

Christopher J Waller: Thoughts on the crypto ecosystem

Speech by Mr Christopher J Waller, Member of the Board of Governors of the Federal Reserve System, at the Global Interdependence Center Conference "Digital Money, Decentralized Finance, and the Puzzle of Crypto", La Jolla, California, 10 February 2023.

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Thanks to the conference organizers for inviting me to participate today. It is great to be back at a Global Interdependence Center conference. Given recent events in crypto, it is certainly timely to have a day of discussions related to digital assets.¹

Before diving into today's talks, which will touch on various parts of the crypto ecosystem, I'd like to clearly define some concepts to ensure we're all talking about the same things. I think of the crypto ecosystem as consisting of three parts:

- a crypto-asset, which generally refers to any digital asset implemented using cryptographic techniques that is being traded;
- a database management protocol used to record trades, commonly referred to as the blockchain, which includes both permissioned and permissionless distributed ledger technologies; and
- technology that directly facilitates trading crypto-assets; this includes smart contracts and tokenization as a form of data privacy.

The latter two parts may facilitate the trading of crypto-assets, but also have much broader applications.

First, let's consider distributed ledger technology. The technology is simply a database management protocol that has various permissions regarding who can write to the database and who can read the database. Although this technology is fundamental for the creation of crypto-assets, there is nothing in this technology that restricts it to being used solely in the crypto ecosystem. In fact, distributed ledger technology is being explored to potentially address a wide range of data management problems.

Next, there are various technologies related to crypto-assets. One is the use of smart contracts in peer-to-peer trading. Smart contracts also can be used in conjunction with a centralized data management protocol to automate the execution of certain transactions in non-crypto-assets. For example, over time, they could be used to speed up the clearance and settlement of securities transactions. Another emerging technology is tokenization. In any trade of assets, there are issues regarding how much personal information you need to provide to conduct the trade. For example, some personal information is needed to protect against the possibility of anonymous trading, which can promote money laundering. Tokenization, when combined with data vaults to securely store personal information, can be used to trade objects in a way that protects one's identity from being exploited for profit. While these technological developments are still in their infancy, they have potential applications beyond the crypto ecosystem that could lead to substantial productivity enhancements in other industries.

This leaves us with the crypto-assets themselves. The question is, why would someone hold such an asset? What is the value proposition of such an asset? The answer isn't new or unique, but rather is based on economic relationships that result in objects having value. One reason objects have value is because of their intrinsic properties. For example, the value of corn derives in part from the fact that it can be used for food or fuel, or in some cases for Thanksgiving centerpieces. Intuition suggests that if an object has no intrinsic value, then the price of that object should be zero—why pay for something that has no fundamental value? Shockingly, it turns out that objects may be valued well above what their intrinsic properties would suggest. Since Paul Samuelson's seminal work in 1958 on intertemporal consumption smoothing, economists have known that an intrinsically useless object can trade at a positive price.²

Such an object's value is driven purely by belief. If I believe someone will pay a positive price for this object in the future, then I may be willing to pay a positive price now, carry it across time, and sell it when I need to consume other goods and services. Samuelson referred to this concept as "the social contrivance of money."

While an intrinsically useless object can trade at a positive price, we also know that there is always a second equilibrium price for this object, which is zero. What if one day, beliefs change and I no longer believe that someone will pay me for this object in the future? Then I clearly shouldn't pay anything for it today, so its price goes to zero.

There are many intrinsically useless objects that still have value. Consider things like baseball cards and celebrity autographs, which are pieces of cardboard and paper with pictures or scribbles on them. Based on their fundamental properties, these things have little to no intrinsic value, yet can be in high demand and command staggering prices. What happens if one day, no one wants to collect baseball cards? As valuable as they are today, they wouldn't be worth much, if anything.

This brings us to crypto-assets. To me, a crypto-asset is nothing more than a speculative asset, like a baseball card. If people believe others will buy it from them in the future at a positive price, then it will trade at a positive price today. If not, its price will go to zero. If people want to hold such an asset, then go for it. I wouldn't do it, but I don't collect baseball cards, either. However, if you buy crypto-assets and the price goes to zero at some point, please don't be surprised and don't expect taxpayers to socialize your losses.

The upshot of this is that crypto-assets are risky and many of the firms dealing in them are in their infancy. That has come to bear in the past year as several prominent crypto-related firms have filed for bankruptcy, including payment platforms, exchanges, crypto lenders, and hedge funds. The declines in crypto-asset values and associated business failures have led to many investors in the crypto industry getting hurt. As I mentioned in a speech last summer, surveys conducted indicated that somewhere between 12 and 20 percent of U.S. adults have owned, traded, or used crypto-assets.³ As losses mount, the debate is turning to whether there should be better investor protections in place. But even institutional investors, with significant resources to conduct due diligence of investments, have felt the pain of the so-called crypto winter. For example, it has been reported that at least 15 public pension funds, which manage public employee retirement funds, had investments in the now-bankrupt crypto-asset exchange, FTX.⁴

While I don't care if people take on risky investments or engage in risky business ventures, banks and other financial intermediaries must engage in any activity they do in a safe and sound manner. I'm supportive of prudent innovation in the financial system, while at the same time concerned about banks engaging in activities that present a heightened risk of fraud and scams, legal uncertainties, and the prevalence of inaccurate and misleading financial disclosures. As with any customer in any industry, a bank engaging with crypto customers would have to be very clear about the customers' business models, risk-management systems, and corporate governance structures to ensure that the bank is not left holding the bag if there is a crypto meltdown. And banks considering engaging in crypto-asset-related activities face a critical task to meet the "know your customer" and "anti-money laundering" requirements, which they in no way are allowed to ignore.

So far, spillovers to other parts of the financial system from the stress in the crypto industry have been minimal. The lack of spillovers to date may be attributable in part to the relatively limited number of interconnections between the crypto ecosystem and the banking system. While it is critical that we ensure that the financial stability risks associated with crypto-assets are mitigated, it is important that we keep the various parts of the crypto ecosystem distinct in our minds as the debate about if and how to regulate crypto rolls on. Doing so will ensure we do not unduly limit the development and potential future uses of the positive features of the crypto ecosystem.

With that, I'd be happy to answer some questions.

¹ The views expressed here are my own and do not necessarily reflect those of my colleagues on the Board of Governors of the Federal Reserve System.

² Paul Samuelson, "An Exact Consumption-Loan Model of Interest with or without the Social Contrivance of Money," *Journal of Political Economy*, vol. LXVI (December 1958): 467–482.

³ Christopher J. Waller, "[Risk in the Crypto Markets](#)" (remarks at the SNB-CIF Conference on Cryptoassets and Financial Innovation, Zurich, Switzerland, June 3, 2022).

⁴ "[Have Pensions Lost Money on FTX?](#)," Equable.org, December 1, 2022.