BANK RUNS DURING CRYPTO WINTER

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"Crypto Winter" refers to a systemic event that occurred in the cryptocurrency ecosystem—what we call "crypto space"—in 2022. Crypto space was wracked by plummeting crypto prices, the troubles of a large crypto hedge fund, and runs on many crypto lending platforms. Several large crypto firms went bankrupt. Collectively, everyday people lost billions of dollars. And crypto investors are still feeling the aftershocks.

We begin with two observations: First, despite mass marketing campaigns to the contrary, crypto lending platforms recreated and replicated traditional banking. They were vulnerable to runs because, like all banks, they borrowed short and lent long. This is the essence of banking, so we label these lending platforms "crypto banks." Second, crypto space was largely circular. Once crypto banks obtained deposits and investments, these firms borrowed, lent, and traded mostly between themselves. As a result, Crypto Winter did not cause the kind of financial turmoil that we witnessed in either 2008 or 2020, nor did it cause an economic recession.

We then sound a warning for regulators. The next generation of crypto firms are linking up with the financial sector, which means their failures will spill over into the real economy. To contain the inevitable growth of systemic risk, regulators should use banking laws to address a banking problem.

TABLE OF CONTENTS

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Introduction

From November 2021 to June 2022, the aggregate market value of cryptocurrencies fell from $2.9 trillion to $1 trillion.[1] This led to a cascade of events in the cryptocurrency ecosystem called "Crypto Winter." Many ordinary investors are still reeling. In letters to a bankruptcy judge, investors described their stories of betrayal, depression, and despair.[2] One investor was a 50-year-old laborer with a high school education who began saving for retirement at the age of 40. He trusted Celsius with "approximately $165,000."[3] He "went all in . . . 100% of [his] savings followed by everything [he] had left over after each check."[4] His money is gone, his retirement in jeopardy. He never owned a home and, as a result of losing his entire life savings, probably never will.[5] Others were left "in jeopardy of losing [their] home and everything [they] own."[6] They were told that crypto deposits were safer than traditional bank deposits.[7] Unfortunately, none of that was remotely true.

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[1] *See Global Live Cryptocurrency Charts & Market Data*, CoinMarketCap, https://coinmarketcap.com/charts/ (last visited Feb. 11, 2024) (showing aggregate market capitalization from 2013 to present); Dallas G. Taylor, *Charting New (and Familiar) Territory: The Voyager Crypto Bankruptcy*, Nat'l L. Rev. (July 18, 2022), https://www.natlawreview.com/article/charting-new-and-familiar-territory-voyager-crypto-bankruptcy.

[2] *See* Letters to the Hon. Martin Glenn, *In re* Celsius Network LLC, 642 B.R. 497 (Bankr. S.D.N.Y. 2022) (No. 1:22-bk-10964). For excerpts from letters and a more easily accessible medium, see *Excerpts from Letters to the Judge in Celsius Network Bankruptcy Case*, Molly White Blog (July 22, 2022), https://blog.mollywhite.net/celsius-letters/.

[3] Letter to the Hon. Martin Glenn, dated Aug. 25, 2022, *In re* Celsius Network LLC, 642 B.R. 497 (Bankr. S.D.N.Y. 2022) (No. 1:22-bk-10964), Doc 650.

[4] *Id.*

[5] *See id.*

[6] Letter to the Hon. Martin Glenn, dated July 14, 2022, *In re* Celsius Network LLC, 642 B.R. 497 (Bankr. S.D.N.Y. 2022) (No. 1:22-bk-10964), Doc 529.

[7] *See* Complaint ¶ 33, James v. Mashinsky, 2023 WL 130793, (N.Y. Sup. Ct. Jan. 5, 2023) (No. 450040) ("In a March 7, 2019, interview at the NASDAQ MarketSite in Times Square,

Following the 2008 global financial crisis, many individuals understandably lost trust in traditional banks. Crypto firms leveraged this antagonism in public marketing campaigns. As Celsius co-founder Alex Mashinsky remarked in 2018, "When you look at what the banks pay, you say to yourself, somebody is lying. Either the bank is lying or Celsius is lying."[8] (Celsius lied.) Despite the public marketing campaigns, including endorsements from celebrities,[9] crypto lending platforms like Celsius and Voyager simply recreated banking in crypto space—the type of banking that is unregulated, unsupervised, uninsured, and therefore subject to debilitating runs. We call them "crypto banks."

In this article, we argue that Crypto Winter represented a failure to identify and react to a perennial regulatory phenomenon: the recreation of banking by entities that purported to be doing anything but. We examine what occurred, why it occurred, and what can be done about it. And we present our examination in the form of two observations and a warning for regulators.

Part I contains our first observation: If an entity is borrowing short and lending long, it is in the business of maturity transformation. It is economically equivalent to a bank—with all the corresponding risks—regardless of what it publicly calls itself or how it is legally categorized. In a very predictable turn of events, crypto banks replayed most of U.S. financial history by suspending withdrawals. Part II contextualizes these crypto bank runs by presenting a summary of events that transpired during Crypto Winter.

In Part III, we present our second observation: Crypto space is largely circular or self-referential. The fallout from Crypto Winter was mostly contained to crypto space, as the systemic event did not cause an economic recession like the 2008 global financial crisis or the onset of the COVID-19 pandemic.[10] Once crypto banks obtained deposits from investors, these firms borrowed, lent, and traded mostly between themselves. Their "loans" were to other crypto entities, not to real world firms.

Mashinsky claimed that money deposited with Celsius was 'as safe as it is with the bank, which is the alternative, it's just that [Celsius] network is always acting in your best interest.' In a December 3, 2020 YouTube interview, Mashinsky stated that Celsius generated revenue by lending assets in a way 'similar to what banks do.' On August 2, 2021, Mashinsky represented that Celsius was in fact safer than a bank, claiming in a YouTube interview that 'we have less risk, we have much less risk [than banks].'").

[8] Bryce Elder, *Further Reading*, Fin. Times: FT Alphaville (July 13, 2022), https://www.ft.com/content/4438bd4f-320c-4903-a7dc-e64b6fcdb4eb.

[9] *See, e.g.*, Tiffany Hsu, *Larry David Doesn't Get Crypto. That's Why He's the Perfect Pitchman.*, N.Y. Times (Feb. 13, 2022), https://www.nytimes.com/2022/02/13/business/media/larry-david-super-bowl-ftx-crypto.html; Corinne Ramey et al., *Celebrities Who Endorsed Crypto, NFTs Land in Legal Crosshairs After Investor Losses*, Wall St. J. (Jan. 30, 2023, 12:34 PM), https://www.wsj.com/articles/celebrities-who-endorsed-crypto-nfts-land-in-legal-crosshairs-after-investor-losses-11675097150.

[10] *See* Mark E. Van Der Weide & Jeffery Y. Zhang, *Tale of the Tape: Lessons from the 2008 and 2020 Financial Crises*, 26 Stan. J.L. Bus. & Fin. 413, 418 (2021) (noting "the sudden panic by investors in short-term funding markets" in 2008 and 2020); *see also* Jeremy C. Kress & Jeffery Y. Zhang, *The Macroprudential Myth*, 112 Geo. L.J. 569 (2024) (describing the economic fallout in both 2008 and 2020).

Part IV warns regulators that crypto firms will not make this circularity mistake again. The next generation of crypto firms are already linking up with the real economy because they learned the hard way that *you can't make something out of nothing*. Unfortunately, if crypto space increasingly integrates with the real economy, a financial panic in crypto space could lead to a systemic meltdown in the real economy. There is potential for a real financial crisis the next time around. We argue in Part V that the first-best regulatory response to mitigate this forthcoming systemic risk is to apply banking law—specifically, deposit insurance and meticulous supervision—to crypto banks, mirroring the guardrails that currently exist at traditional banks.

I. History of Bank Runs and the Creation of "Crypto Banks"

We begin with a primer on the economics of banking and provide an overview of the systemic bank runs that have occurred throughout U.S. history. We then turn to a discussion of cryptocurrency lending platforms and explain why they are engaged in an identical business model—hence our reference to them as "crypto banks." Understanding the theory and history of bank runs will allow the reader to understand why crypto banks succumbed to the same kind of bank runs that have historically plagued the financial system, and why the first-best regulatory response is to apply banking law.

A. The Economics of Banking

From an economics perspective, a bank is an entity that is engaged in the business of *issuing short-term debt* (e.g., issuing a demand deposit).[11] Table 1 presents a few examples of the different types of "banks" in the modern economy. On the horizontal axis of Table 1, we divide banks into "private" and "sovereign." Not surprisingly, private banks are private firms; and sovereign banks are either a government entity *or* are explicitly guaranteed by the government.[12] On the vertical axis, we split banks into token-based (*i.e.*, banks that issue circulating short-term debt claims) and account-based (*i.e.*, banks that issue non-circulating short-term debt claims tied to the specific identities of people or firms). The banks created by crypto firms fall into one of these quadrants. Like money market funds, crypto banks issue short-term debt that can be redeemed in customer accounts. Also like money market funds, they are maintained by private actors and have no sovereign guarantee.

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[11] *See, e.g.*, Douglas Diamond & Philip Dybvig, *Bank Runs, Deposit Insurance, and Liquidity*, 91 J. Pol. Econ. 401 (1983); Tri Vi Dang, Gary Gorton, Bengt Holmström & Guillermo Ordoñez, *Banks as Secret Keepers*, 107 Am. Econ. Rev. 1005 (2017).

[12] *See* Morgan Ricks, The Money Problem: Rethinking Financial Regulation 32–34 (2016) (analyzing the contemporary monetary landscape and distinguishing private from sovereign).

Importantly, the crypto banks we discuss herein are *not* stablecoin issuers, which also fall into one of the quadrants.[13] Both crypto lending platforms and stablecoin issuers are unregulated banks from an economics perspective, but stablecoin issuers create token-based, circulating money where crypto banks create account-based, non-circulating money.[14] There are different ways of mitigating systemic risk for token-based money and account-based money.[15]

Table 1: Examples of Different Types of Banking

	Private	**Sovereign**
Token-Based	Stablecoin Issuers	Federal Reserve
Account-Based	**Crypto Banks** Money Market Funds	FDIC Insured Banks

B. Historical Bank Runs and Suspensions of Convertibility

Banks are susceptible to "bank runs." A bank run occurs when large numbers of bank depositors demand cash for the amount in their checking accounts. Bank runs were the norm in the United States prior to the adoption of FDIC deposit insurance in 1934. In the pre-Civil War period, there were panics in 1819, 1837, and 1857.[16] During the National Banking Era (1863–1914), there were major panics in 1873, 1893, 1907, and 1914 as well as incipient panics in 1884 and 1890.[17] The Federal Reserve Act was passed in 1913, but it did not end bank runs. During the Great Depression, there were panics in 1930, 1931, and 1933.[18]

Bank runs matter because they can threaten the entire economy. William Gouge described the Panic of 1837 as follows:

> At the present moment, all the Banks in the United States are bankrupt; and, not only they, but all the Insurance Companies, all the Railroad Companies, all the Canal Companies, all the City

[13] *See* Gary B. Gorton & Jeffery Y. Zhang, *Taming Wildcat Stablecoins*, 90 U. Chi. L. Rev. 909, 911 (2023) (identifying stablecoin issuers as unregulated banks from an economics perspective).

[14] *See* Gary B. Gorton & Jeffery Y. Zhang, *Protecting the Sovereign's Money Monopoly*, 75 Ala. L. Rev. 955, 963 (2024) (describing the difference between account-based money and token-based money).

[15] In short, token-based money should only be issued by the sovereign, not by a private entity. This is because only sovereign token-based money can maintain its value in times of economic panic. *See id.* Account-based money can be issued by private entities, but they should be backed by insurance (*e.g.*, FDIC deposit insurance). *See infra* Part I.C. and accompanying text.

[16] Clement Juglar, A Brief History of Panics and Their Periodical Occurrence in the United States 3, 50, 58 (DeCourcy W. Thom trans., 3d ed. 1916).

[17] Andrew J. Jalil, *New History of Banking Panics in the United States, 1825–1929: Construction and Implications*, 7 Am. Econ. J.: Macroeconomics 295, 299 (2015).

[18] Kristie M. Engemann, *Banking Panics of 1931–33*, Fed. Rsrv. Hist. (Nov. 22, 2013), https://www.federalreservehistory.org/essays/banking-panics-1931-33.

> Governments, all the Country Governments, all the State Governments, the General Government, and a great number of people. This is literally true. The only legal tender is gold and silver. Whoever cannot pay, on demand, in the authorized coin of the country, a debt actually due, is, in point of fact, *bankrupt*: although he may be at the very moment in possession of immense wealth, and although, on the winding up of his affairs, he may be shown to be worth millions.[19]

Mechanically, banks are vulnerable to runs because they do not have enough cash on hand to meet all redemption requests. Banks lend the cash out in exchange for illiquid assets that generate revenue. President Franklin Roosevelt explained this vulnerability clearly in his first radio fireside chat on March 12, 1933, during the largest banking panic of the Great Depression:

> [L]et me state the simple fact that when you deposit money in a bank, the bank does not put the money into a safe deposit vault. It invests your money in many different forms of credit—in bonds, in commercial paper, in mortgages and in many other kinds of loans . . . .What, then, happened during the last few days of February and the first few days of March? Because of undermined confidence on the part of the public, there was a general rush by a large portion of our population to turn bank deposits into currency or gold—a rush so great that the soundest banks couldn't get enough currency to meet the demand. The reason for this was that on the spur of the moment it was, of course, impossible to sell perfectly sound assets of a bank and convert them into cash, except at panic prices far below their real value.[20]

Historically, in the face of bank runs, banks chose to "suspend convertibility" by simply refusing to honor redemption demands. (In the Great Depression, President Roosevelt declared a bank holiday so that banks would not be open and hence did not have to pay out cash.[21]) Suspension of convertibility by banks was considered illegal in the United States, and a bank could lose its charter if it did not honor depositors' requests for cash, but this rule was rarely enforced. In fact, it was recognized that enforcing this rule during a financial crisis could destroy the banking system.

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[19] William Gouge, An Inquiry into the Expediency of Dispensing with Bank Agency and Bank Paper in the Fiscal Concerns of the United States 5 (1837).

[20] Franklin D. Roosevelt, President, Fireside Chat 1: On the Banking Crisis (Mar. 12, 1933) (transcript available in the University of Virginia Miller Center: https://millercenter.org/the-presidency/presidential-speeches/march-12-1933-fireside-chat-1-banking-crisis).

[21] William L. Silber, *Why Did FDR's Bank Holiday Succeed?*, 15 Fed. Rsrv. Bank N.Y. Econ. Pol'y Rev. 19, 21 (2009).

The suspension of convertibility was first legally addressed in 1857 by the Supreme Court of New York in *Livingston v. the Bank of New York*.[22] The case involved a suit by a depositor who was refused legal tender when he went to withdraw from the bank during the Panic of 1857. Judge J. Roosevelt wrote:

> Is such the necessary inference from suspension [insolvency], no matter what the bank's assets may amount to, in cases where suspension is general, and nearly universal, throughout the State and every other section of the Union? It seems to me that it is not . . . in the very organization of such institutions . . . in case of a panic or sudden rush, the banks, although amply and clearly solvent, may not have specie enough on hand immediately to satisfy all claims.[23]

Judge Roosevelt was making the same point as President Roosevelt (no relation). Banks are involved in maturity transformation—borrowing short and lending long—the essence of banking.

C. Crypto Lending Platforms

A crypto lending platform, which we call a "crypto bank," is a crypto entity that takes deposits in the form of cryptocurrencies and then lends them out to generate revenue. In return, the depositors earn regular interest payments, sometimes double-digit percentages.[24] In comparison, traditional bank depositors typically receive an interest rate that looks more like a rounding error.[25] The interest rates offered by crypto banks vary based on what type of cryptocurrency is deposited.[26] For an overview of deposit services offered by large crypto banks, see Table 2 below. These deposits are short-term debt contracts as acknowledged in the crypto banks' terms of service.[27]

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[22] Livingston v. Bank of New York, 26 Barb. 304 (1857).

[23] *Id.* at 307.

[24] *See* Coin Interest Rate, https://www.coininterestrate.com/. In January 2022, Celsius offered 18 percent interest. *See* Zeke Faux & Joe Light, *Celsius's 18% Yields on Crypto Are Tempting—and Drawing Scrutiny*, Bloomberg (Jan. 27, 2022), https://www.bloomberg.com/news/articles/2022-01-27/celsius-s-18-yields-on-crypto-are-tempting-and-drawing-scrutiny.

[25] As of February 21, 2023, the national weighted average of interest rates paid by insured depository institutions and credit unions on savings accounts (.35%), interest checking accounts (.06%), and money market deposit accounts (.48%) were all less than 50 basis points. *See National Rates and Rate Caps*, FDIC: Bankers Res. Ctr. (Feb. 21, 2023)., https://www.fdic.gov/resources/bankers/national-rates/2023-02-21.html.

[26] *See, e.g.*, Eric Huffman, *Best Crypto Lending Rates 2024*, Milkroad (Feb. 19, 2024), https://milkroad.com/lend/.

[27] *See, e.g.*, *Terms of Use*, Celsius Network (Sept. 29, 2022), https://celsius.network/terms-of-use. Depositors can also "stake" their cryptocurrencies—that is, lock up the cryptocurrency deposit for a fixed period during which it cannot be withdrawn, similar to a certificate of deposit—in exchange for a higher return. David Rodeck, *Crypto Staking Basics*,

TABLE 2: OVERVIEW OF CRYPTO LENDING PLATFORMS

Platform	**Interest rates (%)**	**Examples of cryptocurrencies that the platform accepted as "deposits"[28]**
Binance[29]	0.35 – 20.0	AXS, BUSD, USDT, NEAR, BTC, DOT, LUNA, AVAX, ADA, ETH, SHIB, BNB
Crypto.com[30]	0.1 – 12.5	DOT, MATIC, DAI, USDC, USDT, AVAX, CRO, NEAR, ONE, ZIL, ATOM, EGLD, FTM, SOL, ETH, BTC
CoinLoan[31]	3.0 – 12.3	BUSD, DAI, EUR, GBP, PAX, TUSD, USDC, USDT, ADA, BCH, BNB, BTC, DOT, ETH, LINK, LTC, PAXG, SOL, WBTC, XLM, XMR, XRP, MKR
Voyager[32]	0.5 – 12.0	KAVA, DOT, USDC, APE, KSM, VGX, ETH, BTC
YouHodler[33]	1.0 – 10.0	DOT, AVAX, ATOM, BUSD, DAI, EURS, HUSD, NEAR, SOL, TUSD, USDC, USDP, USDT
Gemini Earn[34]	0.45 – 8.05	CRV, 1INCH, USDC, BCH, ETH, BTC, DOGE
BlockFi[35]	0.1 – 7.5	USDC, BUSD, PAX, GUSD, DAI, BTC, ETH, BCH, ALGO, DOGE, LTC, UNI, LINK, BAT, PAXG
Compound[36]	0.00 – 1.56	USDT, DAI, TUSD, COMP, USDC, SUSHI, UNI, USDP, FEI, LINK

The terms of service make clear that such deposits (or "loans") are debt contracts and that depositors can withdraw at any time.[37] Voyager's terms of

FORBES (Feb. 20, 2024, 10:46 AM), https://www.forbes.com/advisor/investing/cryptocurrency/crypto-staking-basics/.

[28] Ordered from highest interest rate to lowest. Cryptocurrencies with the same rate ordered alphabetically.

[29] *Binance Earn*, BINANCE, https://web.archive.org/web/20220930031933/https://www.binance.com/en/earn (last visited Mar. 24, 2024). Interest rates as of Sept. 30, 2022.

[30] *Crypto Earn – How Does It Work?*, CRYPTO.COM, https://web.archive.org/web/20220824232028/https://help.crypto.com/en/articles/2996965-crypto-earn-how-does-it-work (last visited Mar. 24, 2024). Interest rates as of Sept. 30, 2022.

[31] *Earn with CoinLoan*, COINLOAN, https://web.archive.org/web/20220816040618/https://coinloan.io/earn-interest-on-crypto/ (last visited Mar. 24, 2024). Interest rates as of Aug. 16, 2022.

[32] *Voyager Earn Program*, VOYAGER, https://web.archive.org/web/20220523183112/https://www.investvoyager.com/earn/ (last visited Mar. 24, 2024). Interest rates as of May 23, 2022.

[33] *Earn Crypto*, YOUHODLER, https://web.archive.org/web/20220814184552/https://www.youhodler.com/earn-crypto (last visited Mar. 24, 2024). Interest rates as of Aug. 14, 2022.

[34] *Gemini Earn*, GEMINI, https://web.archive.org/web/20220913150845/https://www.gemini.com/earn (last visited Mar. 24, 2024). Interest rates as of Sept. 13, 2022.

[35] *Crypto Interest Rates*, BLOCKFI, https://web.archive.org/web/20220920225640/https://blockfi.com/rates/ (last visited Mar. 24, 2024). Interest rates as of Sept. 20, 2022.

[36] *Market Overview*, COMPOUND, https://web.archive.org/web/20221003134003/https://compound.finance/markets/ (last visited Mar. 24, 2024). Interest rates as of Oct. 3, 2022.

[37] *E.g.*, CELSIUS NETWORK, *supra* note 27 ("You may terminate any loan [*i.e.*, deposit] to Celsius at any time, and request that Celsius return the borrowed Eligible Digital Assets and deliver and Rewards accrued from the Earn Service, by transferring such Eligible Digital Assets and Rewards to your external Virtual Wallet . . . .").

service also specify when it can "delay, modify, or prohibit" withdrawals—that is, reserving its right to refuse to honor redemption requests. The terms of service for other crypto banks are similar in their powers to prevent and stop runs.[38]

One may reasonably ask how these crypto lending platforms can pay out rates that are "tens or hundreds of times higher than what conventional banks pay."[39] Crypto banks make money by lending digital tokens to investors or crypto companies—for a fee, typically between 5 to 10 percent—who might use the tokens for speculation or hedging. The lenders profit from the spread between the interest they pay on deposits and that charged on loans.[40] For example, CoinRabbit pays 5 percent interest on their stablecoin "deposit" accounts[41] and charges 12-17 percent interest on their crypto loans.[42] It "works" because borrowers give CoinRabbit crypto collateral (CoinRabbit accepts 232 different crypto coins as collateral) and in return, they receive a loan in cryptocurrencies.[43]

Despite being marketed as better and safer banks, these crypto banks were vulnerable to the same underlying economic forces. When depositors panicked and requested redemptions, crypto banks were forced to suspend convertibility. We present the chronology of Crypto Winter next.

II. Chronology of Crypto Winter

"Crypto Winter" is a term commonly used to describe an extreme trough in the collective cryptoasset market. There has been more than one winter.[44] Indeed, since the first block of Bitcoin was mined in January 2009, crypto space has experienced at least three troughs extreme enough to be widely accepted as Crypto Winters.[45] The first was during 2013–15 when Bitcoin fell

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[38] *See, e.g.*, *Terms and Conditions for CoinRabbit*, CoinRabbit (Nov. 29, 2022), https://coinrabbit.io/terms-of-use/; *SpectroCoin Pro General Terms and Conditions*, SpectroCoin (Mar. 23, 2023)., https://spectrocoin.com/en/terms/exchange-terms-of-service.html.

[39] *See* Zeke Faux & Joe Light, *Celsius's 18% Yields on Crypto Are Tempting—and Drawing Scrutiny*, Bloomberg (Jan. 27, 2022), https://www.bloomberg.com/news/articles/2022-01-27/celsius-s-18-yields-on-crypto-are-tempting-and-drawing-scrutiny.

[40] Tom Wilson et al., *Explainer: The World of Crypto Lending*, Reuters (June 13, 2022), https://www.reuters.com/business/finance/world-crypto-lending-2022-06-13.

[41] CoinRabbit offers 5 percent interest APY on USDT and USDC. *Savings Account*, CoinRabbit, https://coinrabbit.io/earn (last visited Mar. 20, 2024).

[42] *Crypto Loans*, CoinRabbit, https://coinrabbit.io/ (last visited Mar. 20, 2024) (Under "What you should know about crypto loans," select "What is your APR and how is it calculated?" The answer reads: "The annual percentage rate depends on the selected crypto loan currencies and ranges from 12% to 17%. The crypto interest is calculated monthly from the time the crypto currency loan was taken and is included in the repayment amount.").

[43] CoinRabbit's "Get Loan" interface allows the user to select from 232 different cryptoassets to use as collateral and select from USDT, USDC, BTC, ETH, DOGE, and DGB to receive as funds. *See id*.

[44] *Cf.* George R. R. Martin, A Game of Thrones (1996).

[45] *See* Paul Vigna, *Bitcoin Slumps Toward Another "Crypto Winter"*, Wall St. J. (June 26, 2021, 5:30 AM), https://www.wsj.com/articles/bitcoin-slumps-toward-another-crypto-winter-11624699802.

from $1,163 to $152 (*i.e.*, a peak-to-trough Bitcoin-USD drawdown of about 87%).[46] The second occurred during 2017–18, when Bitcoin fell from $19,666 to $3,122 (*i.e.*, a peak-to-trough Bitcoin-USD drawdown of about 84%).[47] The third began in 2022, when Bitcoin prices dropped from $69,000 to $15,479 (*i.e.*, a peak-to-trough Bitcoin-USD drawdown of about 78%).[48] We focus on the third wintry episode, when it became clear that crypto space recreated banks that were vulnerable to destabilizing runs.

Global markets, including assets in crypto space, peaked at all-time highs in late 2021 due to a mixture of pandemic bounce-back and government interventions that provided cheap money to financial investors and traders.[49] Then economic conditions changed quickly. A couple of months after those all-time highs, global markets experienced significant weakening due to the Russian invasion of Ukraine and the Federal Reserve's rate hikes.[50] In May, the Federal Reserve officially announced its plans for monetary policy tightening to combat rising inflation.[51] The days of easy money were coming to an end. Like they have in previous times of equity market turmoil, assets in crypto space responded like traditional risk assets—selling off with the equity markets and setting off the death spiral of the algorithmic stablecoin TerraUSD, which lost its peg to the dollar on May 9, 2022.[52]

TerraUSD was the flagship algorithmic stablecoin built on the Terra blockchain.[53] TerraUSD's peg to the dollar functioned by shifting volatility to LUNA: When TerraUSD's price fell below $1, arbitrageurs could swap one TerraUSD for $1 worth of LUNA; and when TerraUSD's price rose above $1,

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[46] Bitcoin trades on multiple exchanges and also over the counter. Historical price data varies slightly based on the venue. Price data here is from the BitStamp exchange, available at *Bitcoin/US Dollar*, TradingView (Feb. 11, 2024), https://www.tradingview.com/chart/?symbol=BITSTAMP%3ABTCUSD (Select "All" to see complete trading information and change view to "1 day") (identifying that Bitcoin traded at a high of $1,163 on November 1, 2013 and traded at a low of $152.4 on January 1, 2015).

[47] *Id.* (identifying that Bitcoin traded at a high of $19,666 on December 1, 2017 and traded at a low of $3,122 on December 1, 2018).

[48] *Id.* (identifying that Bitcoin traded at a high of $69,000 on November 8, 2021 and traded at a low of $15,479 on November 21, 2022).

[49] *See* Jon Maier & Michelle Cluver, *Q4 2021 Review & Outlook*, Glob. X (Jan. 1, 2022), https://www.globalxetfs.com/q4-2021-review-and-outlook/; *see also* Van Der Weide & Zhang, *supra* note 10, at 417 (noting that the "both the fiscal and monetary arms of the federal government intervened massively and quickly" to combat the pandemic in 2020).

[50] *See* Jon Maier & Michelle Cluver, *Q1 2022 Review & Outlook*, Global X (Apr. 6, 2022), https://www.globalxetfs.com/q1-2022-review-outlook/.

[51] *See* Press Release, Bd. Governors Fed. Rsrv. Sys., Plans for Reducing the Size of the Federal Reserve's Balance Sheet (May 4, 2022), https://www.federalreserve.gov/newsevents/pressreleases/monetary20220504b.htm.

[52] Stacy-Marie Ishmael, *Crypto's Audacious Algorithmic Stablecoin Experiment Crumbles*, Bloomberg (May 10, 2022), https://www.bloomberg.com/news/articles/2022-05-10/crypto-s-audacious-algorithmic-stablecoin-experiment-crumbles.

[53] *See About the Terra Protocol*, Terra Docs, https://classic-docs.terra.money/docs/learn/protocol.html (last visited Feb. 26, 2023).

arbitrageurs could swap $1 worth of LUNA for one TerraUSD.[54] The trade-off between TerraUSD and LUNA would therefore ensure that TerraUSD could trade at par with the dollar. But therein lies the problem with algorithmic stablecoins. The market prices of TerraUSD and LUNA were dependent on each other—the first ominous sign of circularity in the crypto space.

TerraUSD and LUNA failed despite the efforts of the Luna Foundation Guard. The Guard is a Singaporean nonprofit organization that was founded to act as a quasi-lender-of-last-resort to guard TerraUSD's peg by supporting it with non-LUNA assets.[55] But the Guard's reserves were insufficient to act as a true lender of last resort. By May 10, the Guard had deployed virtually all of its 80,000 Bitcoin reserves in a futile attempt to save the peg when TerraUSD traded at 75 cents, selling approximately 33,000 Bitcoin for 1.1 billion TerraUSD.[56]

The collapse of LUNA marks the start of 2022's Crypto Winter. Its collapse started a chain reaction, first causing a "bank run" on crypto lending platforms Celsius and Voyager. Facing that existential threat, these crypto banks suspended withdrawals, as shown in Table 3.

TABLE 3: CRYPTO BANK SUSPENSIONS

Entity Suspending	**Date Suspension Reported**	**Entity Explanation**
Celsius	June 12, 2022	"due to extreme market conditions"[57]
Binance	June 13, 2022	"due to a stuck transaction causing a backlog"[58]
Babel Finance	June 17, 2022	"unusual liquidity pressures"[59]

[54] *See* EVAN KEREIAKES ET AL., TERRA MONEY: STABILITY AND ADOPTION 5 (2019), https://whitepaper.io/document/587/terra-whitepaper.

[55] *See UST Reserve*, LUNA FOUND. GUARD, https://lfg.org/missionandvision/ (last visited Feb. 8, 2024) ("In an event where the market price of [TerraUSD] materially deviates from the USD peg, holders of [TerraUSD] will be able to close the arbitrage and bring the market price of [TerraUSD] back to the peg by swapping [TerraUSD] for major, non-correlated assets like BTC that capitalize the reserve. The reserve functions as a release valve for swelling pressure to exit [TerraUSD] to LUNA on-chain, dampening the reflexivity of the system by reducing the dilution of the LUNA supply during severe contractions and restoring the peg in real-time and maintaining an alternative arbitrage opportunity outside of the Terra protocol itself.").

[56] Sergio Goschenko, *Luna Foundation Guard Discloses Usage of Bitcoin Reserves*, BITCOIN.COM (May 17, 2022), https://news.bitcoin.com/luna-foundation-guard-discloses-usage-of-bitcoin-reserves/.

[57] Vicky Ge Huang, *Big Crypto Lender Celsius Freezes All Account Withdrawals*, WALL ST. J. (June 13, 2022, 1:23 AM), https://www.wsj.com/articles/big-crypto-lender-celsius-freezes-all-account-withdrawals-11655096584.

[58] Changpeng Zhao (@cz_binance), TWITTER (June 13, 2022, 8:00 AM), https://twitter.com/cz_binance/status/1536317704990208000.

[59] Oliver Knight, *Babel Finance Suspends Withdrawals, Citing 'Unusual Liquidity Pressures'*, COINDESK (May 11, 2023, 1:42 PM), https://www.coindesk.com/business/2022/06/17/babel-finance-suspends-withdrawals-citing-unusual-liquidity-pressures/.

Entity Suspending	Date Suspension Reported	Entity Explanation
CoinFLEX	June 23, 2022	"extreme market conditions"[60]
Voyager	July 1, 2022	"current market conditions"[61]
Vauld	July 4, 2022	"volatile market conditions"[62]
Zipmex	July 20, 2022	"volatile market conditions"[63]
Hodlnaut	August 8, 2022	due to "recent market conditions"[64]
FTX Digital Markets, FTX.US	November 8, 2022	"liquidity crunches"[65]
Crypto.com	November 9, 2022	deposits and withdrawals of Solana-based stablecoins halted due to "recent industry events"[66]
Atom Asset Exchange	November 13, 2022	"scheduled 'system upgrade'"[67]
Liquid Global	November 15, 2022	"in compliance with the requirements of voluntary Chapter 11 proceedings in the United States"[68]
Gemini Earn (Genesis lending partner to Gemini Earn)	November 16, 2022	Gemini: "Genesis…has paused withdrawals"[69] Genesis: "extreme market dislocation and loss of industry confidence"[70]

[60] Aislinn Keely, *CoinFLEX Halts Withdrawals Amid 'Extreme Market Conditions'*, The Block (June 23, 2022, 2:30PM), https://www.theblock.co/post/153871/coinflex-halts-withdrawals-amid-extreme-market-conditions.

[61] Press Release, Voyager Digital Ltd., Voyager Digital Provides Market Update (July 1, 2022), https://www.nasdaq.com/press-release/voyager-digital-provides-market-update-2022-07-01.

[62] Press Release, Vauld, Corporate Statement (July 4, 2022), https://support.vauld.com/en/articles/6359088-corporate-statement-july-4th-2022.

[63] Zipmex (@zipmex), Twitter (July 20, 2022, 6:15 AM), https://twitter.com/zipmex/status/1549699440302166016.

[64] *Singapore-Based Crypto Lender Hodlnaut Suspends Withdrawals*, Reuters (Aug. 9, 2022), https://www.reuters.com/technology/singapore-based-crypto-lender-hodlnaut-suspends-withdrawals-2022-08-08/.

[65] Tracy Wang, *FTX Exchange Halts All Crypto Withdrawals*, CoinDesk (Nov. 8, 2022), https://www.coindesk.com/business/2022/11/08/ftx-exchange-halts-all-crypto-withdrawals/.

[66] Sam Kessler, *Crypto.com Halts Solana USDC and USDT Deposits, Withdrawals*, CoinDesk (Nov. 9, 2022), https://www.coindesk.com/business/2022/11/09/cryptocom-halts-solana-usdc-and-usdt-deposits-withdrawals/.

[67] Nwani Mishael, *Troubled Exchange AAX Seeks Fresh Capital After Denying FTX Link*, Coinfomania (Nov. 15, 2022, 6:57 PM), https://coinfomania.com/aax-seeks-fresh-capital-after-denying-ftx-link/.

[68] Liquid Global Official (@Liquid_Global), Twitter (Nov. 15, 2022, 5:04 AM), https://twitter.com/Liquid_Global/status/1592458596750856192.

[69] Press Release, Gemini, An Important Message Regarding Gemini Earn (Nov. 16, 2022), https://www.gemini.com/blog/an-important-message-regarding-gemini-earn.

[70] Nelson Wang, *Genesis' Crypto-Lending Unit Is Halting Customer Withdrawals in Wake of FTX Collapse*, CoinDesk (May 9, 2023, 12:02 AM), https://www.coindesk.com/business/2022/11/16/genesis-crypto-lending-unit-is-halting-customer-withdrawals-in-wake-of-ftx-collapse/.

On June 27, Three Arrows—a crypto hedge fund which took significant losses on its LUNA position—defaulted on a loan of 15,250 Bitcoin and 350 million USDC to Voyager, commencing an insolvency proceeding in the British Virgin Islands.[71] Three Arrows also failed to meet a margin call on loans totaling $75 million from Celsius (a liquidation of collateral reduced the amount owed to $40.6 million).[72] On July 1, Three Arrows filed for bankruptcy in the Southern District of New York.[73]

Alameda Research, whose ties to FTX were not yet well-known (other than that Sam Bankman-Fried owned controlling shares in both),[74] was already a large debtor to and equity owner of Voyager, owing nearly $377 million to Voyager and holding about 9.5% of Voyager's stock. Alameda extended Voyager $200 million in cash and 15,000 Bitcoin in emergency financing, for an aggregate amount of about $500 million.[75] Upon Voyager's Chapter 11 filing, Alameda was the largest creditor of Voyager, with an unsecured claim of $75 million.[76] Alameda was also a large debtor to Celsius, holding an unsecured debt claim of $12.7 million.[77]

Scrutiny of Alameda's massive positions then led to FTX's collapse. On November 2, crypto-focused news site Coindesk published its review of a private financial document representing the balance sheet of Alameda,[78] which revealed Alameda's size and disturbing exposure to FTX.[79] The Coindesk article commenced a rapid fallout. On November 6, Changpeng Zhao ("CZ"), the founder and CEO of the world's largest crypto exchange, Binance, publicly

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[71] Declaration of Stephen Ehrlich ¶¶ 55–56, *In re* Voyager Digital Holdings, Inc., No. 22-10943 (Bankr. S.D.N.Y. 2022) [hereinafter *Voyager–Ehrlich Declaration*].

[72] Declaration of Alex Mashinsky ¶ 112, *In re* Celsius Network LLC, No. 22-10964 (Bankr. S.D.N.Y. 2022) [hereinafter *Celsius–Mashinsky Declaration*].

[73] Nikhilesh De & Danny Nelson, *Three Arrows Capital Files for Bankruptcy in New York Tied to British Virgin Island Proceeding*, CoinDesk (May 11, 2023, 2:46 PM), https://www.coindesk.com/business/2022/07/01/three-arrows-capital-files-for-bankruptcy-in-new-york-tied-to-british-virgin-islands-proceeding/.

[74] *See* Patricia Kowsmann et al., *Troubles at Sam Bankman-Fried's Alameda Began Well Before Crypto Crash*, Wall St. J. (Dec. 31, 2022), https://www.wsj.com/articles/alameda-sam-bankman-fried-ftx-crypto-crash-11672434101. Sam Bankman-Fried founded Alameda in 2017 as a principal trading firm focused on cryptoasset arbitrage strategies. Matthew Goldstein et al., *How FTX's Sister Firm Brought the Crypto Exchange Down*, N.Y. Times (Nov. 18, 2022), https://www.nytimes.com/2022/11/18/business/ftx-alameda-ties.html. As Alameda began to struggle (Alameda's assets declined by more than two-thirds by mid-2018), he then created FTX in 2019, on which Alameda would serve as a market maker to support liquidity. In October 2021, Bankman-Fried named Caroline Ellison and Sam Trabucco co-CEOs of Alameda, purporting to step away from any decision-making role. Kowsmann et al., *supra*.

[75] *Voyager–Ehrlich Declaration*, *supra* note 71, ¶ 33.

[76] *Id.* at 119–27.

[77] *Celsius–Mashinsky Declaration*, *supra* note 72 at 46–48.

[78] Ian Allison, *Divisions in Sam Bankman-Fried's Crypto Empire Blur on His Trading Titan Alameda's Balance Sheet*, CoinDesk (Aug. 16, 2023, 5:56 PM), https://www.coindesk.com/business/2022/11/02/divisions-in-sam-bankman-frieds-crypto-empire-blur-on-his-trading-titan-alamedas-balance-sheet/.

[79] *Id.*

stated in a tweet that Binance would be selling all of its FTT holdings,[80] which amounted to $580 million.[81] The ensuing selloff in FTT created an insolvency crisis for FTX, which halted customer withdrawals.[82] On November 8, CZ tweeted that Binance would be acquiring FTX (which had previously been valued at $32 billion)[83] under undisclosed terms to save it from its "liquidity crunch."[84] But within a day, CZ and Binance walked away from the deal, citing "corporate due diligence."[85]

On November 10, the Securities Commission of the Bahamas "took action to freeze assets of FTX Digital Markets and related parties. The Commission also suspended the registration and applied to the Supreme Court of The Bahamas for the appointment of a provisional liquidator of FTX Digital Markets Ltd."[86] On November 11, FTX filed for Chapter 11 bankruptcy and Bankman-Fried resigned.[87]

On December 13, prosecutors made public a criminal indictment charging Bankman-Fried with a litany of fraud-related charges.[88] The indictment alleges that Bankman-Fried schemed to misappropriate customer deposits to pay Alameda's expenses and debts. Notably, the DOJ did not allege that any specific cryptoasset was a security—the alleged securities fraud arose in connection with defrauding FTX's investors.[89] On the same day, the SEC and CFTC filed complaints in federal district court.[90]

In sum, this third Crypto Winter began with the collapse of LUNA, and it triggered a wave of high-profile and interconnected insolvencies. From this episode, we highlight two observations. First, these "financial innovations"

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[80] Changpeng Zhao (@cz_binance), Twitter (Nov. 6, 2022, 10:47 AM), https://twitter.com/cz_binance/status/1589283421704290306. FTT was a token that provided access to the FTX trading platform's features and services.

[81] Dan Milmo, *How Binance Played a Key Role as FTX Collapse Unfolded*, The Guardian (Nov. 11, 2022, 12:28 AM), https://www.theguardian.com/technology/2022/nov/11/binance-ftx-collapse-cryptocurrency-exchange-changpeng-zhao.

[82] *Id.*

[83] Ryan Browne, *Cryptocurrency Exchange FTX Hits $32 Billion Valuation Despite Bear Market Fears*, CNBC (Jan. 31, 2022, 7:44 PM), https://www.cnbc.com/2022/01/31/crypto-exchange-ftx-valued-at-32-billion-amid-bitcoin-price-plunge.html.

[84] Changpeng Zhao (@cz_binance), Twitter (Nov. 8, 2022, 11:09 AM), https://twitter.com/cz_binance/status/1590013613586411520.

[85] Binance (@Binance), Twitter (Nov. 9, 2022, 4:00 PM), https://twitter.com/binance/status/1590449161069268992.

[86] Press Release, Sec. Comm'n of the Bahamas, Securities Commission of the Bahamas Freezes Assets of FTX (Nov. 10, 2022), https://www.scb.gov.bs/wp-content/uploads/2022/11/Securities-Commission-Statement-on-FTX-101122-Final.pdf.

[87] Jeremy Hill, *Bankman-Fried Resigns From FTX, Puts Empire in Bankruptcy*, Bloomberg (Nov. 11, 2022, 9:28 AM), https://www.bloomberg.com/news/articles/2022-11-11/ftx-com-goes-bankrupt-in-stunning-reversal-for-crypto-exchange.

[88] *See generally* Indictment, United States v. Bankman-Fried, No. 1:22-cr-00673 (S.D.N.Y. Dec. 13, 2022).

[89] *See id.* ¶¶ 10–12.

[90] *See* Complaint, SEC v. Bankman-Fried, No. 1:22-cv-10501 (S.D.N.Y. Dec. 13, 2022) [hereinafter *SEC Complaint*]; *see also* Complaint, CFTC v. Bankman-Fried, No. 1:22-cv-10503, (S.D.N.Y. Dec. 13, 2022) [hereinafter *CFTC Complaint*].

were pitched as different from traditional banks—and superior in stability. But they literally re-created banking in crypto space.[91] It is unfortunate that we must all relearn financial history the hard way. Second, many of these crypto enterprises were engaged in a circular business model. Once they obtained deposits, they lent money to other entities in the crypto ecosystem.[92] This is why crypto bank runs did not cause a financial crisis in the real world. Regulators, however, will not have this luxury of circularity the next time around.[93]

III. Crypto Circularity

The second observation is that Crypto Winter had no significant effects on the real-world financial sector or the real economy because there was very little interoperability between the two worlds. Crypto space was largely circular, as depicted visually in Figure 1 below. (To be clear, this observation does *not* apply to stablecoin issuers, which have substantial links to the real economy.) Given the lack of connections between crypto space and the real economy, what happened in crypto space largely stayed in crypto space. But that might not be the case going forward. The next generation of crypto innovations are becoming "interoperable" with the real economy—that is, facilitating financial transactions in the real world, not just in crypto space.

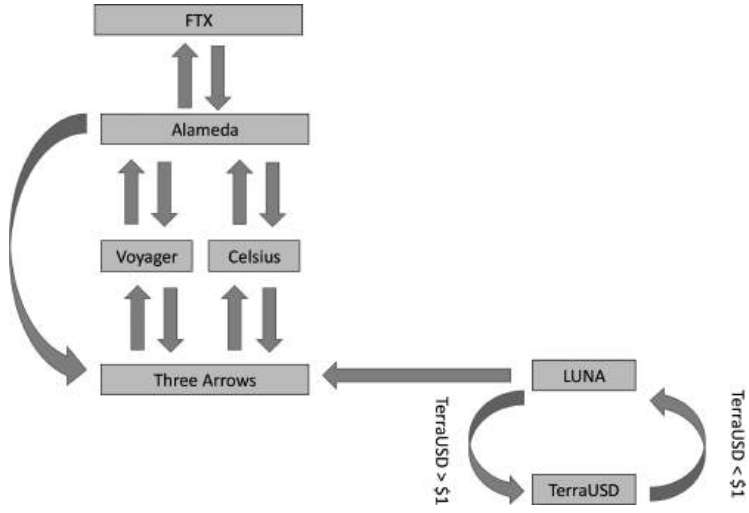

Figure 1: Circular Transactions Between Large Crypto Firms

[91] *See supra* Section I.C. discussion.
[92] *See infra* Section III.A. discussion.
[93] *See infra* Section IV.A. discussion.

A. Trying Alchemy Again

The circular business model of crypto banks harkens back to alchemy, when people tried to create precious metals out of, well, less precious objects. It violated the commonsense principle that *you can't make something out of nothing*, which is why some have labelled the crypto space a Ponzi scheme.[94] This would not necessarily be the case if crypto space had substantial connections to the real economy. But such connections largely did not exist because real-world firms did not transact with cryptocurrencies.

If crypto firms were not lending to businesses in the real world, what were they doing with the deposits they received? We can obtain a glimpse of their business dealings from bankruptcy filings. Table 4 below shows Voyager's largest loans. They were all to other entities in crypto space. Recall that Alameda Research is a quantitative trading firm that was linked to Sam Bankman-Fried's failed crypto exchange, FTX. Both FTX and Alameda collapsed in November 2022. Table 5 below shows Celsius' largest creditors, which also included Alameda Research. Table 6 shows the largest creditors of Three Arrows Capital. Notice that Voyager and Celsius lent crypto assets to Three Arrows Capital. In short, the largest players in crypto space were all lending to each other.

TABLE 4: VOYAGER'S LARGEST LOANS[95]

Company	**Borrowing Rate**	**Outstanding Amount (thousands)**
Alameda Research Ltd.	1% - 11.5%	$376,784
Three Arrows Capital	3% - 10%	$654,195
Genesis Global Capital	4% - 13.5%	$17,556
Wintermute Trading Ltd.	1% - 14%	$27,342
Galaxy Digital LLC	1% - 30%	$34,427
Tai Mo Shan Limited	10%	$13,779
Other	4% - 8%	$751
Total		**$1,124,825**

[94] *See, e.g.*, Complaint ¶ 92, KeyFi, Inc. v. Celsius Network Ltd., No. 652367 (N.Y. Sup. Ct. July 7, 2022) ("Celsius is a Ponzi scheme."); *see also* Robert Park, Opinion, *Cryptocurrency Might be the Greatest Ponzi Scheme of All Time*, CINCINNATI ENQUIRER (Jan. 29, 2023, 4:15 AM), https://www.cincinnati.com/story/opinion/contributors/2023/01/29/opinion-cryptocurrency-might-be-the-greatest-ponzi-scheme-of-all-time/69836392007/.

[95] *Voyager–Ehrlich Declaration*, *supra* note 71, ¶ 29.

TABLE 5: CELSIUS' LARGEST CREDITORS[96]

Creditor	**Amount**
Pharos USD Fund SP	$81 million
ICB Solutions	$13.3 million
The Caen Group LLC	$13.1 million
Alameda	$12.8 million
B2C2 LTD	$11.8 million
Covario AG	$11.3 million
Invictus Capital	$0.9 million
Strobilus LLC	$7.9 million
Crypto SP	$7.9 million
Altcointrader LTD	$7.6 million
Deferred 1031	$6.7 million

TABLE 6: PARTIAL LIST OF THREE ARROWS' CREDITORS[97]

Entity	**Total Claims**
Digital Currency Group	$1.2 billion
Voyager	$674 million
DRB Panama Inc (Deribit)	$80 million
Chen Kaili Kelly[98]	$65.7 million
DeFinance Capital	$35 million
Celsius Network	$40 million
CoinList Network	$35 million
Su Zhu	$5 million

B. Crypto Banks' Connections to the Real World During Crypto Winter

Although the largest players in crypto space were all lending to each other, there were *some* connections between crypto space and the real economy. Here, we examine the connection between crypto space and two failed banks—Silvergate Bank and Signature Bank. This examination is informative

[96] Emily Nicolle et al., *Celsius Bankruptcy Filing Shows Long Reach of FTX's Sam Bankman-Fried*, BLOOMBERG (July 14, 2022, 1:10 PM), https://www.bloomberg.com/news/articles/2022-07-14/celsius-bankruptcy-filing-shows-long-reach-of-sam-bankman-fried/.

[97] Yueqi Yang, *Three Arrows Creditors Include Crypto Giants, Co-Founder's Wife*, BLOOMBERG (July 18, 2022, 4:01 PM), https://www.bloomberg.com/news/articles/2022-07-18/three-arrows-said-to-owe-digital-currency-group-1-2-billion.

[98] Spouse of Three Arrows cofounder Kyle Davies. *Id.*

because it gives us a hint of how crypto firms would like to be connected to the real economy in the future (and, in some cases, how they are connecting to the real economy presently).

Silvergate, which failed in March 2023,[99] focused on the digital currency industry.[100] Its customers included large crypto exchanges such as Coinbase, Gemini, and Kraken.[101] Almost all of Silvergate's deposits came from its digital currency customers and were subject to significant fluctuations. In FY2021, their high and low daily total digital currency deposit levels were $16 billion and $4.6 billion, respectively.[102] Table 7 below shows a breakdown of Silvergate's customer base, as shown in its annual report.

TABLE 7: SILVERGATE DEPOSITS ON DECEMBER 31, 2021[103]

	Number of Customers	**Total Digital Currency Deposits**
Digital Currency Exchanges	94	$8.29 billion
Institutional Investors	894	$4.22 billion
Other	393	$1.60 billion
Total	1,381	$14.11 billion

On December 31, 2021, Silvergate's noninterest bearing deposits as a percentage of total deposits stood at a staggering 99.5 percent, showing overwhelming reliance on digital asset industry customers.[104]

Silvergate's main product offering was the Silvergate Exchange Network (SEN), which it touted as a fast payment network for digital currency exchanges.[105] To use SEN, participants deposited cash into a SEN account. A participant could then make transfers of U.S. dollars from its SEN account to another participant's SEN account. Silvergate also offered the SEN Leverage product, which provided U.S. dollar loans to SEN customers against Bitcoin collateral.[106] As of December 31, 2021, Silvergate had approved, under SEN Leverage, lines of credit totaling $570.5 million and had an outstanding loan balance of $335.9 million (18.9% of its total loan portfolio).[107]

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[99] Max Reyes and Katanga Johnson, The Search for Lessons from 2023 US Banking Crisis, BLOOMBERG (Aug. 30, 2023, 11:53 AM), https://www.bloomberg.com/news/articles/2023-08-30/2023-bank-failures-how-fed-fdic-are-trying-to-apply-lessons-learned.

[100] Silvergate Cap. Corp., Annual Report (Form 10-K) 4 (Feb. 28, 2021).

[101] *The Silvergate Sage, Explained*, COINBASE (Mar. 8, 2023), https://www.coinbase.com/bytes/archive/the-silvergate-saga-explained.

[102] Silvergate Cap. Corp., *supra* note 100, at 50.

[103] *Id.* at 51.

[104] *Id.* at 7.

[105] *Id.* at 6.

[106] *Id.* at 8.

[107] *Id.* at 8.

Crypto Winter stressed Silvergate's business, to say the least. By December 6, 2022, following the collapse of FTX and Alameda, "Silvergate's shares [had] plunged 84 per cent this year, much worse than the 23 per cent fall for the KBW Bank index."[108] Silvergate reported a 2022 fourth quarter loss of approximately $1 billion and stated that as it was preparing "for what it expects will be a sustained period of transformation."[109] On March 2, 2023, shares of Silvergate plummeted another 57.7 percent for a trailing twelve-month loss of 95.7 percent after the company announced a delay in the filing of its annual 10-K report.[110] On March 8, Silvergate announced that it would shut down its operations.[111]

The second example of crypto's connection to the real economy was Signature Bank, a New York chartered commercial bank that also failed in March 2023.[112] Signature was a large player in the crypto space. It offered Signet—a commercial payments product that Signature ran on a private, permissioned form of Ethereum's blockchain.[113] Signature marketed it as enabling "customers to make payments in U.S. dollars in real-time, without the assistance of third-party intermediaries."[114] Signet deposits reached $28.7 billion at the end of 2021.[115] Signature also offered loans against various cryptoasset collateral.[116] Signature's total deposits declined by 16.5 percent ($17.54 billion) during 2022, driven by a $12.39 billion decline in Signet deposits.[117] On March 12, Signature was shut down by regulators.[118]

Following the collapse of Silvergate Bank and Signature Bank, "crypto firms [began] combing for banks outside the [United States], with lenders in

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[108] Joshua Oliver, *US Bank Silvergate Defends Ties to Sam Bankman-Fried's Crypto Groups*, Fin. Times (Dec. 6, 2023), https://www.ft.com/content/38ac9101-4642-4acf-92ba-3f7580987deb.

[109] Press Release, Silvergate Capital, Silvergate Capital Corporation Announces Fourth Quarter 2022 Results (Jan. 17, 2023), https://ir.silvergate.com/news/news-details/2023/Silvergate-Capital-Corporation-Announces-Fourth-Quarter-2022-Results/default.aspx.

[110] Tanaya Macheel, *Silvergate Capital Shares Drop 57% After the Crypto Bank Delays Its Annual Report*, CNBC (Mar. 2, 2023, 11:34 AM), https://www.cnbc.com/2023/03/02/silvergate-capital-shares-crater-after-the-crypto-bank-delays-annual-report.html.

[111] Rachel Louise Ensign, *Crypto Bank Silvergate to Shut Down, Repay Deposits*, Wall St. J. (March 8, 2023, 6:45 PM), https://www.wsj.com/articles/crypto-bank-silvergate-to-shut-down-repay-deposits-4bc2a469.

[112] Caroline Alexander, *The Unraveling of New York's Signature Bank*, Bloomberg (Mar. 14, 2023, 9:18 AM), https://www.bloomberg.com/news/newsletters/2023-03-14/the-unraveling-of-new-york-s-signature-bank.

[113] *See* Benjamin Pirus, *Signature Bank Beats JPMorgan to Ethereum-Based Token Services*, Forbes (Feb. 22, 2019, 9:00 AM), https://www.forbes.com/sites/benjaminpirus/2019/02/22/signature-bank-already-has-hundreds-of-clients-using-private-ethereum-jpm-coin-still-in-testing.

[114] Signature Bank, Annual Report (Form 10-K) 47 (Mar. 1, 2023).

[115] *Id.* at 78.

[116] *Id.* at 17.

[117] Signature Bank, 2022 Fourth Quarter and Year-End Results (Form 10-Q) 11 (Jan. 17, 2023).

[118] David Benoit et al., *Signature Bank Is Shut by Regulators After SVB Collapse*, Wall St. J. (Mar. 12, 2023, 9:32 PM), https://www.wsj.com/articles/signature-bank-is-shut-by-regulators-after-svb-failure-a5f9e0f7.

Switzerland and the United Arab Emirates among those in the spotlight."[119] In other words, crypto firms are continuing their attempts to link up with the real economy—they have learned their lesson: *you can't make something out of nothing*—and they are succeeding. Next time there's a financial collapse in crypto space, we could experience financial contagion in the real world. Regulators must be prepared for this increased interoperability, which we discuss next.

IV. Crypto Interoperability at Home and Abroad

The next generation of crypto firms is building greater linkages with the real economy, and regulators are responding. In early 2023, the banking agencies issued a joint warning about banks' crypto activities.[120] This guidance has been viewed as an attempt to seal off the regulated banking system from anything crypto related.[121] In this Part, we argue that the sealing-off policy will not work if it is implemented in isolation.

At a high level, we note that agency guidance is not legally binding, and a subsequent administration can easily reverse such guidance. Not surprisingly, given the lack of legal bindingness, crypto space is still forming connections with U.S. financial institutions. And these growing connections heighten systemic risk.

In addition, we observe that foreign jurisdictions like the European Union, United Kingdom, and Singapore are engaging with crypto firms and giving them a way to plug into the real economy. Thus, even if U.S. authorities were able to prevent crypto space from connecting with U.S. institutions, systemic risk could build up in foreign banks and blow back upon the U.S. economy during a crisis.

A. Existing Policy Guidance Is Ineffective

There are two related counterarguments that are worth addressing at the outset. The first is that, as a matter of public policy, the best way to protect the real economy from crypto banks is to make it extremely difficult for the

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[119] Suvashree Ghosh et al., *Crypto Scours the Globe for Banks to Replace Collapsed US Lenders*, Bloomberg (March 13, 2023, 8:15 AM), https://www.bloomberg.com/news/articles/2023-03-13/crypto-scours-the-globe-for-banks-to-replace-collapsed-us-lenders.

[120] Press Release, Bd. Governors Fed. Rsrv. Sys., FDIC & OCC, Joint Statement on Liquidity Risks to Banking Organizations Resulting from Crypto-Asset Market Vulnerabilities (Feb. 23, 2023), https://www.federalreserve.gov/newsevents/pressreleases/files/bcreg20230223a1.pdf.

[121] *See, e.g.*, Rachel Louise Ensign & David Benoit, *Banks are Breaking Up with Crypto During Regulatory Crackdown*, Wall St. J. (Feb. 16, 2023, 5:30 AM), https://www.wsj.com/articles/banks-are-breaking-up-with-crypto-during-regulatory-crackdown-22de1832 ("Banks are backing away from crypto companies, spooked by a regulatory crackdown that threatens to sever digital currencies from the real-world financial system.").

traditional financial system to connect with crypto firms.[122] The motivating idea is that if crypto banks cannot connect, then we are back to circularity. What happens in crypto space stays in crypto space.

This idea is seductive, but it is asking for the impossible. U.S. regulators can saber rattle all they want but if they are not issuing legally binding regulations, then traditional financial institutions can ignore them. And, as we describe below, some U.S. banks have ignored the guidance and have continued to build up their crypto connections. Moreover, even if U.S. regulators are able to shut down crypto domestically, they won't be able to stop foreign economies from connecting with crypto space. This is not as logistically simple as shutting down the circulation of private banknotes in the 19th century.[123] Given the interconnected nature of banking, a banking crisis abroad will almost surely cause problems domestically.

Another related counterargument is that, as a matter of administrative law, regulatory agencies should use low-friction tools like issuing guidance as opposed to rulemaking processes when dealing with new industries.[124] The theory is that informal threats might be more useful in managing nascent-industry uncertainty when facts on the ground are continuously evolving. This idea is sensible for dealing with uncertainty in general, but the finance industry is not the best application. If market actors are allowed to invest in a new financial product, they will absolutely do so as long as the investment maximizes profit. In other words, that new product will be normalized through use so long as its profitable. If regulators choose to wait and see how the new product develops over time, it may very well be too late for them to "regulate" it effectively in the future.

The well-known Glass-Steagall Act of 1933 serves as an instructive example. The law was designed to seal off commercial banks from the activities of broker-dealers, namely, from the underwriting of corporate securities.[125] Lawmakers imposed this separation because they believed there was too much speculation in the financial sector prior to the Crash of 1929. Thus, they erected a wall to separate commercial banking activities ("safe") from broker-dealer activities ("dangerous").

Then came the invention of financial derivatives in the 1980s—that is, interest rate swaps and foreign exchange swaps. Commercial banks began using these swaps extensively as there was a lot of "uncertainty" in the sense that swaps did not fit into pre-existing legal categories of futures, securities,

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[122] Matt Levine, Opinion, *Crypto Had Its Bank Runs Too*, Bloomberg (May 15, 2023, 2:33 PM), https://www.bloomberg.com/opinion/articles/2023-05-15/crypto-had-its-bank-runs-too.

[123] *See* Gorton & Zhang, *supra* note 13, at 939–49.

[124] Tim Wu, *Agency Threats*, 60 Duke L.J. 1841, 1843 (2011).

[125] Russell J. Funk & Daniel Hirschman, *Derivatives and Deregulation: Financial Innovation and the Demise of Glass-Steagall*, 59 Admin. Sci. Q., 669, 669–704 (2014).

or loans.[126] "This ambiguity made it difficult for regulators to interpret swaps and led to persistent battles over jurisdiction and other issues, leaving even those regulators who were suspicious of these novel financial innovations ill equipped to respond."[127] The crypto space is similar. As we discuss more in the next Part, there have been long-running disputes on whether certain cryptoassets are securities,[128] commodities,[129] or something else.[130]

Starting in the mid-1980s, amid the uncertainty and the rising use of derivatives, the Office of the Comptroller of the Currency began authorizing various derivative transactions by taking a very broad view of "the business of banking."[131] By then, it was already too late. The value of the derivatives market was already measured in the trillions of dollars and growing rapidly—averaging "36 percent [growth] a year from 1986 to reach $3.5 trillion at the end of 1991."[132] The wait-and-see approach failed, and Glass-Steagall was eventually repealed in 1999.[133]

There is a lot of uncertainty with respect to crypto space, to be sure, but finance and banking are not new industries. As argued herein, the labeling might be new ("a cryptocurrency lending platform") but the underlying economics are identical ("a bank"). We have seen this movie before. Thus, we believe that the approach of "wait and see" coupled with "issue guidance in the meantime" is likely to fail again. By the time derivatives regulation came around, it was already too late. The toothpaste could not be put back into the tube. Regulators are unfortunately heading down the same path with respect to crypto.

B. Growing Domestic Connections

In early 2023, over 130 FDIC insured banks had ongoing or planned crypto activities—including arrangements that allowed for bank customers

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[126] *Id.* at 688.

[127] *Id*. at 671; *see also* Saul S. Cohen, *The Challenge of Derivatives*, 63 Fordham L. Rev. 1993 (1995); Saul S. Cohen, *The Challenge of Derivatives (Continued)*, 66 Fordham L. Rev. 747 (1997); Roberta Romano, *A Thumbnail Sketch of Derivative Securities and Their Regulation*, 55 Md. L. Rev. 1, 2 (1996).

[128] *See, e.g.*, SEC v. Ripple Labs, Inc., No. 20 Civ. 10832, 2023 WL 4507900 (S.D.N.Y. July 13, 2023) (SEC suit alleging that the sale of cryptoassets violated Section 5 of the Securities Act of 1933.

[129] *See, e.g.*, Timothy G. Massad & Howell Jackson, *How to Improve Regulation of Crypto Today—Without Congressional Action—And Make the Industry Pay for It* 2–3 (Hutchins Ctr. on Fiscal & Monetary Pol'y, Working Paper No. 79, 2022) (noting that policymakers have debated whether "any particular crypto-asset is a security, a commodity or something else").

[130] *See, e.g.*, Gorton & Zhang, *supra* note 13, at 911 (describing stablecoin issuers as creating private "money").

[131] *See* Saule T. Omarova, *The Quiet Metamorphosis: How Derivatives Changed the "Business of Banking"*, 63 U. Mia. L. Rev. 1041, 1041 (2009).

[132] Eli M. Remolona, *The Recent Growth of Financial Derivative Markets*, Fed. Rsrv. Bank N.Y. Q. Rev., Winter 1992, at 28, 28–29.

[133] Gramm-Leach-Bliley Act, Pub. L. No.106-102, Title V, 113 Stat. 1338, 1436 (1999) (codified at 15 U.S.C. § 6801 (2006)).

to buy and sell crypto assets. Banks also provided account deposit services, custody services, and lending to crypto asset exchanges.[134] These services will almost certainly grow over time.

Some very large banks, including JPMorgan, have reportedly begun accepting deposits from select crypto firms, "particularly well-funded crypto start-ups and investors."[135] JPMorgan is "not soliciting the business of crypto clients whose deposits have been stranded at the closed banks… but is also not automatically turning them away."[136] Crypto firms that have opened new accounts at JPMorgan include "VC funds and web3-infrastructure start-ups."[137] Although neither the banks nor the crypto firms appear willing to go public "for fear of jeopardizing the already fragile relationships," JP Morgan and Citi are said to have been the "most welcoming."[138] Bank of America, Citi, Goldman Sachs, and Wells Fargo are also named as those who have accepted blue-chip crypto customers.[139]

The most prominent blue-chip crypto customer to be directly entangled by the bank failures, Circle, has publicly expanded its relationship with BNY Mellon,[140] also the world's largest custodian.[141] On March 14, Circle announced that it had moved the cash holdings of its reserves to BNY Mellon, "except for limited funds held at transaction banking partners in support of USDC minting and redemption."[142] Circle also announced that it would be using Cross River Bank as a new banking partner for minting and redemption of its USDC stablecoin.[143] Cross River Bank is known as a crypto-friendly bank that "provides accounts for consumers to move money in real-time, with

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[134] Tyler Smith, Fed. Deposit Ins. Corp., Top Management and Performance Challenges Facing the Fed. Deposit Ins. Corp. 10 (2023), https://www.fdicoig.gov/sites/default/files/reports/2023-02/TMPC%20Final%202-16-23_0.pdf.

[135] Jen Wieczner, *Crypto Companies Are Asking Jamie Dimon to Hold Their Money*, N.Y. Mag. Intelligencer (Mar. 16, 2023), https://nymag.com/intelligencer/2023/03/crypto-companies-are-asking-jamie-dimon-to-hold-their-money.html.

[136] *Id.*

[137] *Id.*

[138] *Id.*

[139] *Id.*

[140] Jeremy Allaire (@jerallaire), Twitter (Mar. 15, 2023, 2:28 AM), https://twitter.com/jerallaire/status/1635890582693330944.

[141] Danny Park, *BNY Mellon, Largest Custodian Bank, Starts Bitcoin, Ether Custody Services*, Yahoo! Fin. (Oct. 11, 2022), https://finance.yahoo.com/news/bny-mellon-largest-custodian-bank-025732249.html.

[142] Allaire, *supra* note 140. As of January 31, 2024, Circle continues to hold most of its reserves in a government MMF whose shares are only available for purchase by Circle. Deloitte, USDC Reserve Rep. 3 (2024), https://www.circle.com/hubfs/USDCAttestation Reports/2024/2024%20USDC_Examination%20Report%20January%202024.pdf; *see also Circle Reserve Fund*, BlackRock, https://www.blackrock.com/cash/en-us/products/329365/.

[143] Jeremy Allaire (@jerallaire) (Mar. 12, 2023, 11:06 PM), Twitter, https://twitter.com/i/web/status/1635114973830725633.

fiat-to-crypto on and off-ramps."[144] Separately, Visa has announced that it will accept Circle's USDC to settle transactions,[145] as Circle has announced plans to implement a global payments system.[146] Ripple already does this through a digital network of around 200 or so banks that can transfer money across borders in seconds.[147]

Beyond these examples of connections with the largest U.S. financial institutions, crypto firms have attempted to connect with smaller U.S. financial institutions.[148] These smaller banks include United Texas Bank and Evolve Bank. United Texas Bank "facilitate[s] settlement between Circle and MoneyGram."[149] Evolve Bank had also emerged as a crypto-friendly bank, becoming "arguably the most significant player in the 'partner banking' or 'banking-as-a-service' space."[150] For example, Evolve Bank provides the banking services for Mercury[151] and Series Financial.[152]

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[144] Press Release, Cross River Bank, Cross River Wins CryptoFin Industry Award for Pioneering Efforts in Crypto (Feb. 9, 2022), https://crossriver.com/cross-river-wins-cryptofin-industry-award-pioneering-efforts-crypto.

[145] Press Release, VISA, Visa Becomes First Major Payments Network to Settle Transactions in USD Coin (Mar. 29, 2021), https://usa.visa.com/about-visa/newsroom/press-releases.releaseId.17821.html.

[146] *See, e.g.*, *Fintech Firm Circle Buys Elements to Drive Crypto Payments*, ELEC. PAYMENTS INT'L, (Sept. 30, 2022), https://www.electronicpaymentsinternational.com/news/fintech-circle-elements-crypto/.

[147] *See RippleNet Growth: Announcing More than 300 Customers*, RIPPLE (Nov. 6, 2019), https://ripple.com/insights/ripplenet-growth-announcing-more-than-300-customers/.

[148] *See* Alexander Osipovich et al., *Banks Step Up to Serve Crypto Firms After Signature, Silvergate Blowups*, WALL ST. J. (Mar. 27, 2023), https://www.wsj.com/articles/banks-step-up-to-serve-crypto-firms-after-signature-silvergate-blowups-5e7b4074 (observing that regional and smaller banks have become receptive to crypto).

[149] Nina Bambysheva, *MoneyGram Partners with Ripple Competitor Stellar, will Settle Transactions with USDC Stablecoin*, FORBES (Oct. 6, 2021), https://www.forbes.com/sites/ninabambysheva/2021/10/06/moneygram-partners-with-ripple-competitor-stellar-will-settle-transactions-with-usdc-stablecoin.

[150] Jason Mikula, *Evolve's Problematic Partners: Bankruptcies, Regulatory Actions, Abrupt Shutdowns*, FINTECH BUS. WKLY. (Dec. 4, 2022), https://fintechbusinessweekly.substack.com/p/evolves-problematic-partners-bankruptcies; *see also Important Information Regarding FTX & BlockFi*, EVOLVE BANK & TR., https://www.getevolved.com/important-information/ (last visited Feb. 11, 2024) (stating Evolve was sponsor and issuing bank for Deserve but did not have direct relationship with BlockFi and "never processed ACH transactions for FTX or the FTX exchange").

[151] MERCURY, https://mercury.com/web3 (last visited Feb. 11, 2024) ("Mercury is a financial technology company, not a bank. Banking services provided by Choice Financial Group and Evolve Bank & Trust; Members FDIC.").

[152] S*ee* SERIES, https://web.archive.org/web/20230315142804/https://www.seriesfi.com/ (last visited Mar. 24, 2024) ("All Blue Labs, Inc. DBA Series Financial is a financial technology company and is not a bank. Series partners with FDIC-insured banks to offer its banking products and services. Series bank accounts are FDIC insured up to $250,000 per depositor through Evolve Bank & Trust, Member FDIC. The Series Visa® Corporate Debit Card is provided by Evolve Bank & Trust, Member FDIC pursuant to a license from Visa U.S.A. Inc. and may be used everywhere Visa is accepted.").

Additionally, Axos,[153] Cogent,[154] Customers Bank,[155] and Western Alliance Bank[156] are U.S. banks known to cater to crypto firms and belong to the "Digital Interbank Network." As part of the Digital Interbank Network, the banks offer interoperable tokenized deposit products, using a private, permissioned blockchain from the Tassat Group.[157] Note that Signature Bank's Signet, discussed above, was built on the intrabank version of this product, TassatPay.[158] Although TassatPay was launched in 2019 to settle crypto trading transactions, it now increasingly supports traditional financial transactions.[159] The Network's participating banks and original working group membership are summarized in appendix Table A2.[160]

Other U.S. banks have begun offering retail crypto services but are not known to have institutional crypto customers. Vast Bank states that it is "the first nationally chartered U.S. bank that allows you to buy, sell, and hold cryptocurrency assets through your mobile banking app."[161] In January 2022, the American Banker reported that an estimated 300 banks were set to offer Bitcoin trading in partnership with New York Digital Investment Group.[162] NYDIG offers a product suite that "integrates into existing bank core systems and delivers a frictionless end-user experience."[163]

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[153] *See* Yueqi Yang et al., *A New Crypto Banking System Arises Under the Shadow of a Regulatory Crackdown*, Bloomberg (June 9, 2023, 3:00 AM), https://www.bloomberg.com/news/articles/2023-06-09/new-crypto-banking-system-emerges-as-regulators-crack-down-on-coinbase-binance.

[154] *See* Cogent Bank, *Industry Specialties: Banking for Blockchain-Enabled Businesses*, https://web.archive.org/web/20230527004414/https://cogentbank.com/business-banking/industry-specialties/blockchain-business-banking/ (last visited Mar. 24, 2024).

[155] *See id; Customers Bank Makes Bold Move with Cryptocurrency Clients,* Bus. Wire (Nov. 2, 2021, 8:00 AM), https://www.businesswire.com/news/home/20211102005268/en/ (announcing list of inaugural institutional crypto clients, including Genesis Global Trading, GSR, and SFOX).

[156] *See* Yang et al., *supra* note 153; W. All. Bank, *Industry Expertise: Blockchain & Digital Assets Industry*, https://www.westernalliancebancorporation.com/industry-expertise/blockchain-and-digital-assets (last visited Aug. 26, 2024).

[157] Digit. Interbank Network, https://interbanknetwork.com/ (last visited Feb. 11, 2024).

[158] Yizhu Wang, *Banks Execute Transfer on Blockchain-Enabled Network*, S&P Glob.: Mkt. Intel. (Oct. 3, 2022), https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/banks-execute-transfer-on-blockchain-enabled-network-72332712. Customers Bank also offers both an intrabank CBIT product based on TassatPay. *Id.*

[159] Yizhu Wang, *Banks' Blockchain Payment Networks are not just for Cryptocurrency*, S&P Glob.: Mkt. Intel. (Feb. 9, 2023), https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/banks-blockchain-payment-networks-are-not-just-for-cryptocurrency-74222468.

[160] *See Tassat Successfully Completes Launch of the Digital Interbank Network*, Bus. Wire (Oct. 3, 2022), https://www.businesswire.com/news/home/20221003005347/en/Tassat%C2%AE-successfully-completes-launch-of-The-Digital-Interbank-Network%E2%84%A2.

[161] *Vast Mobile Banking*, Vast Bank, https://web.archive.org/web/20230930022814/https://www.vast.bank/crypto-banking (last visited Mar. 24, 2024).

[162] Penny Crosman, *Small Banks Set to Go Live With Bitcoin Trading*, Am. Banker (Jan. 18, 2023, 3:46 PM), https://www.americanbanker.com/news/small-banks-set-to-go-live-with-bitcoin-trading.

[163] NYDIG, *Bitcoin on Main Street*, https://web.archive.org/web/20231002053250/https://nydig.com/banking (last visited Mar. 24, 2024).

C. Growing International Connections

Not surprisingly, given the approach taken by U.S. regulators, some crypto firms are also "combing for banks outside the [United States]."[164] These foreign banks are listed in Table 8 below. Included among these is nonbank BCB Group, a U.K. payments processor "that links crypto companies to the banking system."[165] BCB offers the BCB Liquidity Interchange Network Consortium (BLINC), an instant settlement network.[166] BCB is "accelerating plans to add U.S. dollar capabilities to help fill the hole left by [SEN]."[167]

TABLE 8: SELECTED CRYPTO-FRIENDLY FOREIGN BANKS

Bank	**Jurisdiction**	**Regulator**
Arab Bank Switzerland[168]	Switzerland	Swiss Financial Market Supervisory Authority[169]
BCB Group Holdings Limited[170]	United Kingdom	UK Financial Conduct Authority[171]
Capital Union Bank[172]	Bahamas	Central Bank of The Bahamas / Inspector of Banks & Trust Companies[173]
DBS[174]	Singapore	Monetary Authority of Singapore[175]

[164] Suvashree Ghosh et al., *Crypto Scours the Globe for Banks to Replace Collapsed US Lenders*, BLOOMBERG (Mar. 13, 2023, 8:15 AM), https://www.bloomberg.com/news/articles/2023-03-13/crypto-scours-the-globe-for-banks-to-replace-collapsed-us-lenders. *See also* Aisha S. Gani, *UK's ClearBank Saw 20% Spike in Client Flows After SVB's Fall*, BLOOMBERG (Mar. 27, 2023), https://www.bloomberg.com/news/articles/2023-03-27/uk-s-clearbank-saw-20-spike-in-client-flows-after-svb-s-fall.

[165] Ian Allison, *Crypto Banking Firm BCB Prepares U.S. Dollar Payments to Plug Silvergate Gap*, COINDESK (May 9, 2023, 12:09 AM), https://www.coindesk.com/business/2023/03/06/crypto-banking-firm-bcb-readies-us-dollar-payments-to-plug-silvergate-gap/.

[166] *Id.*

[167] *Id.*

[168] Ian Allison, *Arab Bank Switzerland Is Quietly Getting Into DeFi*, COINDESK (May 11, 2023, 1:52 PM), https://www.coindesk.com/business/2022/01/06/arab-bank-switzerland-is-quietly-offering-clients-defi-tokens/.

[169] *About Arab Bank (Switzerland) Ltd.*, ARAB BANK SWITZERLAND, https://www.arabbank.ch/about-arab-bank-switzerland-ltd/ (last visited Mar. 21, 2024).

[170] Ghosh et al., *supra* note 164.

[171] *See About Us*, BCB GRP., https://www.bcbgroup.com/about-us/ (last visited Mar. 21, 2024).

[172] Ghosh et al., *supra* note 164.

[173] *Financials*, CAP. UNION BANK, https://capitalunionbank.com/financials/ (last visited Mar. 21, 2024).

[174] Nicholas Otieno, *Singapore's OCBC Bank Weighs Launching Crypto Services Amid Surge in Customer Interests*, BLOCKCHAIN.NEWS (Nov. 22, 2021, 8:30 AM), https://blockchain.news/news/singapore-ocbc-bank-weighs-launching-crypto-services-amid-surge-customer-interests.

[175] *See* Press Release, DBS, DBS' Response to MAS' Media Release on Breaches of AML Requirements (June 21, 2023), https://www.dbs.com/newsroom/DBS_response_to_MAS_media_release_on_breaches_of_AML_requirements.

Bank	**Jurisdiction**	**Regulator**
Deltec Bank & Trust[176]	Bahamas	Central Bank of The Bahamas / Inspector of Banks & Trust Companies[177]
Jewel Bancorp Limited[178]	Bermuda	Bermuda Monetary Authority[179]
Overseas-Chinese Banking Corporation[180]	Singapore	Monetary Authority of Singapore[181]
SEBA Bank[182]	Switzerland	Swiss Financial Market Supervisory Authority[183]
Sygnum[184]	Switzerland	Swiss Financial Market Supervisory Authority[185]

Thus, even at its best, the current U.S. policy will simply export bank run risk to other countries. That could work for a while, under the assumption that bank runs in foreign countries won't spill back into the U.S. financial system. That's a bad assumption. The recent banking crisis, which started off with the collapse of Silicon Valley Bank in the United States, serves as a strong reminder that the banking system is global in nature. A panic in one country's banking sector can easily migrate to another country's banking system. Indeed, shortly after U.S. authorities dealt with the three of the four largest bank failures in the country's history, Swiss authorities had to deal with the imminent collapse of Credit Suisse,[186] a "global systemically important bank."[187]

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[176] Ghosh et al., *supra* note 164.

[177] Supervised Financial Institutions, Cent. Bank of the Bahamas 2 (2020), https://www.centralbankbahamas.com/viewPDF/documents/2020-12-30-09-11-34-Supervised-Financial-Institutions-List--December.pdf.

[178] Elizabeth Napolitano, *Jewel Bank Approved as Bermuda's First Digital Asset Bank as Premier Burt Readies to Take Nation Into Stablecoins*, CoinDesk (May 11, 2023, 2:52 PM), https://www.coindesk.com/business/2022/06/07/jewel-bank-approved-as-bermudas-first-digital-asset-bank-as-premier-burt-readies-to-take-nation-into-stablecoins/.

[179] *Id*.

[180] Otieno, *supra* note 174.

[181] *See* Press Release, Oversea-Chinese Banking Corp., OCBC Prices S$450,000,000 4.05 Per Cent. Perpetual Capital Securities First Callable in 2029 (Jan. 10, 2024), https://www.ocbc.com/iwov-resources/sg/ocbc/gbc/pdf/investors/major-regulatory/2024/SGD450m%204.05%20Percent%20AT1.pdf.

[182] Ian Allison, Switzerland's SEBA Bank Snags First FINMA License for Liquid Crypto Funds, CoinDesk (May 11, 2023, 3:05 PM), https://www.coindesk.com/business/2021/09/29/switzerlands-seba-bank-snags-first-finma-license-for-liquid-crypto-funds/.

[183] *Id*.

[184] Allison, *supra* note 168.

[185] Press Release, Sygnum, Sygnum, Digital Asset Technology Group, Receives FINMA Banking and Securities Dealer Licence (Aug. 26, 2019), https://www.sygnum.com/news/sygnum-digital-asset-technology-group-receives-finma-banking-and-securities-dealer-licence/.

[186] Martin Arnold, *There Are Several Reasons to Worry About the Health of Europe's Banks*, Fin. Times (Mar. 20, 2023), https://www.ft.com/content/6af69772-4b8d-4a7c-960c-f233e6ced960.

[187] Fin. Stability Bd., 2022 List of Global Systemically Important Banks (G-SIBs) 1 (2022), https://www.fsb.org/wp-content/uploads/P211122.pdf.

Systemic risk can migrate. In 2023, the Europeans were on the international receiving end.[188] In the future, we might be on the receiving end.

These non-U.S. linkages are likely to grow in the coming years as non-U.S. jurisdictions are actively working on regulation to bring clarity to the crypto space. The European Union passed its Markets in Crypto Assets Regulation (MiCA) in April 2023.[189] MiCA covers "issuers of unbacked crypto-assets, and so-called "stablecoins," as well as the trading venues and the wallets where crypto-assets are held."[190] MiCA seeks to "protect investors and preserve financial stability, while allowing innovation and fostering the attractiveness of the crypto-asset sector."[191]

The United Kingdom—home to the world's leading financial center outside the United States—is not far behind and has been engaging in multiple consultations on its Financial Services and Markets Bill, beginning with a consultation on stablecoin regulation in April 2022.[192] In February 2023, the United Kingdom published the latest in these consultations, a paper on a regulatory framework for cryptoassets used within financial services.[193]

Asia's two leading financial hubs are similarly active. Singapore has published consultation papers on measures for "digital payment token services"[194] and a regulatory approach for stablecoins.[195] Hong Kong has published a consultation paper on proposed regulatory requirements for cryptoasset exchanges.[196] Finally, prominent international organizations—including the International Monetary Fund,[197] Financial Stability Board,[198] Bank for International Settlements,[199] International Organization of Securities Commissions,[200]

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[188] *See* Arnold, *supra* note 186.

[189] European Parliament Press Release 20230414IPR80133, Crypto-Assets: Green Light to New Rules For Tracing Transfers in the EU (Apr. 20, 2023).

[190] Council of the European Union Press Release 551/22, Digital Finance: Agreement Reached on European Crypto-Assets Regulation (MiCA), European Council (June 30, 2022).

[191] *Id.*

[192] HM Treasury, U.K. Regul. Approach to Cryptoassets, Stablecoins, and Distributed Ledger Tech. in Fin. Mkts.: Response to the Consultation and Call for Evidence (2022).

[193] HM Treasury, Future Fin. Servs. Regul. Regime for Cryptoassets: Consultation and Call for Evidence (2023).

[194] Monetary Auth. of Sing., Proposed Regul. Measures for Digit. Payment Token Servs. (2022).

[195] Monetary Auth. of Sing., Proposed Regul. Approach for Stablecoin-Related Activities (2022).

[196] H.K. Sec. and Futures Comm'n, Consultation Paper on the Proposed Regul. Requirements for Virtual Asset Trading Platform Operators Licensed by the Sec. & Futures Comm'n (2023).

[197] IMF, Elements of Effective Policies for Crypto Assets, IMF Policy Paper No. 2023/004 (2023).

[198] Fin. Stability Bd., Regul., Supervision, & Oversight of Crypto-Asset Activities & Markets (2022).

[199] Basel Comm. on Banking Supervision, Bank for Int'l Settlements, Prudential Treatment of Cryptoasset Exposures (2022).

[200] Bd. of the Int'l Org. of Sec. Comm'ns, Comm'n on Payments and Mkts. Infrastructures, Bank for Int'l Settlements, Application of Principles for Fin. Mkt. Infrastructures to Stablecoin Arrangements (2022).

Organisation for Economic Cooperation and Development,[201] and Financial Action Task Force[202]—have all recently published guidance for cryptoasset regulation.

In sum, crypto firms are connecting with U.S. banks and even foreign financial institutions. It might not be possible to put the toothpaste back in the tube. This means that the next time crypto bank runs occur, the damage could easily spill over into the real economy. Regulators must be prepared.

V. Regulatory Engagement

The optimal path forward is the regulation of crypto banking. The question is which regulations to enforce or create. To limit the systemic risk—and to protect millions of consumers and investors—it is imperative to first understand how crypto banks like Celsius and Voyager were treated under the existing legal framework. Here, we provide an analysis of securities law and commodities law. These two are oftentimes discussed as strong contenders to deal with the risks surrounding crypto.[203] We argue that the SEC and the CFTC could have brought enforcement actions against crypto banks based in the United States.

But while these SEC and CFTC guardrails are important, they are insufficient because securities law and commodities law are designed to improve market integrity via transparency.[204] In other words, even if the SEC and CFTC have jurisdictional coverage, they do not have the right tools to mitigate systemic failures caused by bank runs. The first-best approach is to use banking law to fix a banking problem.

A. Enforcing Securities Law

In this section, we analyze the applicability of securities law to crypto banks, namely, the investment company regulation under the Investment Company Act of 1940 and the securities broker-dealer regulation under the Securities Exchange Act of 1934. The SEC likely could have enforced these laws against crypto banks such as Celsius and Voyager prior to their implosions.

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[201] OECD, Crypto-Asset Reporting Framework and Amends. to the Common Reporting Standard (2022).

[202] Fin. Action Task Force, Updated Guidance for a Risk-Based Approach to Virtual Assets & Virtual Asset Serv. Providers (2021).

[203] *See* Massad & Jackson, *supra* note 129, at 2–3.

[204] *See* Int'l Org. of Secs. Comm'ns, Objectives and Principles of Securities Regulation 3 (2017), https://www.iosco.org/library/pubdocs/pdf/IOSCOPD561.pdf; Int'l Org. of Secs. Comm'ns, Principles for the Regulation and Supervision of Commodity Derivatives Markets 11 (2011), http://www.iosco.org/library/pubdocs/pdf/ioscopd358.pdf. By contrast, banks are optimally opaque. *See* Tri Vi Dang, Gary Gorton, Bengt Holmström & Guillermo Ordoñez, *Banks as Secret Keepers*, 107 Am. Econ. Rev. 1005 (2017).

1. Investment Company

Celsius and Voyager likely met the definition of "investment company" under the 1940 Act, although specific details regarding their organizational structures and balance sheets are needed. The investment company status would have precluded their businesses from operating because unregistered investment companies are prohibited from engaging in virtually any business, and registered investment companies are prohibited from issuing debt. (However, it's also likely that Celsius and Voyager could have qualified for the broker exclusion, which we discuss in the second half of this section.)

Congress enacted the Investment Company Act of 1940 to regulate the organization of companies that principally engage in "investing, reinvesting, and trading in securities."[205] It has been described as "the most complex of the federal securities laws" and as "a comprehensive corporate statute."[206] The purpose of the Act is to eliminate conditions "which adversely affect the national public interest and the interest of investors."[207] Among those conditions are "when investment companies, in keeping their accounts, in maintaining reserves, and in computing their earnings and the asset value of their outstanding securities, employ unsound or misleading methods, or are not subjected to adequate independent scrutiny," and "when investment companies operate without adequate assets or reserves."[208] It reflects Congress's "recognition that substantive protections beyond the disclosure requirements of the Securities Act of 1933 and the Securities Exchange Act of 1934 were needed because of the unique character of investment companies and their role in channeling savings into the national economy."[209]

Accordingly, the '40 Act subjects registered investment companies to comprehensive regulation, including limits on leverage and derivatives use. Most importantly, registered investment companies *may not issue debt securities*.[210] Failing to register is not a cure, either. The '40 Act prohibits unregistered investment companies from engaging in any business in interstate commerce (or controlling any company engaged in any business in interstate

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[205] 15 U.S.C. § 80a-1(a)(2).

[206] Paul F. Roye, Dir., Div. of Inv. Mgmt., U.S. Sec. & Exch. Comm'n, Speech by SEC Staff: The Exciting World of Investment Company Regulation (June 14, 2001) https://www.sec.gov/news/speech/spch500.htm ("The great securities law scholar, Louis Loss, described the '40 Act as the most complex of the federal securities laws. . . . It places substantive restrictions on virtually every aspect of the operation of investment companies.").

[207] 15 U.S.C. § 80a-1(b)(8).

[208] *Id.* §§ 80a-1(b)(5), (8).

[209] U.S. Sec. & Exch. Comm'n, Protecting Investors: A Half Century of Inv. Co. Regul. xvii (1992), https://www.sec.gov/divisions/investment/guidance/icreg50-92.pdf.

[210] 15 U.S.C. § 80a-18. Section 18(f) prohibits any registered open-end company to issue any senior security except that it may borrow from a bank provided that upon the borrowing it would have a 300% asset coverage ratio. *Id.* § 80a-18(f).

commerce).[211] If found to be an investment company, a crypto firm cannot lawfully offer interest-bearing deposit accounts.

Were Celsius and Voyager unregistered investment companies? Probably so. Celsius and Voyager offered interest-bearing crypto deposit accounts identical to those of BlockFi. In its risk disclosure, Celsius admits that its Earn service is a securities offering: "Celsius' Earn service is an exempt offering from SEC registration requirements under rule 506(c) of the Securities Act of 1933."[212] However, we argue next that Celsius and Voyager could more likely have been broker-dealers (and thus excluded as investment companies).

2. Broker-Dealers

The SEC could have argued that Voyager and Celsius both met the definition of a securities broker-dealer under the '34 Act. Celsius appears to have operated as an unregistered securities broker-dealer despite being required to register. A company is a broker if it "participates in securities transactions at key points in the chain of distribution." Both Celsius and Voyager performed staking for their customers, and staking is likely to be a securities transaction even if the underlying crypto asset is not a security. Curiously, VYGR Digital Securities, LLC—a wholly owned subsidiary of Voyager—is, in fact, a registered securities broker-dealer.

The SEC governs brokers and dealers primarily under § 15 of the Securities Exchange Act of 1934. Because most § 15 rules apply to both brokers and dealers—and because many brokers are also dealers and vice versa—it is common for brokers and dealers to be collectively referred to as "broker-dealers."[213]

Broker-dealer regulation under § 15 is "designed to ensure that customers are treated fairly, that they receive adequate disclosure and that the broker-dealer is financially capable of transacting business."[214] A broker-dealer generally must be registered with the SEC to conduct any business: § 15(a)(1) generally prohibits unregistered broker-dealers from using any means of interstate commerce to effect any security transactions.[215]

Both Celsius and Voyager were likely acting as unregistered securities broker-dealers. SEC guidance indicates that a firm is a broker-dealer if it "participates in important parts of a securities transaction, including solicitation,

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[211] *Id.* §§ 80a-7(a)(4), (5).

[212] *Risk Disclosure*, Celsius (Apr. 2022)., https://celsius.network/static/risk-disclosure.pdf.

[213] Not expressly defined in '34 Act, the term "broker-dealer" does appear four times in its text. But usually the statute opts for "broker(s) and dealer(s)" (38 times), "broker(s) or dealer(s)" (256 times), or "broker(s), dealer(s)" (80 times). 15 U.S.C. §§ 78a–78rr.

[214] Persons Deemed Not to Be Brokers, 17 C.F.R. § 240 (1984).

[215] Securities Exchange Act of 1934, § 15(a)(1), 15 U.S.C. § 78o(a)(1).

negotiation, or execution of the transaction." Both firms performed staking for customers. A staking transaction is likely a securities transaction even if the underlying asset is not a security.[216]

3. Securities Law Is Insufficient

What is the upside of crypto banks being regulated by the SEC? The answer is "a lot," but none of the associated regulations are designed to reduce run risk. First, consider the case in which a crypto bank is regulated as an investment company. Crypto banks would still be run on. Simply look at money market funds, which are investment companies registered under the '40 Act and regulated by the SEC pursuant to Rule 2a-7.[217] They suffer destabilizing runs every time there is a sizeable market panic.[218] Specifically, when the share price of a money market fund deviates more than 0.5 percent from its stable $1.00 share price, investors will no longer be able to redeem one share for one dollar akin to bank depositors not being able to withdraw the full value of their deposits. "Breaking the buck" can unleash a market-wide panic as investors rush to sell their shares.

Such a market-wide panic occurred in 2008. Following the bankruptcy declaration of Lehman Brothers on September 15, 2008, a money market fund named the Reserve Primary Fund broke the buck on September 16, 2008, due to its exposure to debt issued by Lehman Brothers, leading many investors to pull their money out of the fund.[219] The same phenomenon occurred in March 2020. As fear spread through global markets because of Covid-19, investors requested substantial redemptions from prime and tax-exempt money market funds in the belief that these funds would not be able to honor their redemption requests at full value.[220] Being registered under the '40 Act and regulated by the SEC pursuant to Rule 2a-7 were not—and are not—sufficient to mitigate bank run risk.

Next, consider the scenario in which a crypto bank is regulated as a broker-dealer. Registered broker-dealers must comply with the "financial responsibility rules"—*e.g.*, the Net Capital Rule (Rule 15c3-1),[221] the Customer

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[216] *See* Complaint, SEC v. Payward Ventures, No. 23-cv-588 (N.D. Cal. Feb. 9, 2023) (asserting that staking cryptoassets involves offer and sale of securities).

[217] *See* SEC Money Market Funds Rule, 17 C.F.R. § 270.2a-7 (2024).

[218] Van Der Weide & Zhang, *supra* note 10, at 428.

[219] Jill E. Fisch, *The Broken Buck Stops Here: Embracing Sponsor Support in Money Market Fund Reform*, 93 N.C. L. Rev. 935, 946–47 (2015).

[220] Press Release, U.S. Dep't. of Treasury, President's Working Group on Financial Markets Releases Report on Money Market Funds (Dec. 22, 2020), https://home.treasury.gov/news/press-releases/sm1219; *see also* Lei Li et al., Liquidity Restrictions, Runs, and Central Bank Interventions: Evidence from Money Market Funds (May 24, 2021) (unpublished manuscript), https://dx.doi.org/10.2139/ssrn.3607593.

[221] SEC Net Capital Rule, 17 C.F.R. § 240.15c3-1 (2024).

Protection Rule (Rule 15c3-3),[222] and the Hypothecation Rules (Rules 8c-1 and 15c2-1).[223] The Customer Protection Rule requires broker-dealers that maintain custody of customer securities and safeguard customer cash to segregate those assets from the firm's proprietary business.[224] Again, while these broker-dealer guardrails are important for the integrity of trading markets, they do not mitigate run risk. When market uncertainty rises, a depositor at a crypto bank—or any bank-like entity—will still run. If depositors wait, they run the risk of not getting their money back, as seen during the banking crisis caused by the collapse of Silicon Valley Bank.[225] We discuss this aspect in greater detail in the commodities law section next.

B. Enforcing Commodities Law

In this section, we ask whether the CFTC could have enforced commodities law against crypto banks. We begin by noting that futures commission merchants ("FCMs") and introducing brokers ("IBs") are the commodities law analogs to a securities broker-dealer. Notably, many FCMs are also registered as securities broker-dealers. The CFTC governs FCMs under the Commodities Exchange Act ("CEA").[226] Celsius meets the definition of an FCM because it offered the equivalent of margined trading on virtual currencies. Voyager does not appear to have offered margined trading; it was merely planning to.

1. Futures Commission Merchants

An FCM is "any individual, association, partnership, or trust that is engaged in soliciting or accepting orders for"—among other things—futures, options on futures, swaps, or commodity options, and in connection with soliciting or accepting those orders, "accepts any money, securities, or property (or extends credit in lieu thereof) to margin, guarantee, or secure any trades or contracts that result or may result therefrom."[227] Of note, leveraged

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[222] SEC Customer Protection Rule,17 C.F.R. § 240.15c3-3 (2024).

[223] SEC Hypothecation Rules, 17 CFR §§ 240.8c-1, 240.15c2-1 (2024).

[224] Jenny Strasburg, *What's the Big Deal About Rule 15c3-3? – The Short Answer*, WALL ST. J. (Apr. 28, 2015, 9:49 AM), https://www.wsj.com/articles/BL-263B-4422.

[225] *See* Vivian Giang & Mike Dang, *10 Days That Have Roiled Markets: A Timeline of the Banking Chaos*, N.Y. TIMES (Mar. 20, 2023), https://www.nytimes.com/article/svb-silicon-valley-bank-collapse-timeline.html (noting that the "[s]hock from Silicon Valley's woes reverberated through parts of the banking sector, and investors started to dump bank stocks, including those of First Republic, Signature Bank and Western Alliance.").

[226] *See* 7 U.S.C. §§ 1–26. The reader should be aware that the CEA's section numbering diverges substantially from the US Code. For a helpful conversion chart, see CFTC, *Commodity Exchange Act – U.S. Code Conversion Chart*, https://www.cftc.gov/LawRegulation/ceaconvchart.html (last visited Mar. 23, 2024).

[227] CFTC General Regulations Under the Commodity Exchange Act, 17 C.F.R. § 1.3 (2024).

or margined retail commodity transactions involving "virtual currencies" are treated "as . . . a futures contract."[228]

An IB is a person who is engaged in soliciting or in accepting orders for futures, options on futures, swaps, or commodity options, but "does not accept any money, securities, or property (or extend credit in lieu thereof) to margin, guarantee, or secure any trades or contracts that result or may result therefrom."[229]

CEA § 4d(a)(1) makes it unlawful for any person to act as an FCM (*i.e.*, solicit or accept derivatives orders and take collateral for those orders) unless that person is registered.[230] Likewise, CEA § 4d(g) makes it unlawful for any person to act as an IB (*i.e.*, solicit or accept derivatives orders but not take collateral for those orders) unless they are registered.[231] Moreover, CEA § 4(a) makes it unlawful for any person to "offer to enter into, to enter into, to execute, to confirm the execution of, or to conduct any office or business anywhere in the United States, its territories or possessions, for the purpose of soliciting or accepting" any futures unless that transaction is made on a Designated Contract Market (DCM) for that commodity.[232]

In September 2021, the CFTC filed and settled charges against Payward Ventures, Inc., the owner of the cryptocurrency exchange known as "Kraken."[233] Kraken had offered margined trading in Bitcoin.[234] Because margined trading on spot Bitcoin (a commodity) is treated "as if" it is futures, Kraken had solicited or accepted orders on futures.[235]

Celsius was treated as an FCM because it solicited or accepted orders for leveraged or margined retail commodity transactions that did not result in actual delivery within 28 days.[236] Celsius's First Day Motions explained its retail lending program (which was separate from its interest-bearing crypto deposit accounts).[237] This lending product was offered as part of a suite of products that together created the equivalent of a margin trading account.[238]

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[228] Retail Commodity Transactions Involving Certain Digital Assets, 85 Fed. Reg. 37734, 37734–35 (June 24, 2020).

[229] 7 U.S.C. § 1a(31).

[230] *Id.* § 6d.

[231] *Id.* § 6d(g).

[232] *Id.* § 6(a).

[233] *See* Order Instituting Proceedings Pursuant to Section 6(c) and (d) of the Commodity Exchange Act, Making Findings, and Imposing Remedial Sanctions, *In re* Payward Ventures, CFTC No. 21-20, 2021 WL 4501468, at *1 (Sept. 28, 2021).

[234] *Id.* at *2.

[235] *Id.* at *4.

[236] *Id.* at *2–3.

[237] *Celsius–Mashinsky Declaration*, *supra* note 72, ¶ 112.

[238] *Id.* at ¶61.

2. Commodities Law Is Insufficient

What is the upside of being regulated as an FCM by the CFTC? As stated previously, many FCMs are also registered broker-dealers. FCMs that are not also registered broker-dealers have no insurance fund.[239] To provide customer protection, the CEA relies on a system of account segregation. CEA §§ 4d(a)(2) and 4d(f) are designed to "establish a system of segregation of customer property to result in an FCM holding sufficient funds in segregated accounts to meet their customer obligations in full."[240] CEA § 4d(a)(2) requires that an FCM treat and deal with the funds of a futures customer as belonging to such futures customer.[241] A futures commission merchant must not use customer funds "to secure or guarantee the commodity interests, or to secure or extend the credit, of any person other than the futures customer for whom the funds are held."[242] An FCM may commingle a customer's funds only with other customers' funds, but it must segregate public and non-public accounts.[243]

These regulations, while important to maintaining integrity in commodities markets, do not sufficiently guard against bank runs. As witnessed during the latest banking crisis caused by the collapse of Silicon Valley Bank,[244] depositors will seek redemptions en masse when they perceive the slightest sense of trouble. They care about getting their cash out *now*, and it is unlikely to matter whether the accounts are segregated. Indeed, during the SVB-induced panic, depositors even ran on banks that were not directly linked to SVB.[245] That is what occurs during a panic, which only subsides once the government intervenes and announces broad-based insurance. We discuss the value of having such deposit insurance in the next section and argue that deposit insurance paired with appropriate bank regulation and supervision is the right solution for this problem.

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[239] *See generally 9066 – NFA Fin. Requirements Sect. 16: FCM Fin. Prac. and Excess Segregated Funds/Secured Amount/Cleared Swaps Customer Collateral Disbursements*, NAT'L FUTURES ASS'N (June 30, 2020), https://www.nfa.futures.org/rulebook/rules.aspx?RuleID=9066&Section=9.

[240] Joshua B. Sterling, CFTC Staff Letter, CFTCLTR No. 20-34, 2020 WL 6270224, at *1 (Oct. 21, 2020).

[241] CFTC General Regulations Under the Commodity Exchange Act, 17 C.F.R. § 1.20(f)(1) (2024).

[242] *Id.*

[243] *Id.* § 1.20(a).

[244] *See* Candice Choi, *The Banking Crisis: A Timeline of Key Events*, WALL ST. J. (May 11, 2023, 8:56 PM), https://www.wsj.com/articles/bank-collapse-crisis-timeline-724f6458 (showing a timeline of the banking crisis).

[245] Matt Grossman & Eric Wallerstein, *Silicon Valley Bank Crisis Unsettles Bank Investors*, WALL ST. J. (Mar. 10, 2023, 4:52 PM), https://www.wsj.com/articles/silicon-valley-bank-crisis-unsettles-bank-investors-bc4ee834 (noting that "[s]everal banks were halted from trading throughout Friday due to volatility, including Signature Bank, Western Alliance Bancorporation, First Republic and PacWest Bancorp").

C. Expanding Banking Law

Despite the novelty of cryptocurrencies, entities like Celsius and Voyager operated business models that were identical to the ones operated by traditional banks. To repeat: if an entity is borrowing short and lending long, it is in the business of maturity transformation.[246] It is economically equivalent to a bank despite what it calls itself in public or how it is categorized legally.

1. If It Looks Like a Bank and Talks Like a Bank…

Putting economic theory aside for a moment, if we simply examine the practical functions of a traditional bank, we will observe strong similarities between traditional banks and crypto banks. As articulated by the Acting Comptroller of the Currency Michael Hsu, the chief regulator of national banks in the United States, "[b]anking consists of three bundled activities: taking deposits, making loans, and facilitating payments."[247] Now read the companies' own recent descriptions of their business lines:

> Celsius: "Celsius' primary operations consist of: (a) financial services through which retail and institutional users can (i) earn rewards on cryptocurrency they transferred to Celsius, (ii) securely store and access cryptocurrency, (iii) borrow fiat using cryptocurrency as collateral, and (iv) send and receive cryptocurrency using Celsius' CelPay services; and (b) Bitcoin mining through Mining."[248]

> Voyager: "Voyager's primary operations consist of (i) brokerage services, (ii) custodial services through which customers earn interest and other rewards on stored cryptocurrency assets, and (iii) lending programs."[249]

Voyager took money from investors and lent it out, which satisfies two of the three prongs articulated by the OCC. Celsius satisfied all three prongs, as Celsius also had a payment service. They were acting as banks but not subject to banking law.

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[246] *See* Adam J. Levitin, *Safe Banking: Finance and Democracy*, 83 U. Chi. L. Rev. 357, 357 (2016) (stating that "[b]anking is based on two fundamentally irreconcilable functions: safekeeping of deposits and relending of deposits").

[247] Michael J. Hsu, Acting Comptroller, Off. of the Comptroller of the Currency, Remarks at the Federal Reserve Bank of Philadelphia's Fifth Annual Fintech Conference: Modernizing the Financial Regulatory Perimeter (Nov. 16, 2021); *see also* Dan Awrey, *Unbundling Banking, Money, and Payments*, 110 Geo. L. J. 715, 715 (2022) ("For centuries, our systems of banking, money, and payments have been legally and institutionally intertwined.").

[248] *Celsius–Mashinsky Declaration*, *supra* note 72, ¶ 42.

[249] *Voyager–Ehrlich Declaration*, *supra* note 71, ¶ 20.

2. Pairing Deposit Insurance with Enhanced Supervision

In all likelihood, applying banking law to crypto banks would require an act of Congress.[250] Doing so would subject crypto banks to rigorous regulation but would also provide crypto banks with deposit insurance paired with *enhanced supervision*.

There were various attempts to insure deposits prior to the Civil War and then again after the Panic of 1907. Prior to the Civil War, six states adopted insurance programs designed to protect bank creditors. Those states were New York, in 1829; Vermont, in 1831; Indiana, in 1834; Michigan, in 1836; Ohio, in 1845; and Iowa, in 1858. These systems operated with varying degrees of success until the National Bank Act eventually supplanted them.[251]

The introduction of state deposit insurance dramatically altered bank supervision. Insurance proponents clearly recognized the need for some control over the exposure risk to the various insurance systems (*i.e.*, the participating banks). It was understood that supervision would not prevent all loss to the insurance system, but rather that the early exposure of financial difficulties due to enhanced supervision would reduce both the number of failures and the amount of loss which nevertheless occurred in those failures.[252] The appearance of these two fundamental banking innovations in the same act—that is, insurance of bank obligations and regular bank examinations—was more than a coincidence. The pairing was an economic necessity.

The next wave of state deposit insurance schemes followed the Panic of 1907, when eight states adopted some form of insurance. These states were Oklahoma, Texas, Kansas, Nebraska, South Dakota, Mississippi, North Dakota, and Washington. All eight of these state insurance funds became insolvent in the 1920s with the sharp drop in commodity prices after World War I.[253] According to Calomiris and Jaremski, "Despite being subject to similar exogenous shocks, the insured banking system collapses exhibited much higher loan losses than national banks within the same states or state-chartered banks operating in adjacent states."[254] This, again, highlighted the economic trade-off that deposit insurance encouraged greater risk-taking by banks when enhanced supervision was missing.

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[250] *But see* Howell E. Jackson & Morgan Ricks, *Locating Stablecoins within the Regulatory Perimeter*, Harv. L. Sch. F. on Corp. Governance (Aug. 5, 2021), https://corpgov.law.harvard.edu/2021/08/05/locating-stablecoins-within-the-regulatory-perimeter/ (arguing that section 21 of the Glass-Steagall Act could be invoked to bring certain financial entities within banking law).

[251] *See* Carter H. Golembe & Clark Warburton, Insurance of Bank Obligations in Six States, During the Period 1829-1866 I-1 (1958); *see also* Charles W. Calomiris, *Is Deposit Insurance Necessary? A Historical Perspective*, 50 J. Econ. Hist. 283, 284 (1990).

[252] Golembe & Warburton, *supra* note 251, at I-7.

[253] Calomiris, *supra* note 251, at 289.

[254] Charles W. Calomiris & Matthew Jaremski, *Deposit Insurance: Theories and Facts*, 8 Ann. Rev. Fin. Econ. 97, 106 (2016).

By 1917, at least 80 bills had been introduced in the Congress calling for nationwide deposit insurance. Thirty more bills were introduced in the Congress by 1929, and then, as it became painfully clear during the bank crisis of 1930-33 that state-wide insurance was not the answer, 40 additional bills were introduced by 1933. The last of these became law on June 16, 1933, when the Federal Deposit Insurance Corporation was established.[255]

The issue was controversial. Both the Roosevelt administration and the bank regulatory agencies opposed deposit insurance.

> Bankers were divided on the issue, but the banks who traditionally favored deposit insurance—small, rural, single-office banks in states that prohibited bank branching—had been in retreat economically since 1921 and had lost ground politically. Agricultural distress in the post-World War I years hastened the movement toward larger, more diversified banks, which had less need of protection. The most recent experiences with deposit insurance at the state level had proved disastrous. Eight state-level deposit insurance systems had been created since 1908 at the behest of small unit banks in those states. In the 1920s, all collapsed under the weight of excessive risk taking and fraud, encouraged by the protection of deposit insurance. The experiences of these states were widely discussed at the time.[256]

The early experience with deposit insurance suggests that it will not reduce the risk of runs if it is not accompanied by enhanced supervision.

Despite the naysayers, national deposit insurance in the United States was enacted in 1934, becoming the first such system. Then in the post-World War II era, deposit insurance spread across the globe, and other countries also learned that deposit insurance does not work if implemented by itself. Demirgüç-Kunt and Detragiache reviewed 61 countries over the 1980-97 period and found that explicit deposit insurance increases the likelihood of a banking crisis.[257] However, Demirgüç-Kunt and Kane have argued that deposit insurance may still be desirable because it provides an explicit limit to what is insured, whereas the implicit insurance that otherwise exists is unlimited.[258]

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[255] Carter H. Golembe, *The Deposit Insurance Legislation of 1933: An Examination of its Antecedents and its Purposes*, 76 Pol. Sci. Q. 181, 181 (1960).

[256] Charles W. Calomiris & Eugene N. White, *The Origins of Federal Deposit Insurance*, *in* The Regulated Economy: A Historical Approach to Political Economy, 145, 146 (Claudia Goldin & Gary D. Libecap eds., 1994); *see also* Mark D. Flood, *The Great Deposit Insurance Debate*, Fed. Rsrv. Bank of St. Louis Rev., July–Aug. 1992, at 51, 51.

[257] Asli Demirgüç-Kunt & Enrica Detragiache, *Does Deposit Insurance Increase Banking System Stability? An Empirical Investigation*, 49 J. Monetary Econ. 1373, 1373 (2002); *see also* Deniz Anginer et al., *How Does Deposit Insurance Affect Bank Risk? Evidence from the Recent Crisis*, 48 J. Banking & Fin. 312, 312 (2014).

[258] Asli Demirgüç-Kunt & Edward Kane, *Deposit Insurance Around the Globe: Where Does it Work?*, 16 J. Econ. Persps. 175, 176 (2002).

These authors suggested that the success of deposit insurance depends on the supervisory environment in which it must function.[259]

Therefore, for deposit insurance to be a success for the next generation of crypto lending platforms, these firms need to be regulated and supervised as rigorously as traditional banks. Otherwise, providing deposit insurance by itself would worsen the risk-taking of crypto firms and fail to work as intended to stop runs.

Conclusion

During Crypto Winter, cryptocurrency lending platforms faced bank runs and went bankrupt. It was a systemic event in a circular crypto space that had little impact on the real economy, unlike the turmoil witnessed in September 2008 or March 2020. The next generation of crypto firms will not replicate that circular business model. They will try to become interoperable with the real economy. Indeed, they are already linking up with U.S. and non-U.S. financial institutions. Thus, the next crypto crash could cause systemic failures in our financial sector and lead to an economic recession. In response, regulators would ideally regulate crypto banks like banks, consistent with their business of engaging in maturity transformation.

[259] *Id.* at 177.

Appendix

Table A1: Sequence of Events During Crypto Winter

Date	Event
May 7, 2022	$18 billion algorithmic stablecoin TerraUSD (UST) breaks its $1 peg and falls to 35 cents on May 9. Its companion token LUNA, falls from $80 to a few cents by May 12.[260]
June 12, 2022	Celsius freezes withdrawals, swaps, and transfers due to "extreme market conditions", fueling rumors of insolvency.[261]
July 1, 2022	Three Arrows Capital (3AC), a crypto hedge fund, files for Chapter 15 bankruptcy in New York federal court.[262]
July 3, 2022	Celsius lays off about 23% of its workforce.[263]
July 3, 2022	Voyager suspends withdrawals.[264]
July 5, 2022	Voyager Digital Holdings files for bankruptcy under Chapter 11 after 3AC defaulted on a loan of $670 million from Voyager.[265]
July 7, 2022	KeyFi (an app-based company for managing crypto assets) sues Celsius, alleging market manipulation.[266]
July 13, 2022	Celsius files for Chapter 11 bankruptcy.[267]
September 22, 2022	Compute North (a datacenter company providing full-service hosting services for cryptocurrency miners) files for bankruptcy under Chapter 11 in the Southern District of Texas.[268]
November 11, 2022	FTX Trading Ltd. files for bankruptcy under Chapter 11 in the Bankruptcy Court for the District of Delaware.[269]

[260] Krisztian Sandor & Ekin Genç, *The Fall of Terra: A Timeline of the Meteoric Rise and Crash of UST and LUNA*, CoinDesk (Dec. 22, 2022, 4:07 PM), https://www.coindesk.com/learn/the-fall-of-terra-a-timeline-of-the-meteoric-rise-and-crash-of-ust-and-luna.

[261] Elizabeth Napolitano, *The Fall of Celsius Network: A Timeline of the Crypto Lender's Descent Into Insolvency*, CoinDesk (May 11, 2023, 1:22 PM), https://www.coindesk.com/markets/2022/07/15/the-fall-of-celsius-network-a-timeline-of-the-crypto-lenders-descent-into-insolvency.

[262] Jeremy Hill, *Crypto Hedge Fund Three Arrows Files For Chapter 15 Bankruptcy*, Bloomberg (July 1, 2022), https://www.bloomberg.com/news/articles/2022-07-01/crypto-hedge-fund-three-arrows-files-for-chapter-15-bankruptcy.

[263] Napolitano, *supra* note 261.

[264] Mackenzie Sigalos, *Major Crypto Broker Voyager Digital Suspends All Trading, Deposits and Withdrawals*, CNBC (July 3, 2022, 4:05 PM), https://www.cnbc.com/2022/07/01/voyager-digital-suspends-all-trading-deposits-and-withdrawals-.html.

[265] *Id.*

[266] Brian Quarmby, *Bombshell Allegations of Fraud as KeyFi Takes Celsius to Court*, CoinTelegraph (July 8, 2022), https://cointelegraph.com/news/bombshell-allegations-of-fraud-as-keyfi-takes-celsius-to-court.

[267] Napolitano, *supra* note 261.

[268] Stephen Alpher & Aoyon Ashraf, *Compute North Files for Bankruptcy as Crypto-Mining Data Center Owes up to $500M*, CoinDesk (May 11, 2023, 12:23 PM), https://www.coindesk.com/business/2022/09/22/crypto-mining-data-center-provider-compute-north-files-for-bankruptcy-protection.

[269] Allun John & Hannah Lang, *Crypto Exchange FTX Files for Bankruptcy as Wunderkind CEO Exits*, Reuters (Nov. 11, 2022, 4:15 PM), https://www.reuters.com/business/ftx-start-us-bankruptcy-proceedings-ceo-exit-2022-11-11.

Date	Event
November 16, 2022	FTX Digital Markets Ltd. files a Chapter 15 petition in the Bankruptcy Court for the Southern District of New York.[270]
November 28, 2022	BlockFi Inc. files a Chapter 11 petition in the Bankruptcy Court for the District of New Jersey.[271]
December 1, 2022	Symbiont.io files a Chapter 11 petition in the Bankruptcy Court for the Southern District of New York.[272]
December 21, 2022	Core Scientific Inc. files a Chapter 11 petition in the Bankruptcy Court for the Southern District of Texas.[273]
January 19, 2023	Genesis Global Holdco, LLC and two affiliates file Chapter 11 petitions in the Bankruptcy Court for the Southern District of New York.[274]

TABLE A2: DIGITAL INTERBANK NETWORK[275]

Member	Bank Charter Class	Federal Reserve System Member	Federal Regulator	Known to Have Crypto Customers
Axos[276]	Federal Savings Bank	Yes	Primary: OCC Secondary: CFPB	Yes[277]
Byline[278] (Nasdaq: BY)	State Charter	No	Primary: FDIC	
California Bank of Commerce[279] (Nasdaq: CALB)	State Charter	No	Primary: FDIC	

[270] Suvashree Ghosh, *FTX Bahamas Unit Files for Chapter 15 Bankruptcy in New York*, BLOOMBERG (Nov. 16, 2022, 1:56 AM), https://www.bloomberg.com/news/articles/2022-11-16/bahamas-based-ftx-digital-markets-files-for-chapter-15-bankruptcy-in-new-york.

[271] Joshua Oliver et al., *Crypto Lender BlockFi Files for Chapter 11 Bankruptcy*, FIN. TIMES (Nov. 28, 2022), https://www.ft.com/content/36a6ec4e-15f8-4b15-8bfa-076b87004264.

[272] Nick Baker, *Symbiont.io, Which Tried to Bring Blockchain to Traditional Finance, Files for Chapter 11*, COINDESK (May 9, 2023, 12:04 AM)., https://www.coindesk.com/business/2022/12/09/symbiontio-which-tried-to-bring-blockchain-to-traditional-finance-files-for-chapter-11.

[273] Becky Yerak et al., *Bitcoin Miner Core Scientific Files for Chapter 11*, WALL ST. J. (Dec. 21, 2022, 2:34 PM), https://www.wsj.com/articles/bitcoin-mining-company-core-scientific-files-chapter-11-11671629411.

[274] Stephen Alpher & Danny Nelson, *Genesis' Crypto Lending Businesses File for Bankruptcy Protection*, COINDESK (May 9, 2023, 12:06 AM)., https://www.coindesk.com/business/2023/01/20/genesis-global-files-for-bankruptcy-protection.

[275] BUS. WIRE, *supra* note 160.

[276] *Axos Bank Institutional Details*, FED. DEPOSIT. INS. CORP. (Mar. 15, 2024), https://banks.data.fdic.gov/bankfind-suite/bankfind/details/35546.

[277] *See* Yang et al., *supra* note 153.

[278] *Byline Bank Institutional Details*, FED. DEPOSIT. INS. CORP. (Mar. 15, 2024), https://banks.data.fdic.gov/bankfind-suite/bankfind/details/20624.

[279] *California Bank of Commerce Institutional Details*, FED. DEPOSIT. INS. CORP. (Mar. 15, 2024), https://banks.data.fdic.gov/bankfind-suite/bankfind/details/58583.

Member	Bank Charter Class	Federal Reserve System Member	Federal Regulator	Known to Have Crypto Customers
Cogent Bank[280]	State Charter	No	Primary: FDIC	Yes[281]
Customers Bank[282]	State Charter	Yes	Primary: Federal Reserve Board Secondary: CFPB	Yes[283]
Emprise Bank[284]	State Charter	No	Primary: FDIC	
First Foundation Bank[285] (Nasdaq: FFWM)	State Charter	No	Primary: FDIC Secondary: CFPB	
Lineage Bank[286]	State Charter	No	Primary: FDIC	
OceanFirst Bank[287] (Nasdaq: OCFC)	National Banks	Yes	Primary: OCC Secondary: CFPB	
SouthState Bank[288] (Nasdaq: SSB)	National Banks	Yes	Primary: OCC Secondary: CFPB	
Texas Capital Bank[289] (Nasdaq: TCBI)	State Charter	No	Primary: FDIC Secondary: CFPB	
Western Alliance Bank[290]	State Charter	Yes	Primary: Federal Reserve Board Secondary: CFPB	Yes[291]

[280] *Cogent Bank Institutional Details*, Fed. Deposit. Ins. Corp. (Mar. 15, 2024), https://banks.data.fdic.gov/bankfind-suite/bankfind/details/34908.

[281] Yizhu Wang, *Banks' Blockchain Payment Networks Challenged by Perceived Links to Crypto*, S&P Global (Apr. 25, 2023), https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/banks-blockchain-payment-networks-challenged-by-perceived-links-to-crypto-74801351.

[282] *Customers Bank Institutional Details*, Fed. Deposit. Ins. Corp. (Mar. 15, 2024), https://banks.data.fdic.gov/bankfind-suite/bankfind/details/34444.

[283] *See* Yang et al., *supra* note 153.

[284] *Emprise Bank Institutional Details*, Fed. Deposit. Ins. Corp. (Mar. 15, 2024), https://banks.data.fdic.gov/bankfind-suite/bankfind/details/4789.

[285] *First Foundation Bank Institutional Details*, Fed. Deposit. Ins. Corp. (Mar. 15, 2024), https://banks.data.fdic.gov/bankfind-suite/bankfind/details/58647.

[286] *Lineage Bank Institutional Details*, Fed. Deposit. Ins. Corp. (Mar. 15, 2024), https://banks.data.fdic.gov/bankfind-suite/bankfind/details/6100.

[287] *OceanFirst Bank, National Association Institutional Details*, Fed. Deposit. Ins. Corp. (Mar. 15, 2024), https://banks.data.fdic.gov/bankfind-suite/bankfind/details/28359.

[288] *SouthState Bank, National Association Institutional Details*, Fed. Deposit. Ins. Corp. (Mar. 15, 2024), https://banks.data.fdic.gov/bankfind-suite/bankfind/details/33555.

[289] *Texas Capital Bank Institutional Details*, Fed. Deposit. Ins. Corp. (Mar. 15, 2024), https://banks.data.fdic.gov/bankfind-suite/bankfind/details/34383.

[290] *Western Alliance Bank Institutional Details*, Fed. Deposit. Ins. Corp. (Mar. 15, 2024), https://banks.data.fdic.gov/bankfind-suite/bankfind/details/57512.

[291] *See* Yang et al., *supra* note 153.