

FINANCE REFLECTED BY FUNHOUSE MIRRORS: A PROPOSAL OF INDIRECT REGULATION (GATEKEEPERS) TO CRYPTO CENTRALIZED EXCHANGES (CEX)

LUCAS CAMINHA ¹

MARCUS PAULUS DE OLIVEIRA ROSA ²

RESUMO: Dinheiro é dinheiro, valores mobiliários são valores mobiliários, e bancos são bancos. Seus fundamentos não são alterados pelo fato de os trilhos tecnológicos serem centralizados (clássicos) ou *pseudo-descentralizados* (ativos digitais) – a canção continua a mesma. Sendo assim, esse artigo não reinventa a roda sobre *por que* devemos regular as *exchanges* centralizadas de criptoativos (CEXs), dado que há bibliografia suficiente de hoje até o século XVII para endereçar esse tema. Em vez disso, nós nos concentramos em *como* regular as CEXs, considerando que seus trilhos de tecnologia de registros distribuídos (DLT) são fora da rede (*off-the-grid*) e impedem reguladores de: (i) coletar dados de mercado (assimetria de informação); e (ii) aplicar *enforcement* prático (assimetria tecnológica/operacional). Após revisar práticas regulatórias atuais de diversos países, nós identificamos espaço para uma medida prática – nós propomos que reguladores podem impor obrigações integrais de negociação/intermediação financeira às CEXs através de um *esquema de regulação indireta/gatekeepers*, inspirado no *U.S. Foreign Account Tax Compliance Act (FATCA)*. Nesse modelo, reguladores restringiriam que instituições tradicionais (ou seja, bancos, corretoras, compensações, fundos) transacionassem com CEXs que não providenciassem evidência adequada de conformidade material com suas obrigações de negociação/intermediação financeira. Em uma anotação final, nós narramos um

369

¹ Ph.D. student in Regulatory Law from FGV Rio. M.D. in Corporate Law from Universidade do Estado do Rio de Janeiro (2020). Author of books “*The New Lending Market: Competition, Regulation and New Technologies*” (2021) and “*Fundraising by Startups*” (2020). Visiting Professor on the course of Fintech, Blockchain and Financial Technologies, from the LL.M. in Corporate Law and Capital Markets of IBMEC (2023). Legal counsel in the financial sector.

² M.D. (2023) and Ph.D. student in Corporate Law from Universidade do Estado do Rio de Janeiro (UERJ). Specialist in Infrastructure and Regulation Law from FGV Rio (2021), and in State Law from CEPED/UERJ (2011). Attorney in the Central Bank of Brazil since 2010, acting on financial regulation and payments. Visiting Professor on the course of Fintechs, Regulation and Competition in Digital Markets, from the LL.M. in Law, Innovation and Technology of FGV Rio (2022). The opinions in this paper do not necessarily represent the opinion of the Central Bank of Brazil or its Attorney’s Office.



movimento em ascensão que mira em insular os criptoativos dos sistemas financeiros, evitando riscos de contágio.

PALAVRAS-CHAVE: Finanças; Bancos; CEX; Criptoativos; Regulação financeira.

ABSTRACT: Money is money, securities are securities, and banking is banking. Their fundamentals are not changed by whether technology rails are centralized (classic) or pseudo-decentralized (virtual assets) – the song remains the same. As such, this paper does not reinvent the wheel on *why* we should regulate cryptoasset centralized exchanges (CEXs), as there is enough bibliography from today to the XVII century to go around on that. Instead, we focus on *how* to regulate the CEXs, which comes into play in a world where their distributed ledger technology (DLT) rails are off-the-grid and hinder regulators from: (i) collecting market data (*information asymmetry*); and (ii) practical enforcement (*technology/operational asymmetry*). After revising current regulatory practices from various countries, we identify grounds for a practical approach – we propose that regulators might enforce full trading/financial intermediation obligations on the CEXs by enacting an *indirect regulation/gatekeeper scheme*, as inspired by the U.S. Foreign Account Tax Compliance Act (FATCA). In this model, regulators would restrict traditional institutions (i.e., banks, broker-dealers, clearings, funds) from transacting with CEXs which do not provide adequate evidence of material compliance with their trading/financial intermediation obligations. On a final remark, we narrate a growing movement which aims to insulate non-compliant crypto from the financial systems altogether, avoiding risks of contagion.

KEYWORDS: Finance; Banking; CEX; Cryptoassets; Financial regulation.

INTRODUCTION

If we want to reap the benefits from better technology in finance, we need financial regulators who can stand up to the lobbies. (Thomas Philippon. *The Great Reversal: How America gave up on Free Markets*, 2019)³

Funhouse mirrors show us distorted versions of the people we are. We become stretched thin, or flatten down, or doubled up, you name it. An amusing experience, that is – to see alternate versions of ourselves staring back at us. Still, could some viewers perhaps find them unsettling? They see themselves, but their instincts warn them that something feels off. That the other “them” are not really them. As of right now, it is no philosopher who is being hounded by the existential

³ PHILIPPON, Thomas. *The Great Reversal: How America gave up on free markets*. Cambridge: The Belknap Press of Harvard University Press, 2019, p. 222.

meaning behind the mirrors, but rather a more practical and familiar cast of characters. After centuries of existence (and regulation), financial systems and capital markets see their own distorted reflections in the funhouse – reflections that are quickly gaining ground across investors, depositors, lenders, and borrowers. Enter cryptoasset-land.

In 2008, Satoshi Nakamoto's paper laid the foundations of Bitcoin in a movement to build a parallel monetary and payment system from scratch⁴. With the creation of the Ethereum blockchain, some argue that trust in regulated intermediaries (i.e., banks, broker-dealers, clearings) would be replaced by trust in (i) distributed ledger technology (DLT) and cryptography⁵, and (ii) smart contracts⁶. In this brave new world, instead of ordering a bank to transfer fiduciary (fiat) money from her account to the payee's account, the payor would remit her Bitcoins directly through a cryptographic peer-to-peer transaction (P2P) on a blockchain. More cryptoassets continuously emerged from these public blockchains, both unbacked coins and stablecoins⁷.

That, and true to its Greek namesake (“*kruptós*”, secret, hidden), cryptoasset-land would be an utter regulatory void where no authorities dare.

The dominant companies on crypto have always been the *centralized exchanges* (CEXs), which have transitioned from straight-forward cryptoasset trading marketplaces into one-stop-shops for all things crypto (as per the BIS, “together with third-party trading, [the CEXs] undertake proprietary trading, margin lending

⁴ NAKAMOTO, Satoshi. *Bitcoin: A peer-to-peer electronic cash system*, 2008. Available at <www.bitcoin.org/bitcoin.pdf>. Accessed 18 December 2022.

⁵ “DLT” refers to the infrastructure of the proverbial ledger in which anyone may record, validate, and audit transactions. The concept itself was born in 1991, but only came into prominence with Bitcoin and Satoshi Nakamoto. Among the diverse protocols which may run on DLT technology, the most famous/adopted one is the blockchain. See (i) SAREL, Roee; JABOTINSKY, Hadar; KLEIN, Israel. Globalize Me: Regulating distributed ledger technology. *Vanderbilt Journal of Transnational Law*, forthcoming 2023, p. 10-13; and (ii) BANK FOR INTERNATIONAL SETTLEMENTS (BIS). The Future Monetary System, In BIS Annual Economic Report 2022. *BIS*, June 2022, p. 75-102.

⁶ Smart contracts are the fundamental innovation of Ethereum blockchain network that was created by Vitalik Buterin programmer in 2013. “Smart contracts” are software codes stored on the blockchain which carry out, control, and document events and actions according to predefined terms and rules. See GOGEL, David; DESHMUKH, Sumedha; GEEST, André; et al. DeFi Beyond the Hype: The Emerging World of Decentralized Finance. *World Economic Forum (WEF)*, 2021. p. 3.

⁷ “Stablecoins are a segment of the wider crypto-asset ecosystem along with what is often referred to as unbacked crypto-assets. They were developed to address the high price fluctuations of unbacked cryptoassets such as bitcoin and ether, and their comparatively low price volatility predestines stablecoins for a number of functions where this property is needed”. In ADACHI, Mitsu; SILVA, Pedro; BORN, Alexandra et. al. Stablecoins’ role in crypto and beyond: functions, risks and policy. *ECB Macropprudential Bulletin*, issue 18, July 2022, p. 6-8.

or token issuance, and supply custody services. Often, transactions involve interactions between on-chain smart contracts and off-chain centralized trading platforms⁸). Most prominent among them are Binance, Coinbase, Kraken, Gemini, and, of course, bankrupted FTX.

We have chosen the CEXs as the main object of our research, in no part because they account for (i) over 99% of crypto transactions nowadays⁹; and (ii) almost all crypto activities and services in single entities. As a methodological remark, to properly focus on the CEXs' activities and idiosyncrasies, this paper will not address so-called decentralized finance (DeFi), which is the crypto branch that proposes no intermediaries (decentralized exchanges, for example). This DeFi-less approach was also taken by the European Union (EU) vanguard legislation Markets in Crypto-Assets (MiCA), which we will address in Chapter 3.

Crypto as a whole has seen ups and (exponential) downs in recent years, heavily marking its thematic relevance for this paper: (i) total market value shot up to \$3 trillion by November 2021¹⁰; (ii) crypto's DeFi branch shot up to \$180 billion by November 2021¹¹; (iii) money in crypto lobbying skyrocketed¹²; and (iv) the number of crypto holders went from 100 million to 300 million in 2021¹³. Well, such an overwhelming expansion of retail investors into the *zeitgeist* of the moment is actually quite the green field for empirical studies¹⁴ on how the (irrational) fear of the unknown may be overcome by the (irrational) greed of speculating over what

⁸ BIS. The Future Monetary System, In BIS Annual Economic Report 2022. *BIS*, June 2022, p. 87.

⁹ COSTA, Alex. Centralized exchanges will continue to dominate crypto, JPMorgan Says. *DailyCoin*, 30 November 2022. Available at <<https://dailycoin.com/centralized-exchanges-will-continue-to-dominate-crypto-jpmorgan-says>>. Accessed 5 December 2022.

¹⁰ CoinGecko. Available at <<https://www.coingecko.com/pt/global-charts>>. Accessed 18 June 2023.

¹¹ DeFiLlama. Total Value Locked (USD). All protocols. Available at <www.defillama.com>. Accessed 18 June 2023.

¹² See (i) THE ECONOMIST. Crypto lobbying is going ballistic. *The Economist*, 7 December 2021. Available at <www.economist.com/finance-and-economics/crypto-lobbying-is-going-ballistic/21806674>. Accessed 2 February 2023; (ii) KIERNAN, Paul. FTX's Collapse Upends Sam Bankman-Fried's Washington Play. *Wall Street Journal*, 28 November 2022. Available at <<https://www.wsj.com/articles/ftxs-collapse-upends-sam-bankman-frieds-washington-play-11669545002>>. Accessed 5 February 2023; and (iii) CHIPOLINA, Scott. Tech experts urge Washington to resist crypto industry's influence. *Financial Times*, 31 May 2022. Available at <<https://www.ft.com/content/f4b2fa1a-4057-4b10-9f3b-efa57e6bcbac>>. Accessed 1 February 2023.

¹³ CRYPTO.COM. Crypto market sizing: global crypto owners reaching 300mm. *Crypto.com*, 19 January 2022, p. 9. Available at <www.crypto.com/research/2021-crypto-market-sizing-report-2022-forecast>. Accessed 8 March 2023.

¹⁴ AUER, Raphael; CORNELLI, Giulio; DOERR, Sebastian; FROST, Jon; GAMBACORTA, Leonardo. Crypto trading and Bitcoin prices: evidence from a new database of retail adoption. *BIS Working Paper No 1049*, November 2022.

you have no idea what it is that you “hodl”¹⁵.

That said, crypto did reach \$3 trillion, and its DeFi branch did reach \$254 billion in 2021 – right before crashing back to \$1 trillion and to \$70 billion on June 2022 as “crypto winter” had come (which, to quote Paul Krugman, might be the crypto-land version of Norse mythology’s Fimbulwinter, or endless winter)¹⁶. The collapse of TerraUSD/UST (a stablecoin which lost its peg to the dollar)¹⁷, the Russia-Ukraine War, and hiked interest rates in the West had chained together a domino-effect into mayhem. Crypto providers vaporized customer money amidst fraud accusations (FTX)¹⁸, crypto lenders were defaulted on by borrowers and/or froze withdrawals by investors (Celsius, Voyager, Vault, *et cetera*)¹⁹, crypto hedge funds were plunged into liquidation (Three Arrows Capital)²⁰, and many investors were left by the wayside²¹.

Indeed, a regulatory void where no authorities dare. The entire meltdown was marked by liquidity mismatches, excessive leverage, hidden insolvencies, misrepresentations of CEXs over their asset reserves/segregations, and bailouts by

¹⁵ The nickname of the Buy and Hold investment strategy of a cryptoasset.

¹⁶ KRUGMAN, Paul. Blockchain, what are they good for? *New York Times*, 1 December 2022. Available at <<https://www.nytimes.com/2022/12/01/opinion/blockchains-what-are-they-good-for.html>>. Accessed 5 February 2023.

¹⁷ Smart contracts which are triggered during a collapse will continue to execute and cannot be stopped, intensifying volatility, accelerating deleveraging across crypto, and taking financial risks to yet another level. See BORN, Alexandra; GSCHOSSMANN, Isabella; HODBOD, Alexander; LAMBERT, Claudia; PELLICANI, Antonella. Decentralised finance – a new unregulated non-bank system? *ECB Macroeprudential Bulletin*, issue 18, July 2022, p. 5.

¹⁸ THE ECONOMIST. The spectacular fall of FTX and Sam Bankman-Fried. *The Economist*, 9 November 2022. Available at <<https://www.economist.com/finance-and-economics/2022/11/09/the-spectacular-fall-of-ftx-and-sam-bankman-fried>>. Accessed 26 April 2023.

¹⁹ ENSIGN, Rachel. They thought ‘crypto banks’ were safe, and then came the crash. *Wall Street Journal*, 23 July 2022. Available at <<https://www.wsj.com/articles/they-thought-crypto-banks-were-safe-and-then-came-the-crash-11658568780>>. Accessed 30 April 2023.

²⁰ NG, Serena; OSTROFF, Caitlin; HUANG, Vicky. Crypto hedge fund Three Arrows ordered by court to liquidate. *Wall Street Journal*, 29 June 2022. Available at <www.wsj.com/articles/crypto-fund-three-arrows-ordered-to-liquidate-by-court-11656506404>. Accessed 7 April 2023.

²¹ See (i) FORTSON, Danny. \$2 trillion crypto crash leaves victims with nowhere to go. *The Times*, 9 July 2022. Available at <www.thetimes.co.uk/article/2-trillion-crypto-crash-leaves-victims-with-nowhere-to-go-rjkk3ln9v>. Accessed March 10, 2022; and (ii) KALE, Sirin. ‘They couldn’t even scream any more. They were just sobbing’: the amateur investors ruined by the crypto crash. *The Guardian*, 12 July 2022. Available on <www.theguardian.com/technology/2022/jul/12/they-couldnt-even-scream-any-more-they-were-just-sobbing-the-amateur-investors-ruined-by-the-crypto-crash>. Accessed 18 December 2022.

shareholders²². The issuing cacophony is a testament to crypto's (i) *financial risks* in market, credit, liquidity, and operational fronts (the same ones from banking, if only aggravated by the lack of mandatory shock absorbers and buffers)²³; and (ii) *illicit activity and compliance risks* (financial crime, Ponzi schemes/frauds, market manipulation, and rampart regulatory arbitrage)²⁴.

Now, none of that is to say the financial system is perfect as it is – as crypto enthusiast fervently argue, we acknowledge that elevated transaction costs and inefficiencies in finance are a very real problem²⁵, and that gains from financial technology have been slow to reach consumers. As empirically demonstrated by NYU/Stern Professor Thomas Philippon, the price of financial intermediation per dollar in the U.S. from 1886 to 2012 (i) has been relatively the same since the XIX century; and (ii) has taken up a gradually higher representation in the country's GDP²⁶. That said, as we will conclude, creating a parallel financial system as a cyberpunk, unregulated wasteland is certainly no solution.

Introductory remarks aside, this paper will adopt the following structure:

(i) Chapter 2 summarizes the conceptual discussion over crypto and CEXs. We address the question “why regulate?” (which are mostly the reasons as to why we regulate traditional finance), and “how to regulate?” (starting by the two asymmetries suffered by authorities that try their hand);

(ii) Chapter 3 starts by schematizing the regulatory initiatives from

²² See above, notes 18, 19, 21, and 21.

²³ See (i) ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT (OECD). From “DeFi summer” to “crypto winter”: leverage, liquidations, and policy implications. *OECD on the Level*, January 2022. Available at <www.oecdonthellevel.com/2022/01/31/from-defi-summer-to-crypto-winter-leverage-liquidations-and-policy-implications/>. Accessed 30 March 2023; (ii) INTERNATIONAL MONETARY FUND (IMF). The Crypto Ecosystem and Financial Stability Challenges, In *Global Financial Stability Report*. IMF, October 2021, p. 41-57; and (iii) OSTROFF, Caitlin; HUANG, Vicky. Crypto's domino effect is widening, threatening more pain. *Wall Street Journal*, 2 July 2022. Available at <www.wsj.com/articles/cryptos-domino-effect-is-widening-threatening-more-pain-11656754202>. Accessed 30 March 2023.

²⁴ See (i) AUER, Raphael; FROST, Jon; PASTOR, Jose Maria Vidal. Miners as intermediaries: extractable value and market manipulation in crypto and DeFi. *BIS*, 16 June 2022. Available at <www.bis.org/publ/bisbull58.pdf>. Accessed 18 June 2022; and (ii) BIS. The Future Monetary System, In *BIS Annual Economic Report 2022*. BIS, June 2022, p. 87.

²⁵ HARVEY, Campbell; RAMACHANDRAN, Ashwin; SANTORO, Joseph. *DeFi and the Future of Finance*. New Jersey: John Wiley & Sons, 2021, p. 1-6.

²⁶ PHILIPPON, Thomas. *The Great Reversal: how America gave up on free markets*. Cambridge: The Belknap Press of Harvard University Press, 2019, p. 210-214.

various countries (to speak of crypto regulation is to change the tires on a moving car). After, we propose that regulators might enforce full trading/ financial intermediation obligations on the CEXs by enacting *an indirect regulation/gatekeeper scheme*, as inspired by the U.S. “*Foreign Account Tax Compliance Act*” (FATCA). In this model, regulators would restrict traditional institutions (i.e., banks, broker-dealers, clearings, funds) from transacting with CEXs which do not provide adequate evidence of material compliance with their trading/ financial intermediation obligations. After the paper’s actual proposal, we take single note of a growing movement which aims to insulate crypto from the financial systems altogether, avoiding risks of contagion, and would instead regulate CEXs as non-financial gambling platforms (which would be outside of our scope to evaluate);

(iii) Chapter 4 concludes/summarizes this paper’s contribution.

2. DATA FROM THE FUNHOUSE: WHY SHOULD WE CARE ABOUT (REGULATING) CRYPTO?

Naturally, when a market’s value is quantitatively big as demonstrated, it is already relevant by default, regardless of whether it will succeed or fail (as FTX and others have failed). Take cryptoassets’ 60% free fall from \$3 trillion to below \$0,9 trillion in 2022, for instance. To the faithful (or economically conflicted), these are just healthy market adjustments. To the sceptical, these are already the prelude to an upcoming blockchain-y tombstone for the industry, right alongside the tulip bulb tombstone from 1636 and the dotcom tombstone from 2000. Either way, there is evidence of the need to tame crypto’s financial risks – the amount of money on the table has already catapulted it from the web fringes to the front pages of mainstream media (and to, what a social study, celebrity TikTok profiles who are now facing lawsuits).

Going beyond the hype about market value and “catching on”, crypto may (or may not) bring technological efficiencies, especially revolving around the concept of programmable settlement. In other words, around facilitating settlements through “Delivery versus Payment” (DvP), “Delivery versus Delivery” (DvD), or “Payment versus Payment” (PvP). These models are technologically facilitated by the crypto logic and have potential to reduce transaction costs in finance – crypto’s infrastructure might then matter as much as its market value.

2.1. WHY REGULATE? THE SONG REMAINS THE SAME

Since the risks in crypto were already presented by the Introduction and are by now realized, especially after the 2022 meltdown, TerraUSD, and FTX, we need only address a few remarks to level readers’ knowledge (in practice, to deconstruct the most common fallacies levied against regulation).

As a general rule, any technological variant of the traditional financial system should be just as secured by financial regulation and by central banks, else we fail to deliver public policy objectives within finance – monetary stability, safety for depositors, consumer protection, anti-money laundering and financing of terrorism (AMLFT) controls, et cetera. Despite what crypto evangelists may argue, the economic nature of a product is not changed by whether its technology is centralized (classic) or pseudo-decentralized (centralized virtual asset service providers - CeVASPs). Mere digital innovation cannot ever transform the financial system into risk-free. As such, to summarize the risks in this funhouse, we may segregate them between two categories.

In terms of monetary/macroeconomic risk, an economy where goods, services and investments are traded in cryptoassets is an economy where:

(i) the central bank loses its practical ability to intervene in the supply/demand of money (especially in stabilizing prices/inflation), and in the inflow/outflow of foreign capital and exchange rates (taken to the extreme, an effect akin to a “dollarization”);

(ii) the private banks lose their place in the sun as the major depositories of savings and the major issuers of private money, potentially damaging their robustness and restricting their ability to intermediate money from savers to borrowers (in practice, resulting in loans of lower quantity, higher rates, smaller amounts, and shorter terms) .

In terms of regulatory risk, depositors and investors in CEXs become, at the same time:

(i) victims of risk from (i.a) abusive/fraudulent practices (Ponzi schemes, investments with “guaranteed returns”, actual online dating frauds, etc cetera), (i.b) failures in integrated risk management by the CEX which books their orders and custodies their cryptoassets, (i.c) insider trading and front-running by CEXs and miners rife with conflict of interest - , (i.d) misuse/losses of client assets through CEXs’ proprietary trading (when you have no mandatory asset segregation between CEX assets and client assets, you get the FTX scandal) , and (i.e) increasingly frequent/unprecedented cyber-attacks on their wallets ;

(ii) originators of risk of (ii.a) breaches in AMLFT controls - , (ii.b) tax evasion, and (ii.c) potential contagions to the traditional financial system – a concept already on the radar of the ECB , BIS , FSOC , and Basel Committee , and quite akin to Boston University Professor Rory van Loo's argument of transmission lines between real estate markets and banking

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A PROPOSAL OF INDIRECT REGULATION (GATEKEEPERS) TO CRYPTO CENTRALIZED
EXCHANGES (CEX)**

markets which brought the world down in 2008 (a crisis where a market subsegment was also responsible for pulling all others down with it).

Furthermore, some practical comparisons may assist in bring the reader closer to our train of thought. We list below the major risks to which a CEX investor becomes exposed, and how each of these risks is already addressed by correspondent regulation in the traditional centralized system.

Figure 1: Risks in the crypto ecosystem vs. how traditional finance mitigates this risk (prepared by the authors)

CEX freezes withdrawals and/or files for bankruptcy without restitution of its clients' assets	Mandatory segregation between the CEX's assets and its clients' assets in the case of their custody activities as brokers, dealers or issuers of e-money/money transmitters. In the case of acting as "banks" (i.e. like a deposit issuers just keeping a fractional reserve of clients' liquidity assets), it involves deposit guarantee schemes.
CEX loses clients' assets to hackers	The mere absence of the vulnerabilities of DLT networks (and minimum cybersecurity requirements)
CEX commits insider trading or front-running with privileged information acquired with their activities	Chinese wall and constant monitoring by securities and exchanges authorities
CEX enables flow of cryptoassets into illicit activities (money laundering and asset occultation)	KYC and AMLFT obligations, and system integration or communication between banks and judiciary/police authorities (enabling centralized communication and enforcement of legal orders by the financial intermediary to disclose client data or to freeze client assets)

This general overview of risks illustrates how the crypto ecosystem is indeed a distorted reflection of finance projected by a funhouse mirror, but alas, not so distorted as to lose its more fundamental traits. All these risks have been conceptually known for centuries – lo and behold, they are exactly the same risks as the fiat-driven financial systems, with the difference that, in the traditional systems, these risks are mitigated by centuries of regulatory critical mass from since (before) *The Wealth of Nations* in 1776.

All of that said, considering that the answers to the “why regulate?” of crypto (i) are conceptually the same answers as to why we regulate traditional finance – see the speech aptly titled “The Song Remains the Same” by John Williams, Chairman of the Federal Reserve Bank of New York ; (ii) are being empirically demonstrated by specific reports from the Basel Committee, BIS, IMF, ECB, FSOC, SEC, and other prominent authorities (in the BIS's emblematic words, “regulatory action is needed to address the immediate risks in the crypto monetary system and to support public policy goals”) ; and (iii) are being empirically demonstrated by the spectacular crashes by CEXs and cryptoassets (including supposedly stable

stablecoins) during 2022's crypto winter ; our paper will focus on the practical and down to business – our paper will focus on “how to regulate?”.

2.2. HOW TO REGULATE? THE TWO ASYMMETRIES FACED BY FINANCIAL REGULATION (INFORMATION AND TECHNOLOGY/OPERATIONALITY)

As it stands, financial regulators are not yet equipped with the proper tools to see or to regulate the crypto market, even if there are already many regulatory initiatives in that regard (see our review in Chapter 3). As such, before answering this market's “how to regulate”, we must first identify the current asymmetries which hinder classic authorities from seeing or intervening in the sector. Over the course of our research, we have identified two of them:

(i) First asymmetry: information. In objective terms, authorities still have no digital solution to collect data (in its entirety, at least) from existing blockchains DLT networks, cryptoassets “issuers”, custodial crypto wallets, clients, and CEXs, even if public blockchains registers are transparent to the nodes of the networks. The question is that these transactions are totally pseudoanonymous and we can't identify the counterparties by the public keys/addresses that is public on the network. Besides that, some transfers of cryptoassets between CEX's clients are just “book transfers” transactions, which doesn't impact the registers on the blockchain. Any data that becomes eventually visible to the regulator is merely a part of the whole – the part that is voluntarily revealed by market participants (i.e., amount of Bitcoins reported by Coinbase, tax filing from crypto investors). Crypto is still a realm with many shadows and not enough light – to see what an investor holds in crypto today might be something akin to, in the 2000s, trying to see the songs a person has downloaded to their flash drive. How do you, a regulatory authority, create intelligent and enforceable rules for that which you do not know?

(ii) Second asymmetry: technology/operationality. In a nutshell, the classic tools of regulators have no practical reach to DLT networks. In the traditional system, these authorities have become accustomed to their powers to grant and revoke licenses, apply special resolution regimes, like interventions and liquidations of a financial firm, collect data from bank accounts, freeze custodied assets, et cetera. In the crypto world, even if one such authority attempts to order a CEX to cease its trading, or an investor to pay up the tax from her crypto capital gains, how would these orders be effectively enforced when the DLT infrastructure is completely off the proverbial grid? How does an authority make good on its own rules when they lack the technological/operational means to enforce these rules before the subjected CEXs, investors, cryptoassets, and systems?

These two asymmetries above hinder any regulatory designs and possible responses to “how to regulate?”. After all, a regulator must know the participants of its regulated markets (in short, must have data) before determining the behaviour expected of them and designing the most effective enforcement mechanisms for cases of misbehaviour.

This is where the hypothesis at the forefront of this paper comes from.

First, we hypothesize that any regulatory strategy for crypto must hold practical means for the regulator to surpass the information asymmetry and the technology/operational asymmetry. Second, out of respect for readers’ time in the age of hyper-information, we aim to catch two birds with one stone – from here on out, our narrative moves on the practical means to overcome the two asymmetries above and bring order to this somewhat lawless “Wild West”.

3. BEYOND THE LOOKING GLASS: CHERRY-PICKING TODAY’S MOST EFFICIENT REGULATORY APPROACHES

Before we approach the regulatory proposal currently on the table for CEXs, there are two conditions precedent of regulatory sophistication which should be met before any successful incursion by regulators in the crypto frontier (and “before” is a term that we cannot stress enough):

(i) Suptech. Massive investments in regulatory oversight. This is the trump card to cover the two asymmetries suffered by financial authorities, covering both direct investments (to hire technological systems) and indirect investments (to hire specialized personnel to evaluate/pilot the technological systems, i.e., data scientists, engineers, technologists, UX/content designers, and more professionals who are knowledgeable of digital finance);

(ii) National and international cooperation between authorities. To be as broad as possible, we need alignment between banking, securities, tax, data protection, and law enforcement authorities to force compliance by the CEXs. Without a comprehensive net, they will always leak out of regulation through the weakest link. We have a major CEX as the pivot of an example, where Binance was partially banned in the United Kingdom, but welcomed in France with open arms . As it stands, isolated initiatives such as the UK’s may not generate enough incentive to force compliance by the market, and, as such, it is crucial that authorities around the world dance to the same cadence.

Now, since this paper aims to change the tires on a moving car (as would be the case for any paper taking aim at the subject of CEXs), we have many a benchmark of crypto regulation from varying countries:

(i) Japan oversaw the establishment of the Japan Virtual Currency Exchange Association (JVCEA), pioneering the effort to induce crypto markets into self-regulation back in 2018. According to the local Japanese regulators, the results so far have been reportedly inefficient;

(ii) El Salvador became the first country to rule Bitcoin as legal tender, essentially coercing its economy into accepting/risking it as a means of payment. It did not go well;

(iii) China's central bank banned all CEX presence and cryptoasset transactions – coincidence or not, China also has a long-standing ban on gambling. Interestingly, recent efforts have been underway in Hong Kong and overall China to bring crypto back into the fold;

(iv) Central African Republic ruled Bitcoin as legal tender while the number of African "hodlers" grow across the board, even though more structural regulation is still underway. Meanwhile, over 20% of sub-Saharan countries have opted to ban cryptoassets altogether (2022) ;

(v) Brazil's Congress has approved a crypto landmark law in 2022, and a Presidential decree has since named the Central Bank of Brazil as the industry's primary regulator. Some have critiqued the legal absence of some key-points from the law, namely a mandatory asset segregation in CEXs and mandatory legal presence in the country.

(vi) United States (v.a) President Joe Biden issued the "Executive Order on Ensuring Responsible Development of Digital Assets" with a call to action to establishing guidelines (2022), (v.b) Congress advanced on bipartisan bill "Responsible Financial Innovation Act", with powers granted to the CFTC over which were consider a "commodity" cryptoassets (i. e. unbacked cryptoassets, like Bitcoin and Ether), powers granted to the SEC over security cryptoassets, and, naturally, powers granted to the IRS over crypto reporting/taxation (2022); and (v.c) authorities have initiated a series of rules and enforcement actions concerning CEXs, including the CFTC, FDIC, CFPB, FTC, and Federal Reserve , chief among them being the major lawsuits filed by the SEC against Binance and Coinbase (2023) ;

**FINANCE REFLECTED BY FUNHOUSE MIRRORS:
A PROPOSAL OF INDIRECT REGULATION (GATEKEEPERS) TO CRYPTO CENTRALIZED
EXCHANGES (CEX)**

(vii) European Union has approved the Markets in Crypto-Assets (MiCA) and the Transfer of Funds Regulation (ToFR) rules. MiCA aims for a comprehensive regulatory framework over crypto, with powers granted to the European Central Bank (ECB) and European Securities Commission and Market Authority (ESMA) as regulators. ToFR focuses on casting light over illicit activities on the crypto market, namely through due diligence, KYC, and co-responsibility between financial companies with exposure to crypto.

MiCA is not only one of the most advanced regulatory landmarks to date, but, much like this paper, also keeps focus on centralized crypto activity and excludes DeFi from its scope (to the displeasure of some critics). Since the final rule aims at cryptoasset issuers and service providers, MiCA shall be plainly applicable to the CEXs (which might fall on one or both categories). The specific provisions directed at the CEXs by MiCA are summarized below (first, general obligations of crypto service providers, and then, specific obligations arising from CEXs' activities):

Figure 2: Obligations applicable to CEXs under MiCA (prepared by European Commission)

Obligations applying to all crypto-asset service providers	
Obligation to act honestly, fairly and professionally and in the best interest of clients (Art. 59)	
Prudential requirements (Art.60 and Annex IV)	
Organisational requirements (Art. 61)	
Safekeeping of clients' crypto-assets and funds (Art.63)	
Complaint handling procedure (Art.64)	
Prevention of conflicts of interest (Art.65)	
Outsourcing (Art.66)	

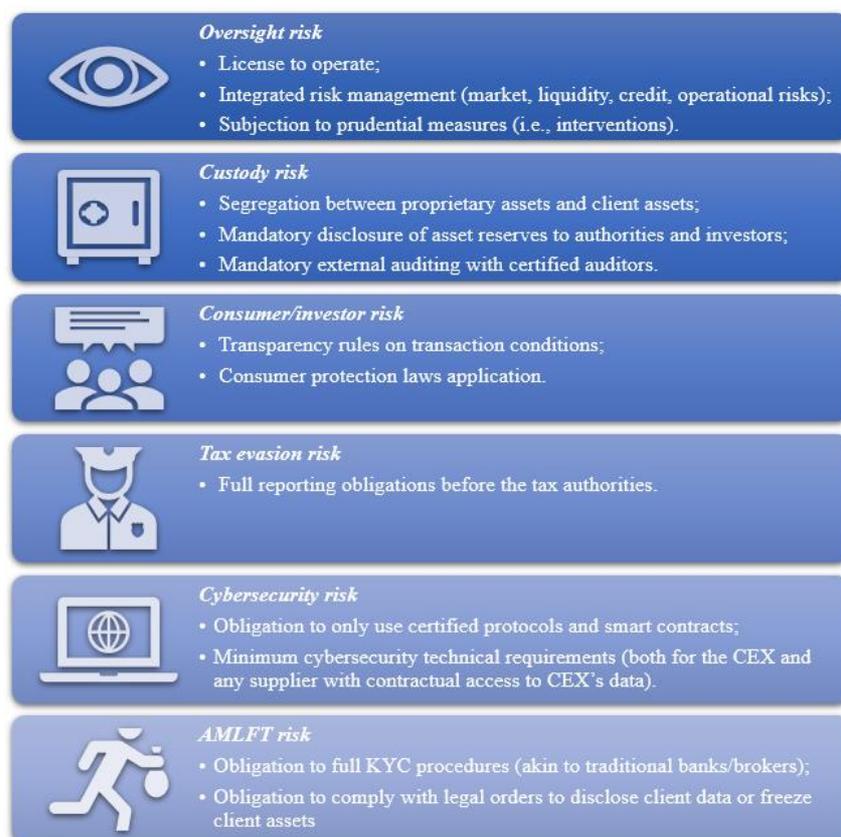
Obligations applying for the provision of specific crypto-asset services	
Custodians (Art.67)	Contractual arrangements with clients, register of positions of clients, asset segregation, liability
Trading platforms (Art.68)	Operating rules, prohibition of dealing on own account for the CASP, resilience of the trading systems, pre- and post-trade transparency, obligation to settle the transactions on the DLT
Exchange fiat to crypto or crypto-to-crypto (Art.69)	Non-discriminatory commercial policy, obligation to publish a firm price, execution at the price displayed at the time of receipt, transparency on orders and transactions
Execution of orders (Art. 70)	Best execution, clear information to clients on the execution policy
Placing of crypto-assets (Art. 71)	Clear agreement with the issuer before the placing, specific rules on conflicts of interest
Reception and transmission of orders (Art. 72)	Prompt transmission of orders, prohibition of non-monetary benefits, no misuse of information related to clients orders
Advice on crypto-assets (Art.73)	Necessary skills and knowledge, assessment of crypto-assets with the needs of clients

We have identified a trend in the country measures above. Most of them seek to extend traditional financial regulation to the CEXs – in practice, to obligate the CEXs to comply with financial licenses, capital requirements, risk management, consumer protection, AMLFT, external audits, et cetera. As such, we will evaluate how authorities might practically enact/enforce the proposal of regulating CEXs within finance and propose a scheme of indirect regulation/gatekeepers. To that end, they must first surpass the two asymmetries from Chapter 2.2 (information and technology/operationality asymmetries).

3.1. REGULATING CEXS WITHIN FINANCE: ALAS, TRADITIONAL FINANCE'S INCUMBENTS BECOME GATEKEEPERS

In a nutshell, the most sought-after approach for dealing with the CEXs is to go ahead and do what many authorities and lawmakers have been saying for years – to regulate them within the boundaries of financial regulation. To add practicality to their discourse, we have schematized below a matrix interlinking each financial risk with the corresponding (traditional) regulatory tools available, much in line with MiCA's own proposal above.

Figure 3: Matrix of CEX risks and applicable regulatory tools (prepared by the authors)



Now, keep in mind that the true challenge is not in arguing that these rules would mitigate the risks from the CEXs – many are already subject to these rules (i.e., Coinbase, for example, is a publicly-traded company in the U.S. and is being sued as such by the SEC). The challenge is rather to enforce material compliance by the CEXs, and not just formal compliance.

We may name a prominent example of formal, yet non-material compliance. FTX was formally submitted to regulation and external auditing, and yet, according to the new CEO in charge of its bankruptcy proceeding, “never in my career have I seen such a complete failure of corporate controls and such a complete absence of trustworthy financial information as occurred here. (...) From compromised systems integrity and faulty regulatory oversight abroad, to the concentration of control in the hands of a very small group of inexperienced, unsophisticated, and potentially compromised individuals, this situation is unprecedented” (do note, this statement comes from the same executive who led Enron’s bankruptcy proceeding).

Distortions such as these happen to CEXs because, pursuant to Chapter 2.2, even when regulators do enact the tools in Figure 3, they still do not have clear data nor enforcement reach over CEXs or their investors – all due to how the crypto ecosystem is in DLT rails which run parallel to the rails of the centralized system.

However, these two rails do intertwine – crypto certainly does not exist in a vacuum, just as CEXs and other participants do not exist independently from traditional finance. These ties that bind are precisely linked to the intermediaries they so vehemently claim to evade – more specifically, the products and services that these intermediaries bring to the table:

(i) On the *service* side, we have a fairly practical concept – a holder of cryptoassets *still needs their bank to permit wire transfers to/from their wallet in a CEX*, since crypto is nowhere near becoming a bona fide currency in the real economy (means of payment). Most investors outside of El Salvador still need to cash out to enjoy their trading loot. Moreover, traditional institutions may be interested in providing asset management services in crypto, such as sponsoring/managing ETFs pegged to cryptoassets, et cetera), and structuring public offerings with DLT; and

(ii) On the *money* side, we have crypto’s interest in the funds of (or managed by) regulated entities such as banks, institutional investors, and publicly traded companies. There is a whole world of proprietary money (i.e., recent standards concerning bank exposure to crypto in the Basel Committee), and a whole other world of client money (i.e., purchase of cryptoassets or shares of crypto-oriented vehicles with third-party funds).

Both on the service side and the money side, regulated entities have winked back at the crypto world with a mutual interest in straightening relationships. The amount of money on the table is always a siren song for traditional finance, growing ever more irresistible. *These relationships constitute entry/exit points, which are where financial regulation may be employed to reach the CEXs.* In other words, banking, capital market and tax authorities already regulate traditional intermediaries and investors – from here, they may enact rules that *restrict the intermediaries and investors from engaging in transactions with CEXs which do not meet minimum regulatory requirements.* In practice, traditional intermediaries could be transformed into gatekeepers that ensure material compliance from CEXs.

To illustrate our point, we have prepared a practical flowchart of the major entry and exit points where third parties from traditional finance are positioned to hinder/stop the CEX's activities. To be precise, we show below (i) the third-parties that integrate the transaction chain when a CEX transacts with a client (Figure 4), and (ii) the third-parties that participate in the transaction chain every time a CEX transacts with a bank, either to open the CEX's account, to custody its clients' cryptoassets, or to receive the bank's proprietary money in the CEX (Figure 5):

Figure 4: Third-parties present between a CEX and clients (prepared by the authors)



Figure 5: Third-parties present between a CEX and bank's services and proprietary money (prepared by the authors)

FINANCE REFLECTED BY FUNHOUSE MIRRORS:
A PROPOSAL OF INDIRECT REGULATION (GATEKEEPERS) TO CRYPTO CENTRALIZED
EXCHANGES (CEX)



We already have precedents of indirect regulation in traditional finance. For instance, the G20 implemented mechanisms to harmonize the extraterritorial regulation of over-the-counter derivatives (OTC) from the U.S. “*Dodd-Frank Act*”²⁷, and the EU “*European Market Infrastructure Regulation*” (EMIR)²⁸. Much like these two, most other precedents of indirect regulation are usually aimed to target entities outside of its territorial jurisdiction. Among these precedents, the practical success of the “*Foreign Account Tax Compliance Act*” is one of the best arguments in favour of the indirect regulation approach. So-called FATCA is an U.S. law enacted in 2010 to fight tax evasion by American persons/entities. One of its (many) determinations was to obligate financial institutions around the world to identify which of their clients should be classified as “*U.S. Persons*” under FATCA and report their tax data to the IRS²⁹.

To overcome the obvious jurisdictional/territorial barrier, FATCA was enacted with a direct obligation for U.S. financial institutions to comply with – before processing any payment to/from a foreign financial institution, the U.S. financial institution must first confirm that the foreign institution is compliant with the reporting obligations from FATCA to the IRS. If the American financial institution cannot ascertain this compliant status, *it must apply a withholding tax of 30% over the payment amount before it is settled with the counterparty*. In a nutshell, FATCA has made it economically unfeasible for any foreign entity to carry out financial

²⁷ The Dodd-Frank Act’s Section 722(d) requirements relating to derivative swaps regulated by the CFTC could be applied to swap activities outside the US, including by non-U.S. persons. For details, see: GREENBERGER, Michael. *The Extraterritorial Provisions of the Dodd-Frank Act protects U.S. Taxpayers from Worldwide Bailouts*. University of Maryland Legal Studies Research Paper No. 2012-17.

²⁸ The clearing obligations of OTC under EMIR’s article 4(a)(iv) and article 25 impact the clearing and reporting obligations from counterparties of so-called third countries.

²⁹ Section 1471(b) of the U.S. Internal Revenue Code of 1986.

transactions with American institutions unless it first pays a coin to the ferryman (or, in this case, pays data bytes to the IRS).

To be clear, FATCA is an absolutely complex legislation in operational, political, and diplomatic terms, and this paper does not imply judgement of value over any of them (in practice, FATCA allows the IRS to transfer its enforcement costs to non-American institutions with no relation to the U.S.' taxation framework)³⁰. That said, FATCA is a consummate practical success in terms of indirect regulation – the U.S. has reached its goal of imposing IRS feeding obligations to virtually every Western financial system outside of North America, as empirically proven by years of data worth of the law's effects³¹.

Returning to the CEX realm, we know from Chapter 2.2 that the current barrier is the lack of technological/operational reach from regulators which keeps them from proving material compliance. Taking a page from FATCA, the best course to achieve such material compliance will be for financial, capital markets, and tax authorities to make it unfeasible (formally and/or economically) for regulated financial institutions to carry out any transaction with CEXs unless they are materially compliant to eventual regulation – a judgement of value to be exercised by the regulated entities, under pain of penalties from regulators.

If this FATCA-like approach is actually implemented, we expect that the most established CEXs will have a relevant incentive to adhere to regulation as the most rational economic decision. If they do not, the financial regulators would prohibit (i) JP Morgan, Citi, Wells Fargo, and other banks from wiring client money to/from the CEXs; (ii) JP Morgan, Citi, Wells Fargo, and other banks from providing services or investing proprietary money in CEXs, and (iii) BlackRock, Vanguard, and other fund managers from allocating crypto in their portfolios. Finally, every relevant CEX that concedes would also become a gatekeeper itself for the remaining CEXs on the market, facilitating the rest of the job of bringing them in.

To conclude our proposal on a note of precedent, U.S. banks have recently announced their intent to cut off ties with Binance's American subsidiary once it became the target of the aforementioned SEC lawsuit³².

³⁰ BROWNING, Lynnley. Analysis: Critics say new law makes them tax agents. *Reuters*, August 2011. Available at <www.reuters.com/article/us-usa-tax-fatca-idUSTRE77I38220110819>. Accessed 3 December 2022.

³¹ SIMONE, Lisa; LESTER, Rebecca; MARKLE, Kevin. *Transparency and Tax Evasion: Evidence from the Foreign Account Tax Compliance Act (FATCA)*. Stanford School of Business, Working Paper No. 3744, February 2019, p. 38-39.

³² GHOSH, Suvashree; YANG, Yueqi; NICOLLE, Emily. Binance.US set to be cut off from banking system after SEC lawsuit. *Bloomberg*, 8 June 2023. Available at <<https://www.bloomberg.com/news/articles/2023-06-09/binance-us-set-to-be-cut-off-from-banking-system-after-sec-suit>>. Accessed 18 June 2023.

3.2. *REGULATING CEXS OUTSIDE OF FINANCE: A NOTE ON THE ALTERNATIVE APPROACHES*

The scope of this paper is to propose a model of regulation for the CEXs *by merging them into the regulation of traditional finance*. That said, we would take a few lines to report on a non-negligible movement of authors, regulators, and media in favour of doing exactly the opposite³³. As best represented by the words of Columbia Professor Todd Baker, this movement states that regulators should “*stop treating crypto trading as if it were finance*” and, as such, deny any regulatory legitimacy to the CEXs and other participants (in other words, deny them “inclusion” by regulation).

Todd Baker and other advocates present two arguments for a complete segregation between finance and crypto.

First, crypto does not provide society with financial intermediation, nor with the means to enable economically/socially productive investment. As such, law and policy should not recognize crypto as finance, and crypto should not deserve financial regulators – these would remain focused on actual finance and the role it plays in our society³⁴ (it is indeed undisputed that financial authorities pay hefty opportunity costs for regulating crypto, since that means less time/resources going into regulation of traditional finance).

Second, the risk of contagion (as discussed in Chapter 2.1). If CEXs were to become regulated and allowed to intensify their transactions with banks, broker-dealers, pension funds and other relevant participants, such an increased interconnectedness would further expose traditional finance to risks from the crypto ecosystem. The delicate balance of financial stability would hinge on more variables, and future CEX bankruptcies (such as FTX) might burden deposit insurers (i.e., FDIC) and lenders of last resort (central banks)³⁵.

In practice, this ever-growing “let crypto burn” movement urges lawmakers to prohibit traditional institutions (i.e., banks, broker-dealers, clearings, *et cetera*) from participating in CEXs, serving in CEXs, supporting participants in CEXs, or adding leverage to CEX (and to crypto in general). Non-legitimization through insulation.

But what, then, do these advocates propose to *do*? If bringing crypto into the financial fold is a no-go, how might lawmakers regulate this industry and its undeniable economic relevance (as demonstrated by this paper on Chapter 2)? Well, while the “let crypto burn” crowd does not consider crypto as traditional *finance*,

³³ CECCHETTI, Stephen; SCHOENHOLTZ, Kim. Let crypto burn. *Financial Times*, 17 November 2022. Available at <<https://www.ft.com/content/ac058ede-80cb-4aa6-8394-941443eec7e3>>. Accessed 9 December 2022.

³⁴ “Financial regulators can go back to regulating traditional finance, which has plenty of problems that need attention”. In BAKER, Todd. Let’s stop treating crypto trading as if it were finance. Columbia Law School Blog on *Corporations and Capital Markets*, 29 November 2022. Available at <<https://clsbluesky.law.columbia.edu/2022/11/29/lets-stop-treating-crypto-as-if-it-were-finance>>. Accessed 6 December 2022.

³⁵ FSOC. Report on Digital Asset Financial Stability Risks and Regulation. *FSOC*, October 2022.

they do consider it to be something else – *bona fide gambling*³⁶. This association between both worlds, which cites academic/scientific basis³⁷, would suggest that lawmakers regulate CEXs under general laws focused mostly on consumer protection (like one would regulate platforms of e-sport betting), and without financial regulators playing a role³⁸.

There are already ongoing initiatives in favour of this insulation – in the UK, many members of Parliament are urging the government not to regulate crypto as a financial service and not to appoint the FCA as its watchdog – instead, they propose to give crypto a similar legal treatment of gambling³⁹.

Also, one might argue that a total ban against crypto might hinder society from achieving the benefits of digitalization in the form of lower prices and financial inclusion. Yet, there are certainly other ways to achieve these benefits, such as fast payment systems (FPS) – a proven way to safely deliver digital efficiency to retail finance, as pioneered by Brazil's Pix⁴⁰. Considering how (i) technology is to be judged by how/whether it solves problems⁴¹, and (ii) many questions linger as to whether crypto is or not a "solution in search of a problem", it might just be possible that consumers would lose what little (non-speculative) incentive they have to migrate to crypto/CEXs once they were treated to a high-quality FPS.

³⁶ BAKER, Todd. Let's stop treating crypto trading as if it were finance. *Columbia Law School Blog on Corporations and Capital Markets*, 29 November 2022. Available at <<https://clsbluesky.law.columbia.edu/2022/11/29/lets-stop-treating-crypto-as-if-it-were-finance>>. Accessed 6 December 2022.

³⁷ See (i) MILLS, Devin; NOWER, Lia. Preliminary findings on cryptocurrency trading among regular gamblers: A new risk for problem gambling? *Addictive Behaviors Journal*, v. 92, p. 136-140, 2019; and (ii) CHIPOLINA, Scott; BARNES, Oliver. 'There needs to be a health warning': How crypto trading can lead to addiction. *Financial Times*, 2 June 2023. Available at <<https://www.ft.com/content/0f879851-5c74-42ef-914b-154cd4e9a881>>. Accessed 18 June 2023.

³⁸ See (i) LOW, Kelvin. The Emperor's New Art: Cryptomania, Art & Property. *86 Conveyancer and Property Lawyer* 378, 2022; (ii) LOW, Kelvin; MIK, Eliza. Pause the Blockchain Legal Revolution. *International & Comparative Law Quarterly*, v. 69(1), 2020; and (iii) KRUGMAN, Paul. Blockchain, what are they good for? *New York Times*, 1 December 2022. Available at <<https://www.nytimes.com/2022/12/01/opinion/blockchains-what-are-they-good-for.html>>. Accessed 5 December 2022.

³⁹ NOONAN, Laura; CHIPOLINA, Scott. MPs call on UK ministers to regulate crypto like gambling. *Financial Times*, 16 May 2023. Available at <<https://www.ft.com/content/ee3d354a-3d57-44b3-bdad-175a69dbf7f8>>. Accessed 15 June 2023.

⁴⁰ DUARTE, Angelo; FROST, Jon; GAMBACORTA, Leonardo; WILKENS, Priscilla Koo; SHIN, Hyun Song. Central banks, the monetary system and public payment infrastructures: lessons from Brazil's Pix. *BIS Bulletin*, No 52, March 2022, p. 3. Available at <<https://www.bis.org/publ/bisbull52.pdf>>. Accessed 25 August 2022.

⁴¹ TALEB, Nassim. Bitcoin, currencies, and fragility. *Quantitative Finance*, vol. 21, issue 8, 2021, p. 6.

As stated, this chapter is a brief remark on the alternative regulatory movement to insulate crypto from finance, and its convenience/validity is outside the scope of our paper.

4. CONCLUSION

In just over a decade, crypto has speedran the entire history that traditional finance took centuries to undergo, especially the major crises that have always underlined the essentiality of financial regulation. This was a fate to be expected from a warped reflection by funhouse mirrors in front of familiar, centuries-old banking and financial intermediation.

Mirrors aside, though, the economic fundamentals of financial products and services are not changed by whether their technology rails are centralized (classic) or pseudo-decentralized (CeVAsPs), and we did not find any solid case for the contrary. As such, this paper does not reinvent the wheel on *why* we should regulate crypto centralized exchanges (CEXs), as there is enough bibliography from today to the XVII century to go around on these *whys* (see Chapter 2.1). Instead, we focus on *how* to regulate the CEXs, namely how to surpass the two asymmetries caused by how CEXs' DLT rails are almost completely off-the-grid, causing hindrances to (i) authorities that try to collect market data (*information asymmetry*); and (ii) authorities that employ practical enforcement (*technology/operational asymmetry*).

After review of country measures to regulate crypto as a whole, especially EU's MiCA, we have identified grounds for a practical approach.

We propose on Chapter 3.1 to regulate CEXs by *bringing them into the fold of the financial regulation*. In practice, to impose full financial intermediation/trading obligations on them (financial licenses, capital requirements, risk management, consumer protection, AMLFT, external audits, *et cetera*). To guarantee material compliance, this paper proposes the enactment of *an indirect regulation/gatekeeper scheme*, as inspired by the U.S. "Foreign Account Tax Compliance Act" (FATCA), where regulators would restrict traditional institutions (i.e., banks, broker-dealers, clearings, funds) from transacting with CEXs which do not provide adequate evidence of material compliance with their trading/banking obligations. Since CEXs are still heavily dependent on traditional institutions' services and money (*see flowcharts in Figures 4 and 5*), these CEXs will receive an incentive to formally adhere to the proposed full trading/financial intermediation obligations (if only to keep their clients wiring money in from bank accounts, to keep accessing asset management funds, to continue brokering as much as possible, and so on).

After, we use Chapter 3.2 to take brief note on an alternative movement aiming to regulate CEXs by *insulating crypto altogether from traditional finance*. These advocates argue against legitimizing the crypto ecosystem with financial regulation, asking instead to regulate CEXs as non-financial gambling hotspots (i.e., rules focused mostly on consumer protection). This approach would leave financial

authorities to carry on as they always have, exclusively dedicated to regulating traditional finance (of which they already have their hands quite full). The proclaimed advantages offered by crypto would be fulfilled by other digital initiatives in the brave new world, such as fast payment systems. Our paper only takes factual note of these alternative ideas, as any value of judgement would be out of our scope.

From here, beyond the traditional recommendation for further research to be built off our own, we urge regulators and academia to tackle the problems from traditional finance which motivated crypto to rise in the first place – namely a lack of competition, high concentrations, and rent-seeking lobbies. While an unregulated pseudo-decentralized cyberpunk wasteland is certainly no solution, the problems it has tried (and failed) to solve are indeed very real.

All in all, if some or all cryptoassets are considered by the citizens a new type or form of a financial assets, financial regulation should seek to build a safe, efficient and inclusive financial system to reap the traditional social benefits of finance over the centuries, because, as mentioned, “the song remains the same” on the jukebox.

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