operating companies on one hand and investment vehicles (e.g. DCCs/DFPCs, some cryptocurrency issuers; etc.).
19. Increasingly, *Vertical Commonality* and *Horizontal Commonality* (in securities law) are applicable to only operating companies (and not to “investment vehicles” or DCCs/DFPCs or cryptocurrencies) – due to competition and fee structures in the global securities industry; the structure and purposes of investment vehicles; regulation; etc..
20. The automation of finance and financial exchanges.
21. “*Regulatory Revolutions*” in some countries.
22. There have been documented cases and prosecutions of fraud in cryptocurrencies markets.
23. During 1990–2018, more than 110 countries changed their national constitutions and many of them are similar to, or based on the US constitution⁵⁰.
24. Although they are illegal, cryptocurrencies are quickly replacing legal tender, but governments have no or little “policy control” over cryptocurrencies (such lack of “policy control” has been empirically shown to directly affect economic growth in several countries).

The US FSOC’s Non-Bank SIFI Criteria doesn’t sufficiently address cryptocurrencies (which is now a large international market), their visibility, their use as Reference-Points and valuation benchmarks, and their market-impact. Nwogugu (2014b) critiqued the US FSOC’s Non-Bank SIFI Criteria, and introduced more efficient criteria. Cryptocurrencies can substantially increase Financial Instability and Systemic Risk, and companies and investment entities that own large amounts of cryptocurrencies, or that issue large amounts of cryptocurrencies should also be under surveillance and US FSOC’s jurisdiction.

Regulating Cryptocurrencies as securities is more likely to increase systemic risk and Financial Instability (compared to regulating them as Commodities or collectibles) because:

- i) Such Regulatory Regime increases or can increase the linkages and volatility Spillovers between securities markets (stock; bonds) and cryptocurrencies.
- ii) Such Regulatory Regime can dampen/reduce the transmission of Monetary Policies.
- iii) Under the current Regulatory Regimes in most countries, cryptocurrencies can amplify the distortions, Financial Instability and Systemic Risk caused by “*Netting*”. Nwogugu (2014b) critiqued the “*Netting*” of swaps/derivatives. Cryptocurrencies derivatives have been created, and

⁵⁰ Law & Versteeg (2012) noted that the US Constitution is similar to those of many countries.

derivatives are often used to hedge or arbitrage (e.g. spreads), and all such derivatives are usually *Netted*.

iv) As explained in Nwogugu (2020) (eg. the critique of *Credit Suisse vs. Billings*), the current securities law regulatory regime in the USA, cannot adequately handle specialized misconduct such as Antitrust and other unfair business practices, especially in the Cryptocurrencies markets. Given the comments in Hu and Morley (2018), Grimm (2008) and McLaughlin (2008), the US SEC and the US CFTC (and similar regulatory agencies in other countries) have knowingly or un-knowingly evolved into illegal antitrust facilitators that shape competition in Cryptocurrencies markets through their non-uniform and discriminatory approval, rule-making and enforcement processes for Cryptocurrencies (ie. of ICOs, etc.).

v) .

As mentioned above, most countries including the United States don't have a comprehensive or efficient system of regulation for Cryptocurrencies.

Cryptocurrencies have the "*Minimum Level Of Standardization*" that is sufficient to classify them as commodities or *quasi-commodities* in terms of the demand for them, their use, and their "*Substitutability*" (i.e. the ability to substitute any Cryptocurrencies unit with a similar unit while maintaining the same risk levels, investment-returns and investment objectives). Cryptocurrencies units are often traded in bulk, and most are traded on cryptocurrency exchanges while some cryptocurrency derivatives are traded on major financial exchanges.

Cryptocurrencies have become commodities or quasi-commodities in terms of their risk profiles and operations which are very different from those of stocks, bonds and individual operating companies in industries, and from those of banks and insurance companies – and some issues are as follows:

1. The Cryptocurrencies offerings/auction process and the risk profile and Industrial Organization effects of Cryptocurrencies differs significantly from other "normal" capital raising processes and Financial Instruments that are used by companies and government agencies, such that new and specialized regulations are required for Cryptocurrencies.
2. The corporate governance, decision-making and management of operating companies and Cryptocurrencies DCCs/DFPCs differ. Operating companies typically have a Board of Directors and an executive management team, and are required formally or morally to comply with corporate governance codes; and their decision-making is multi-tiered, dynamic and evolves over time. Cryptocurrencies don't face similar pressure about corporate governance and most of the decisions are made by the Cryptocurrencies DCCs/DFPCs/Trusts/Vehicles and by the sponsors whose decisions are relatively static.
3. The November 30, 2011 letter from US Senators Diane Feinstein and Carl Levin⁵¹ to the US Commodities Futures Trading Commission (CFTC) about the need for the CFTC to regulate Mutual Funds that focus on investments in commodities and swaps/derivatives, discusses helpful issues.
4. The widespread and increasing use of Cryptocurrencies futures/options to hedge Cryptocurrencies may continue to increase the differences in risk profiles and trading patterns of Cryptocurrencies on one hand, and non-Cryptocurrencies securities (bonds/notes and preferred stock) of operating companies in non-financial industries on the other.

A growing percentage of Cryptocurrencies can be Cryptocurrencies derivatives/futures contracts. The structure of Cryptocurrencies can distort risk – that is, the Cryptocurrencies offering/auction process can become detached from the underlying risk of the issuer due to conditions in the Pre-Sale Market, or just temporary demand-supply imbalances.

It's reasonably inferable that the *Legislative Intent* of the 1933 Act and 1934 Act (US securities statutes), was that the term "investment" was to refer to only investments in operating companies/entities (and maybe some types of government agencies), but not investments in "Investment Vehicles" (such as

⁵¹ See: [www.hsgac.senate.gov/imo/media/doc/Levin-Feinstein%20Comment%20Ltr%20to%20CFTC%20re%20Rule%204%205%20registration%20exemption%20\(Nov%2030%202011\).pdf](http://www.hsgac.senate.gov/imo/media/doc/Levin-Feinstein%20Comment%20Ltr%20to%20CFTC%20re%20Rule%204%205%20registration%20exemption%20(Nov%2030%202011).pdf).

Mutual Funds, Structured Products Vehicles, ABS/MBS Trusts and ETFs)⁵² and Cryptocurrencies. See the comments in Selvers (1974). It's also reasonably inferable that *Legislative Intent* of the Investment Company Act of 1940 (the "1940 Act") and related statutes was to address only "Investment Vehicles" and more specifically, Mutual Funds (but not Cryptocurrencies, Structured Products Vehicles and ETFs)⁵³ – and the 1940 Act does not sufficiently define whether such vehicles are "securities". However, the term "investment" has been wrongly applied to analysis of the legal status of "investment vehicles" and Cryptocurrencies.

In terms of size, an increasing number of Cryptocurrencies are as big as, or bigger than many mid-cap operating companies when measured by assets and or market value. In today's circumstances and for regulatory, Sustainability analysis and economic-policy purposes, it is critical to statutorily distinguish among the following: 1) investment vehicles (Mutual Funds, Structured Products Vehicles, ABS/MBS Trusts and ETFs); and 2) Cryptocurrencies; 3) traditional operating companies; and 4) financial services companies (banks, insurance companies, finance companies, payments companies and transaction processing companies); 5) specialized financial instruments such as Auction-Rate Securities (ARS); 6) commodities.

In some countries such as Canada, the regulations for Commodity Pools and Mutual Funds are converging or were proposed to converge⁵⁴; and under the *Commodity Exchange Act* of 1974 and the *Commodity Futures Modernization Act of 2000* in the US, "Commodity Pools" are functional equivalents of Mutual Funds, ETFs and some Structured Products Vehicles and Cryptocurrencies vehicles/trusts/DCCs/DFPCs.

The current *Regulatory Fragmentation* (various different government agencies and statutes regulate Mutual Funds, ETFs, ARS, ABS/MBS Trusts, Cryptocurrencies and Structured Products) in many countries is sub-optimal and grossly inefficient, and can increase transaction costs, compliance costs, Regulatory Uncertainty, systemic risk and financial instability.

12. New Models Of How To Legally Use Crypto-Assets And Cryptocurrencies In Daily Commerce.

While crypto currencies are not legal tender in most countries, as of 2022, only El Salvador and Central African Republic have made cryptos legal tender. Use of cryptos as currencies is a major objective of most DCCs, even though that objective remains illegal. This section introduces new legal business models for crypto-assets that can reduce legal liabilities, and enable their use in daily commerce.

Model-1: The Crypto-Asset Securities And Barter Model.

- i) This model applies to only "stablecoins" or "mined"-cryptos. The crypto-assets will be created either by mining, ICOs or IDOs.
- ii) Don't label cryptos as "Cryptocurrencies". They should be called "crypto-assets" or "Crypto-Securities" or other names that don't denote or contain "currency".
- iii) Don't use cryptocurrencies as legal-tender or as *medium-of-exchange*.
- iv) Crypto-securities must be registered at government agencies either as securities or as commodities where applicable and necessary.

⁵² But see: *Reeves vs. Ernst & Young*, 494 U.S. 56, 61 (1990) (noting that ".....Congress' purpose in enacting the securities laws was to regulate investments, in whatever form they are made and by whatever name they are called.....").

⁵³ Hu and Morley (2018: 868) stated in part "Note that although many funds regulated by the Investment company Act (ICA) (of 1940) are technically also subject to the 1933 Act and the Securities Exchange Act of 1934 ("1934 Act"), the ICA largely supplants the requirements of these two other statutes, mandating its own distinct forms of disclosureBecause a Commodity Pool ETF invests in commodity futures, rather than securities, its main regulatory statute is not the Investment company Act (of 1940), but the Commodity Exchange Act."

⁵⁴ See: Katten Muchin Rosenman LLP (September 2016). *Canada Proposes Commodity Pool Regulation Update*. www.lexology.com/library/detail.aspx?g=425d4564-2846-48f6-a4f7-7f22dfc4bbf0. This article stated in part ".....The Canadian Securities Administrators proposed amendments to existing rules that would move most of the existing Canadian regulatory framework related to commodity pools from a distinct regulation for CPOs to one applicable to all investment funds.....".

- v) DCCs/DFPCs and their crypto-securities must provide sufficient documentation/disclosures of risks involved.
- vi) Crypto-securities should be backed by assets (physical or intangible) or contract-rights.
- vii) The method of creating the crypto must not violate securities laws and commodities laws. Some persons have noted the differences between the methods for creating Bitcoin and Ethereum (decentralized DeFi processes) and other cryptocurrencies (more like securities). As explained herein, both mined and un-mined cryptocurrencies are securities.
- viii) The method of offering cryptos to the public should not violate statutes (eg. securities laws, commodities laws, antitrust statutes, conspiracy statutes, fraud statutes, etc.).
- ix) Create formal registered “*Barter Markets*” where cryptos can be bartered for other assets/rights. Each such Barter market should be regulated by the national government. Thus, crypto-securities can be used to purchase goods and services strictly and only in designated and licensed Barter Markets (buyers and sellers can become members of these Barter markets).
- x) DCCs/DFPCs must implement KYC (know your customer), transparency and rigid Internal Control measures in order to eliminate fraud and other misconduct.
- xi) DCCs/DFPCs must comply with all disclosure requirements (securities law, consumer protection, tax, etc.).

Model-2: The Clearing House And Voucher Model.

- i) This model can be used for NFTs and cryptocurrencies. The crypto-assets will be created either by mining, minting or ICOs or IDOs.
- ii) Don’t label cryptos as “Cryptocurrencies”. They should be called “crypto-assets” or “Crypto-vouchers” or “Crypto-coupons” or other names that don’t denote or contain “currency”.
- iii) Don’t use cryptocurrencies as legal-tender or as medium-of-exchange and instead, create formal “Clearing Houses” where cryptos/NFTs can be redeemed or issued by only the Clearing House.
- iv) Each Crypto will exist only as a voucher or Coupon, which cannot be traded on any exchange. Crypto-voucher Holders cannot trade any crypto-vouchers with other persons. Thus, all of the securities law and commodities law problems will be avoided.
- v) For each Crypto or NFT-series, there will be at least one Clearing house whose function will be to match people that need vouchers (the “Demand Side”) and those that want to redeem their vouchers (the “Supply Side”).
- vi) Thus, there won’t be any contact between Demand-Customers and Supply customers in the Clearing House. The Clearing House will post the prices at which it will redeem various different volumes of vouchers (including a name-your-price dynamic pricing option). The Clearing House will also post the prices at which it will re-issue various different volumes of vouchers including a name-your-price dynamic pricing option (the Clearing House will operate only in the secondary market). There is no direct-trading or market between buyers and sellers of the Crypto-vouchers. Thus, the Clearing House will make money from the differences between the prices at which it issues and redeems the Crypto-vouchers. Furthermore, for each Crypto-voucher, the Clearing House can temporally separate the redemption and re-issuance processes, so that it cannot be argued that the matching of Demand-Customers and Supply-Customers constitutes trading-on-an-exchange. The Clearing House can use Matching Algorithms to match demand flows to supply flows in order to reduce processing time and to ensure that it generates profits.
- vii) Service companies (eg. Retailers, telecom companies) and manufacturers that want to accept the Crypto-voucher (in lieu of cash payments) can sign up as members of the Clearing House. Such companies can also use the Crypto-vouchers as gifts and incentives for their customers. On their webpages, such companies will make provisions for customers to pay for goods/services using the Crypto-Vouchers.
- viii) In addition to the Clearing Houses, there can also be “*Voucher Markets*” where different companies that accept the vouchers can list their goods and services and customers can buy them using the Crypto-Vouchers. The Clearing Houses can also create their own Crypto-Voucher Markets. The Voucher Markets will be the only venues where holders can use their Crypto-Vouchers to purchase goods/services (individuals and companies that want to sell products can become members

of a Voucher Market). Each Voucher Market can offer price discounts and logistics services discounts to encourage people and companies to use the Voucher Markets.

x) The Crypto-vouchers can be issued in various denominations/sizes – and the lower the standardization, the less likely they will be classified as securities. Holders cannot sell Vouchers for cash in any Voucher Market.

xi) The Voucher Markets can greatly reduce corporate and personal bankruptcies because it enables companies/persons to sell goods/services that they would not ordinary be able to sell (and at discounted prices and on non-cash-terms).

xii) DCCs/DFPCs must implement KYC (know your customer), transparency and rigid Internal Control measures in order to eliminate fraud and other misconduct.

xiii) DCCs/DFPCs must comply with all disclosure requirements (securities law, consumer protection, tax, etc.).

Model-3: The Central Crypto-Coupon Market And Internal-Clearing-House Model.

i) This model can be used for both NFTs and cryptocurrencies. The crypto-assets will be created either by mining or minting (and or ICOs and or IDOs).

ii) Don't label cryptos as "Cryptocurrencies". They should be called "crypto-assets" or "Crypto-coupons" or other names that don't denote or contain "currency". Don't use cryptocurrencies as legal-tender or as medium-of-exchange.

iii) Crypto-Coupon Holders cannot trade any crypto-Coupons with other persons, but can gift coupons to others. There will be only one regulated formal central "Coupon Market" in each country (similar to the Voucher Market mentioned above) where coupons can be redeemed for other assets/rights (where different persons/companies that accept the coupons can list their goods and services and customers can buy them using the coupons). The Central Coupon Market (and the national government) can offer incentives (such as tax credits, price discounts and logistics-services discounts) to encourage people and companies to use its services.

iv) The Crypto-coupons can be issued in various denominations/sizes – and the lower the standardization, the less likely it is that they will be classified as securities. The Crypto-coupons cannot be traded on any exchange or venue, and cannot be used as legal-tender.

v) Each seller in the Central Coupon Market can publish its own "market-price" for each type/series of coupons. Each Seller in the Central Coupon Market will also function as a mini-Clearing House and will publish prices at which it will re-issue different coupons for use in the Central Coupon Market. Each Seller cannot serve as a Clearing House for its own coupons.

vi) Membership in the Central Coupon Market will be open to all (Sellers should be able to easily connect the backends of their ecommerce website to the Central Coupon Market's backend).

vii) The Central Coupon Market can greatly reduce corporate and personal bankruptcies because it enables companies/persons to sell goods/services that they would not ordinary be able to sell (and at discounted prices and on non-cash-terms).

viii) DCCs/DFPCs must implement KYC (know your customer), transparency and rigid Internal Control measures in order to eliminate fraud and other misconduct.

ix) DCCs/DFPCs must comply with all disclosure requirements (securities law, consumer protection, tax, etc.).

Model-4: The Building-Block Model.

i) This model can be applied to both NFTs and "Cryptocurrencies", and cryptocurrencies will exist only as personal property and as commodities. Under this model entire or significant portions of organizations, technologies and operational processes can be built using only cryptocurrencies (that is currently happening to some extent with both mined and non-mined Cryptocurrencies).

ii) As building-blocks within the Digital Economy:

1) Cryptocurrencies will be used as building-blocks for creating and or operating markets, products, organizations, Mechanisms, apps/DApps, technologies and operations processes. Some of the requirements for this approach are as follows:

- i) *Universal Standardization* - some minimum amount of standardization of blockchain technologies and processes across all blockchain systems worldwide.
- ii) *Coordinated Valuation* – there should be ways to define and assign a generally-accepted standard unit of work/expense, so that whole/fractional units of cryptocurrency can be assigned to each such unit of work/expense.
- iii) *Cross-chain capabilities* – increasing volumes of transactions can be executed across different blockchain systems/standards.
- iii) *Fungibility* – as much as possible, there should be fungibility of cryptocurrencies/Tokens.
- iv) *Energy efficiency* – blockchains and blockchain transactions must consume only small amounts of energy.
- v) *Liquidity & Clearing-Houses* – there should be regular and quasi Clearing Houses (where Tokens can be converted into cash and vice-versa) and Exchanges (where Tokens can be easily swapped for other tokens or cash).
- vi) *Blockchain Growth* - this approach partly depends on the continued growth of the use of blockchain technologies around the world.
- vii) *Tax Advantaged* – the use of such cryptocurrencies should provide tax advantages to users. That is because of the potentially huge benefits provided for innovation, capital-formation
- viii) *Incentives* -

2) Cryptocurrencies can be used for the Tokenization/monetization of the “quasi-Equity” side of the Balance Sheets of corporate entities and government entities – by issuing Tokens in exchange for startup capital and development capital. That can significantly reduce the Capital-Formation Problem and the Startup-Valuation Problem faced by startups in most countries.

3) Cryptocurrencies can be used for the Tokenization/monetization of the “Expense” side of the Income Statements of corporate entities and government entities – by paying all or part of such expenses with Cryptocurrencies. That contrasts with traditional stocks (which are used for the monetization/tokenization of the equity-side of balance sheets of corporate entities) and bonds (which are used for monetization/tokenization of the assets-side of balance sheets of corporate entities and government entities). In accounting/Finance theory, there remains a significant and continuing debate about what constitutes Intangible Assets, Marketing Expenses, Selling Expenses, business-development expenses and startup/development expenses, and most of these expenses increase/reduce the firm’s brand-equity and market-value. Several unfortunate outcomes are that: a) companies routinely and intentionally misclassify expenses among these five accounts (Intangible Assets, Marketing Expenses, Selling Expenses, business-development expenses and startup/development expenses) which constitutes earnings management and or Asset-quality Management (which are explained in Nwogugu (2020)); b) there are often significant differences between the book-values and market-values of listed (exchange traded) companies, such that book-values are often less than forty percent of the market values of companies (collectively, the “*Intangibles Value-Differential*”). Thus, Tokenization of the “Expense” side of the Income Statements can significantly reduce the *Intangibles Value-Differential*, since such Tokens can trade at market-values that reflect the true/intrinsic values of the associated/underlying expenses incurred.

3) Crypto-assets will be created or mined but cannot be traded on exchanges or markets like securities.

4) Cryptocurrency-owners can swap their crypto-assets only for stocks, warrants/options and debt/bonds of companies and government-agencies and non-profit organizations that want to use crypto assets as incentives, access-keys and mechanisms in their networks or products or organizations. These asset swaps will be done through designated licensed Clearing Houses. Each Clearing House can accept any number of cryptocurrencies and “redeem” them with stocks/warrants/debt/options of applicable/associated companies and

government-agencies and non-profit organizations. There won't be any direct exchange of assets between any crypto-holder and any participating-company.

- iii) "Cryptocurrencies" should be called "Tokens", coins, or "crypto-assets" or "crypto-units" or other names that don't denote or contain "currency".
- iii) DCCs/DFPCs/DFPCs must implement KYC (know your customer), transparency and rigid Internal Control measures in order to eliminate fraud and other misconduct.
- iv) DCCs/DFPCs must comply with all disclosure requirements (securities law, consumer protection, tax, etc.).
- vii) The cryptocurrencies must not conform to any elements of the *Howey Tests* (US Supreme Court case law). The single individual "units" of cryptocurrencies cannot be traded on any securities exchange or market like securities; but they can be processed in bundles through a "Clearing House". There cannot be any *Horizontal Commonality* in the super-majority of instances/transactions – that is, for any transaction or group of transactions, any losses or gains incurred by any miner or original-investor (primary market investor) or the DCC must not correspond to losses or gains incurred by other miners/original-investors respectively. There cannot be any *Vertical Commonality* in the super-majority of instances/transactions – that is, for any transaction or group of transactions, any losses or gains incurred by the miners or the DCC must not correspond to losses or gains incurred by secondary-market investors respectively.
- viii) The cryptocurrencies must not conform to any of the "*Marine Midland Tests*"; derived from a US Supreme Court case) which are as follows:

iv) The cryptocurrencies must not conform to any of the *SEC vs. Joiner tests* (the "*Joiner Tests*"; derived from a US Supreme Court case) which are as follows:

- 1) *What character the instrument is given in commerce by the terms of the offer ?* - in commerce, the crypto-assets should not be issued or used as currencies or as securities, but more like collectibles or commodities or stores-of-value.
- 2) *The plan of distribution of cryptocurrencies ?* – most cryptocurrencies are distributed through ICOs and IDOs. In a relatively few instances, cryptocurrencies are sold through pre-announced "drops" or "Air-drops" wherein the creator and sponsor (similar to a DCC) announce the planned sale of NFTs, buyers can sign up, and then the NFTs are sold. To the extent possible, the crypto assets should not mirror the roadshow elements of traditional IPOs of stocks/bonds. The crypto-assets can also be sold through auctions.
- 3) *The economic inducements held out to the prospect ?* – in reality, these vary widely from none to a myriad of incentives. With regards to incentives, cryptocurrencies are not standardized.
- 4) *The promoters' offerings should be judged as being what they were represented to be* – the cryptocurrency should be used and treated as commodities and or collectibles.

v)

Model-5: The Commodities And Commodity-Futures Model.

- i) In this model, cryptocurrencies will exist only as commodities and as personal property. This model can be applied to NFTs and "Cryptocurrencies".
- ii) Don't label cryptos as "Cryptocurrencies". They should be called "crypto-assets" or other names that don't denote or contain "currency".
- iii) DCCs/DFPCs must implement KYC (know your customer), transparency and rigid Internal Control measures in order to eliminate fraud and other misconduct.
- iv) DCCs/DFPCs must comply with all disclosure requirements (commodities law and securities law, consumer protection, tax, etc.).
- v) Cryptocurrencies cannot be traded on any securities exchange or market like securities. The cryptocurrencies must not comply with elements of the *Howey Test* (US case law) .
- vi) Cryptocurrencies can be traded only as commodities and only through standardized commodity contracts on a commodities exchange where there are spot and futures/forwards markets.

- vii) Each licensed/regulated commodities exchange will determine which specific cryptocurrencies have sufficient market depth and liquidity to be traded as commodities.
- viii) Each licensed/regulated commodities exchange will determine which specific cryptocurrencies commodity contracts have sufficient market depth and liquidity for creation of associated futures and forward contracts.
- ix) The cryptocurrencies must not conform to any elements of the *Howey Test* (US case law). The single individual “units” of cryptocurrencies cannot be traded on any securities exchange or market like securities; but they can be traded in markets in “*Bundles-Of-Units*” as commodities. There cannot be any *Horizontal Commonality* in the super-majority of instances/transactions – that is, for any transaction or group of transactions, any losses or gains incurred by any miner or original-investor (primary market investor) or the DCC must not correspond to losses or gains incurred by other miners/original-investors respectively. There cannot be any *Vertical Commonality* in the super-majority of instances/transactions – that is, for any transaction or group of transactions, any losses or gains incurred by the miners or the DCC must not correspond to losses or gains incurred by secondary-market investors respectively.
- x) The *SEC vs. Joiner tests* (the “*Joiner Tests*”; derived from a US Supreme Court case): are as follows:

- 1) *What character the instrument is given in commerce by the terms of the offer ?* - in commerce, the crypto-assets should not be issued or used as currencies or as securities, but more like collectibles or commodities or stores-of-value.
- 2) *The plan of distribution of cryptocurrencies ?* – most cryptocurrencies are distributed through ICOs and IDOs. In a relatively few instances, cryptocurrencies are sold through pre-announced “drops” or “Air-drops” wherein the creator and sponsor (similar to a DCC) announce the planned sale of NFTs, buyers can sign up, and then the NFTs are sold. To the extent possible, the crypto assets should not mirror the roadshow elements of traditional IPOs of stocks/bonds. The crypto-assets can also be sold through auctions.
- 3) *The economic inducements held out to the prospect ?* – in reality, these vary widely from none to a myriad of incentives. With regards to incentives, cryptocurrencies are not standardized.
- 4) *The promoters’ offerings should be judged as being what they were represented to be* – the cryptocurrency should be used and treated as commodities and or collectibles.

Model-6: The Settlement Model.

- i) In this model, cryptocurrencies will exist only as personal property and as a tool for settling any type of transaction in order to minimize the physical movement of cash in any country or across countries (eg. financial transactions; settlement in telecom networks; incentives; etc.). This model can be applied to NFTs and “Cryptocurrencies”.
- ii) Don’t use the term “Cryptocurrencies”. They should be called “*crypto-assets*” or “*Crypto-Settlement-Units*” or “*Settlement-Units*” or other names that don’t denote or contain “currency”.
- iii) DCCs/DFPCs must implement KYC (know your customer), transparency and rigid Internal Control measures in order to eliminate fraud and other misconduct.
- iv) DCCs/DFPCs must comply with all disclosure requirements (securities law, commodities law, consumer protection, tax, etc.).
- v) The Settlement-Units will be created either by mining, minting (and or ICOs or IDOs).
- vi) The cryptocurrencies must not conform to any elements of the *Howey Tests* (US Supreme Court case law). The single individual “units” of cryptocurrencies cannot be traded on any securities exchange or market like securities; but they can be traded in markets in “*Bundles-Of-Units*” as commodities. There cannot be any *Horizontal Commonality* in the super-majority of instances/transactions – that is, for any transaction or group of transactions, any losses or gains incurred by any miner or original-investor (primary market investor) or the DCC must not correspond to losses or gains incurred by other miners/original-investors respectively. There cannot be any *Vertical Commonality* in the super-majority of instances/transactions – that is, for any transaction or group of transactions, any losses or gains incurred by the miners or the DCC must not correspond to losses or gains incurred by secondary-market investors respectively.

viii) The *SEC vs. Joiner tests* (the “*Joiner Tests*”; derived from a US Supreme Court case): are as follows:

- 1) *What character is the instrument given in commerce by the terms of the offer ?* - in commerce, the crypto-assets should not be issued or used as currencies or as securities, but more like collectibles or commodities or stores-of-value.
- 2) *The plan of distribution of cryptocurrencies ?* – most cryptocurrencies are distributed through ICOs and IDOs. In a relatively few instances, cryptocurrencies are sold through pre-announced “drops” or “Air-drops” wherein the creator and sponsor (similar to a DCC) announce the planned sale of NFTs, buyers can sign up, and then the NFTs are sold. To the extent possible, the crypto assets should not mirror the roadshow elements of traditional IPOs of stocks/bonds. The crypto-assets can also be sold through auctions.
- 3) *The economic inducements held out to the prospect ?* – in reality, these vary widely from none to a myriad of incentives. With regards to incentives, cryptocurrencies are not standardized.
- 4) *The promoters’ offerings should be judged as being what they were represented to be* – the cryptocurrency should be used and treated as personal property, commodities and or collectibles.

13. Crypto-Economy And The “Real-Economy”: Crypto-Economy Is Part Of The Real Economy, And That Is A Major Difference From Regular Financial Markets.

Mined-Cryptos originate directly from blockchain transactions in the real economy and the financial sector. Most Non-Mined-Cryptos are issued in ICOs/IDOs to fund tech startups and non-profits.

14. Regulation Of DAOs.

Tables ____, ___ & ___ (elements of *Theories Of Regulation*) in this article also address the regulation of DAOs. DAOs are integratl parts of incorporated and unincorporated entities, and thus should be regulated within the existing frameworks of corporate/company laws, even if it means amending such laws.

Most DAOs have the following common properties:

- i) Most DAOs don’t exist in isolation, but rather, exist in the context of an incorporated Digital Assets entity (and its technology Whitepaper) that offers or is developing DeFi products or one or more cryptocurrencies (the “Core-Entity”).
- ii) The Core-Entity’s whitepaper is almost the equivalent of Corporate Bylaws because the Whitepaper specifies: 1) binding formal/informal contractual terms between the company and coin/product holders, and 2) terms of the Core-Entity’s Smart-Contracts and current and future operations, and 3) the Core-Entity’s Token-Economics or “Tokenomics” which almost always has huge long-term effects on the values and popularity of tokens/coins.
- iii) Most DAOs focus on only the Core-Entity’s businesses.
- iv) Admission into a DAO is typically open to: 1) shareholders and founders of the Core-Entity, 2) holders of coins issued or to be issued by the Core-Entity, 3) individuals that have met specific conditions set by the Core-Entity and or the DAO (such as specific acts of social-good, specific acts of media marketing/promotion that benefits the Core-Entity and or its cryptocurrency). In many instances, not all token-holders or shareholders of a Core-Entity are DAO members. Each DAO member must take specific affirmative steps to be admitted into the DAO.
- v) Each DAO typically has a Constitution or a set of operating rules, most of which pertain only to one or more DeFi products or a cryptocurrencies launched by the Core Entity, but not to the Core-Entity’s other business operations.
- vi) Each DAO cannot override, but functions within the frameworks of the Core-Entity’s bylaws and Articles-of-Incorporation and technical whitepaper.
- vii) Each DAO doesn’t have appointed leaders (eg. CEO, COO, VP, etc.), and its agenda is proposed and voted on my members. Each DAO typically has several meeting in each year where members vote on its agenda topics, and the voting results are implemented by coordinators.

viii) The number of members of each DAO is typically very large (200-500,000 people) and its members are usually very geographically-dispersed around the world. The technological and financial/legal knowledge of DAO members can vary dramatically. Thus treating and regulating a DAO as a legal incorporated entity is very inefficient and is akin to treating a Board of Directors or a “Shareholder Advisory Committee With Mandatory Input” or a “majority Shareholder Group” of a company as a legal entity.

ix) The typical DAO is most similar to: 1) an expanded Supervisory Board under the German Corporate Governance System, or 2) a Shareholders’ Advisory Group under the UK Corporate Governance System or the German Corporate Governance System. See Nwogugu (2019) which compared the Board Corporate Governance Systems of seven countries.

x) Most DAOs operate on a voluntary basis and don’t incur any costs. Treating a DAO as a corporate legal entity imposes taxation, profitability expectations and operating/management costs that will distort its decision-making and create perverse incentives in the deliberations and operations of DAOs, and distract DAO members from its core mission of choosing the best operation policies for its Core-Entity’s products/services.

15. The European Union’s *Markets In Crypto Assets (MiCA) Framework*⁵⁵.

See all sections above and the critique (below) of the new “*Lummis-Gillibrand Responsible Financial Innovation Act*”. The MiCA framework was approved in 2022.

16. The Proposed “*Lummis-Gillibrand Responsible Financial Innovation Act*” (US Congress; 2022) “Bifurcated Or Dual-Standards” Regulation For Cryptocurrencies Is Inefficient And Creates Greater Uncertainty, Systemic Risk, Transaction-Costs And Litigation Costs, and Can Stifle Innovation.

During June 2022, US Senators Lummis and Gillibrand issued draft “Bifurcated/Dual-Standards” regulation for cryptocurrencies⁵⁶ wherein some cryptos (the most popular) will be regulated as commodities while

⁵⁵ See: Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on Markets in Crypto-assets, and amending Directive (EU) 2019/1937 (COM/2020/593 final). EU Parliament. <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52020PC0593>.

See: “EU Finance Commissioner Calls for Speedy Passage of Crypto Law”. June 14, 2022. Sandali Handagama. <https://www.msn.com/en-us/news/world/eu-finance-commissioner-calls-for-speedy-passage-of-crypto-law/ar-AAysDmO?ocid=BingNewsSearch>.

⁵⁶ See: “Lummis-Gillibrand Responsible Financial Innovation Act”. <https://www.lummis.senate.gov/wp-content/uploads/Lummis-Gillibrand-Section-by-Section-Final.pdf>.

See: *Digital Commodity Exchange Act* (H.R. 7614, 117th Congress; USA Statute).

See: “U.S. Congress Unveils Sweeping Bipartisan Crypto Legislation”. June 9, 2022.

https://angle.ankura.com/post/102hqa7/u-s-congress-unveils-sweeping-bipartisan-crypto-legislation?utm_source=Mondaq&utm_medium=syndication&utm_campaign=LinkedIn-integration.

This article stated in part:

“.....Key Provisions

- **Establishes the CFTC as the Primary Regulator of Digital Assets** – Most notably, the bill would effectively establish the Commodity Futures Trading Commission (CFTC) as the primary regulator of digital assets by (a) providing the agency with “exclusive spot market jurisdiction” over digital assets, (b)
- **Stablecoin Reserve Requirements** – Stablecoin issuers would be required to (a) maintain high-quality liquid assets valued at 100% of the face value of issued stablecoins, (b) provide monthly disclosures on such assets, and (c) guarantee the ability to redeem all stablecoins at par in legal tender.
- **Stablecoin Issuance Process for Banks and Credit Unions** – Establishes a procedure for banks and credit unions to issue stablecoins by establishing a separate depository institution affiliate and securing the necessary regulatory approvals.

others will be treated as securities. Some of the main problems inherent in the “*Lummis-Gillibrand Responsible Financial Innovation Act*” are as follows:

1) Because of its inherent “double-standards” (potentially conflicting commodities and securities laws for very similar assets), sections of the “*Lummis-Gillibrand Responsible Financial Innovation Act*” will most probably create significant Uncertainty, operating costs and transaction costs that will cause and increase price volatility, *Systemic Risk* (correlation and related shocks may be transmitted separately and differently among prices of tokens classified as securities and commodities), *Financial Instability* (increased uncertainty, cost-of-capital, operating costs and transaction costs increase the probability of price-crashes and corporate failures and *Domino-Effects*), *Valuation-Gaps* (tokens deemed similar by market-participants but that are classified/regulated differently, will probably be priced very differently) and increased cost-of-capital in crypto-markets (Risk-perception issues) and *Correlation-Gaps* (tokens regulated as commodities and securities will have different correlation patterns and each group will have greater correlation among its members).

Regulatory Reporting Requirements – Sets a number of reporting requirements for operators in the digital assets industry. In particular, issuers of digital assets that are considered “ancillary assets” would have to submit twice-annual disclosures to the SEC on the valuation and management of those assets. In addition, digital asset service providers would be required to provide clear consumer notices, and require acknowledgement of, on a number of matters ranging from material source code updates to how a bankruptcy or insolvency scenario would be handled.

- **Digital Asset Exchange Registration Requirements and Fees** – digital asset exchanges can register with the CFTC and CFTC can impose user fees on digital asset exchanges to cover regulatory costs.
- **Crypto Broker Tax Reporting Requirements** – Delays for two years (until 2025) and amends the mandatory yearly tax reporting requirements for crypto brokers that were passed last year as part of the Infrastructure Investment and Jobs Act.
- **Tax Exemption for Crypto Transactions Less than \$200** – Provides a tax exemption for all transactions for goods and services under \$200.
- **Tax Exemption for Digital Asset Lending Agreements** – Specifies that so-called digital asset lending agreements are not generally taxable events.
- **Tax Exemption for Crypto Mining and Staking** – Establishes that digital assets obtained from mining or staking are not to be treated as taxable income until they are converted into fiat currency and gains or losses are realized.
- **Decentralized Autonomous Organization (DAO) Registration Requirements** – Requires community-led decentralized autonomous organizations (DAOs) to classify as business entities that must be incorporated as an LLC, corporation, partnership, foundation, cooperative, or similar organization.
- **Government Studies on Key Issues** – Directs a number of government agencies to conduct studies on key issues within the digital asset industry. For example, the bill directs the Treasury Department, the Federal Energy Regulatory Commission (FERC), the SEC, and the CFTC to conduct studies on (a) opportunities, benefits, and challenges associated with decentralized finance, (a) energy consumption related to digital assets, (b) how the digital assets industry self regulates and how registered digital asset associations should be established, and (c) cybersecurity standards for digital asset intermediaries.
- **Advisory Committee on Financial Innovation** – Proposes an Advisory Committee on Financial Innovation that includes industry representatives, the SEC, CFTC, a Federal Reserve Board member, a state regulator, and consumer protection advocates.....”.

- 2) Sections of the “*Lummis-Gillibrand Responsible Financial Innovation Act*” promotes unnecessary jurisdictional competition between the US SEC and the US CFTC by statutorily classifying cryptocurrencies as both commodities and or securities (without very clear definitions). Historically, any jurisdictional competition between any two US government agencies (eg. the US CFTC and the US SEC) has never ended well and results in redundancies and duplication of investigation/enforcement efforts and regulations, all of which burdens innovation and commerce and increases operating costs and transaction costs of subject companies and affected individuals. An example is the jurisdictional competition between the US FTC and the US SEC over enforcement of antitrust regulations in the US securities industry⁵⁷. Another good example is the regulation of GNMA Certificates⁵⁸ (classified as both securities and commodities) and GNMA Futures/Options (classified as only commodities) by the US government⁵⁹. GNMA's are akin to Mortgage Backed Securities (MBS) and they were created to increase liquidity in, and attract new investors into the secondary mortgage markets.
- 3) Sections of the “*Lummis-Gillibrand Responsible Financial Innovation Act*” will likely increase litigation costs and advisory fees because there will be increase litigation volumes and increased “advisory services” work as more crypto issuers seek classification of their coins as (and ways to make their coins to become) commodities.
- 4) Sections of the “*Lummis-Gillibrand Responsible Financial Innovation Act*” over-relies on the *Howey Tests* (1946 US Supreme Court case), and doesn't mention the *Marine-Midland Tests* and the *Joiner Tests* which were also derived from US Supreme court cases.
- 5) An economic interest that gives the token-holder a right to “.....profits, liquidation preferences or other financial interests in a business entity,.....” (“*Interests Rights*”) isn't a security under the *Howey Tests* unless it meets at least a majority (three) of the existing five *Howey Tests*. At best, the “*Interests Rights*” point is only one of five *Howey Tests*; and as of 2022, most cryptocurrencies didn't meet more than two of the five *Howey Tests* and didn't comply with any of the *Marine Midland Tests* and the *Joiner Tests* (both of which are analyzed herein). The *Interests-Rights Point* can also be construed as a new legislative extension of the *Howey Tests* (by adding one new *Howey*

⁵⁷ In *Credit Suisse vs. Billing*, the US Supreme Court wrongly ruled that Antitrust statutes don't apply to US securities firms. See the discussion in Nwogugu (2021).

⁵⁸ See: *Board of Trade of City of Chicago v. S.E.C.*, 677 F.2d 1137 (7th Cir.; 1982) (*vacated as moot*) 459 U.S. 1026.

See: *LTV vs. UMIC Government Securities, Inc.*, 523 F. Supp. 819, 835 (N.D.Tex.; 1981) (*affirmed*) 704 F.2d 199 (5th Cir.) (*certiorari denied*) 104 S.Ct. 163 (1983) (“.....the court ruled that a GNMA standby commitment was subject to the antifraud provisions of the securities acts.....”).

See: *Abrams vs. Oppenheimer Government Securities*, 737 F.2d. 582 (7th Cir. 1984) (“.....In sum, we affirm the district court's holding that the purchase of GNMA forwards is in connection with the purchase and sale of the underlying GNMA securities, and therefore the antifraud provisions of the securities laws apply to the purchase and sale of GNMA forwards.....”).

See: US Dep't. of Housing and Urban Development (1978). *Analysis And Report On Alternative Approaches to Regulating The Trading Of GNMA Securities*, vol. I, at 1-15 (1978) (HUD Report). This report stated in part: “.....Congress expanded the definition of commodity to include financial instruments such as GNMA certificates in response to industry's desire to trade in their derivatives. 7 U.S.C. § 2 (1974) (amended 1983). See generally *Board of Trade of Chicago v. S.E.C.*, 677 F.2d 1137, 1140 n. 2 (7th Cir. 1982). Thus, GNMA's are both securities and commodities and, to recapitulate, the CFTC's jurisdiction over the trading of GNMA derivatives is now limited to GNMA futures and options on GNMA futures.....”.

⁵⁹ See: Note, *The GNMA Securities Market: An Analysis Of Proposals For A Regulatory Scheme*. *Fordham Urban Law Journal*, 9, 457-467 (1980). This article analyzed the jurisdictional competition between the US SEC and the US CFTC with respect to GNMA futures, and it stated as follows: “.....[The CFTC] has exclusive jurisdiction over transactions involving contracts of sale of a commodity for future delivery traded or executed on a contract market. The regulation of commodity futures, not government securities, is the primary function of the CFTC. However, section 2(1) of the 1933 Act defines the term "security" to include any right to purchase a security. Because a GNMA futures contract is a right to a purchase a GNMA security, arguably both agencies have jurisdiction over GNMA futures contracts [footnotes omitted].....”.

Test). As explained in this article, an economic interest (Mined or Non-Mined Cryptos) that gives the holder a right to “profits, liquidation preferences or other financial interests in a business entity,” doesn’t make the token a security under the *Marine Midland Tests* and the *Joiner Tests* (both of which are analyzed herein), under which Mined/Non-Mined Cryptocurrencies aren’t securities or investment contracts and/or notes. In most other areas of Finance, “*Contingent Revenue-Participation Rights*” are not classified as debts or equity either in statutes or in Common-Law, and *Interest Rights* are very similar to *Contingent Revenue-Participation Rights*.

6) As explained in this article, the issue of “*Full Decentralization*” of a token/crypto is completely irrelevant to the classification of the token as securities or commodities or any other instrument. Furthermore, the *Full-Decentralization Requirement* isn’t applied to classifications of commodities and other financial instruments, and thus can be deemed to be violations of the *Equal Protection Clause* and the *Substantive Due Process Clause* of the US Constitution; and it will likely burden *InterState Commerce* and stifle Innovation.

7) Sections of the proposed “*Lummis-Gillibrand Responsible Financial Innovation Act*” misunderstands the nature and functions of DAOs, is highly ineffective as explained in this article, and “.....Requires community-led decentralized autonomous organizations (DAOs) to classify as business entities that must be incorporated as an LLC, corporation, partnership, foundation, cooperative, or similar organization.....”. The “*Lummis-Gillibrand Responsible Financial Innovation Act*” proposals for regulating DAOs as corporate legal entities is also constitutionally deficient because it probably violates the *Substantive Due Process Clause*, the *Equal Protection Clause* and the *Right-To-Contract Clause* of the US Constitution; and it will likely burden *InterState Commerce* and stifle Innovation.

8) The “*Lummis-Gillibrand Responsible Financial Innovation Act*” Section-201 *De Minimis Exclusion* (exclusion of up to \$200 per transaction from a taxpayer’s gross income for use of virtual currency for payment for goods and services) is most probably an unconstitutional violation of the *Substantive Due Process Clause* and the *Equal-Protection Clause* of the US Constitution; and it may be a burden on *Interstate Commerce* in circumstances that involve states that have high concentrations of crypto-users and states that don’t. In the USA, the *De Minimis Exclusion Clause* is not applied to other types of commerce such as Barter exchanges, Securities swaps, Commodities swaps, etc..

9) Section-408 (Payment Stablecoins) states that a payment stablecoin issued by a depository institution (bank/credit union) is not a commodity or a security, and that is wrong, and will likely create similar problems mentioned above in this section.

10) Section-409 (Financial Institutions Definition) classifies digital asset exchanges as ‘financial institutions’ under the *Bank Secrecy Act*, which imposes regulatory requirements on them regardless of their sizes and the types of Digital Assets traded in their platform. NFT exchanges shouldn’t be classified as Financial Institutions. Digital-asset exchanges that handle less than a threshold volume of monthly digital-assets trading shouldn’t be classified as Financial Institutions. See the three *Theories of Regulation* introduced in this article. Note that DeFi products (staking, farming) are more like commodities-lending and securities-lending, and are very different from traditional banking. Such crypto companies shouldn’t have access to the US Federal Reserve’s (and other Central Banks’) “windows”.

11) Section-601 requires “...all issuers of payment stablecoins to: (1) maintain high-quality liquid assets valued at 100% of the face value of all outstanding payment stablecoins; (2) provide public disclosures on the assets backing the stablecoin and their value; and (3) have the ability to redeem all outstanding payment stablecoin at par in legal tender. Establishes a detailed, optional process for depository institutions (banks/credit unions) to issue a payment stablecoin.....”. Section 601’s definition of “liquid assets” isn’t sufficient, and rather should specifically mention cash.

12) Section-603 (Digital Yuan on Government Devices) maybe deemed to be discriminatory and in violation of International Trade laws and the US Constitution (the *Equal Protection Clause*, the *Right-To-Contract Clause*, the *Substantive Due Process Clause* and the *Interstate Commerce Clause*) because it singles out the Digital Yuan, but doesn’t apply to CBDCs issued by other countries that are or maybe deemed to be national security risks (countries that are adversaries of the US; and or allies of adversaries of the US such as Russia, Kazakhstan, Belorussia, Venezuela, Iran, Turkey,

Syria, Philippines, Libya, North Korea, etc.), or countries that have been sanctioned by the US government.

13) Sections 603-606 allow existing and new banks to be chartered solely to provide Stablecoins. However, Sections 603-606 maybe vague because they don't specify the permitted underlying assets of such stablecoins. Secondly, stablecoins can be problematic especially when backed by illiquid assets; and because of their nature/structure, they increase systemic risks (correlation) and Financial Instability (*Domino Effects*).

14)

16. The Case For Mandatory/statutory Minimum Capital Requirements And New Regulations (Insurance Requirements; Disclosure Requirements; etc.) For Cryptocurrency Issuers, “Pegged-Coin DFPCs”, “Stablecoin DFPCs”, “Liquidity-Provider DFPCs”, “DEX DFPCs” And “Large-Volume-Coin DFPCs”.

“Pegged-Coin DFPCs” are companies that sponsor/co-sponsor and or create and or launch coins for which they promise or give the impression that such coins are pegged to a fiat currency and or to another coin. “Stablecoin DFPCs” are companies that sponsor/co-sponsor and or create and or launch coins for which they promise or give the impression that such coins are backed by any type of underlying assets (such as fiat currencies, NFTs, art, real estate, coins and or algorithms). “Large-Volume-Coin DFPCs” are companies that sponsor/co-sponsor and or create and or launch coins whose market-value is in the top-20th percentile of all cryptocurrencies. “Liquidity-Provider DFPCs” are companies that sponsor/co-sponsor and or create Liquidity-Pools and DeFi Farms where customers pool or stake their tokens in exchange for advertised returns or payments. “DEX DFPCs” are blockchain companies that provide platforms that are used to execute IDOs, IGOs and DEX offerings by themselves and for third-parties.

The following factors may justify governments' imposition of new regulations and mandatory minimum capital requirements on “Pegged-Coin DFPCs”, “Stablecoin DFPCs” and *Large-Volume-Coin DFPCs*, DEX DFPCs and “Liquidity-Provider DFPCs”:

- i) The sudden crash of prices of LUNA And UST (both cryptos were developed and marketed by South Korea's Terra Labs) during May 2022 which wiped out more than \$50 billion of market-value in crypto markets, and the problems inherent in, and the “run” on Tether during May 2022 justify imposition of minimum capital requirements and insurance policies on crypto-market participants.
- ii) The repeated failures of algorithms used by “Pegged-Coin DFPCs” and “Stablecoin DFPCs” – such as the algorithms developed by Terra Labs for UST and LUNA coins. Those algorithms were supposed to maintain specific price/exchange-rate relationships.
- iii) The many incidences or “Rug-Pulls” and “exit-scams” by sponsors/creators of cryptocurrencies around the world.
- iv) The harmful activities of Crypto-Whales (investors that own large chunks of a specific crypto) which moves the prices of cryptos.
- v) Investors who contribute tokens to Farms or Pools are typically promised a specific return (APR or APY) by DCCs/DFPCs, but such returns cannot be achieved (or are much less probable) if there are sudden declines in the prices of the tokens in the Pool, or tokens pegged to the tokens in the Pool.
- vi) Pooling and Farming can significantly increase Systemic Risk and Financial Instability in digital asset markets simply because: 1) they can increase correlations and psychological associations between and among digital assets, and 2) they can increase negative perceptions coins and riskiness in times of increasing or declining token prices; 3) they affect not only the prices of cryptocurrencies but also prices and correlations of other Digital Assets such as NFTs, FNFTs, etc. (whose prices are often quoted in cryptocurrency units and not in fiat currencies).
- vii) The extremely high intra-day and medium-term volatilities of the prices of many cryptocurrencies.
- viii) Many cryptocurrency issuers publicly make actionable promises (about their current status and future operations and intentions) which they don't fulfill. That can create significant Reputation-Deficits that foster crime, actionable misconduct and un-necessary/harmful volatility in crypto-markets.
- ix) Most cryptocurrency issuers don't disclose the names/identities of their founders, top-5 corporate officers and top-ten shareholders/crypto-holders. That can create huge Reputation-Deficits and

Information-Deficits that foster/facilitate crime, actionable misconduct and un-necessary/harmful volatility in crypto-markets.

x) Most cryptocurrency issuers and DCCs/DFPCs don't publicly disclose their financial statements. That can create huge Reputation-Deficits, Information-Deficits and Percived-Risk that fosters/facilitates crime, actionable misconduct and un-necessary/harmful volatility in crypto-markets.

xi) Most DFPCs seem to use different algorithms to calculate the number of Liquidity-Provider (LP) tokens that they award in Pooling (awarded to customers that "stake" their cryptos in Pools), and they also use different algorithms to calculate returns for Farming. Most LPs aren't tradeable and aren't recognized by many types of crypto wallets. That creates substantial and limiting lack of uniformity that reduces liquidity in markets. Ideally, there should be a uniformly applied algorithm for calculating the minimum number of LP tokens awarded in Pooling (DCCS/DFPCs can choose to award higher-than-normal LP tokens, but customers should be assured of a generally-accepted minimum number of LP tokens for each type of Pooling transaction for any specific crypto pair).

xii) Many of the disclosure requirements of Reg.-A and Reg. A+ can be adopted for cryptocurrency issuers.

xiii) Many cryptocurrency issuers promise to holders/customers, various types of "Reflections", dividends, token-burning, buyback-and-Burn transactions and revenue-sharing which they don't or may not deliver. Many of these holders/customers are too poor and or don't have the knowledge/sophistication to complain to government agencies; and the government agencies are unlikely to take action unless many customers/holders complain within a short period of time. Also, while most crypto issuers and DFPCs/DCCs are based in developed countries or large emerging markets countries, many of their holders/customers are based in smaller countries.

xiv) While there are many auditing/certification firms that audit blockchain companies (such as CertIK): 1) the blockchain systems of most active DCCs/DFPCs and crypto-issuers haven't been audited; 2) such blockchain audits may not verify the built-in smart-contracts for "Reflections", dividends, token-burning, buyback-and-Burn transactions and revenue-sharing; 3) ; 4)

xv)

16.1. Complex Systems And Nonlinearity Issues Inherent In Regulating DeFi Under The "Traditional Weak-Form Truncated-Free-Markets Theories-Of-Regulation".

This section develops regulatory frameworks for DeFi under the *Traditional Weak-Form Truncated-Free-Markets Theories* which are characterized as follows:

i) Investor Protection is a major element of government policies and regulation. Investors are assumed to be unsophisticated and uneducated, with limited research resources.

ii) Government intervention in markets is required.

iii) Government bears and or is expected to bear substantial losses for market-failures and participant-fraud that creates or amplifies Financial Instability and or Systemic Risk.

iv) Courts and arbitration-fora function effectively and quickly and can resolve disputes in ways that promote economic growth and sustainability.

v) The benefits and weaknesses/harms of ordinary regulation or free-market based regulation are often truncated (limited and or distorted) by political processes (see Nwogugu (2021a;b)), political lobbying, corruption/bribery, *WTAL* (see Nwogugu (2006)), *MN-TU* (see Nwogugu (2019c)), individual/group *Regret-Minimization* (see Nwogugu (2006)) and individuals' Risk-Perception.

vi) Some products are very complex, and thus issuers and intermediaries/platforms bear the responsibility of classifying products into risk categories and ensuring that investors invest only in products that match their wealth and risk-profile (the "*Selection-Task*").

vii) Issuers and intermediaries are expected to bear losses for sub-standard disclosure. That is, disclosure deficiencies are a major "Investment risk" for which issuers, intermediaries/banks/ICO-platforms are responsible.

viii) Market volatility is a given risk that can increase Financial Instability and Systemic Risk, and one of the many purposes of Regulation is to monitor and control volatility.

ix) Regulation should also address and promote Liquidity, but firms/persons that intentionally reduce liquidity and or distort crypto-markets aren't sufficiently penalized.

x) Enforcement is a direct function of Regulation, Political Capital and Consumer Sentiments.

- xi) Regulation drives Enforcement and vice-versa.
- xii) “Aggregation” (of transactions, participants and entities) should increase the efficiency of Regulation and Enforcement (due to better information flows, transparency, peer monitoring, peer pressure; etc.).
- xiii) “Aggregation” (of transactions, participants and entities) should reduce Nonlinear-Risks (due to better transparency, information flows, peer monitoring, peer pressure; etc.).

This *Traditional Weak-Form Truncated-Free-Markets Theories-Of-Regulation* explains and reflects the historical patterns of regulation that were implemented by state and federal governments in many developed and developing countries for various exchange-traded asset classes such as stocks, bonds, commodities and currencies. However and as of 2022, no or very few countries had implemented the *Traditional Weak-Form Truncated-Free-Markets Theories* in cryptocurrency markets.

Given the events and financial/economic crisis of 1995-2022 around the world, the effectiveness of these *Traditional Weak-Form Free-Markets Theories-Of-Regulation* is doubtful, especially in terms of Sustainable Growth, Financial Stability and promoting Inequality-reduction as illustrated by the following:

- i) Such theories can generate significant volumes of unnecessary lawsuits – due to complexity of regulations, mis-interpretation of statutes/regulation and legislative-intent, Regulatory Capture, political lobbying, bribery/corruption, over-zealous lawyers, un-informed or corrupt judges; etc..
- ii) They can make investors to become complacent, and heavily and unnecessarily dependent on third-parties and the legal system.
- iii) They encourage and or facilitate misconduct by lawyers and judges.
- iv) They result in regulations/statutes and judicial/arbitration proceedings that can have significant *Information Content*, and thus can increase Systemic Risk and Financial Instability.
- v) They result in disclosure requirements that can have significant *Information Content*, and thus can increase Systemic Risk and Financial Instability.
- vi) They grant banks and intermediaries an implicit “*Put Option*” (a floor for the values of their assets) partly because the government will always intervene to bailout failing banks/intermediaries. This Put Option can cause complacency, weak Internal Controls, excessive executive compensation and excessive risk-taking at banks/intermediaries.
- vii) They can distort employee motivation and incentives at banks/intermediaries and crypto-issuers.
- viii) Despite capital reserve requirements for other types of assets, there have still been financial-distress and bankruptcies of banks and financial intermediaries around the world during the last fifty years. That is a significant lesson for the regulation of crypto-markets.

Table-1: Elements Of "Traditional Weak-Form Truncated-Free-Markets" Theories-Of-Regulation.

<u>Regulation</u>	<u>Cryptocurrency Issuers</u>	<u>Pegged-Coin DFPCs</u>	<u>Stablecoin DFPCs</u>	<u>Liquidity-Provider DFPCs</u>	<u>DEX DFPCs</u>	<u>Large-Volume-Coin DFPCs</u>
Are Blockchain Audits by third-parties required ?	No, but audited companies can pay lower Capital Reserve payments and lower deductions from their ICO/IDO/IGO offering proceeds.	Yes, annually.	Yes, annually.	Yes, annually.	Yes, annually.	Yes, annually.
Are Algorithm audits by third-parties required ?	No, but audited companies can pay lower Capital Reserve payments and lower deductions from their ICO/IDO/IGO offering proceeds.	No, but audited companies can pay lower Capital Reserve payments and lower deductions from their ICO/IDO/IGO offering proceeds.	No, but audited companies can pay lower Capital Reserve payments and lower deductions from their ICO/IDO/IGO	No, but audited companies can pay lower Capital Reserve payments and lower deductions from their ICO/IDO/IGO	No, but audited companies can pay lower Capital Reserve payments and lower deductions from their ICO/IDO/IGO	No, but audited companies can pay lower Capital Reserve payments and lower deductions from their ICO/IDO/IGO

			offering proceeds.	offering proceeds.	offering proceeds.	offering proceeds.
Registration (at state and federal government levels) required ?	Only for large coin issuers	Yes	Yes	Yes	Yes	Yes
Mandatory Licensing required (at state and or federal levels) ?	Not applicable.	Yes	Yes	Yes	Only for large DEX DFPCs	Yes
Capital Reserve Requirement ?	No	Yes	Yes	Yes	Yes	Yes
Capital reserve to be deposited at government regulator ?	Only for Stablecoin issuers.	Yes	Yes	Yes	Not applicable	
Capital Reserve cannot be used as collateral and cannot be pledged.	Yes	Yes	Yes	Yes	Yes	Yes
Capital reserve should be cash that is readily available to compensate coin holders for specific types of losses that exceed a specified monetary amount.	Yes	Yes	Yes	Yes	Yes	Yes
Capital Reserve should be proportional to: 1) the monetary volume of coins issued by the DFPC; 2) the nature of the pegs and stablecoins offered by the DFPC; 3) the size of the DFPC's Farms and Pools and the monetary amounts and volatilities of coins in such pools; 4) the price performance and volatility of the coins and crypto-derivatives issued by the DFPC; 5) the price performance and volatility of coins and crypto-derivatives owned and or borrowed by the DFPC, all of which must be disclosed in its Balance Sheet.	Not applicable.	Yes	Yes	Yes	Only for large DEX DFPCs	Yes
DFPCs whose blockchain systems are audited/certified (eg. By CertiK) in each calendar quarter or half-year can be allowed to make lower capital reserve deposits	Not applicable.	Yes	Yes	Yes	Yes	Yes
A percentage of cryptocurrency offering (ICO, IDO, IGO) proceeds must be kept in a reserve at a government-managed Restitution Fund ? The Restitution Fund shall make payments only to coin-holders that are victims of misconduct and crime/misconduct induced crypto price-crashes (not all price crashes will be compensated for).	Yes	Yes	Yes	Yes	Yes	Yes
The company must procure insurance policies that are provided by insurers that are rated (credit ratings) AAA or AA. The insurance policies must cover Rug-Pulls, Fraud, manipulations, exit-scams, ineffective smart-contracts and price-crashes in stated minimum-coverage amounts that are specified by government regulators.	Not applicable.	Yes	Yes	Yes	Yes	Yes
The payouts/proceeds of such insurance policies must be paid to a government-managed Restitution Fund for coin-holders that are victims of Rug-Pulls and price crashes (the named insurance beneficiary should be the Restitution Fund).						
The company must disclose (at KYC standards applied to their customers) the verified names/identities of its founders, top-five corporate officers, board-members and top-ten shareholders/crypto-holders on their websites (wallet addresses can be used as ID for only the top-ten crypto-holders).	Yes	Yes	Yes	Yes	Yes	Yes
The company must publicly disclose its audited half-year and audited full-year financial statements in its website.	Yes	Yes	Yes	Yes	Yes	Yes
All cryptocurrency issuers whose crypto market-value or assets exceed pre-specified thresholds must publicly disclose their un-audited half-year and or audited full-year financial statements in both their websites and in the websites of their associated "Pegged-Coin DFPCs", "Stablecoin DFPCs", Large-Volume-Coin DFPCs, or DEX DFPCs.	Yes	Yes	Yes	Yes	Yes	Yes
All cryptocurrency issuers must publicly disclose in their websites and in the websites of their associated "Pegged-Coin DFPCs", "Stablecoin DFPCs", Large-Volume-Coin DFPCs, or DEX DFPCs, the specific rights, interests (ownership; cashflow; dividends, voting-rights; etc.) and benefits and obligations granted to them by each cryptocurrency unit. This disclose must be made in plain English language and should be separate from the issuer's technical documents/road-maps.	Yes	Yes	Yes	Yes	Yes	Yes
All cryptocurrency issuers and their associated "Pegged-Coin DFPCs", "Stablecoin DFPCs", Large-Volume-Coin DFPCs, and DEX DFPCs must publicly disclose any incidences of Cybersecurity attacks in their systems/software (see Note-1 below).	Yes	Yes	Yes	Yes	Yes	Yes

Blockchain companies whose blockchain systems are audited/certified (eg. by CertIK) in each calendar quarter or half-year can be allowed to make lower Capital Reserve deposits (and ot contribute lower percentages of their ICO/IDO/IGO offering proceeds to the Restitution Fund).	Yes	Yes	Yes	Yes	Yes	Yes
Ideally, there should be a standard uniformly applied algorithm for calculating the minimum number of LP tokens awarded in each new “Pooling” transaction. Individual DFPCs can decide to issue greater amounts of LP tokens for any specific Pooling transaction, but customers should be assured of a generally-accepted minimum at all DFPCs.	Yes	Yes	Yes	Yes	Yes	Yes
There should be a standard uniformly applied algorithm for calculating and allocating the returns for Farming for various types of Cryptos and LP tokens. Many DCCs/DFPCs routinely make actionable promises in their webpages about investment returns that customers can earn from their Farming and Pooling operations.	Yes	Yes	Yes	Yes	Yes	Yes
LP tokens should be tradable and treated just like every other crypto. Otherwise, the LP tokens simply work against their main objective of enhancing liquidity because their holders tie up coins in Pools which may not be used at all or minimally. That is, to avoid potentially harmful zero-sum outcomes, providing liquidity for one class of coin-holders should not reduce the liquidity of another class of coin-holders.	Yes	Yes	Yes	Yes	Yes	Yes
Apart from the minimum insurance requirements mentioned above, there should be mandatory minimum capital requirements and insurance requirements for DFPCs that offer Farming and Pooling that exceed a state maximum amount.	Yes	Yes	Yes	Yes	Yes	Yes
Penalties, taxes and additional capital requirements should be imposed on DFPCs/DCCs that require the use of two different cryptos for staking in Pooling transactions. That is because such transactions greatly increase the correlations and psychological association between such pairs of Cryptos, and also can drastically change Risk-Perceptions of crypto-market participants (with regards to values, relative-values, riskiness, volatility and returns of such crypto pairs).	Yes	Yes	Yes	Yes	Yes	Yes
Customer-service - must display customer service email (Discord, Telegram and similar platforms are optional).	Not applicable.	Yes	Yes	Yes	Yes	Yes
Negative Externalities caused by DCCs/DFPCs can be handled by taxing their transactions and depositing the tax proceeds in Special Resolution Funds.	No, or not in the majority of instances.	No, or not in the majority of instances.	No, or not in the majority of instances.	No, or not in the majority of instances.	No, or not in the majority of instances.	No, or not in the majority of instances.
“Self-Qualification” and “Self-Selection” are the expected evolving investor approach to decision-making and choice, Natural Selection applies, and investors/issuers/DFPCs should bear their Selection-Burden. There can be “private” market mechanisms that reduce the incidence of such misconduct. The Pain-Of-Losses (losses incurred by market-participants) and Reputational-Capital (of crypto-issuers, DCCs/DFPCs and major crypto-investors) serves as guidance for market participants	No, or not in the majority of instances.	No, or not in the majority of instances.	No, or not in the majority of instances.	No, or not in the majority of instances.	No, or not in the majority of instances.	No, or not in the majority of instances.
Many of the disclosure requirements of Reg.-A and Reg. A+ (US securities laws) can be modified and adopted for cryptocurrency issuers.	Yes	Yes	Yes	Yes	Yes	Yes

Source: Michael C. Nwogugu

Notes:

1. See: US SEC (May 2022). *Cybersecurity Risk Management, Strategy, Governance, and Incident Disclosure*. 17 CFR Parts 229, 232, 239, 240, and 249 [Release Nos. 33-11038; 34-94382; IC-34529; File No. S7-09-22]. <https://www.sec.gov/rules/proposed/2022/33-11038.pdf>.
 See: Winston & Strawn LLP (May 23, 2022). *SEC Proposes New Rules Requiring Cybersecurity Disclosures*. <https://www.winston.com/en/privacy-law-corner/sec-proposes-new-rules-requiring-cybersecurity-disclosures.html>.

16.2. Complex Systems And Nonlinearity Issues Inherent In Regulating DeFi Under “Semi-Strong-Form Truncated Free-Markets Theories-Of-Regulation”.

Given the foregoing disadvantages of *Traditional Weak-Form Free-Markets Theories-Of-Regulation*, DeFi can be regulated under *Semi-Strong-Form Truncated Free-Markets Theories* which have the following common/unifying characteristics:

- i) Investor Protection is a concern but isn’t a major element of government policies and regulation. Investors are assumed to be sophisticated and educated, and with significant research resources.
- ii) Government intervention in markets should be minimal and targeted.
- iii) Government isn’t expected to bear substantial losses for market failures, and “reckless” investors should bear such losses either directly or through privately built market-mechanisms. That is, there should be market-mechanisms that ensure that such loss-transfers.

- iv) Cryptocurrencies should be banned where any of these conditions exist: 1) the benefits of cryptocurrencies to the country are far outweighed by the social, psychological and economic costs and crimes/misconduct associated with cryptocurrencies; 2) the government lacks the expertise and resources to regulate cryptocurrencies and to enforce regulations/statutes; 3) the central bank cannot sufficiently manage cryptocurrency markets within its monetary policy scope/powers/systems and associated fiscal policies.
- v) The benefits and weaknesses/harms of ordinary regulation or free-market based regulation are often truncated (limited and or distorted) by political processes (see Nwogugu (2021a;b)), political lobbying, corruption/bribery, *WTAL* (introduced in Nwogugu (2006)), *MN-TU* (see Nwogugu (2019c)), individual/group *Regret-Minimization* (see Nwogugu (2006)) and individuals' Risk-Perception.
- vi) Courts and arbitration fora may or may not function effectively and quickly, provide “*Selective Justice*” and may resolve disputes in ways that promote economic growth and Financial Stability, and may occasionally be subject to political interference (especially in jurisdictions where judges are elected).
- vii) Some products are very complex, but investors who don't understand them shouldn't invest in them. That is, “*Self-Qualification*” and “*Self-Selection*” is the expected investor approach to decision-making and choice, and investors should bear the *Selection-Burden*. *Self-Qualification* refers to states/processes where investors bear the burden of disclosure, appropriateness of investments, identification of fraud and due-diligence. *Self-Selection* (a new type of process in Complex System) is a set of conditions/processes wherein: 1) crypto-issuers bear the moral and legal burden of deciding the appropriate features of cryptos/smart-contracts and whether or not to participate in crypto markets and 2) investors bear the moral and legal burden of deciding the appropriate crypto investment/smart-contract and whether or not to participate in crypto markets. *Natural Selection* (Complex Systems) can also ensure the demise of “weak” investors and issuers, and the survival of skilled investors and crypto-issuers. *Selection-Burden* refers to costs/losses incurred by crypto-market participants due to *Self-Qualification* and *Self-Selection*.
- viii) Issuers, intermediaries/banks and Investors are expected to bear direct and indirect losses for sub-standard disclosure. That is, disclosure deficiencies are a major “Investment risk” for which investors as just as responsible for, as issuers, intermediaries/banks/ICO-platforms are responsible. Thus, “*Self-Qualification*” and “*Self-Selection*” are part of the key decision factors, *Natural Selection* applies.
- ix) Market volatility is a given risk, and monitoring/controlling volatility isn't a major objective of Regulation. That is, “*Self-Qualification*” and “*Self-Selection*” are the expected evolving investor approach to decision-making and choice, *Natural Selection* applies, and investors/issuers/DFPCs should bear their *Selection-Burden*; and the *Pain-Of-Losses* (losses incurred by market-participants) and *Reputational-Capital* (of crypto-issuers, DCCs/DFPCs and major crypto-investors) serves as guidance for market participants.
- x) Liquidity isn't a major objective of Regulation, and Liquidity should be left to market forces and “private” market mechanisms. Firms/persons that intentionally reduce liquidity and or distort/manipulate markets can be sufficiently penalized either by regulations and or “private” market-mechanisms (for example, some crypto issuers reduced the negative effects of “Crypto Whales” by taxing transaction that use their tokens, and contributing those tokens to Liquidity-Pools).
- xi) Enforcement is a direct function of Regulation, Political Capital and Consumer Sentiments.
- xii) Regulation drives Enforcement and vice-versa.

The *Semi-Strong-Form Truncated-Free-Markets Theories* can explain the state of Regulation of cryptocurrencies in many Emerging Markets countries (such as Nigeria, China, Russia, Mexico, Brazil, Thailand, Philippines, Singapore, India, Vietnam, Argentina, etc.) during 2017-2022.

Thus, under these *Semi-Strong-Form Truncated-Free-Markets Theories*, some or many of the specific “problems” inherent in DeFi are simply risks that investors can knowingly avoid by their own choices – the following are corresponding responses (under the *Strong-Form Truncated-Free-Markets Theories*) to the above-mentioned “problems” in DeFi markets (mentioned in Section-__ above):

- i) Capital requirements (for DFPCs/DCCs) aren't necessary and crypto investors should be able to conduct their own due diligence. Negative Externalities caused by DCCs/DFPCs can be handled by taxing their transactions and depositing the tax proceeds in Special Resolution/Restitution Funds.
- ii) "Self-Qualification" and "Self-Selection" are relevant but Investor Protection is an important economic and political issue in decision-making, enforcement-efforts and choice. Issuers/DFPCs are the main instigators/causes of crypto risks and should bear some of their *Selection-Burden*. Disclosure can be very helpful in managing Financial Instability, Systemic Risk and market Volatility. There can be "private" market mechanisms that reduce the incidence of misconduct. The *Pain-Of-Losses* (losses incurred by market-participants) and *Reputational-Capital* (of crypto-issuers, DCCs/DFPCs and major crypto-investors) serves as guidance for market participants
- iii) Mandatory Disclosure should be encouraged (and in worst-case scenarios, required) as outlined in Section-____.
- iv) Auditing/certification of blockchain companies (by auditors such as CertIK) should be encouraged and where feasible, made mandatory.
- v) Cryptocurrency activities shall be banned where: 1) the associated incidences of crime are very high and or increasing and or are highly publicized; 2) the cost of crime causes by cryptocurrencies far outweighs any benefits to the government and its indigenes; 3) most local participants don't have sufficient knowledge or computing power to participate in crypto markets effectively; 4) the government agencies don't have sufficient knowledge or resources to manage the monetary policy and fiscal policy effects/implications of Cryptocurrencies.

Table-2: Elements Of "Semi-Strong-Form Truncated-Free-Markets" Theories-Of-Regulation.

Regulation	Cryptocurrency Issuers	Pegged-Coin DFPCs	Stablecoin DFPCs	Liquidity-Provider DFPCs	DEX DFPCs	Large-Volume-Coin DFPCs
Are Blockchain Audits by third-parties required ?	No, but audited companies can pay lower Capital Reserve payments and lower deductions from ICO/IDO/IGO offerings.	Yes, annually.				
Are Algorithm audits by third-parties required ?	No, but audited companies can pay lower Capital Reserve payments and lower deductions from ICO/IDO/IGO offerings.	No, but audited companies can pay lower Capital Reserve payments and lower deductions from ICO/IDO/IGO offerings.	No, but audited companies can pay lower Capital Reserve payments and lower deductions from ICO/IDO/IGO offerings.	No, but audited companies can pay lower Capital Reserve payments and lower deductions from ICO/IDO/IGO offerings.	No, but audited companies can pay lower Capital Reserve payments and lower deductions from ICO/IDO/IGO offerings.	No, but audited companies can pay lower Capital Reserve payments and lower deductions from ICO/IDO/IGO offerings.
Registration (at state and federal government levels) required ?	Only for large coin issuers	Yes	Yes	Yes	Yes	Yes
Mandatory Licensing required (at state and or federal levels) ?	Not applicable.	No	No	No	Only for large DEX DFPCs	No
Capital Reserve Requirement ?	Not applicable.					
Capital reserve to be deposited at government regulator ?	Not applicable.					
Capital Reserve cannot be used as collateral and cannot be pledged.	Not applicable.					
Capital reserve should be cash that is readily available to compensate coin holders for specific types of losses that exceed a specified monetary amount.	Not applicable.					
Capital Reserve should be proportional to: 1) the monetary volume of coins issued by the DFPC; 2) the nature of the pegs and stablecoins offered by the DFPC; 3) the size of the DFPC's Farms and Pools and the monetary amounts and volatilities of coins in such pools; 4) the price performance and volatility of the coins and crypto-derivatives issued by the DFPC; 5) the price performance and volatility of coins and crypto-derivatives owned and or borrowed by the DFPC, all of which must be disclosed in its Balance Sheet.	Not applicable.					

DFPCs whose blockchain systems are audited/certified (eg. By CertIK) in each calendar quarter or half-year can be allowed to make lower capital reserve deposits.	Not applicable.	Yes	Yes	Yes	Yes	Yes
A percentage of cryptocurrency offering (ICO, IDO, IGO) proceeds must be kept in a reserve at a government-managed Restitution Fund ? The Restitution Fund shall make payments only to coin-holders that are victims of misconduct and crime/misconduct induced crypto price-crashes (not all price crashes will be compensated for).	Yes	Yes	Yes	Yes	Yes	Yes
The company must procure insurance policies that are provided by insurers that are rated (credit ratings) AAA or AA. The insurance policies must cover Rug-Pulls, Fraud, manipulations, exit-scams, ineffective smart-contracts and price-crashes in stated minimum-coverage amounts that are specified by government regulators.	Not applicable.	Yes	Yes	Yes	Yes	Yes
The payouts/proceeds of such insurance policies must be paid to a government-managed Restitution Fund for coin-holders that are victims of Rug-Pulls and price crashes (the named insurance beneficiary should be the Restitution Fund).	Not required	Not required	Not required	Not required	Not required	Not required
The company must disclose (at KYC standards applied to their customers) the verified names/identities of its founders, top-five corporate officers, board-members and top-ten shareholders/crypto-holders on their websites (wallet addresses can be used as ID for only the top-ten crypto-holders).	Yes	Yes	Yes	Yes	Yes	Yes
The company must publicly disclose its audited half-year and audited full-year financial statements in its website.	Yes	Yes	Yes	Yes	Yes	Yes
All cryptocurrency issuers whose crypto market-value or assets exceed pre-specified thresholds must publicly disclose their un-audited half-year and or audited full-year financial statements in both their websites and in the websites of their associated "Pegged-Coin DFPCs", "Stablecoin DFPCs", Large-Volume-Coin DFPCs, or DEX DFPCs.	Yes	Yes	Yes	Yes	Yes	Yes
All cryptocurrency issuers must publicly disclose in their websites and in the websites of their associated "Pegged-Coin DFPCs", "Stablecoin DFPCs", Large-Volume-Coin DFPCs, or DEX DFPCs, the specific rights, interests (ownership; cashflow; dividends, voting-rights; etc.) and benefits and obligations granted to them by each cryptocurrency unit. This disclose must be made in plain English language and should be separate from the issuer's technical documents/road-maps.	Yes	Yes	Yes	Yes	Yes	Yes
All cryptocurrency issuers and their associated "Pegged-Coin DFPCs", "Stablecoin DFPCs", Large-Volume-Coin DFPCs, and DEX DFPCs must publicly disclose any incidences of Cybersecurity attacks in their systems/software (see Note-1 below).	Yes	Yes	Yes	Yes	Yes	Yes
Blockchain companies whose blockchain systems are audited/certified (eg. by CertIK) in each calendar quarter or half-year can be allowed to make lower Capital Reserve deposits (and ot contribute lower percentages of their ICO/IDO/IGO offering proceeds to the Restitution Fund).	Yes	Yes	Yes	Yes	Yes	Yes
Ideally, there should be a standard uniformly applied algorithm for calculating the minimum number of LP tokens awarded in each new "Pooling" transaction. Individual DFPCs can decide to issue greater amounts of LP tokens for any specific Pooling transaction, but customers should be assured of a generally-accepted minimum at all DFPCs.	Not required	Not required	Not required	Not required	Not required	Not required
There should be a standard uniformly applied algorithm for calculating and allocating the returns for Farming for various types of Cryptos and LP tokens. Many DCCs/DFPCs routinely make actionable promises in their webpages about investment returns that customers can earn from their Farming and Pooling operations.	Not required	Not required	Not required	Not required	Not required	Not required
LP tokens should be tradable and treated just like every other crypto. Otherwise, the LP tokens simply work against their main objective of enhancing liquidity because their holders tie up coins in Pools which may not be used at all or minimally. That is, to avoid potentially harmful zero-sum outcomes, providing liquidity for one class of coin-holders should not reduce the liquidity of another class of coin-holders.	Not required	Not required	Not required	Not required	Not required	Not required
Apart from the minimum insurance requirements mentioned above, there should be mandatory minimum capital requirements and insurance requirements for DFPCs that offer Farming and Pooling that exceed a state maximum amount.	Not required	Not required	Not required	Not required	Not required	Not required

Penalties, taxes and additional capital requirements should be imposed on DFPCs/DCCs that require the use of two different cryptos for staking in Pooling transactions. That is because such transactions greatly increase the correlations and psychological association between such pairs of Cryptos, and also can drastically change Risk-Perceptions of crypto-market participants (with regards to values, relative-values, riskiness, volatility and returns of such crypto pairs).	Not required					
Customer-service - must display customer service email (Discord, Telegram and similar platforms are optional).	Not applicable.					
Negative Externalities caused by DCCs/DFPCs can be handled by taxing their transactions and depositing the tax proceeds in Special Resolution Funds.	Yes	Yes	Yes	Yes	Yes	Yes
“Self-Qualification” and “Self-Selection” are the expected evolving investor approach to decision-making and choice, Natural Selection applies, and investors/issuers/DFPCs should bear their <i>Selection-Burden</i> . There can be “private” market mechanisms that reduce the incidence of misconduct. The Pain-Of-Losses (losses incurred by market-participants) and Reputational-Capital (of crypto-issuers, DCCs/DFPCs and major crypto-investors) serves as guidance for market participants	Yes	Yes	Yes	Yes	Yes	Yes
Many of the disclosure requirements of Reg.-A and Reg. A+ (US securities laws) can be modified and adopted for cryptocurrency issuers.	No	No	No	No	No	No

Source: Michael C. Nwogugu

Notes:

1. See: US SEC (May 2022). *Cybersecurity Risk Management, Strategy, Governance, and Incident Disclosure*. 17 CFR Parts 229, 232, 239, 240, and 249 [Release Nos. 33-11038; 34-94382; IC-34529; File No. S7-09-22]. <https://www.sec.gov/rules/proposed/2022/33-11038.pdf>.
 See: Winston & Strawn LLP (May 23, 2022). *SEC Proposes New Rules Requiring Cybersecurity Disclosures*. <https://www.winston.com/en/privacy-law-corner/sec-proposes-new-rules-requiring-cybersecurity-disclosures.html>.

16.3. Complex Systems And Nonlinearity Issues Inherent In Regulating DeFi Under “Strong-Form Truncated-Free-Markets Theories-Of-Regulation”.

Given the foregoing disadvantages of *Traditional Weak-Form Truncated-Free-Markets Theories-Of-Regulation*, DeFi can be regulated under *Strong-Form Truncated-Free-Markets Theories-Of-Regulation* which have the following common/unifying characteristics:

- i) Investor Protection isn’t a major element of government policies and regulation. Investors are assumed to be sophisticated and educated, and with significant research resources.
- ii) Government intervention in markets should be reduced as much as possible.
- iii) Government isn’t expected to bear substantial losses for market failures, and “reckless” investors should bear such losses either directly or through privately built market-mechanisms. That is, there should be market-mechanisms that ensure that such loss-transfers.
- iv) Courts and arbitration fora don’t function effectively and quickly, and don’t resolve disputes in ways that promote economic growth and Financial Stability, and are subject to political interference (especially in jurisdictions where judges are elected), and their decisions often carry *Information Content* that increases volatility and distorts markets.
- v) The benefits and weaknesses/harms of ordinary regulation or free-market based regulation are often truncated (limited and or distorted) by political processes (see Nwogugu (2021a;b)), political lobbying, corruption/bribery, *WTAL* (introduced in Nwogugu (2006)), *MN-TU* (see Nwogugu (2019c)), individual/group *Regret-Minimization* (see Nwogugu (2006)) and individuals’ Risk-Perception.
- vi) Some products are very complex, but investors who don’t understand them shouldn’t invest in them or should invest only limited amounts in them. That is, “*Self-Qualification*” and “*Self-Selection*” is the expected investor approach to decision-making and choice, and investors should bear the *Selection-Burden*. *Self-Qualification* refers to states/processes where investors bear the burden of disclosure, appropriateness of investments, identification of fraud and due-diligence. *Self-Selection* (a new type of process in Complex System) is a set of conditions/processes wherein: 1) crypto-issuers bear the moral and legal burden of deciding the appropriate features of cryptos/smart-contracts and whether or not to participate in crypto markets and 2) investors bear the moral and legal burden of deciding the appropriate crypto investment/smart-contract and whether or not to

participate in crypto markets. *Natural Selection* (Complex Systems) can also ensure the demise of “weak” investors and issuers, and the survival of skilled investors and crypto-issuers. *Selection-Burden* refers to costs/losses incurred by crypto-market participants due to *Self-Qualification* and *Self-Selection*.

vii) Investors are expected to bear direct and indirect losses for sub-standard disclosure. That is, disclosure deficiencies are a major “Investment risk” for which investors as just as responsible for, as issuers, intermediaries/banks/ICO-platforms are responsible. That is, “*Self-Qualification*” and “*Self-Selection*” are the expected evolving investor approach to decision-making and choice, *Natural Selection* applies, and investors/issuers/DFPCs should bear their *Selection-Burden*.

viii) Market volatility is a given risk, and monitoring/controlling volatility isn’t a major objective of Regulation. That is, “*Self-Qualification*” and “*Self-Selection*” are the expected evolving investor approach to decision-making and choice, *Natural Selection* applies, and investors/issuers/DFPCs should bear their *Selection-Burden*; and the *Pain-Of-Losses* (losses incurred by market-participants) and *Reputational-Capital* (of crypto-issuers, DCCs/DFPCs and major crypto-investors) serves as guidance for market participants.

ix) Liquidity isn’t a major objective of Regulation, and Liquidity should be left to market forces and “private” market mechanisms. Firms/persons that intentionally reduce liquidity and or distort crypto-markets can be sufficiently penalized by “private” market-mechanisms (eg. Some crypto issuers have implemented mechanisms that reduce the negative effects of “Crypto Whales” – such as contributing their tokens to liquidity pools).

vi) Enforcement is a direct function of Regulation, Political Capital and Consumer Sentiments.

vi) Regulation drives Enforcement and vice-versa.

The *New Strong-Form Truncated-Free-Markets Theories* can explain the state of Regulation of cryptocurrencies in many developed countries (such as USA, Canada, Mexico, UK, Germany, Australia, Japan, etc.) during 2017-2022.

Thus, under these *New Strong-Form Truncated-Free-Markets Theories*, most or all of the specific “problems” inherent in DeFi are simply risks that investors can knowingly avoid by their own choices – the following are corresponding responses (under the *New Strong-Form Free-Markets Theories*) to the above-mentioned “problems” in DeFi markets (mentioned in Section-__ above):

i) Capital requirements are not necessary and investors should be able to conduct their own due diligence.

ii) “*Self-Qualification*” and “*Self-Selection*” are the expected evolving investor approach to decision-making and choice, *Natural Selection* applies, and investors/issuers/DFPCs should bear their *Selection-Burden*. There can be “private” market mechanisms that reduce the incidence of such misconduct. The *Pain-Of-Losses* (losses incurred by market-participants) and *Reputational-Capital* (of crypto-issuers, DCCs/DFPCs and major crypto-investors) serves as guidance for market participants

iii) Mandatory Disclosure should be required as outlined in Section-___. *Most cryptocurrency issuers don’t disclose the names/identities of their founders, top-5 corporate officers and top-ten shareholders/crypto-holders (that can create huge Reputation-Deficits and Information-Deficits that foster/facilitate crime, actionable misconduct and un-necessary/harmful volatility in crypto-markets)*

iv) Auditing/certification of blockchain companies (such as CertIK) may not be efficient - “*Self-Qualification*” and “*Self-Selection*” are the expected evolving investor approach to decision-making and choice, *Natural Selection* applies, and investors/issuers/DFPCs should bear their *Selection-Burden*; and there can be “private” market mechanisms that reduce the incidence of such misconduct.

Table-3: Elements Of "Strong-Form Truncated-Free-Markets" Theories-Of-Regulation.

<u>Regulation</u>	<u>Cryptocurrency Issuers</u>	<u>Pegged-Coin DFPCs</u>	<u>Stablecoin DFPCs</u>	<u>Liquidity-Provider DFPCs</u>	<u>DEX DFPCs</u>	<u>Large-Volume-Coin DFPCs</u>
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Are Blockchain Audits by third-parties required ?	No, but audited companies can pay lower Capital Reserve payments and lower deductions from ICO/IDO/IGO offerings.	Yes, annually.				
Are Algorithm audits by third-parties required ?	No, but audited companies can pay lower Capital Reserve payments and lower deductions from ICO/IDO/IGO offerings.	No, but audited companies can pay lower Capital Reserve payments and lower deductions from ICO/IDO/IGO offerings.	No, but audited companies can pay lower Capital Reserve payments and lower deductions from ICO/IDO/IGO offerings.	No, but audited companies can pay lower Capital Reserve payments and lower deductions from ICO/IDO/IGO offerings.	No, but audited companies can pay lower Capital Reserve payments and lower deductions from ICO/IDO/IGO offerings.	No, but audited companies can pay lower Capital Reserve payments and lower deductions from ICO/IDO/IGO offerings.
Registration (at state and federal government levels) required ?	Only for large coin issuers	Yes	Yes	Yes	Yes	Yes
Mandatory Licensing required (at state and or federal levels) ?	Not applicable.	No	No	No	Only for large DEX DFPCs	No
Capital Reserve Requirement ?	Not applicable.					
Capital reserve to be deposited at government regulator ?	Not applicable.					
Capital Reserve cannot be used as collateral and cannot be pledged.	Not applicable.					
Capital reserve should be cash that is readily available to compensate coin holders for specific types of losses that exceed a specified monetary amount.	Not applicable.					
Capital Reserve should be proportional to: 1) the monetary volume of coins issued by the DFPC; 2) the nature of the pegs and stablecoins offered by the DFPC; 3) the size of the DFPC's Farms and Pools and the monetary amounts and volatilities of coins in such pools; 4) the price performance and volatility of the coins and crypto-derivatives issued by the DFPC; 5) the price performance and volatility of coins and crypto-derivatives owned and or borrowed by the DFPC, all of which must be disclosed in its Balance Sheet.	Not applicable.					
DFPCs whose blockchain systems are audited/certified (eg. By CertIK) in each calendar quarter or half-year can be allowed to make lower capital reserve deposits.	Not applicable.	Yes	Yes	Yes	Yes	Yes
A percentage of cryptocurrency offering (ICO, IDO, IGO) proceeds must be kept in a reserve at a government-managed Restitution Fund ? The Restitution Fund shall make payments only to coin-holders that are victims of misconduct and crime/misconduct induced crypto price-crashes (not all price crashes will be compensated for).	Yes	Yes	Yes	Yes	Yes	Yes
The company must procure insurance policies that are provided by insurers that are rated (credit ratings) AAA or AA. The insurance policies must cover Rug-Pulls, Fraud, manipulations, exit-scams, ineffective smart-contracts and price-crashes in stated minimum-coverage amounts that are specified by government regulators.	Not applicable.	Yes	Yes	Yes	Yes	Yes
The payouts/proceeds of such insurance policies must be paid to a government-managed Restitution Fund for coin-holders that are victims of Rug-Pulls and price crashes (the named insurance beneficiary should be the Restitution Fund).	Not required					
The company must disclose (at KYC standards applied to their customers) the verified names/identities of its founders, top-five corporate officers, board-members and top-ten shareholders/crypto-holders on their websites (wallet addresses can be used as ID for only the top-ten crypto-holders).	Yes	Yes	Yes	Yes	Yes	Yes
The company must publicly disclose its audited half-year and audited full-year financial statements in its website.	Yes	Yes	Yes	Yes	Yes	Yes
All cryptocurrency issuers whose crypto market-value or assets exceed pre-specified thresholds must publicly disclose their un-audited half-year and or audited full-year financial statements in both their websites and in the websites of their associated "Pegged-Coin DFPCs", "Stablecoin DFPCs", Large-Volume-Coin DFPCs, or DEX DFPCs.	Yes	Yes	Yes	Yes	Yes	Yes

All cryptocurrency issuers must publicly disclose in their websites and in the websites of their associated "Pegged-Coin DFPCs", "Stablecoin DFPCs", Large-Volume-Coin DFPCs, or DEX DFPCs, the specific rights, interests (ownership; cashflow; dividends, voting-rights; etc.) and benefits and obligations granted to them by each cryptocurrency unit. This disclosure must be made in plain English language and should be separate from the issuer's technical whitepapers/documents/road-maps.	Yes	Yes	Yes	Yes	Yes	Yes
All cryptocurrency issuers and their associated "Pegged-Coin DFPCs", "Stablecoin DFPCs", Large-Volume-Coin DFPCs, and DEX DFPCs must publicly disclose any incidences of Cybersecurity attacks in their systems/software (see Note-1 below).	Yes	Yes	Yes	Yes	Yes	Yes
Blockchain companies whose blockchain systems are audited/certified (eg. by CertIK) in each calendar quarter or half-year can be allowed to make lower Capital Reserve deposits (and ot contribute lower percentages of their ICO/IDO/IGO offering proceeds to the Restitution Fund).	Yes	Yes	Yes	Yes	Yes	Yes
Ideally, there should be a standard uniformly applied algorithm for calculating the minimum number of LP tokens awarded in each new "Pooling" transaction. Individual DFPCs can decide to issue greater amounts of LP tokens for any specific Pooling transaction, but customers should be assured of a generally-accepted minimum at all DFPCs.	Not required					
There should be a standard uniformly applied algorithm for calculating and allocating the returns for Farming for various types of Cryptos and LP tokens. Many DCCs/DFPCs routinely make actionable promises in their webpages about investment returns that customers can earn from their Farming and Pooling operations.	Not required					
LP tokens should be tradable and treated just like every other crypto. Otherwise, the LP tokens simply work against their main objective of enhancing liquidity because their holders tie up coins in Pools which may not be used at all or minimally. That is, to avoid potentially harmful zero-sum outcomes, providing liquidity for one class of coin-holders should not reduce the liquidity of another class of coin-holders.	Not required					
Apart from the minimum insurance requirements mentioned above, there should be mandatory minimum capital requirements and insurance requirements for DFPCs that offer Farming and Pooling that exceed a state maximum amount.	Not required					
Penalties, taxes and additional capital requirements should be imposed on DFPCs/DCCs that require the use of two different cryptos for staking in Pooling transactions. That is because such transactions greatly increase the correlations and psychological association between such pairs of Cryptos, and also can drastically change Risk-Perceptions of crypto-market participants (with regards to values, relative-values, riskiness, volatility and returns of such crypto pairs).	Not required					
Customer-service - must display customer service email (Discord, Telegram and similar platforms are optional).	Not applicable.					
Negative Externalities caused by DCCs/DFPCs can be handled by taxing their transactions and depositing the tax proceeds in Special Resolution Funds.	Yes	Yes	Yes	Yes	Yes	Yes
"Self-Qualification" and "Self-Selection" are the expected evolving investor approach to decision-making and choice, <i>Natural Selection</i> applies, and investors/issuers/DFPCs should bear their <i>Selection-Burden</i> . There can be "private" market mechanisms that reduce the incidence of misconduct. The Pain-Of-Losses (losses incurred by market-participants) and <i>Reputational-Capital</i> (of crypto-issuers, DCCs/DFPCs and major crypto-investors) serves as guidance for market participants	Yes	Yes	Yes	Yes	Yes	Yes
Many of the disclosure requirements of Reg.-A and Reg. A+ (US securities laws) can be modified and adopted for cryptocurrency issuers.	No	No	No	No	No	No

Source: Michael C. Nwogugu

Notes:

1. See: US SEC (May 2022). *Cybersecurity Risk Management, Strategy, Governance, and Incident Disclosure*. 17 CFR Parts 229, 232, 239, 240, and 249 [Release Nos. 33-11038; 34-94382; IC-34529; File No. S7-09-22]. <https://www.sec.gov/rules/proposed/2022/33-11038.pdf>.

See: Winston & Strawn LLP (May 23, 2022). *SEC Proposes New Rules Requiring Cybersecurity Disclosures*. <https://www.winston.com/en/privacy-law-corner/sec-proposes-new-rules-requiring-cybersecurity-disclosures.html>.

17. Constitutional Law Considerations.

Given the comments herein and in Hu & Morley (2018), Grimm (2008), Nwogugu (2008a;b) and McLaughlin (2008), the current securities regulation framework (statutes, processes and framework as of 2020) for Cryptocurrencies in the USA and other countries probably violates the *Procedural Due Process Doctrine*, the *Substantive Due Process Doctrine*, the *Right-to-Contract Doctrine*, the *Interstate-Commerce Doctrine*, (“selective enforcement” and approvals based on geographic location; and increase of transaction costs based on location of Cryptocurrencies-sponsors), the *Right-Of-Association Doctrine*, and the *Equal Protection Doctrine*. Similar Constitutional Political Economy issues can occur in other countries whose constitutional laws are similar to the US Constitution. However, it is likely that due to the “political costs” of change, concerns about public opinion and successful political lobbying, many national governments have been reluctant to change, unify and or clarify the current (2020) piece-meal/conflicting and inefficient regulatory regimes for Cryptocurrencies.

18. Conclusion.

Clearly while the global crypto market presents opportunities for Economic Development, Sustainability and Inequality-Reduction, it also causes difficult regulatory and Financial Stability challenges, and isn’t being regulated effectively.

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- *Compliance With Ethical Standards* – this article complies with all ethical standards. The research doesn’t involve human participants and/or animals.

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Appendix-1: Regulation Of Cryptocurrencies Around the World (April 2022; Thomson Reuters; <https://www.thomsonreuters.com/en-us/posts/wp-content/uploads/sites/20/2022/04/Cryptos-Report-Compendium-2022.pdf>)

North America

Canada⁶⁰

Canada has approved bitcoin exchange-traded funds (ETFs). Canadian Securities Administrators (CSA)¹ and the Investment Industry Regulatory Organization of Canada (IIROC)² have issued guidance requiring crypto trading platforms and dealers in Canada to register with the local provincial regulators. In 2021 Canada adopted a clear registration regime for trading platforms that offer custodial services to Canadian clients. Several firms have registered under the new rules. Canada has also provided guidance on advertising and marketing of cryptos. The Ontario Securities Commission has actively enforced the regulations against several unregistered foreign trading platforms. The Canada Revenue Authority (CRA) generally treats cryptocurrency like a commodity for purposes of the Income Tax Act.

Mexico⁶¹

Cryptocurrencies are prohibited in Mexico. The government and the financial authority, CNBV, enacted a set of fintech laws³ in March 2018 that developed a regulatory framework and “sandbox” for virtual assets. The country has, however, taken a conservative approach to virtual assets with their relationship to existing financial system.

In June 2021 financial authorities said crypto-assets are not legal tender and not considered currencies under existing laws, warning that financial institutions that operate with them are subject to sanctions. “The financial authorities reiterate their warnings ... on the risks inherent in the use of so-called ‘virtual assets’ as a means of exchange, as a store of value or as another form of investment,” the statement said.

“The country’s financial institutions are not authorized to carry out and offer to the public operations with virtual assets, such as bitcoin, Ether, XRP and others in order to maintain a healthy distance between them and the financial system.”

Despite the restrictions, some of population has embraced cryptocurrencies. Mexico’s largest crypto exchange, Bitsos, has more than one million users on its platform.

Mexico’s Federal AML Law was amended in March 2018 to include transactions with “virtual assets” and considers them vulnerable activities under Financial Action Task Force (FATF) purposes.

The tax framework for cryptocurrencies is expected to change as there is no official position.

⁶⁰ 1 <https://www.securities-administrators.ca/news/canadian-securities-regulators-outline-regulatory-framework-for-compliance-for-crypto-asset-trading-platforms/>

2 <https://www.iiroc.ca/news-and-publications/notices-and-guidance/joint-csaiiroc-staff-notice-21-329-guidance-crypto-asset-trading-platforms-compliance-regulatory>

⁶¹ <http://www.diputados.gob.mx/LeyesBiblio/ref/lritf.htm>

United States.

The regulatory framework for cryptocurrencies is evolving despite overlap and differences in viewpoints between agencies. Although the Securities and Exchange Commission⁴ (SEC) is widely seen as the most powerful regulator, Treasury's FinCEN⁵, the Federal Reserve Board⁶ and the Commodity Futures Trading Commission⁷ (CFTC) have issued their own differing interpretations and guidance. An Executive Order from the White House⁸ released in March directs the agencies to coordinate their regulatory efforts.

The SEC often views many cryptos as securities, the CFTC calls bitcoin a commodity, and Treasury calls it a currency. To iron out the regulatory differences, confusion about definitions, and jurisdiction, the President's Working Group and the Financial Stability Oversight Council will play important roles in the development of a future regulatory framework.

The Internal Revenue Service (IRS) defines cryptocurrencies as "a digital representation of value that functions as a medium of exchange, a unit of account, and/or a store of value" and has issued tax guidance⁹ accordingly. The IRS requires investors to disclose yearly cryptocurrency activity on their tax returns.

The United States is home to the largest number of crypto investors, exchanges, trading platforms, crypto mining firms and investment funds.

Central and South America

Argentina.

In Argentina, investing in cryptocurrencies is legal. It has become a large industry and accounts for a considerable portion of the country's savings and assets. The government has issued regulations regarding cryptocurrencies related to taxation and AML/CFT. The government has proposed legislation which would create a legal and regulatory framework for crypto-assets as a means of payments, investments and transactions.

Argentina agreed with the IMF that it would adopt a program of fiscal, monetary and financial stability as it refinanced external debt in January. The promise may lead to higher taxes on cryptos. The Argentina Securities and Exchange Commission¹⁰ (CNV) will be the regulatory body with oversight responsibilities. It plans to maintain a national registry of operations, with transactions reported to the Financial Information Unit for compliance with AML requirements. Argentina's Federal Administration of Public Income and central bank have requested more information from domestic crypto exchanges and banks. Gains from cryptos are generally taxable at a 4% to 6.5% rate on gross income for each digital currency transaction.

Bolivia⁶².

The Bolivian government banned the use of cryptocurrencies such as bitcoin in 2014, in the belief that it would facilitate tax evasion and monetary instability. "It is illegal to use any kind of currency that is not issued and controlled by a government or an authorized entity," Bolivia's central bank¹¹ (BCB) said. Bolivia has refrained from cracking down on or criminalizing the holding or trading cryptos, but it has not allowed businesses and brokers seeking to provide crypto-related services in the country. The BCB has publicly said, "...crypto-assets may not be operated through the Bolivian financial system. They do not operate with the authorization of the BCB or the Financial System Supervision Authority." The BCB has said the measures were necessary to protect the public from "risks, frauds and swindles."

⁶² 11 <https://www.bcb.gob.bo/>

Brazil⁶³

In 2021 as the Brazilian real struggled, many Brazilians turned to cryptos. According to CoinMarketCap, approximately 10 million Brazilians now participate in the crypto market. Legislators in Brazil have proposed a series of regulations in the past several years and created a regulatory “sandbox.” Brazilian lawmakers have also passed legislation¹² requiring “virtual asset service providers to follow rules of communication of financial transactions, with identification of customers and recordkeeping.”

The Brazilian Securities and Exchange Commission¹³ (CVM) has approved several crypto ETFs. The government has declared that bitcoin is an asset and therefore is subject to capital gains taxes. Brazil has said that existing AML laws extend to virtual currencies in certain contexts.

The Special Department of Federal Revenue of Brazil¹⁴ has published a document on cryptocurrency taxes in the country.

The Central Bank of Brazil¹⁵ said a CBDC, the digital real, could be launched as early as 2023.

Chile⁶⁴

Lawmakers in Chile are working to develop a regulatory and oversight framework for cryptocurrencies and to potentially recognize bitcoin as legal form of payment¹⁶. The

government is also working on a CBDC. With a growing number of cryptocurrency exchanges in the country, and in the absence of a legal framework, the Central Bank and the Financial Market Commission¹⁷ has said that existing regulations are applicable to cryptocurrencies. The Chilean Internal Revenue Service (SII) is the only institution so far to have issued legislation on cryptocurrencies in Notice no 963, issued on May 14, 2018,¹⁸. The SII released a determination on the taxation of income obtained from buying and selling cryptocurrencies. It said that Tax Form 22 would require the declaration “from the sale of foreign currencies of legal course or assets digital/virtual, such as cryptocurrencies (for example, bitcoins).”

Colombia⁶⁵

⁶³ 12 <https://www.camara.leg.br/noticias/811726-comissao-aprova-pena-maior-para-lavagem-de-dinheiro-com-moedas-virtuais>

13 <https://www.gov.br/cvm/en>

14 <http://normas.receita.fazenda.gov.br/sijut2consulta/link.action?visao=anotado&idAto=100592>

15 <https://www.bcb.gov.br/en/pressdetail/2397/nota>

⁶⁴ 16 https://www.senado.cl/appsenado/templates/tramitacion/index.php?boletin_ini=14708-03

17 <https://www.cmfchile.cl/portal/principal/613/w3-article-25729.html>

18

https://www.sii.cl/normativa_legislacion/jurisprudencia_administrativa/ley_impuesto_renta/2018/ja963.htm

⁶⁵ 19 <https://www.banrep.gov.co/es/publicaciones/documento-tecnico-criptoactivos>

20 <https://www.superfinanciera.gov.co/jsp/index.jsf>

21

https://www.supersociedades.gov.co/nuestra_entidad/normatividad/normatividad_conceptos_juridicos/OFICIO_100-237890_DE_2020.pdf

22 <https://www.dian.gov.co/Prensa/ComunicadosPrensa/009-DIAN-realiza-acciones-de-fiscalizacion-a-operacion-con-criptoactivos-BITCOIN.pdf>

23 <https://www.bce.fin.ec/index.php/boletines-de-prensa-archivo/item/1028-comunicado-oficial-sobre-el->

The Colombian government has prohibited banks from providing financial services to cryptocurrency companies. The country's restrictive approach has created a challenge for the industry as firms may not use banking institutions.

The Banco de la República¹⁹, the country's monetary, exchange and credit authority, and the Superintendencia Financiera de Colombia (SFC)²⁰, the government agency responsible for overseeing financial regulation and market systems, released statements on cryptos. The authorities said cryptos are not legal tender or valid investments for supervised entities, and that firms are not authorized to advise or manage them.

The Superintendency of Corporations in Colombia²¹ has stated that companies can legally purchase cryptos such as bitcoin, although such "intangible assets" are unregulated. The country's tax authority, the Directorate of National Taxes and Customs (DIAN)²², said "virtual currencies are not money for legal purposes. However, in the context of mining activity, insofar as they are received in exchange for services and/or commissions, they correspond to income and, in any case, to goods that can be valued and generate income for those who obtain them as from be part of your patrimony and take effect in tax matters."

There is no specific legislation or prohibition on the use of cryptocurrencies, but warnings from the government have led banks to deactivate cryptocurrency-related accounts and created an environment which makes it impossible for cryptocurrency-oriented companies to operate.

Ecuador

In January 2018, the Central Bank of Ecuador²³ informed citizens that bitcoin "is not a means of payment authorized for use in the country." It clarified that bitcoin is not backed by any authority as its value is based on speculation. Financial transactions are not controlled, supervised, or regulated by any entity in the country, and this presents a financial risk to those who use it. Despite this warning, the central bank has said that "the purchase and sale of cryptocurrencies — such as bitcoin — through the internet is not prohibited."

In January 2022, Guillermo Avellan, the manager of the Central Bank of Ecuador, said there are plans to issue regulations later this year, which would bring clarity and contribute to the prevention of financial crimes such as money laundering.

El Salvador

El Salvador has established itself as a pioneer in cryptocurrencies with its 2021 adoption²⁴ of bitcoin as legal tender in the country. President Nayib Bukele has fully embraced bitcoin with promises of no income tax on cryptos and plans to build a geo-thermal powered city to try to attract bitcoin mining.

The International Monetary Fund, has urged El Salvador to reverse course, citing concerns about the country's financial stability. The move to legal tender status is widely seen as a risky experiment, with credit rating agencies downgrading the country's debt ratings. The move has also raised concerns related to AML and KYC compliance.

Peru⁶⁶

In December 2022, a new cryptocurrency law was introduced which seeks to define crypto-

uso-del-bitcoin

⁶⁶ 24 <https://www.asamblea.gob.sv/sites/default/files/documents/decretos/8EE85A5B-A420-4826-ABD0-463380E2603B.pdf>

25 <https://wb2server.congreso.gob.pe/spley-portal-service/archivo/OTM0MA==/pdf/PL0104220211220>

26 <https://www.smv.gob.pe/>

assets and regulate crypto transactions. The proposed law, “Crypto-asset Marketing Framework,” was introduced in the Peruvian Congress under the number N° 1042/2021-CR25, The law is seen as a first step to establish regulatory clarity for virtual asset service providers and others involved in blockchain and cryptography. The law proposes the creation of a public register and provides that registrants must operate lawfully in the country. It also considers the use of crypto-assets to create and incorporate companies and proposes that the assets could be considered property or intangible assets.

Thus far, the government has warned that no supervision is provided by the Securities Market Agency²⁶ (SMV), the Banking, Insurance and Pension Fund Manager Agency²⁷ (SBS), or the Peruvian Central Reserve Bank²⁸ (BCRP).

The BCRP has said that these financial assets are not legal tender, nor are they supported by central banks, so they fail fully to meet the functions of money as a medium of exchange, unit of account and store of value.

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Uruguay

There is no specific legislation on cryptocurrencies. The Uruguayan Chamber of FinTech²⁹ has, however, announced the formation of a cryptocurrency committee to analyze what future regulations might look like. The country is widely viewed as bitcoin- and blockchain-friendly with no regulations specifically banning or permitting the use of cryptocurrencies.

On October 1, 2021, the Central Bank of Uruguay issued a statement about virtual assets and outlined a process for regulating cryptos. Peru has actively embraced the industry with a view of achieving a regulatory approach that is in line with international organizations.

The central bank clarified that the assets are not considered legal tender and that a regulatory framework would be very different from that of El Salvador.

Venezuela

Prior to 2018, law enforcement arrested and seized assets of bitcoin miners but has now declared cryptocurrencies such as bitcoin legal. The Superintendency of Crypto-assets and Related Activities of Venezuela (SUPCACVEN) is the governmental agency in charge of regulations, control and protection of crypto-assets.

On September 21, 2020, Venezuela legalized bitcoin mining. Miners must, however, be registered and all activities must be overseen through the “National Mining Pool,” with the government in charge of distributing the rewards from such activities.

The government has also created its own cryptocurrency called the Petro, which is backed by the value of Venezuelan oil.

Europe

Austria⁶⁷

The Financial Market Authority (FMA) has warned³⁰ investors that cryptocurrencies are risky and that the FMA does not supervise or regulate virtual currencies, including bitcoin, or cryptocurrency trading platforms. The FMA’s regulations follow Austria’s implementation

²⁷ <https://www.sbs.gob.pe/>

²⁸ <https://www.bcrp.gob.pe/en>

⁶⁷ ²⁹ <https://fintech.org.uy/>

³⁰ <https://www.fma.gv.at/en/bitcoins/>

³¹ <https://www.bmf.gv.at/en.html>

of the Fifth Money Laundering Directive (AMLD5), defining crypto-assets as “financial instruments.” The FMA regulations provide registration requirements with respect to the issuance and selling of virtual currencies as well as transferring them, trading and exchange platforms for them as well as providers of custodian wallets.

Cryptocurrencies are legal but are not considered as legal tender. The Austrian Ministry of Finance³¹ classes cryptocurrencies as “other (intangible) commodities.” As part of a nationwide tax overhaul, Austria will apply a 27.5% capital gains tax on digital currencies, bringing the treatment of cryptos into line with that of stocks and bonds, to “streamline” conditions between asset classes.

As a member of the EU, regulations and guidance issued by the European supervisory authorities (the European Banking Authority (EBA), the European Insurance and Occupational Pensions Authority (EIOPA) and the European Securities and Markets Authority (ESMA)) apply. Virtual currencies are defined by the European Central Bank (ECB) as “a digital representation of value, not issued by a central bank, credit institution or e-money institution, which, in some circumstances, can be used as an alternative to money.”

Bailiwick of Guernsey⁶⁸

The territory of Guernsey within the British Isles is known as a Crown Dependency but is not part of the United Kingdom; rather, it is a self-governing possession of the British Crown. The Guernsey Financial Services Commission (GFSC) is the body responsible for the regulation of the finance sector.

The GFSC has warned of the risks associated with cryptos, although it has taken a light regulatory approach. According to the GFSC website³², “Virtual or crypto currencies could interact with our regulatory laws in a number of ways and therefore any application would need to be assessed on its individual merits. We will assess any application by the same criteria we use for other asset types or structures, which means we would look to ensure that key controls are appropriate — for example, around custody, liquidity, valuation of assets and investor information.”

The GFSC has said it will assess applications on individual merits against the criteria used for asset types or structures, because cryptocurrencies, “could interact with regulatory laws in a number of ways.” Applicants must demonstrate how they will comply with AML/CTF laws and rules. The GFSC has also said it would be cautious about approving applications for ICOs, and also about the establishment of any kind of digital currency exchange within the jurisdiction.

Guernsey has announced plans for crypto-asset regulations later this year. The laws are expected to include a licensing regime for VASPs. Guernsey has approved a bitcoin fund.

Bailiwick of Jersey⁶⁹

The territory of Jersey within the British Isles is known as a Crown Dependency but is not part of the United Kingdom; rather, it is a self-governing possession of the British Crown. In 2016 amendments to the Proceeds in Crime Law categorized virtual currency as a form of currency.

Financial services business such as exchanges are subject to Jersey’s AML requirements and must comply with the island’s laws, regulations, policies and procedures related to AML/CTF. Virtual currency exchanges are a supervised business and are required to register with, and fall under the supervision of, the Jersey Financial Services Commission³³ (JFSC).

Mining of cryptos on a small scale in Jersey is not taxable³⁴, although the exchange of

⁶⁸ 32 <https://www.gfsc.gg/faqs-0>

⁶⁹ 33 <https://www.jerseyfsc.org/>

34 <https://www.gov.je/TaxesMoney/IncomeTax/Technical/Guidelines/Pages/CryptocurrenciesTreatment.aspx>

cryptocurrencies to and from conventional currencies and other cryptocurrencies will be liable to income tax, if it is considered to be “trading.”

Belgium⁷⁰

The Belgian Financial Services and Markets Authority³⁵ and the National Bank of Belgium are the primary regulatory bodies for financial services in Belgium. The regulators have published guidance and warnings to the public that cryptocurrencies are not legal tender and have also issued statements regarding scams and investor protection. Belgium has, however, fostered a strong fintech community involved in digital assets and blockchain. The minister of justice has announced plans to establish a legal framework related to cryptos. In February 2022 Belgium announced new rules³⁶ for certain virtual asset service providers. The rules, which take effect in May 2022, will require service providers “to meet a series of conditions, including ones relating to their professional integrity and compliance with the anti-money laundering legislation.”

Gains on cryptocurrencies are taxable by as “miscellaneous income.”

As a member of the EU, regulations issued by the EBA, EIOPA and ESMA apply. Virtual currencies are defined by the ECB as “a digital representation of value, not issued by a central bank, credit institution or e-money institution, which, in some circumstances, can be used as an alternative to money.”

Bulgaria⁷¹

The Bulgarian National Bank³⁷ and the Bulgarian Commission for Financial Supervision³⁸ have not defined cryptocurrencies as financial instruments or electronic money.

Cryptocurrencies and bitcoin mining are not illegal and not regulated.

Bulgarian regulators have issued various standard warnings to the public and potential investors about risks associated with digital assets and initial coin offerings, and has not defined cryptocurrencies as financial instruments or legal tender for payments.

The Bulgarian National Revenue Agency³⁹ has issued a statement to define tax treatment for businesses and individuals and declare activities. Gains on cryptocurrency gains are taxed at 10%.

As a member of the EU, Bulgaria is one of only eight countries that has not adopted the euro, although national bank officials have said they intend to adopt the euro in 2024. Other EBA, EIOPA and ESMA regulations and guidance apply.

⁷⁰ 35 <https://www.fsma.be/en>

³⁶ <https://www.fsma.be/en/news/cryptocurrencies-new-rules-certain-service-providers>

⁷¹ 37 <https://www.bnb.bg/>

38 <https://www.fsc.bg/en/>

Czech Republic⁷²

In the Czech Republic, cryptocurrency is largely unregulated and is regarded as a commodity rather than a currency. It is not an official means of payment.

The Czech National Bank⁴⁰ permits Czech banks to offer crypto-related services as long as they comply with AML regulations. The Czech Republic has said cryptocurrencies present no danger to the banking system and has deferred to EU directives. The Czech Republic has, however, implemented a stricter legal model than AMLD5 requiring that every cryptocurrency-related firm be regulated by the Czech government. AML regulations apply to anyone that provides cryptocurrency services, including “those who buy, sell, store, manage, or mediate the purchase or sale of cryptocurrencies or provide other services related to such currencies as a business.”

Gains on cryptos are taxed at rates between 15 and 19%.

Denmark⁷³

The Danish Financial Supervisory Authority⁴¹ is the main regulator in Denmark. Cryptocurrency regulation is, however, influenced by EU law. An amendment in January 2020 to the Danish Act on Measures to Prevent Money Laundering and Financing of Terrorism⁴² defines a virtual currency as “a digital representation of value that is not issued or guaranteed by a central bank or a public authority, is not necessarily attached to a legally established currency and does not possess a legal status of currency or money, but is accepted by natural or legal persons as a means of exchange and which can be transferred, stored and traded electronically.”

There is no regulation of mining for virtual currencies in Denmark.

Denmark amended the AML Act in 2020 to implement AMLD5, which is designed to bring virtual currencies within the scope of the 4MLD.

The Danish central bank, the Nationalbanken⁴³, is researching the development of a digital currency, the “e-krone.”

Estonia

Estonia has been an early crypto frontrunner, with more than 1,300 crypto exchanges. In January 2021 the Ministry of Finance in Estonia proposed regulations for virtual currency service providers. The new regulations require “virtual currency service” firms to have their registered office, management and place of business located in Estonia. Such firms include wallets and trading platforms.

Although virtual currencies are not subject to securities regulation in the EU, the new draft rules attempt to address some of the regulatory issues and tighten regulation on virtual asset service providers. Firms will be subject to the supervision of the Financial Supervision Authority⁴⁴, which will require minimum capital standards, IT standards, audits and reporting. All license holders are required to re-apply for a new license.

⁷²39 <https://www.iota-tax.org/organization/national-revenue-agency>

⁴⁰ <https://www.cnb.cz/en/public/media-service/speeches-conferences-seminars/presentations-and-speeches/Cryptoassets-Central-Banks-and-the->

[Current-Monetary-System-pdf-754-kB/](#)

⁷³ ⁴¹ <https://www.dfsa.dk/>

⁴² https://www.dfsa.dk/Rules-and-Practice/AML_act_guide

⁴³ <https://www.nationalbanken.dk/en/publications/Pages/2017/12/Central-bank-digital-currency-in-Denmark.aspx>

In December 2021, Estonia's minister of finance published an informational page⁴⁵ addressing commonly asked questions about the proposed bill. "The legislation does not contain any measures to ban customers from owning and trading virtual assets and does not in any way require customers to share their private keys to wallets," the minister said. The proposed bill is seen as Estonia's answer to the FATF guidance on regulating VASPs. Income derived from cryptocurrencies in Estonia is taxable by the county's Tax and Custom Board⁴⁶.

Finland

In May 2019, Finland's Financial Supervisory Authority⁴⁷ (FSA) began regulating virtual currency exchange providers, wallets and issuers of virtual currencies. Registration is required to ensure compliance with statutory requirements surrounding reliability of the provider, protection of client money, segregation of assets, marketing and compliance with AML/CFT regulations. The FSA has warned consumers of the risky, volatile and speculative nature of the investments. The Finnish FSA has published stricter rulings regarding crypto marketing saying "Only registered virtual currency providers can market virtual currencies and related services in Finland. The marketing of virtual currencies in Finnish and in Finland is only allowed for entities registered as virtual currency providers in Finland." The list of supervised entities⁴⁸ operating in the cryptocurrency and digital currency sector is small, with fewer than 10 companies registered; although, the FSA does not advise on or restrict Finnish customers visiting foreign websites. Finland has joined the European Blockchain Partnership⁴⁹ and agreed to AMLD5.

44 <https://www.fi.ee/en/finantsinspektsioon/financial-innovation/virtual-currencies-and-ico/information-entities-engaging-virtual-currencies-and-icos>

45 <https://www.fin.ee/en/faq-how-will-new-estonian-draft-legislation-affect-virtual-assets-and-crypto#can-i-be-fined-for-o>

46 <https://www.emta.ee/eng/private-client/declaration-income/other-income/taxation-private-persons-virtual>

47 <https://www.finanssivalvonta.fi/en/publications-and-press-releases/supervision-releases/2019/virtual-currency-providers-to-be-supervised-by-the-fin-fsa--briefing-for-virtual-currency-providers-on-15-may/>

48 <https://www.finanssivalvonta.fi/en/registers/supervised-entities/>

49 <https://digital-strategy.ec.europa.eu/en/news/european-countries-join-blockchain-partnership#:~:text=On%2010th%20of%20April%202018,ser-vices%2C%20with%20the%20highest%20standards>

France

In April 2019, the French National Assembly adopted the Plan d'Action pour la Croissance et la Transformation de Entreprises⁵⁰ (PACTE – Action Plan for Business Growth and Transformation) that will establish a framework for digital asset services providers. France's Financial Market Authority⁵¹ (AMF) has adopted new rules and regulations for cryptocurrency service providers and ICOs, related to the (PACTE). Ordinance No 2020-154452, was issued on December 9, 2020, to compliment France's cryptocurrency regulations.

In June 2021, the regulations were finalized and went into effect. Firms are now subject to mandatory registration and subject to stricter KYC regulations. The rules established new AML/CFT rules related to digital assets. They imposed new requirements on crypto exchanges and prohibit anonymous accounts, expand AML/CFT and KYC obligations to better harmonize the French AML framework with Financial Action Task Force⁵³ (FATF) principles and respond to new risks associated with digital assets.

Lawmakers in France have recently debated changing the tax structure related to cryptos. Cryptos are taxed similar to movable property. Occasional traders are charged a flat tax of 30% while miners and professional traders are taxed 45%.

Germany

The German government was one of the first countries to provide legal certainty to financial institutions, allowing them to hold crypto-assets. Regulations stipulate that citizens and legal entities can buy or trade crypto-assets as long as it is done through licensed exchanges and custodians. Firms must be licensed with the German Federal Financial Supervisory Authority⁵⁴ (BaFin).

BaFin views and classifies cryptos as “units of account” within the meaning of the German Banking Act. They are therefore not legal tender, money, or foreign exchange notes or coins. The regulators have agreed, however, that they are deemed “crypto-assets” in accordance with the definition of financial instruments.

Germany has signed up to requirements under AMLD5. It has established licensing requirements for custody services. Crypto-assets are, however, based on agreement and accepted as a means of exchange or payment or as an investment, and can be transferred, stored, and traded electronically.

The German Federal Central Tax Office considers cryptocurrencies as private money for tax purposes. For individuals, gains of less than 600 euros held for less than a year are considered tax-free. Sales of cryptos held for more than a year are tax-exempt in Germany.

If neither of the conditions are met, the gains are taxed subject to ordinary income rates.

50 <https://www.gouvernement.fr/en/pacte-the-action-plan-for-business-growth-and-transformation#:~:text=The%20PACTE%20will%20facilitate%20access,need%20in%20order%20to%20innovate>

51 <https://www.amf-france.org/en>

52 <https://www.legifrance.gouv.fr/jorf/id/JORFTEXT000042636234>

53 <https://www.fatf-gafi.org/>

54

https://www.bafin.de/SharedDocs/Veroeffentlichungen/EN/Merkblatt/BA/mb_Hinweise_zum_Erlaubnisantrag_fuer_das_Kryptoverwahrgeschaefte_en.html

Greece

In the midst of the Greek debt crisis in 2015 bitcoin exploded in popularity in the country. Crypto regulation centers around Europe-wide directives. The Bank of Greece has issued and adopted European warnings and the country joined the European Blockchain Partnership. The Hellenic Capital Market Commission⁵⁵ views cryptocurrencies as portfolio assets and not currency. It requires providers of digital wallets, custody services and exchange services between cryptos and fiat currencies such as ATMs to be registered. The registry is seen as an important first step in the country’s regulatory efforts. As an EU member state, Greece has agreed to follow any EU initiatives and to AMLD5.

The Bank of Greece set up an Innovation Hub or “sandbox” to enable fintech activities and became a member of the European Forum for Innovation Facilitators (EFIF) in April 2019. There is no dedicated tax regime for blockchain or cryptocurrencies, although taxation for mining is considered income from commercial enterprises and the profits that will arise after deducting the operating expenses are taxed according to the general provisions and the applicable tax rates. Holders of cryptocurrencies are taxed at a rate of 15% plus a progressive increase as income from capital gains.

Greenland

As an autonomous Danish dependent territory under the Kingdom of Denmark, financial services, banking, and crypto laws and regulations in Greenland are within the scope of the

Danish regime.

Hungary

The National Bank of Hungary, the Magyar Nemzeti Bank (MNB),⁵⁶ has issued a public statement warning citizens who use or invest in cryptocurrencies such as bitcoin about their unregulated nature and associated risks. The MNB published a report⁵⁷ on fintech and digitalization in April 2020 that included an analysis of the fintech sector, profitability and services across the fintech market.

Cryptocurrencies are not recognized as legal tender and regulations are underdeveloped in Hungary as there are no laws specifically regulating crypto activities. Hungary has, however, joined the European Blockchain Partnership and agreed to AMLD5.

⁵⁵ http://www.hcmc.gr/el_GR/web/portal/mlaundering1

⁵⁶ <https://www.mnb.hu/foreign-warnings>

⁵⁷ <https://www.mnb.hu/letoltes/fintech-es-digitalizacios-jelente-s-final-eng.pdf>