

Into the Ether or the State?
The Politics of Legibility in Cryptocurrency Markets

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Abstract: The governance of cryptocurrency markets is at an inflection point. Numerous actors, inspired in part by utopian ideals, promote decentralization and seek to operate outside the confines of the state. Others, instead, are working to translate cryptocurrency into existing regulatory structures to encourage greater acceptance and participation by mainstream investors. In this paper, we map how this battle between decentralized (DeFi) and centralized (CeFi) finance is causing cryptocurrency markets to gyrate toward and away from state-based legal frameworks. To achieve their aims, DeFi actors rely on what we term ‘illegibility strategies’ to purposefully shield themselves from the state, similar to methods recognized amongst remote peoples by James C. Scott in *The Art of Not Being Governed*. CeFi actors, in contrast, pursue ‘legibility strategies’ to incorporate cryptocurrencies into the status quo regulatory fold. We present a new framework summarizing this dynamic and use it to examine the early histories of cryptocurrency exchanges and stablecoins. Each case exemplifies how DeFi-CeFi conflict shapes the governance of markets, with important implications for stability, fairness, and investor protection.

Key words: cryptocurrency; legibility; market governance; political economy; regulation

1. Introduction

In January 2019, Gemini, a fast-growing cryptocurrency exchange, unveiled a new advertising campaign: ‘The Revolution Needs Rules’ (Ives 2019). Gemini was seeking to highlight that, unlike many of its competitors, it had actively sought regulation by the New York State Department of Financial Services (NYSDFS).¹ Gemini’s proclivity to, in its own words, ‘ask for permission, not forgiveness,’ has been welcomed by regulators and investors (CFTC 2018; Vigna 2018). But this strategy is fundamentally inconsistent with the goals of crypto idealists: to decentralize power and eliminate intermediaries, to escape the state and operate in the unregulated ether.

What will be the outcome of this tug-of-war? And, more broadly, what causes new markets to gyrate between centralized, state-based legal frameworks and decentralized spaces operating outside the regulated sphere? These questions underlie much debate within the cryptocurrency community on the direction of the market, but they have not been formally analyzed by scholars of political economy. This article addresses this gap.

We contend that these dynamics are driven by the competing interests and strategies of two actors: Decentralized Finance (DeFi) and Centralized Finance (CeFi). DeFi operations are designed to be ‘illegible’ to states: they seek to frustrate external control and build new unregulated markets. CeFi operations, in contrast, are actively pursuing state legibility to facilitate integration with legacy markets and more regulation. We test the central propositions of this novel legibility framework against developments in the markets for cryptocurrency exchanges and stablecoins (i.e., cryptocurrencies pegged to other assets such as the U.S. dollar).

As these descriptions indicate, DeFi and CeFi actors are not just competing over business. They are also competing over *governance*. Each group actively pulls in opposing directions, driven

not just by material financial interests but also, in some cases, ideological positions on states vis-à-vis markets. We do not seek to predict which set of actors will ‘win’ or ‘lose,’ as such binary thinking obfuscates the finding that markets are in a constant state of dynamic change. Rather, we map how competition between DeFi and CeFi actors generates a spectrum of market structures that vary along two dimensions: centralization and state orientation.

By performing these tasks, this article advances our understanding of market regulation and the political economy of finance. First, from Stigler (1971) on, theories of regulation and governance generally examine interest group politics over the design of rules within the existing system of laws and regulations. What this literature misses, however, is that there is sometimes a group of actors—in the case of cryptocurrencies known as DeFi—that reject the entire system and want to operate outside the regulated sphere, pursuing strategies of illegibility to remain ungoverned by the state.

Second, we improve upon Scott's (2010) concept of illegibility by introducing the countervailing force of legibility. We set out a novel set of legibility and illegibility strategies used by CeFi and DeFi actors, respectively. Phrased differently, we describe the conflicting arts of being governed and ungoverned. Our attention to competing societal demands for different degrees of legibility complements recent work that seeks to explain why states cast legibility projects selectively, making some domains more legible than others (Morgan and Orloff 2017; Slater and Kim 2015).

Third, we challenge the commonplace assumption that regulated and unregulated markets are strictly separate realms. In fact, the regulated-CeFi and unregulated-DeFi parts of the cryptocurrency market are co-constituted and so interdependent that each could not exist without the ‘other’ (MacKenzie 2008). The two zones (governed and ungoverned) need to be seen as part

of a single market system. This mutual constitution includes a cultural dimension in which each—CeFi and DeFi—needs the ‘other’ to construct and maintain its market identity.²

This article is organized as followed. Section 2 defines CeFi and DeFi. Section 3 introduces a new heuristic framework of legibility struggles. Sections 4.1 and 4.2 subsequently examine cases exemplifying how CeFi-DeFi competition shifts crypto markets, focusing on cryptocurrency exchanges and stablecoins. Section 5 summarizes our analysis, observes parallel dynamics in shadow cases, and outlines directions for future research.

2. Centralized and Decentralized Financial Actors

CeFi and DeFi describe different types of market actors providing trading infrastructure; facilitating payments; lending capital; and/or trading assets. CeFi actors are traditional firms operating through centralized structures and processes. A typical example is the centralized Coinbase cryptocurrency exchange.

DeFi actors operate through distributed blockchain ledgers, consensus protocols, and decentralized structures.³ An archetypical example is Bitcoin. No one knows the founder. No one controls the core development team. Anyone can run a Bitcoin node to verify transactions and the network is maintained by many mining companies. Essentially, every participant must approve updates in the network. Other blockchain protocols, such as Ethereum, are less decentralized, but still fit the DeFi classification.

No taxonomy can perfectly identify all actors, and some organizations may operate in the grey area between these CeFi and DeFi ideal points. It is nonetheless possible to recognize these distinctions in most cases and the opposing forces they represent. CeFi actors pull markets toward

the state controlled centralized legal framework; DeFi actors push in precisely the opposite direction. Figure 1 represents this conflict in its most stylized form, which we will expand into a two-dimension spectrum of market governance systems in Section 3.

Figure 1. Spectrum of State Control and Centralized Conformity



Before proceeding, note that CeFi-DeFi conflict is not just about inter-organizational rivalry. Rather, each actor type offers relative operational (dis)advantages, with direct implications for price stability, market fairness, investor protection, and other concerns of public policy (Schar and Berentsen 2020). DeFi actors, for example, offer greater self-sovereignty by democratizing ownership among users. Further, they offer immutable distributed ledgers that offer transparency and minimize opportunities for manipulation. These advantages come at a cost, however, of flexibility and accountability, two relative advantages generally held by CeFi actors. Evaluating the relative merits of each actor type and their implications for wider market characteristics is beyond the scope of this paper. Rather, we are concerned with understanding the fundamental strategic forces that lead to their arrival and decline throughout a market’s history.

3. Explaining Legibility Shifts in Market Governance

In this section, we introduce a dynamic framework to explain change in cryptocurrency markets, focusing specifically on CeFi-DeFi legibility struggles. The purpose of this heuristic framework is not to predict the outcome of these struggles, but rather to construct a ‘moving picture’ of how these competitive dynamics shift markets between legible centralized, state-governed frameworks and illegible decentralized, ungoverned spheres.⁴

3.1 Market legibility struggles

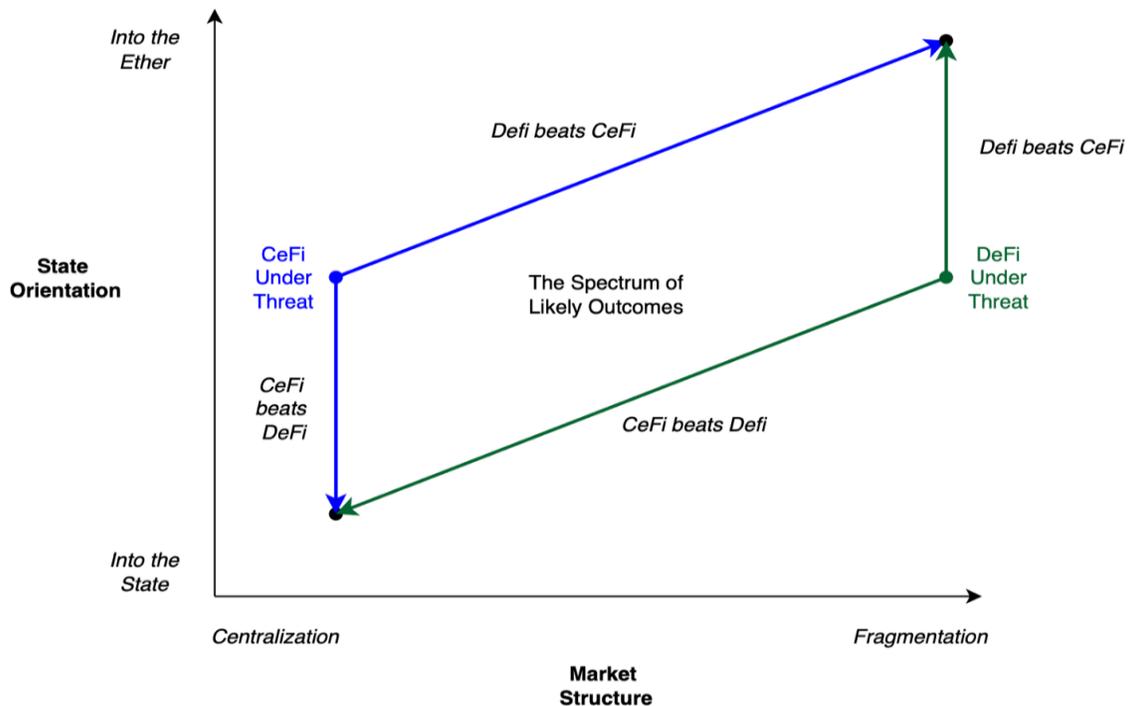
Our analysis begins with Scott's (1999) concept of ‘legibility’. Scott contends that states must make society ‘legible’ in ways that facilitate control, resource appropriation, and the prevention of rebellion. Actors that do not seek to be governed can, in turn, pursue strategies of ‘illegibility’ to escape state-based governance and even create appropriation-proof spaces (Scott 2010). Scott focuses specifically on groups that purposefully seek to remain ‘stateless’ by living in remote geographic locations and using customs, language, and societal rules that are inconsistent with (i.e., illegible to) the state apparatuses that seek to govern and control them.

DeFi actors likewise pursue illegibility to escape the confines of state-based legal structures and the power of incumbent firms and markets. The primary goal of decentralized architectural design, as amply demonstrated by Nakamoto's (2008) original Bitcoin White Paper, is to establish state-censorship resistance. There is, however, a counterbalancing force, one that does not form part of Scott's analysis: CeFi. These actors, in direct contrast, seek to make new market concepts

legible to states and incumbent firms often through centralizing processes. Gemini, with whom we began this article, is pursuing such a strategy.

Figure 2 represents this constant pull and tug between CeFi and DeFi actors that pushes markets towards and away from 1) the state and 2) centralized and decentralized forms of market structure. To analyze these dynamics of CeFi-DeFi competition, it is useful for expositional purposes to focus on situations in which CeFi actors are under threat by DeFi (or vice-versa). Imagine a CeFi exchange facing competition from DeFi entrants, a situation symbolized by the blue dot in Figure 2. The DeFi entrants will seek to fragment the market and shift it away from state-oriented legal structures, in direct contrast to the CeFi exchange’s preference to achieve further centralization/state conformity. The space in the central quadrant represents the range of likely state orientations and market structural outcomes.

Figure 2. Competitive Gyration in Markets



The market is conceived as a series of tightly connected, causally linked, legibility struggles between CeFi and DeFi firms. These competitive struggles imply sequential processes and dynamics that are non-reinforcing (or self-undermining), with success for either CeFi or DeFi inducing off-setting strategic reactions that push in the opposite direction. This logic militates against the emergence of a single master process or direction in the market.

The shifts towards and away from the state and centralization are not constant; they often occur quickly in moments of technological or regulatory change followed by less dramatic periods of consolidation. But the entire process works continuously as every period of consolidation harbors nascent forces of countermobilization that downstream will disrupt this unstable equilibrium. The outcome is a logic in which legibility increases and decreases cyclically.⁵

We acknowledge CeFi and DeFi actors are not, of course, the only actors with preferences over the structure and state-orientation of markets. States may have a general interest in ensuring that markets are legible. In some scenarios, however, states will seek to promote industry self-regulation, which allows public agencies to save costs, avoid blame, and satisfy ideological preferences for ‘free’ markets.⁶ The state’s preference (to that extent that can be defined) may provide CeFi or DeFi actors with advantages at certain junctures. Ultimately, however, it is the constant struggle between these two actors that leads markets to gyrate amongst the spectrum of outcomes in Figure 2.

3.2 (II) *legibility strategies*

With this general framework in-hand, we can turn to the strategies of DeFi-illegibility and CeFi-legibility. In what ways do DeFi actors pursue illegibility? Put differently, what are the main sources and instruments of illegibility? At least three illegibility strategies are worthy of mention.

First, DeFi actors aim to *stymie* state intervention through decentralization. As noted, this is one of the original ideological motivations for digital currencies: to establish state-censorship resistance through decentralization. DeFi projects emphasize that decentralized operations do not easily fit the legal descriptions of existing asset classes (Tiwari 2018). DeFi actors also often operate without a designated leader or physical headquarters, a strategy akin to living in remote geographic locations to facilitate self-governance. Further, DeFi projects use informal off-chain governance, while minimizing formal on-chain governance, increasing information asymmetry and keeping state regulators in the dark (Buterin 2017).

Second, in pursuing illegibility, DeFi developers engineer *segregated*, structurally autonomous, networks that are detached from legacy markets and proofed against state appropriation. This involves developing technologies that, by design, are *not* interoperable with existing market systems and processes. Segregation further involves obviating the very need for state laws and regulations through the principle that ‘code is law’ (Lessig 1999). Segregation is augmented by cementing commitment through the establishment of shared beliefs and community ideals that enable DeFi communities to resist outside influences.⁷

Third, DeFi networks advance illegibility through *anonymity* for users using the tools of cryptography. The goal is a *laissez faire* ideal where anonymous traders congregate in open-source protocols to freely exchange assets. This anonymity creates a plausible basis for DeFi operators to

deny market regulatory responsibilities. Anonymity also removes a potential hook for regulators seeking to impose behavioral standards on markets as participants cannot be targeted directly.

How are these DeFi strategies met by the opposing constituency of CeFi firms, including start-ups and incumbent operators, seeking legibility? Again, three legibility strategies can be isolated. First, CeFi firms engage in *translation* by working with regulators, industry groups, academics, and other partners to find ways of making the market legible and incorporating the novel product/services into the status quo regulatory fold. CeFi firms are going to great lengths to define the legal treatment of cryptocurrencies, obtain regulatory licenses, and create compliance apparatuses that reflect existing practices legible to regulators and investors. The process of bringing new technologies into line with existing market regulations inevitably constitutes a learning process for states and participants.

Second, legibility involves CeFi firms *intermediating* regulated legacy and unregulated DeFi markets. The connecting bridges CeFi architectures build import the practices and standards of legacy markets into DeFi domains. This makes DeFi innovations more legible while assimilating them to centralized organizational processes (e.g., compliance functions, internal counsel, and risk departments) that conform to existing regulatory standards. Ultimately, the DeFi technology can be effectively disarmed through intermediation, at least in its capacity to create illegibility.

Third, CeFi may *tattletale* on DeFi users by reporting suspected misconduct, highlighting scandals, and engaging in general fearmongering over the innovation. Part of this strategy includes providing market intelligence and information to government agencies that undermines the anonymity of market actors in DeFi projects. Tattletale also involves lobbying activities that seek

to bring the anonymous environments of DeFi into disrepute. Table 1 lists the key strategies of legibility and illegibility used by CeFi and DeFi actors.

Table 1: Strategies of Illegibility and Legibility in Capital Markets

Strategies of Illegibility (DeFi Actors)

A) **Stymie**: Design novel architectures that are (or appear to be) incompatible with existing state-based legal structures, while decentralizing and automating governance processes, thereby impeding the capacity of states to impose oversight and control.

B) **Segregate**: The establishment of autonomous blockchain-based markets using non-interoperable DeFi protocols that are outside the domain of traditional state-regulated financial markets.

C) **Anonymize**: Insulating through cryptographic tools market participants from state surveillance, whether for privacy or less noble reasons, making it harder for states to target market participants.

Strategies of Legibility (CeFi Actors)

D) **Translate**: Explain novel architectures to states, while centralizing internal governance processes and bringing them as far as possible into line with existing state laws, regulations, and best practices, thereby augmenting the capacity of states to impose oversight and control.

E) **Intermediate**: The establishment of connections between traditional and blockchain-based markets and the cooptation of DeFi tools and technologies into existing market structures and processes.

F) **Tattletale**: Actively highlight to states, whether through public or private channels, bad actors, undesirable practices, scandals, or perceived risks in the non-regulated sphere, making it easier for states to target market participants.

3.3 Co-constitution through CeFi-DeFi competition

While the strategic positioning of CeFi in opposition to DeFi is of critical importance in these market dynamics, it is misleading to focus only on the antagonistic elements in their relationship. As Scott noted, actors in state governed spaces and ungoverned hinterlands are always ‘in dialogue’ with one another (2008, 108). CeFi needs DeFi to build new markets that it can later co-opt for its benefit; DeFi actors, in turn, need CeFi to provide capital and stability, thereby

consolidating existing gains and creating further opportunities for disintermediation. One cannot exist without the other. In this sense, CeFi and DeFi actors are mutually constitutive.

There is a cultural element to co-constitution. The identity of DeFi is forged in opposition to the identity of CeFi and vice versa. Co-constitution does not imply that organizational divergence is inevitable, however. On the contrary, CeFi and DeFi actors often draw on a common stock of technological and regulatory tools (Levi-Strauss 1966). This form of bricolage gives rise to ‘hybridized’ arrangements, sometimes called ‘Ce-DeFi’, that involve organizational structures growing more alike.

However, full convergence and organizational stabilization around a singular hybridized form is not likely. First, imitation never leads to a direct copy. Instead, tools are reconfigured, producing something different. Second, hybridized projects are structurally ambivalent and subject to internal contestation. Third processes of hybridization are two-directional: CeFi firms can decentralize, and DeFi firms can centralize. The logics of open directionality and dynamic contestability reinforce the multiple rather than singular trajectories in the market.

3.4 Scope conditions and extensions

The distinction between CeFi-legibility and DeFi-illegibility strategies seems clear and simple in the abstract. But empirically, it can be challenging to isolate these strategies, because they are context specific. DeFi strategies of illegibility, for example, are not about avoiding formal rules and standards entirely. On the contrary, DeFi actors seek to create their own rules and standards (like Ethereum Token Standards) to create segregated platforms for market exchange just as ‘stateless’ groups have their own languages and societal organizations (Scott 2010). Likewise,

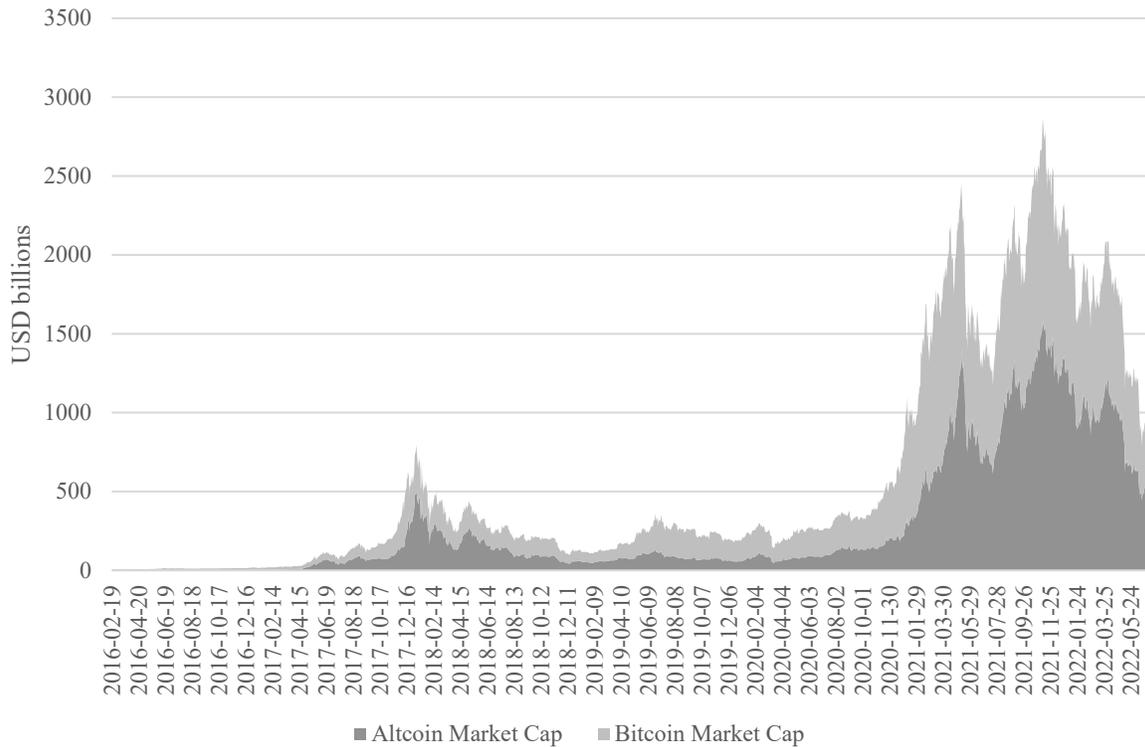
CeFi firms can engage in regulatory arbitrage and rule-avoidance. However, within the scope condition of CeFi-DeFi struggles, we can expect CeFi firms to pursue legibility while DeFi firms seek illegibility.

Finally, the cryptocurrency market is not the only market to which this heuristic is applicable. History is replete with examples of struggles between regulated incumbents and unregulated challengers that resemble CeFi-DeFi competition. Securities markets, for example, underwent a transformation in the late 1990s and early 2000s, in which new, unregulated, electronic trading venues challenged the dominance of traditional, regulated, exchanges, ultimately shifting the industry toward fragmentation and away from state control (Mattli 2018). Our framework may not travel to every context, which is beyond the scope of such a general theoretical workhorse. But what it captures, we contend, is a common feature of capital market governance and its divergent forces.

4. Making the Cryptocurrency Market

The cryptocurrency market has grown dramatically since its origins (see Figure 3). But neither Bitcoin, Ethereum, nor any other blockchain, has created the cryptocurrency market by itself. To make Bitcoin and other cryptocurrency markets succeed, entrepreneurs have needed to build a great variety of market structures to enable people to execute transactions in the cryptocurrency ecosystem. These market infrastructures include fiat-to-cryptocurrency exchanges (on-and off-ramps), cryptocurrency asset and derivative exchanges, lending and investment vehicles, secure custody services, stablecoins, wallets, and so forth. These corridors within and between markets are endlessly proliferating and changing in form.

Figure 3: Cryptocurrency Market Growth: Altcoin and Bitcoin Market Capitalization, 2016-22



Source: Coindance.com

Responding to the markets staked out by decentralized blockchains such as Bitcoin and Ethereum, the initial approach of those building new market infrastructures was to scale by building CeFi platforms close to borderlands of the state. CeFi gains from state legibility however opened the door for DeFi entrants. Illegible projects, designed to stymie oversight and anonymize participants, moved to restore an anti-statist and decentralized ideal of Bitcoin. Yet, legal uncertainties in the ether, structural ambivalences, and functional vulnerabilities, induced a CeFi countermobilization that enabled legibility to strike back. These recurring shifts between CeFi and DeFi are examined in the next two sub-sections addressing how the regulated and unregulated zones of the cryptocurrency exchange and stablecoin markets are making and remaking one another.

4.1 Exchanges: A ‘Safe’ Place to Trade

The history of cryptocurrency exchanges can be organized around three interrelated phases of CeFi-DeFi action and reaction. The initial mobilization of CeFi centralized exchanges (CEXs) beginning in 2010 triggered a counter-mobilization of DeFi decentralized exchanges (DEXs) beginning in 2017 that culminated in the 2021 DeFi boom. Illegibility in turn induced a CEX backlash aimed at restoring state legibility and control. This distinctive historical pattern affirms the dynamic logics of the legibility-illegibility framework.

4.1.1 The opening era of CeFi legibility

Early cryptocurrency adopters quickly looked to establish online platforms to buy, sell, and store their newly minted assets. The first electronic Bitcoin exchange launched in March 2010, although it was not until the Tokyo based Mt.Gox made fast and convenient adoption and trading possible in 2012 that interest exploded. Mt. Gox would, however, succumb to an infamous hack in 2014 that saw millions of dollars in Bitcoin stolen from the exchange. For critics, the Mt. Gox disaster exposed the dangers of CEXs, spawning early DEX investments.

The time for the DEXs had not yet come, however. Despite the harrowing Mt. Gox losses, CeFi entrepreneurs, like Brian Armstrong who founded Coinbase in 2012, recognized the potential gains of bringing cryptocurrencies out of the illicit domains of Silk Road and onto Wall Street. Coinbase set out to translate Bitcoin for state regulators and legacy market investors, promising a ‘safe’ and ‘legitimate’ place to trade (Bensinger 2015). Armstrong explained that, ‘We reached out proactively . . . to regulators and tried to be an educational resource . . . to be legitimate’

(Armstrong 2021a). Without engagement, Armstrong believed, the cryptocurrency industry was ‘always going to be in the shadows [and] someone was always going to try to shut [things] down’.

Through regular diplomatic visits to US government agencies, Coinbase began to gain ‘a faint halo of respectability’ (Roberts 2020, 49). This allowed Coinbase to bridge and intermediate traditional and Bitcoin markets (Trautman 2014). Starting in 2013, major US corporates, including Dell, Expedia and Dish Network, and traditional financial payment services Stripe, Braintree, and PayPal, were brought onstream (Roberts 2020). Coinbase additionally sought to stay in the good graces of US law enforcement through a tattletale strategy, filing regular ‘Suspicious Activity Reports’ with the US Treasury (Roberts 2020, 45).

Even as Coinbase and other CEXs solicited legitimacy however, they were building bridges of intermediation into an unregulated, dark, and decentralized marketplace. Inconsistent as this might seem with the stated desire to become ‘legitimate’, CEXs always developed in dialogue with decentralized platforms and unregulated zones of the market as they were bound together by a common set of market forces. This pattern is well-illustrated by the 2017 initial coin offering (ICO) boom.

The ICO boom was littered with rug pulls (where developers flee with investor funds), fraud, insider trading, and other forms of maleficence (D. Shin 2022). Yet, CEXs asserted that new cryptocurrency assets would not qualify as securities under US laws and therefore could be listed without the protections of ‘blue sky’ regulations, essentially because the issuing entities were sufficiently decentralized to not meet the *Howey Test*.⁸ Operating from weakly regulated jurisdictions, such as Malta, Bermuda, and the Seychelles, a new CEXs called Binance rose meteorically in 2018 by taking an especially aggressive approach to listing new tokens (L. Shin 2020).

In part due to the threat posed by Binance, CEXs like Coinbase, Kracken, and Gemini, aimed to partition the legible regulated and illegible unregulated zones of the market more sharply (Chiglinsky, Kharif, and Leising 2021). They increasingly moved to obtain licenses from the NYDFS and other state regulators. These licenses enabled institutional traders, retail investors, and Web3 firms to hold cryptocurrencies in a legally compliant environment (Coinbase 2022). As predicted, this intermediation and the influx of institutional money imported legibility expectations relating to audit opinions and reports, trade execution and portfolio and risk management programs, and legal opinions on custody solutions (Roberts 2020).⁹

The advance of legibility also led to the establishment of collective market organizations designed to enable industry-level engagements with state regulators. Gemini proposed the Virtual Commodity Association in 2018 to root out bad behavior, establish common standards of conduct, and engage with regulatory agencies (Winklevoss 2018). In 2021, Coinbase proposed a new statutory US regulator to police the industry with a private SRO on a basis analogous to the SEC and FINRA system of governance for the US equities market (Ennis 2021). Similar industry groups have been built in the UK, Europe, and Japan, and other major jurisdictions

Increasing state legibility reaped benefits for some. Little by little, legal bans, regulatory warnings, product exclusions, and lawsuits thinned the list of CEXs capable of operating in the US, China, and other large jurisdictions. Offshore CEXs like Binance were forced to establish US regulated entities and pivot to a more state-facing stance (Melinek 2022). Even rebel CEXs, like Shapeshift, drew the ‘dismal conclusion that they might be treated as a financial institution, and as such would have to start to impose all sorts of financial regulatory obligations on our users’ (L. Shin 2021).

With each step in the direction of legibility, CEXs moved further toward reproducing traditional regulated finance, where internal controls, regulatory compliance, and states weighed in on policy and practices. As Armstrong put it in 2021, ‘our core businesses today which generates most of our revenue is a regulated financial services company’ (Armstrong 2021a). All this was anathema to the original promise of a decentralized state-sanction-proof cryptocurrency market, free of government regulation and centralized intermediary control.

4.1.2 DeFi strikes back via illegibility

DeFi adherents had always deemed CEXs to be a betrayal of the anti-statist ideals of Bitcoin. DEX innovation began in January 2014 when NXT announced their intention to launch the NXT Asset Exchange (DeMartino 2016). But NTX and its peers, like Block DX, Coinprism, and Wave, remained experimental technologies on the margins of the market (De 2018).

The next iteration of DEXs, like IDEX, built on Ethereum smart contracts in 2017 made progress by enabling any ERC-20 standardized token to be exchanged with each other (decentralizedcapital 2017). But to plug into the broader markets, Etherdelta, IDEX, and others needed centralized technological components such as centralized orders books and account accreditation processes that pulled them away from the ideals of decentralization (The Blocknet Protocol 2019).

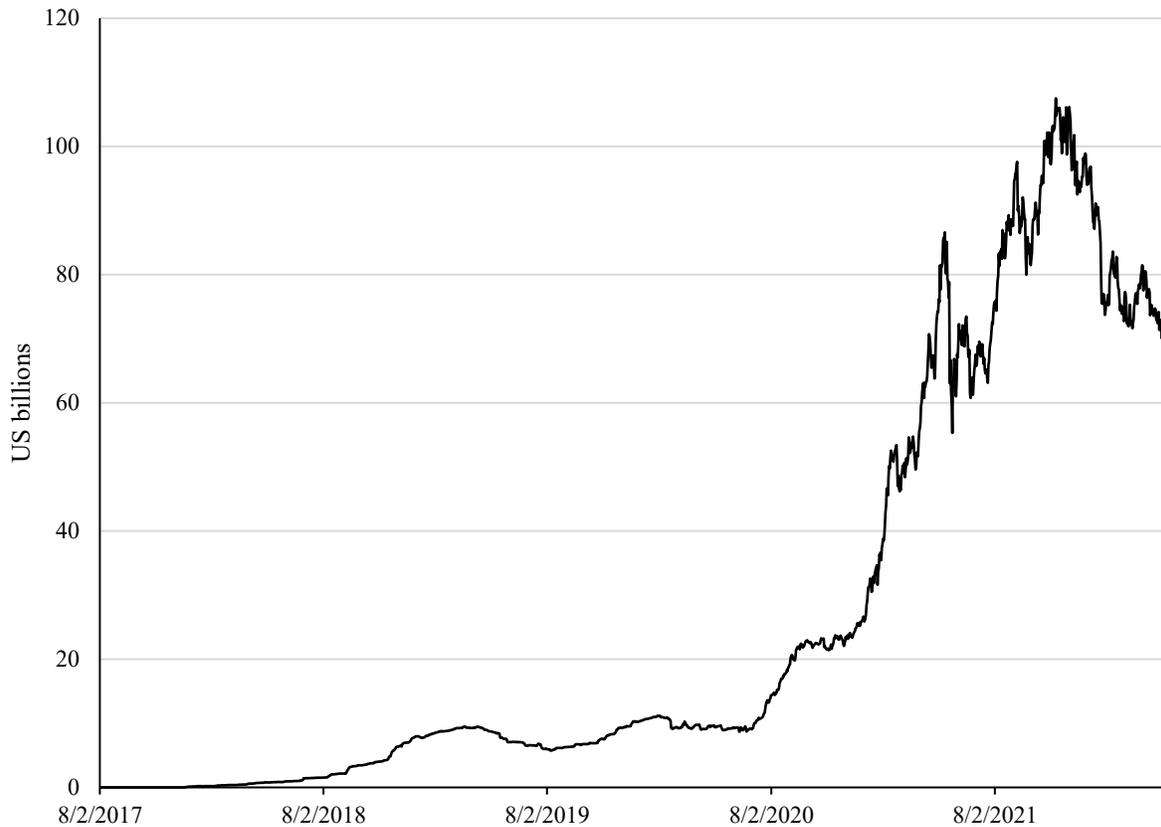
Eventually, in 2018/19, DEXs achieved the goal of having no blockchain or native currency limitations, no trading pair limitations, true peer-to-peer (P2P) orderbooks, and, in some cases, direct wallet-to-wallet trading facilities. These DEXs were finally able to stymie state intervention and threaten CEXs by using software to replace the entities that would typically come under the

purview of existing laws and statutes. The rapid rise of Uniswap, a DEX established in 2019, illustrates the disruptive power of illegibility.

Built on the Ethereum blockchain, a decentralized network, Uniswap boasts that it cannot be shut down by any government. While Uniswap Labs develops and updates the protocol, it maintains there is no responsible administrator to whom outside regulatory obligations might be directed. Uniswap's terms of service deny that it even operates as an exchange facilitating the execution or settlement of trades. Instead, it argues that all this happens entirely on the public distributed Ethereum blockchain in a P2P fashion (Uniswap 2021). The assertion is that Uniswap is simply an empty vessel in the ether.

This constitution enabled Uniswap and its DEX peers to threaten CEXs through illegibility, anonymization, and associated regulatory arbitrage. DEXs dramatically reduced the cost of spinning up a new market by avoiding KYC and AML standards, internal capital buffers and standards for dealing with custodial risks. The difference in organizational form is well illustrated by the striking fact that in 2021 Uniswap had 25 employees while Coinbase had 1,500 individuals on its payroll (Dilendorf and Tabba 2021). The total value locked in DeFi exploded as traders flooded into this unregulated domain (Figure 4).

Figure 4: Total Value Locked (TVL) in DeFi Protocols, 2017 – 2021



Source: DeFi Pulse

DeFi market growth, somewhat paradoxically, has brought centralizing pressures, however. First, while DEXs claim to operate outside law, this is an untested assertion. The largest DEXs are therefore exploring CeFi integrations, with firms like Harbor and Polymath, capable of providing some protection against regulatory actions (Schapp 2021). Second, DEXs, just like CEXs, are soliciting partnerships with traditional financial firms, such as Robin Hood and Paypal, to increase adoption (Schapp 2021). The issue is that DEXs, as immutable protocols, struggle to deal with diverse legacy-world organizations. Again, the preferred solution is ‘middle-wear partnerships’ with CeFi firms that compromise on decentralization (Schapp 2021). The final pressure concerns

internal governance. The problems of SushiSwap in the summer of 2021 exemplify this. Joseph Delong, and other members of the leadership team, left under a cloud and with the conclusion that there was no way to get around hierarchy and clear structural divisions once SushiSwap had started to grow. ‘Structurelessness isn’t really a viable methodology,’ Delong told the Nashville Ethereum conference one year later (Dale 2022).

4.1.3 The hybrid of Ce-DeFi

In the years following the invention of DEXs, CEXs have responded. A few, like Shapeshift, opted to ‘get out of the business of regulated activity’ by mutating into DeFi organizations (L. Shin 2021). But mutation is risky. Why move to an unknown, unregulated, and technologically unproven territory? Most CEXs therefore followed Coinbase’s lead in pushing for more state legibility to exclude DEX competitors from the market or envelop them in common standards of regulation.¹⁰

CEXs also coopted DEX technologies in new ‘Ce-DeFi’ projects. Coinbase for example introduced DEX inspired self-custodial services in 2021. Binance likewise rolled out a smartchain DEX that was interoperable with Ethereum. Finally, the Bahamas based FTX, based on the Solana blockchain, is ambitiously seeking to insert DeFi-P2P, non-custodial, trading solutions into the heart of the US capital markets by establishing a 24/7 tokenized derivatives product market (Doherty, Versprille, and Yang 2022).

These ‘Ce-DeFi’ projects aim to roll back DeFi’s gains. But they also raise new issues and points of ambivalence. Coinbase CEO, Armstrong, admits there is a ‘tension between the [existing] Coinbase [business] which is regulated like a financial services firm and the Coinbase self-

custodial [business] that is regulated more like a software company because we are never taking possession of customer funds and not executing any trades’ (Armstrong and Adams 2021). This illustrates how the CeFi versus DeFi battle, and conflicts around the regulated and unregulated boundaries of the market, are not dissolved by Ce-DeFi. They are internalized through hybridization.

4.1.4 Exchange reactive-sequencing and co-constitution

In summary, as predicted by our framework, the history of the cryptocurrency exchange market is a story of CeFi-DeFi push and pull and genuine ambivalence—stymification and translation, segregation and (re)intermediation, anonymization, and telltale. On the CeFi side of the market, Coinbase and others have embraced state legibility, even as they have profited from DeFi innovations.

The position of the DEXs is no less ambivalent. The unregulated arena of DEXs operations has taken market share from CEXs. But even as CEXs are threatened by new operators in the shadows, DEXs continue to depend on them as pipelines of capital, legal stability, and governance solutions.

These structural ambivalences are best reflected in the rise of Ce-DeFi. Yet however much technologies and structures are comingled, the distinction between CEXs and DEXs can never finally disappear. This is because regulated-CEXs and unregulated-DEXs constitute a single market system in which each needs the other to construct profit opportunities and the social field of the market.

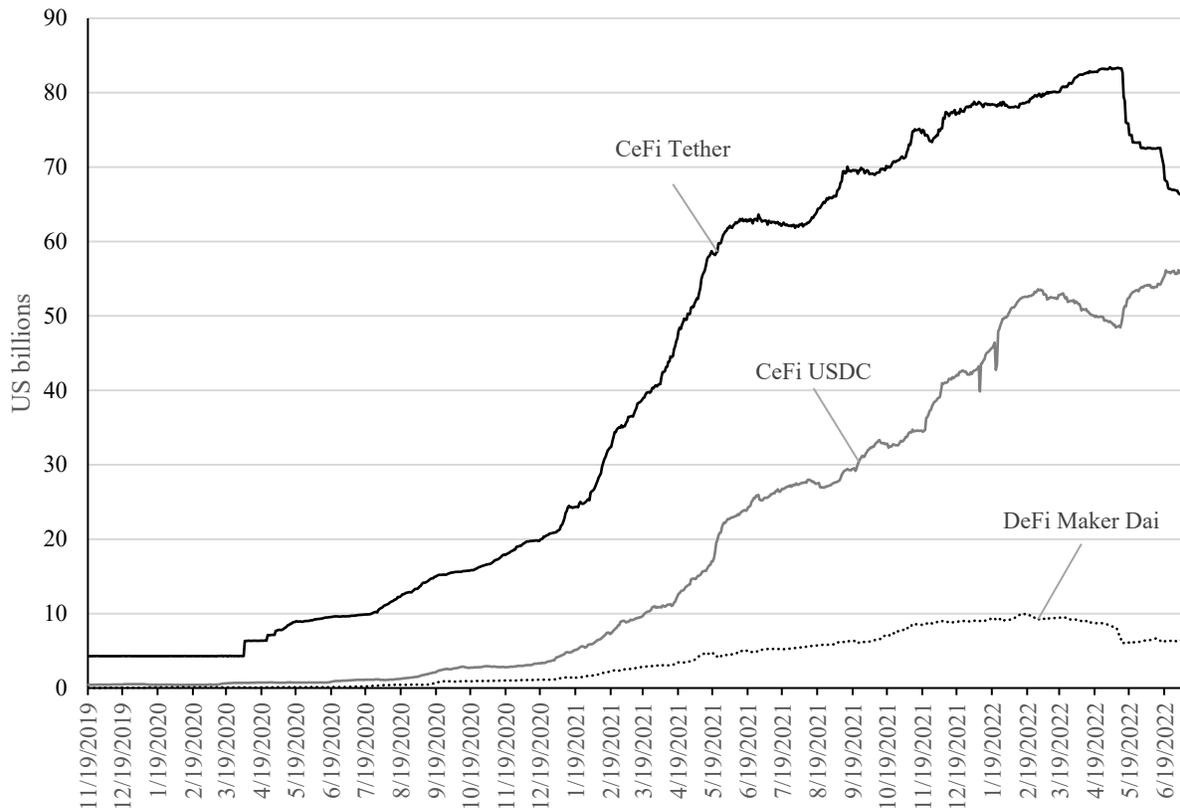
4.2. Stablecoins: A ‘Stable’ Medium of Exchange

Exchanges created a place to trade cryptocurrencies but building the cryptocurrency economy also demanded some way to manage the dramatic volatility otherwise inhibiting the adoption and use of virtual currencies. The market’s solution was stablecoins: cryptocurrencies that aim to maintain a stable value with reference to a specified asset, typically US dollars (FSB 2020). Tracing the history of stablecoin projects unveils a tussle of competing CeFi and DeFi models. CeFi stablecoins have solicited legibility while DeFi projects have sought to build illegible state-censorship resistant stablecoins. More so than in the exchange market, this struggle has been played out through episodes of organizational failure and reinvention.

4.2.1 Libra brings CeFi legibility

The first CeFi stablecoin, Realcoin, a dollar-backed instrument, that went on to become USD Tether, was issued in 2014 with the support of the Bitfinex exchange. The next major centralized stablecoin, USDC, was launched in 2018 by Circle in collaboration with Coinbase. Two further centralized stablecoins, Paxos and Gemini, were launched, this time with the approval of regulators in New York, in the same year. Tether and USDC rapidly became crucial parts of the market infrastructures providing value benchmarking and bank-like risk transformation services in the ecosystem (Figure 5).

Figure 5: Market Growth of Leading CeFi and DeFi Stablecoins, 2019 – 2022



Source: Coingecko.com

The regulatory scrutiny of the stablecoin market intensified dramatically as Facebook proposed the launch of Libra in 2019 (Hecker 2020). Government regulators poured over Libra’s plans. The G7 (2021) declared that ‘no global stablecoin project should begin operation until the legal, regulatory and oversight challenges and risks’ are addressed. This FSB, BIS, and US President’s Working Group all warned in 2021 that stablecoins needed to be regulated (FSB 2020; President’s Working Group 2021). Eventually, Facebook dropped its stablecoin project in 2021 (see Waller 2021). But, by this time, states knew far more about the stablecoin market than they did before.

In this context, the centralized stablecoins, Tether and Circle, shifted quickly to advance state legitimacy and attain regulatory recognition.¹¹ Many issues needed translation. It was unclear

how the USDC and Tether tokens would be classified, how the sector would be regulated, and by whom. Circle and Tether engage in extensive processes of diplomacy aimed at bringing operations into line with the status quo. However, while the boundaries of state regulation were in dispute, Tether and Circle could avoid scrutiny as a traditional bank or financial institutions despite offering similar services.

The construction of a more legible market began to emerge. Beginning in late 2018, Circle and Tether started to publish attestations on their reserves, marking a shift towards conformity. Though these fell short of formal audits, both companies used the attestations to telltale on unregulated DeFi stablecoins (Robinson and Bloomberg 2021).¹² At the US federal level, Circle and Tether registered as money service businesses (MSB) with the Financial Crimes Enforcement Network (FinCEN), a bureau of the US Department of the Treasury (Koning 2021). Finally, Circle began in 2022 to publish an industry-first weekly USDC stablecoin transparency report. Some see this as a first move towards founding a standard setter for the industry (Salmon 2021).

Translation and raising prudential standards enabled smoother intermediation with legacy financial institutions like Visa, MasterCard, and Plaid (Circle 2022). In March 2021, Visa unveiled a pilot scheme to use the USDC to settle transactions.¹³ Tether and USDC are also deeply integrated into CEX infrastructures. These relationships have imported more traditional financial standards into the market.

Following these developments, on August 11, 2021, Circle announced its intention to become a full-reserve national commercial bank, operating under the supervision and risk management requirements of the Federal Reserve, U.S. Treasury, OCC, and the FDIC. The path then is clear: Circle has moved the market towards the state, not away from it. But building a payment system to meet the myriad of existing bank regulations would rapidly erode the high-tech

competitive advantages of USDC and Tether and expose them to rivals on the DeFi flank of the market.

4.2.2 DeFi illegibility and its discontents

The history of DeFi stablecoins started with the Proshares project in 2013. It took four years however for decentralized stablecoins to really impact the market through the launch of MakerDAO in 2017 (Maker Team 2017). Users place collateral (Ethereum or other assets) into the Maker system and get a loan in DAI tokens. The loans are built on smart contracts—that among other things automate liquidations if the collateral changes—designed to maintain the DAI peg to the USD. In the technological trail demonstrated by Maker, a series of other decentralized stablecoins launched including Terra and Digix Gold (DGX).

Maker and other DeFi projects have worked to stymie the reach of the state through decentralization (Russo 2020). The core of the project is the Maker protocol—the program—that runs Maker’s self-executing components (Maker 2018). The idea is that the operations are autonomous, rules are hard-coded, and peg maintenance is self-executing. This architecture enables Maker to operate on a decentralized basis and outside the boundaries of the state (Russo 2020).

Maker’s vision was to support a bottom-up formation of an alternative and segregated financial system (Maker 2020e). Here the utility of DAI as a stable, decentralized, currency was fundamentally connected to the composability of DAI across Ethereum projects (Maker 2020f). Developers were able to build using DAI with guaranteed interoperability across Ethereum

projects. These synergies were expected to create positive spillovers as DAI would be used by an increasing number of projects in a growing market.¹⁴

Maker and other DeFi stablecoins envisaged a path of market development that would see CeFi stablecoins fail or be sanctioned by the state. This, they anticipated, would bring the market to them. However, this prediction has stalled amid a series of major DeFi crises. The collapse of Terra 2022 and the near failure of Maker two years earlier highlight the limits of isolated DeFi ecosystems (Maker 2022b). As our framework predicts, in the face existential crises, these leading decentralized stablecoins moved rapidly to centralized governance procedures and systems.

Maker's problems began when the Covid shock caused DIA to lose its peg, wiping out collateral holders. The members of Maker faced enormous pressure to adopt a centralized stablecoin as a form of collateral. The collateral onboarding of USDC was debated on Maker governance calls in March and April 2020 (Maker 2020b; 2020a; 2020c). The main argument for onboarding was the creation of greater DAI liquidity that could help to push the DAI peg back towards \$1. The concern was that without USDC 'there may not be a tomorrow' (Maker 2020c). The decision was taken as a temporary one to fix the liquidity problem that threatened DAI.

The case against onboarding USDC was to reduce the 'purity' of DAI as a decentralized stablecoin and push the market towards rather than away from the state and centralization (Maker 2020d). DAI would no longer backed entirely by decentralized assets. The move also had a clear regulatory risk and undermined the state appropriation-proof status of Maker (Koning 2020). If the US government decided that dollar-backed stablecoins were illegal for example, the Maker system would be in profound problems. There was also a related 'blacklist' risk under KYC and AML regulations (Maker 2020b). Further, Maker faced a legitimacy cost in moving away from the ideals of decentralization.

Despite these arguments, the pressures on DAI compelled the adoption of USDC. This was a massive departure from Maker's original design. As one investor explained, 'What made the original version of DAI so transgressive was its ability to recreate the dollar out of entirely censorship-resistant material' (Koning 2020). 'Makerdao is a project that is supposed to exist without any sort of reliance on a centralized actor . . . That is the whole point of DeFi' (Russo 2020).

Maker's community has since tried to unwind its dependence on USDC. In early 2022, USDC was over 50 percent of the backing of DAI. As one participant put it, we need a solution or 'we are just going to be wrapped USDC' (Maker 2022a). The key issue was that the members of Maker could not identify any real alternative. Using decentralized stablecoins would involve investing in and strengthening direct competitors (Maker 2022a). The other option to onboard other real-world assets, such as US Treasury bonds, as collateral meanwhile might entirely compromise the status of Maker as a DeFi entity. The result was a do nothing response (Maker 2022a).

The failure of TerraUSD (UST) tells a similar story. Terra's two native tokens, Luna and UST were supposed to work in tandem to peg UST, an algorithmic stablecoin, to \$1 price. To buy UST, users needed Luna, and vice versa. This algorithmic see-saw dynamic was intended to keep the price of UST stable. The philosophy was rooted in the ideas of DeFi. In the words of one investor, 'They found the algorithm model fresh and attractive because there was a growing need for stablecoins and the coins were not linked to the real economy in any way, only backed by each other and by Bitcoin' (Davies and Jung-a 2022).

Even before the 2022 collapse however, Terra Labs had spun up something called the Luna Foundation Guard (LFG) to centralize its processes for defending the \$ peg. This was not enough

however. In May 2022 a run took place on UST. As the Luna supply was sold off, the value of the cryptocurrency plummeted, undermining the ecosystem's delicate algorithmic balance (Sarkar 2022). UST rapidly went to zero.

The failure of UST triggered a system-wide market collapse and renewed regulatory scrutiny of the stablecoin market. It led to further governance debates at Maker. Maker insiders feared that coordination problems and inaction were emerging from the decentralized organization. In July 2022, core developers proposed a series of reforms that would have turned the DAO into a more centralized organization akin to a traditional corporation (Mitchelhill 2022). The Maker community however voted down the proposals, preferring decentralization. The pressures to centralize are unlikely to disappear however, especially if the system is hit by another crisis.

4.2.3 Legibility through cycles of organizational failure

As our framework suggests, CeFi stablecoin operators are working to translate cryptocurrencies into the state-regulated and legacy zones of the market. Like CEXs, Tether and USDC have risen on the tide of unregulated cryptocurrency markets and integration into DeFi projects. The DeFi parts of the market have meanwhile aimed to restore the decentralized and illegible ideals of the cryptocurrency ecosystem. However, while aiming to construct the foundations for the endogenous and independent accumulation of capital within a segregated DeFi ecosystem, functional problems have undermined the ambition of DeFi stablecoins. Particularly in moments of existential crisis, Maker, UCT, and other DeFi stablecoins have on-boarded CeFi stablecoins and introduced centralized human-decision making structures.

5. Conclusion: Looking Back and Forward

The future of the cryptocurrency markets is being crafted through the struggle between DeFi and CeFi firms. DeFi actors make use of cryptocurrency innovations to disintermediate centralized business models and build an ungoverned financial system outside the state regulated system. The promise is an anti-statist revolution realized through illegibility. In contrast, CeFi firms are engaged in capturing the implementation of blockchain technologies and securing a replication of the existing financial system under the auspices of state control. The aim is to bring cryptocurrency technologies into the state legible structures of the status quo. The ultimate impact of cryptocurrencies in this vision is an evolution of the current capitalist structure.

The analysis presented in this paper suggests that elements of both narratives are correct, but neither is complete. They capture parts of the markets self-governing order that cyclically moves the market between more and less centralized and state-orientated orders. It also emphasizes that the two sides of the market – and the two futures they envisage – are in tension but also depend on each other. The CeFi firms could not thrive without the unregulated decentralized assets and technologies that DeFi entrepreneurs innovate to escape state regulation and control. Likewise, DeFi firms need CeFi to bring stability and resources that enable the cryptocurrency markets to grow and leverage traditional pools of capital.

The real disputes are over where the boundaries of the market are drawn. Here, CeFi firms appear to have an advantage, not just because decentralized forms of organization are crisis prone and difficult to scale and therefore slow to achieve widespread adoption, but also because the state has a basic interest in centralization in so far as it advances government control and legibility. However, the realization of those advantages will always open some measure of opportunity

outside the perimeters of the state and encourage innovations designed to improve the appropriation-proof technologies of DeFi entities.

How should we understand the contested dialectical relations between markets that are regulated by states and their agents, on the one hand, and parallel, coexisting, unregulated markets, on the other? This spatial relationship is particularly salient in financial markets, and for the firms competing in them, where the emergence of markets outside the state regulated domain is a recurring theme, especially in periods of technological disruption, legal change, and new market creation.

In the present moment, this cleavage demarks the struggle between legacy financial markets and different visions for the cryptocurrency markets. But it also finds echoes in previous moments of market structural change. From equities and repo markets to Eurodollars and commodities, there is a common pattern of illegible decentralized frameworks arising often through technological innovations on the opaque peripheries of markets, attacking and disintermediating incumbents, expanding markets to excluded groups, and evading state controls, only for incumbent players and forces of reintermediation to coopt their technologies and practices, centralizing their processes and translating them into legible state regulated domains. The cycle then repeats.

Through these patterns firms are repeatedly forced to use alchemic solutions and find themselves in circumstances of structural ambivalence. These developments highlight the differences between the ideals and the actual practices found in both old and new markets. The process of market development appears not as the realization of some rational ideal, be it statist or anti-statist, centralized or decentralized, but rather a dynamic process of bricolage through unstable cycles of illegibility and legibility. In this context, the cooptation of DeFi technologies by CeFi

firms is an intrinsic part of market value creation and capture. Likewise, DeFi firms adopting CeFi structures and legacy practices is not a transgression of some fundamental boundary, but rather a necessary part of bringing stability to ungoverned parts of the market. Put another way, the market does not betray its function when it simultaneously links and divides DeFi and CeFi firms, regulated and unregulated zones, state and non-state places; on the contrary, this is the essential nature of the market order.

Notes

- ¹ Gemini would soon have plenty of company; as of March 2022, NYDFS regulates 30 Virtual Currency Businesses. See NYDFS (2022).
- ² This neatly echoes what Cronon (1992) observed of the seemingly divided geographies of the ‘metropolis’ and ‘nature’ in his classic study of the formation of Chicago’s markets in the American Great West.
- ³ For more details on the technological background of DeFi, see Zetzsche, Arner, and Buckley (2020).
- ⁴ Our dynamic approach to mapping these movements is grounded in historical sociological (Aminzade 1992) and institutionalism (Orren and Skowronek 1994; Pierson 2004).
- ⁵ Mattli and Kellerman (2019) observe aspects of this cycle in markets for equities and foreign exchange, and our theory builds on a long lineage of thought on the spontaneous self-organization of markets (see Buchanan and Vanberg 2001).
- ⁶ On state motivation to outsource regulation as a means of saving costs and benefiting from private firms’ industry expertise, see Abbott, Levi-Faur, and Snidal (2017). On motivations to shift responsibility/blame, see Heinkelmann-Wild et al. (2021).
- ⁷ For this reason, DeFi architectures operate as mutual-benefit organizations, somewhat analogous to organized religions, dedicated to the collective production of group ideologies, technical education and instruction, social ties, and other quasi-public ‘club goods’ (McCleary 2011).
- ⁸ The Howey Test established a test for determining if an investment contract, which is a security, exists. Under the Howey Test an investment contract exists where there is (1) an investment of money (2) in a common enterprise (3) with the expectation of profit (4) to be derived solely or primarily from the efforts of others.
- ⁹ Author interview, Japan Virtual and Crypto assets Exchange Association (JVCEA), Tokyo, Japan, 6.12.2021.
- ¹⁰ Ibid.
- ¹¹ CBDC Webinar, Dante Disparate, 17.02.2022.
- ¹² The attestations saw both companies row back from earlier claims that their stablecoins were fully back by dollars.
- ¹³ Ibid.
- ¹⁴ The ERC-20 token standard and other fungible and non-fungible tokens and the DID standard for decentralized identity have enabled developers to issue tokens knowing that exchanges would recognize them, knowing that wallets would be able to hold them, and knowing that they would have the benefits of a stable nominal reference (Maker 2022c).

References

- Abbott, Kenneth W., David Levi-Faur, and Duncan Snidal. 2017. “Theorizing Regulatory Intermediaries: The RIT Model.” *Annals of the American Academy of Political and Social Science* 670 (1): 14–35.
- Aminzade, Ronald. 1992. “Historical Sociology and Time.” *Sociological Methods & Research* 20 (4): 456–80. <https://doi.org/10.1177/0049124192020004003>.
- Armstrong, Brian. 2021. Brian Armstrong on the Crypto Economy Interview by Tyler Cowen. Conversations with Tyler. <https://medium.com/conversations-with-tyler/tyler-cowen-brian-armstrong-coinbase-crypto-7fedc56c9910>.
- Bensinger, Greg. 2015. “First U.S. Bitcoin Exchange Set to Open.” *WSJ*, January 25, 2015, sec. Markets. <http://online.wsj.com/articles/first-u-s-bitcoin-exchange-set-to-open-1422221641>.
- Buchanan, James M., and Viktor J. Vanberg. 2001. “The Market as a Creative Process.” In *The Constitution of Markets: Essays in Political Economy*, 101–13. London: Routledge.
- Buterin, Vitalik. 2017. “Notes on Blockchain Governance.” December 17, 2017. <https://vitalik.ca/general/2017/12/17/voting.html>.

- CFTC. 2018. “Statement of CFTC Commissioner Brian D. Quintenz on a Proposal by Cameron and Tyler Winklevoss for a Virtual Commodity SRO.” March 13, 2018. <https://www.cftc.gov/PressRoom/SpeechesTestimony/quintenzstatement031318>.
- Chiglinsky, Katherine, Olga Kharif, and Matthew Leising. 2021. “Crypto Exchanges Have a Plan to Beat Binance: Play by the Rules.” *Bloomberg.Com*, July 12, 2021. <https://www.bloomberg.com/news/articles/2021-07-12/coinbase-kraken-and-gemini-play-by-the-rules-to-beat-binance>.
- Circle. 2022. “USDC Market Cap Grows to More than \$50 Billion.” Circle. February 2, 2022. <https://www.circle.com/blog/usdc-market-cap-grows-to-more-than-50-billion>.
- Coinbase. 2022. “Enhancing Trust with Regulatory Compliance.” Coinbase Help. 2022. <https://help.coinbase.com/en/coinbase/other-topics/legal-policies/enhancing-trust-with-regulatory-compliance>.
- Cronon, William. 1992. *Nature’s Metropolis: Chicago and the Great West*. Norton.
- Dale, Brady. 2022. “Former SushiSwap CTO Argues for the Need for Hierarchy in DAOs in Provocative Talk at ETHDenver.” *The Defiant*, February 22, 2022. <https://thedefiant.io/joseph-delong-sushiswap-postmortem/>.
- Davies, Christian, and Song Jung-a. 2022. “\$40bn Crypto Collapse Turns South Korea against the ‘Lunatic’ Leader.” *Financial Times*, May 23, 2022. <https://www.ft.com/content/c46f767c-c8e3-47cf-b0a3-46d3b84498c3>.
- De, Nikhilesh. 2018. “‘Colored Coins’ Startup Coinprism Is Shutting Down.” *CoinDesk*, March 29, 2018, sec. Markets. <https://www.coindesk.com/markets/2018/03/29/colored-coins-startup-coinprism-is-shutting-down/>.
- decentralizedcapital. 2017. “[ANN] [Decentralized Ethereum Exchange] IDEX Live on Ethereum Mainnet.” January 13, 2017. <https://bitcointalk.org/index.php?topic=1751338.0>.
- DeMartino, Ian. 2016. *The Bitcoin Guidebook: How to Obtain, Invest, and Spend the World’s First Decentralized Cryptocurrency*. Skyhorse Publishing.
- Doherty, Katherine, Allyson Versprille, and Yueqi Yang. 2022. “Crypto Billionaire Rankles Wall Street Titans With Derivatives Plan.” *Bloomberg*, April 21, 2022. <https://www.bloomberg.com/news/articles/2022-04-21/crypto-billionaire-rankles-wall-street-with-futures-trading-plan>.
- Ennis, Dan. 2021. “Coinbase Sees Single Regulator, New Framework for Crypto Supervision.” *Banking Dive*. October 18, 2021. <https://www.bankingdive.com/news/coinbase-sees-single-regulator-new-framework-for-crypto-supervision/608380/>.
- FSB. 2020. “Regulation, Supervision and Oversight of ‘Global Stablecoin’ Arrangements.” Financial Stability Board. <https://www.fsb.org/2020/10/regulation-supervision-and-oversight-of-global-stablecoin-arrangements/>.
- G7. 2021. “G7 Finance Ministers and Central Bank Governors’ Statement on Central Bank Digital Currencies (CBDCs) and Digital Payments.” G7. https://www.mof.go.jp/english/policy/international_policy/convention/g7/g7_20211013_1.pdf.
- Hecker, Richie. 2020. “How Libra Failed, and How It Could Succeed in 2020.” *CoinDesk*, January 4, 2020, sec. Policy. <https://www.coindesk.com/policy/2020/01/04/how-libra-failed-and-how-it-could-succeed-in-2020/>.
- Heinkelmann-Wild, Tim, Bernhard Zangl, Berthold Rittberger, and Lisa Kriegmair. 2021. “Blame Shifting and Blame Obfuscation: The Blame Avoidance Effects of Delegation in

- the European Union.” *European Journal of Political Research* n/a (n/a).
<https://doi.org/10.1111/1475-6765.12503>.
- Ives, Nat. 2019. “Winklevosses’ Cryptocurrency Exchange Says the ‘Revolution Needs Rules.’”
Wall Street Journal, January 4, 2019, sec. C Suite.
<https://www.wsj.com/articles/winklevosses-cryptocurrency-exchange-says-the-revolution-needs-rules-11546599600>.
- Koning, J. P. 2020. “MakerDAO’s Embrace of Centralized Stablecoins Offers Risks and Rewards.” *CoinDesk*, October 12, 2020, sec. Policy.
<https://www.coindesk.com/policy/2020/10/12/makerdaos-embrace-of-centralized-stablecoins-offers-risks-and-rewards/>.
- . 2021. “What Tether Means When It Says It’s ‘Regulated.’” *CoinDesk*, January 26, 2021, sec. Policy. <https://www.coindesk.com/policy/2021/01/26/what-tether-means-when-it-says-its-regulated/>.
- Lessig, Lawrence. 1999. *Code: And Other Laws Of Cyberspace*. First Edition. New York: Basic Books.
- Levi-Strauss, Claude. 1966. *The Savage Mind*. University of Chicago Press.
- MacKenzie, Donald. 2008. *Material Markets: How Economic Agents Are Constructed*. OUP Oxford.
- Maker. 2018. “Governance & Risk #1.” Maker. https://www.youtube.com/watch?v=_W-Unj4LlzU.
- . 2020a. “Governance & Risk #77.” Maker.
<https://www.youtube.com/watch?v=WuW0e6axaHQ>.
- . 2020b. “Governance and Risk Call Special: Onboarding USDC as Collateral to Mitigate Liquidity Risk.” Maker. <https://www.youtube.com/watch?v=YZFfglp01q0>.
- . 2020c. “Governance & Risk #78.” Maker.
https://www.youtube.com/watch?v=v_OtobM_Mrg.
- . 2020d. “Governance & Risk #79.” Maker.
<https://www.youtube.com/watch?v=AIW7IFg6gBI>.
- . 2020e. “What Will Maker Governance Look Like After Complete Decentralization?” April 3, 2020. <https://blog.makerdao.com/what-will-maker-governance-look-like-after-complete-decentralization/>.
- . 2020f. “How and Why to Self-Integrate Dai into Decentralized Apps.” April 23, 2020. <https://blog.makerdao.com/how-and-why-to-self-integrate-dai-into-decentralized-apps/>.
- . 2022a. “Governance & Risk #174.” Maker.
<https://www.youtube.com/watch?v=TYjzRyEWaRk&t=2163s>.
- . 2022b. “Governance & Risk #178.” Maker.
<https://www.youtube.com/watch?v=rHIQFRdqa1M>.
- . 2022c. “Governance & Risk #179.” <https://www.youtube.com/watch?v=71jiZxW2cHE>.
- Mattli, Walter, ed. 2018. *Global Algorithmic Capital Markets: High Frequency Trading, Dark Pools, and Regulatory Challenges*. Oxford: Oxford University Press.
- Mattli, Walter, and Miles Kellerman. 2019. “Changing Capital Market Structure and Regulatory Challenges: Trends in Equity and Foreign Exchange Markets.” In *The Oxford Handbook on International Economic Governance*, edited by Eric Brousseau, Jean-Michel Glachant, and Jérôme Sgard. Oxford: Oxford University Press.

- McCleary, Rachel, ed. 2011. *The Oxford Handbook of the Economics of Religion*. Oxford University Press. <https://global.oup.com/academic/product/the-oxford-handbook-of-the-economics-of-religion-9780195390049>.
- Melinek, Jacquelyn. 2022. “Binance.US Raises over \$200M in First Seed Round, Hitting a \$4.5B Valuation as It Preps for IPO | TechCrunch.” TechCrunch. April 6, 2022. <https://techcrunch.com/2022/04/06/binance-us-raises-over-200m-in-first-seed-round-hitting-a-4-5b-valuation-as-it-preps-for-ipo/>.
- Mitchelhill, Tom. 2022. “MakerDAO Members Shoot down Proposal for More Centralization.” *Cointelegraph*, July 1, 2022. <https://cointelegraph.com/news/makerdao-members-shoot-down-proposal-for-more-centralization>.
- Morgan, Kimberly J., and Ann Shola Orloff. 2017. “Introduction: The Many Hands of the State.” In *The Many Hands of the State*, edited by Kimberly J Morgan and Ann Shola Orloff, 1–32. Cambridge University Press. <https://doi.org/10.1017/9781316471586.001>.
- Nakamoto, Satoshi. 2008. “Bitcoin: A Peer-to-Peer Electronic Cash System,” 9.
- NYSDFS. 2022. “Virtual Currency Businesses: Regulated Entities.” Department of Financial Services. 2022. https://www.dfs.ny.gov/apps_and_licensing/virtual_currency_businesses/regulated_entities.
- Orren, Karen, and Stephen Skowronek. 1994. “Beyond the Iconography of Order: Notes for a ‘New Institutionalism.’” In *The Dynamics of American Politics*. Routledge.
- Pierson, Paul. 2004. *Politics in Time: History, Institutions, and Social Analysis*. Princeton: Princeton University Press.
- President’s Working Group. 2021. “Report on Stablecoins.” President’s Working Group on Financial Markets, the Federal Deposit Insurance Corporation, and the Office of the Comptroller of the Currency. https://home.treasury.gov/system/files/136/StableCoinReport_Nov1_508.pdf.
- Roberts, Jeff John. 2020. *Kings of Crypto: One Startup’s Quest to Take Cryptocurrency Out of Silicon Valley and Onto Wall Street*. Harvard Business Review Press.
- Robinson, Matt, and Bloomberg. 2021. “Cryptocurrency Tether Is Fined \$41 Million for Lying about Reserves.” *Fortune*, October 15, 2021. <https://fortune.com/2021/10/15/tether-crypto-stablecoin-fined-reserves/>.
- Russo, Camila. 2020. “MakerDAO Founder Rune Christensen On DeFi’s Biggest Test Yet by The Defiant - DeFi Podcast.” The Defiant - DeFi Podcast. April 8, 2020. <https://anchor.fm/thedefiant/episodes/MakerDAO-Founder-Rune-Christensen-On-DeFis-Biggest-Test-Yet-ecgj0b>.
- Salmon, Felix. 2021. “How Crypto Giant Circle Could Create a U.S.-Backed Digital Currency.” Axios. August 12, 2021. <https://www.axios.com/2021/08/12/circle-crypto-digital-currency-bank>.
- Sarkar, Arijit. 2022. “Do Kwon Dismisses Allegation of Cashing out \$2.7B from LUNA, UST.” *Cointelegraph*, June 12, 2022. <https://cointelegraph.com/news/do-kwon-dismisses-allegation-of-cashing-out-2-7b-from-terra-luna-ust>.
- Schapp, Ashleigh. 2021. “Presentation on Uniswap.” June. <https://odysee.com/uniswap-ethcc-2021>.
- Schar, F., and A. Berentsen. 2020. *Bitcoin, Blockchain, and Cryptoassets: A Comprehensive Introduction*. MIT Press. https://books.google.com/books?id=_L34DwAAQBAJ.

- Scott, James C. 1999. *Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed*. Yale University Press.
<https://yalebooks.yale.edu/book/9780300078152/seeing-state>.
- . 2010. *Art of Not Being Governed: An Anarchist History of Upland Southeast Asia*. Yale University Press. <https://yalebooks.yale.edu/book/9780300169171/art-not-being-governed>.
- Shin, Daniel. 2022. “10 Largest Rug Pulls.” *Identity Review*, July 7, 2022.
<https://identityreview.com/rug-pulls/>.
- Shin, Laura. 2020. “Listen to CZ Compare Binance to Bitcoin.” Unchained Podcast. May 19, 2020. <https://unchainedpodcast.com/listen-to-cz-compare-binance-to-bitcoin/>.
- . 2021. “Why ShapeShift’s Erik Voorhees Thinks Toxic Bitcoin Maximalism Is Bullshit.” July 27, 2021. <https://unchainedpodcast.com/why-shapeshifts-erik-voorhees-thinks-toxic-bitcoin-maximalism-is-bullshit/>.
- Slater, Dan, and Diana Kim. 2015. “Standoffish States: Nonliterate Leviathans in Southeast Asia.” *TRaNS: Trans-Regional and -National Studies of Southeast Asia* 3 (1): 25–44.
<https://doi.org/10.1017/trn.2014.14>.
- Stigler, George J. 1971. “The Theory of Economic Regulation.” *The Bell Journal of Economics and Management Science* 2 (1): 3–21.
- The Blocknet Protocol. 2019. “The Evolution of the Decentralized Exchange: A Brief History.” *Medium* (blog). May 13, 2019. <https://theblocknetchannel.medium.com/the-evolution-of-the-decentralized-exchange-a-brief-history-888ee0ce1803>.
- Tiwari, Neil. 2018. “The Commodification of Cryptocurrency.” *Michigan Law Review* 117 (3): 611–34. <https://doi.org/10.36644/mlr.117.3.commodification>.
- Trautman, Lawrence. 2014. “Virtual Currencies Bitcoin & What Now After Liberty Reserve, Silk Road, and Mt. Gox?” *Richmond Journal of Law & Technology* 20 (4): 13.
- Uniswap. 2021. “Terms of Service.” Uniswap Protocol. October 25, 2021.
<https://uniswap.org/terms-of-service>.
- Vigna, Paul. 2018. “Winklevoss Effort to Self-Regulate Cryptocurrency Gets Members.” *Wall Street Journal*, August 20, 2018, sec. Markets. <https://www.wsj.com/articles/winklevoss-effort-to-self-regulate-cryptocurrency-gets-members-1534804308>.
- Waller, Christopher J. 2021. “Reflections on Stablecoins and Payments Innovations.” <https://www.federalreserve.gov/newsevents/speech/waller20211117a.htm>.
- Winklevoss, Cameron. 2018. “A Proposal for a Self-Regulatory Organization for the U.S. Virtual Currency Industry.” Gemini. March 13, 2018. <https://www.gemini.com/blog/a-proposal-for-a-self-regulatory-organization-for-the-u-s-virtual-currency-industry>.
- Zetsche, Dirk A, Douglas W Arner, and Ross P Buckley. 2020. “Decentralized Finance.” *Journal of Financial Regulation* 6 (2): 172–203. <https://doi.org/10.1093/jfr/fjaa010>.