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On November 11, 2022, the cryptocurrency exchange FTX collapsed, nine days after a copy of the balance sheet of its affiliated hedge fund, Alameda Research was leaked. Once it was revealed that Alameda and FTX were significantly intertwined, and that FTX was suffering from serious liquidity shortages, the exchange's customers rushed to withdraw their funds. Many found that they could not do so. Behind the scenes, Alameda had been hemorrhaging money on bad trades and using FTX customer funds to cover those losses. Sam Bankman-Fried resigned as CEO, and FTX filed for bankruptcy. A month later, he was arrested. Bankman-Fried faces 13 criminal counts, ranging from fraud to foreign bribery. The implosion of FTX was the most spectacular in a series of cryptocurrency industry collapses that started in the spring of 2022.

Modern cryptocurrencies emerged in 2009 with the launch of Bitcoin, the first consequential virtual currency to rely on blockchain technology. Blockchains are essentially databases; their distinguishing feature is that, instead of relying on a centralized authority to update them, they use some form of consensus mechanism to decide who gets to add transactions to the database. The consensus mechanism varies, but the most common two are proof-of-work (as used by Bitcoin) and proof-of-stake (as used by Ethereum). Proof-of-work relies on people known as "miners," who validate transactions. Proof-of-stake selects validators from a pool of people who own the relevant cryptocurrency. In both cases, chosen validators are compensated for their work, and although the validator could theoretically be anyone, in reality, economic incentives have led to extremely concentrated pools of validators.

With the very public disintegration of FTX, simmering questions about the sustainability of the cryptocurrency industry have come to a boil. Other cryptocurrency companies and industry associations have tried to dispel investor fears and dissuade regulatory authorities from cracking down, insisting that FTX was just one bad apple. But FTX's unraveling was not an isolated incident. Rather, it revealed fundamental flaws in the cryptocurrency industry. The root of the problem is that cryptocurrency assets can be created at no cost and without limit, and an unlimited supply of assets makes a system more vulnerable to booms and busts. When assets have nothing behind them, no reliable financial accounting practices or valuation techniques exist to expose the fraudulent manipulation of those assets. The result is that fraudsters have rushed into cryptocurrency, exploiting the complexity and hype to dupe the unwary. As Bankman-Fried awaits trial, U.S. policymakers need to limit the harms associated with cryptocurrency technologies and business models. At the very least, they should not loosen existing laws in the name of fostering cryptocurrency innovation. But they should also consider a more serious measure: banning cryptocurrency assets outright.

CRYPTOCURRENCY CONCERNS

Cryptocurrencies already facilitate many different kinds of harm. Pariah states, including Iran and North Korea, use cryptocurrencies, and the anonymity that they grant, to evade sanctions and launder money. In 2022, for example, Pyongyang reportedly stole $1.7 billion in cryptocurrency, which it is believed to be using to fund ballistic missile and nuclear weapon development. Cryptocurrencies, particularly Bitcoin, have become the most common form of payment for the ransomware attacks increasingly targeting businesses and public services because it allows the nefarious actors behind these attacks to receive large amounts of money quickly and anonymously. Cryptocurrencies are also increasingly being used to facilitate drug and human trafficking—and the anonymity that they grant users inhibits law enforcement efforts.

If allowed to proceed unchecked, the unrestricted growth of the cryptocurrency industry and its future integration with the traditional financial system could produce a major crisis. Blockchain-based finance is complex, automated, and highly interconnected, and it offers vast opportunities for creating leverage, because there is a virtually unlimited supply of assets to borrow against. These are the kind of fragilities that led to the last financial crisis, in 2008. This damaged trust in the traditional financial system, and the cryptocurrency industry wandered into the wreckage, promoting itself as a reliable alternative to banks. Despite the industry's claims, most of those who invested in cryptocurrency have lost money. Those already disillusioned with traditional finance are likely to become even more cynical after their cryptocurrency losses, and this cynicism may have further consequences. As the professor David Golumbia, author of *The Politics of Bitcoin*, has argued, much of the conversation regarding cryptocurrency draws on right-wing rhetoric about the evils of government. There is a danger that members of cryptocurrency communities, embittered by their losses, may be funneled into extreme online communities.

Cryptocurrencies also come with an environmental cost. Bitcoin and other cryptocurrency assets relying on proof-of-work blockchains require miners to run computers that consume enormous amounts of electricity. Powering these computers has sometimes required as much energy as that consumed by the entirety of the Netherlands—a country of some 17 million people. In addition to the emissions that result, the mining burns through computer equipment relatively quickly, contributing to electronic waste and the global semiconductor chip shortage.

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Given the many problems with cryptocurrency, it seems foolhardy to allow the industry to continue as it is unless it can be shown to have demonstrable benefits. But it is hard to identify any upsides. Industry leaders and lobbyists tend to argue that the primary benefit of cryptocurrency is its decentralization. Given the sometimes dubious track record of traditional financial institutions, the prospect of a truly decentralized system, which does not require the use or trust of intermediaries, is certainly an appealing one. Unfortunately, that prospect is unrealistic. Decentralizing the technology does not guarantee that the actual control of that technology will remain decentralized. Rather, economic incentives have led to extremely concentrated pools of transaction validators, leaving users dependent on these small groups of people. Furthermore, blockchains are software, and users depend on the people programming the software—people who may have conflicts of interest or may make mistakes when programming. Software is never flawless, it degrades over time, and hackers are always seeking to exploit its vulnerabilities. This means that software must be constantly maintained—again, often by a select group of people. To take one example, recent reporting in the *Wall Street Journal* revealed that there are currently just five people who can approve proposed changes to Bitcoin's core blockchain software. Some of the applications built on the blockchain are administered in a decentralized way, but decision-making still tends to lie in the hands of a small group of users. It is a far cry from the claims of decentralization that come from cryptocurrency enthusiasts and advocates.

In sum, the best that the cryptocurrency industry can offer is a version of the traditional financial system that remains economically centralized but has more vulnerabilities because of its attempts at technological decentralization. Because blockchain-based finance is so complex, it is inherently fragile. The collapses that began in 2022 were not outliers but symptoms of systemic problems in the cryptocurrency industry.

CRUSHING CRYPTOCURRENCIES

Policymakers who recognize that blockchain technology's harms outweigh its benefits might believe that state intervention is justified but wonder if it is even possible. Misleading rhetoric about cryptocurrency's decentralization is used to persuade regulators that the software is calling the shots, implying that there are no business entities or humans to regulate. But the reality is that regulation can be applied to the many different intermediaries that are critical to cryptocurrency' operation. For example, traditional business entities operate the centralized exchanges that serve as gateways to the cryptocurrency markets. If Congress were to pass legislation banning them from listing cryptocurrency assets, the cryptocurrency market would quickly fade. Alternative decentralized exchanges do exist, but a ban could be enforced against them, too, because control of those exchanges tends to be concentrated in the hands of a few people.

Opponents of a cryptocurrency ban often allege that such an action would limit future useful blockchain innovations. There is little to fear here, however. Many of the most hyped innovations, including central bank digital currencies, do not require a blockchain at all. Blockchain technology itself has extremely limited utility. The consensus mechanisms that make blockchains work are inherently less efficient and more costly than centralized alternatives; they have to be, or else it would be too easy for a bad actor to take over. Indeed, in 2022 over 1,500 technology experts signed a letter to U.S. congressional leaders stating that "by its very design, blockchain technology is poorly suited for just about every purpose currently touted as a present or potential source of public benefit."

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If policymakers are still reluctant to adopt an outright ban, then the second-best alternative is to stringently enforce regulations that are already in place. Banking regulators should use existing prudential rules to keep banks from being exposed to the risks of cryptocurrency assets, and securities regulators should enforce existing rules to protect retail investors from unregistered cryptocurrency offerings and fraud. Fortunately, in the wake of

FTX's failure, both the banking regulators and the U.S. Securities and Exchange Commission have redoubled their efforts to rein in the cryptocurrency industry, making it clear that regulation has been possible all along. Although there are legislative improvements that could strengthen banking and securities regulation, the bespoke cryptocurrency bills that have so far been introduced in Congress are inadequate. With provisions designed to limit the SEC's jurisdiction over the cryptocurrency industry and bring some types of cryptocurrency assets into the heart of the banking system, these bills are designed to legitimize and accommodate cryptocurrency, to allow it to attract funding from institutional investors and otherwise integrate with the traditional financial system. They would not protect the economy and the public from cryptocurrency but rather remake the law in cryptocurrency's favor.

Cryptocurrency, despite its proponents' arguments to the contrary, can be regulated. But steps to do so will be subject to the long-standing and well-known problem of geographical arbitrage. If the United States cracks down, it is possible that cryptocurrency may migrate elsewhere. But because the global cryptocurrency industry relies heavily on funding from U.S. venture capital firms, it remains an open question whether the industry could survive without that funding.

Some have expressed concerns about the United States losing its edge as a global leader in cryptocurrency innovation, but it is undesirable to be a leader in an innovation this harmful. A greater concern is the development of an offshore cryptocurrency industry, which could cause harms that spill over into the United States. Similar concerns about spillovers from traditional financial activities have driven international efforts to agree to global standards of financial regulation, most notably on bank capital requirements. International bodies such as the Basel Committee on Banking Supervision, the Financial Stability Board, and the International Organization of Securities Commissions are already working to coordinate approaches to cryptocurrency regulation. The United States should continue to take part in these efforts to limit the damage cryptocurrency might do at the global level. But there is no reason to delay in cracking down on cryptocurrency at home.