

WRITTEN STATEMENT OF
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BEFORE THE
UNITED STATES SENATE COMMITTEE ON
AGRICULTURE, NUTRITION, AND FORESTRY

Examining Digital Assets: Risks, Regulation, and Innovation

February 9, 2022

10 AM EST

Introduction

Chair Stabenow, Ranking Member Boozman, and Members of the Committee, thank you for inviting me to testify today.

My name is Sandra Ro, and I am a founding Board Director and the CEO of the [Global Blockchain Business Council](#), the leading not-for-profit, global industry association for the blockchain technology ecosystem. We work with our nearly 400 institutional members, including corporations, NGOs, government agencies, law firms, blockchain protocols and foundations, and academic institutions, to scale and build a sustainable, responsible, multi-trillion-dollar industry. I began my financial services career as a financial engineer, creating and pricing derivatives solutions in foreign exchange (FX) markets at Deutsche Bank AG, and later as a Vice President within Mergers & Acquisitions, FX and Interest Rates Hedging Advisory at Morgan Stanley Global Capital Markets.

My journey in digital assets trading and research began in 2011 as Executive Director and Head of FX Research & Product Development at CME Group. In the early years, most of our work was research, patent filings, and internal experiments. By 2016, I led a newly-created group, Digitization, where we developed the Bitcoin Real Time Index, the Bitcoin Daily Reference Rateⁱ, the first USD cash-settled Bitcoin futures, blockchain pilots related to post trade and clearing house solutions, and a digital gold asset called Royal Mint Gold (RMT) with UK's Royal Mint.ⁱⁱ The Digitization team pioneered some of the earliest regulated cryptocurrency products, many of which still trade today; the first Bitcoin ETFs in the U.S. and Brazil are based on CME Bitcoin products. During this early innovation, we frequently worked and communicated with the CFTC, developing positive trusted relationships and pioneering together.

ⁱ <https://www.cmegroup.com/markets/cryptocurrencies/bitcoin/bitcoin.html>

ⁱⁱ <http://investor.cmegroup.com/news-releases/news-release-details/royal-mint-and-cme-group-launch-royal-mint-gold>

Since then, I have dedicated my time to education - separating hype from reality, [mapping standards work](#)ⁱⁱⁱ that needs to be done, and answering the perennial question: what are the real-world [applications](#) and benefits of blockchain and digital assets?^{iv} Progress has been made by the private sector to create innovative solutions, but we need more collaboration between government agencies and innovators to foster sound financial products, fair markets, and resilient market infrastructure, be it centralized, decentralized, or hybrid.

I am here to support this Committee’s work to better understand the risks and benefits of digital assets and blockchain technology. I hope this is the beginning of a long and fruitful dialogue.

Blockchain Basics

As requested by the Committee, I will commence with some basics.

The Bitcoin whitepaper, published in November 2008^v, outlined a peer-to-peer electronic cash system using a consensus mechanism known as Proof of Work (POW). On the Bitcoin ledger, transactions are arranged in consecutive blocks. In its most basic sense, POW requires members of a network (known as “miners”) to solve a mathematical puzzle to secure the network. Once a miner solves and confirms a transaction, it is assigned to a block. The block is time-stamped and added linearly to the blockchain. For this work, the miner that first solved the puzzle receives compensation in the form of a block reward. Anyone with the requisite hardware, technical know-how, and access to energy can set up a mining operation, which makes the network decentralized and extremely secure. The network itself has yet to be hacked. Bitcoin is the first open source,

ⁱⁱⁱ <https://gbbcouncil.org/gsmi/>

^{iv} <https://gbbcouncil.org/wp-content/uploads/2022/02/GBBCs-2021-Annual-Report.pdf>

^v <https://bitcoin.org/en/bitcoin-paper>

permissionless blockchain network. With a fixed supply of 21 million tokens, it remains the largest cryptocurrency by market capitalization. Both the token and the blockchain are called bitcoin.

The next major public blockchain launch was Ethereum in July 2015^{vi}. This enabled smart contracts, which essentially automate actions and processes. Smart contracts are the basis of decentralized finance (DeFi) and non-fungible tokens (NFTs). The Ethereum blockchain is open source, permissionless and popular amongst users and developers. Ether is the token and Ethereum refers to the blockchain. Ethereum currently functions as a POW blockchain, though a transition to Proof of Stake is in progress.

Proof of Stake (POS) is a consensus mechanism whereby users offer their digital assets as collateral to validate a block. It is estimated that with POS, “the energy expenditure of Ethereum will be roughly equal to the cost of running a home computer for each node on the network.”^{vii} Other blockchains that currently use POS include Algorand, Cardano, Cosmos, Terra, and more.

There are additional consensus mechanisms, including Proof of Authority, Proof of Capacity, Proof of History, Proof of Storage, and more; they each offer different ways of achieving agreement on a transaction.

Attributes of Blockchain Technology

Databases have long served as digital repositories of information, so what is it about blockchain technology that makes it different and special?

Blockchain technology allows us to do several things better.

^{vi} <https://ethereum.org/en/history/>

^{viii} <https://ethereum.org/en/energy-consumption/>

Blockchain technology helps us move ‘data as value’ in a secure, lower-cost, peer-to-peer model. It permanently records the transaction on a real-time ledger viewable by everyone in the network. Some blockchains are open source and permissionless, others are closed and invitation-only (or “permissioned”). We are seeing a trend towards open source blockchains, with a mix of permissioned and permissionless blockchains.

Blockchain technology’s unique features necessitate collaboration, sometimes between participants who may be competitors, unknown to each other, and not geographically proximate.

Blockchains facilitate permanence. Information on a blockchain is permanent once confirmed and recorded, which makes ‘cooking the books’ or tampering with records extremely difficult. Not impossible, but very difficult.

Blockchain transactions are traceable. Most ledgers are pseudonymous, allowing for easy tracking of funds; this has been demonstrated in the successful recovery of the Colonial Pipeline ransom^{viii} and similar events.

As blockchain technology evolves and more digital assets trade in markets, each with their own purpose and value, it is critical that stakeholders work together to develop prudent guardrails.

Why Blockchain Technology and Digital Assets?

Along with digitization, the growth in blockchain and digital assets is the natural progression of decades of technological advancement. I would like to share some of the blockchain-based use cases that are moving our society in a more secure, transparent, and hopefully, equitable direction. Digital assets are used in each of these scenarios - facilitating troubleshooting in supply chains, commodities

^{viii} <https://www.reuters.com/business/energy/us-announce-recovery-millions-colonial-pipeline-ransomware-attack-2021-06-07/>

tracking and tracing, funds flow accountability, and quality improvement for an array of products, from food and livestock to raw materials.

Tracking and tracing commodities

First National Bank of Omaha (FNBO), the fourth largest agriculture bank in the U.S., is working with a consortium of partners to create Cattle ID^{ix}, a system that uses machine learning to create unique digital identities for individual cattle. Using these identities, cattle producers can add health and treatment records to each animal. Data is private by default, but easily shareable on the Cattle ID blockchain.

Circular, a UK-based company, alongside the UK Critical Minerals Association, is tokenizing rare and critical minerals to track their journey from mine to factory to end-of-life recycling. Lithium, cobalt, tungsten, copper, nickel, and other minerals and metals are essential to the technology and auto industries. Enhanced tracking and tracing of these materials can increase accountability and reduce negative impacts.

Improving fragmented commodities markets and price transparency

NGOs and large corporations are leveraging blockchain to create more transparent and functioning voluntary carbon credit markets. The [InterWork Alliance](https://interwork.org/), a GBBC initiative, is leading work^x with Microsoft and other stakeholders, to create common taxonomy, frameworks, and carbon product classifications to connect marketplaces, reduce fraud, improve price discovery, and create more accurate calculations of carbon offsets and credits for financial and non-financial reporting purposes.

^{ix} <https://gbbccouncil.org/wp-content/uploads/2022/02/GBBCs-2021-Annual-Report.pdf>

^x <https://interwork.org/>

Record keeping of transactions and auditing

Blockchains remove single points of failure, ensuring decentralized backups of critical data, and creating clear audit trails. For example, BitGive Foundation, the first and oldest crypto-based charity, developed a donation tracking tool called [GiveTrack](https://www.givetrack.org/).^{xi} Using blockchain, GiveTrack tracks project donations through the lifecycle of the funds as they are spent by project beneficiaries. Heifer International used the platform to raise funds to help small rural Arkansas farmers lease or buy farming equipment. By using GiveTrack, donors can monitor their donations and see records of disbursement allocations. This concept can apply to governments' foreign aid disbursements, budgets, taxation revenues, and beyond.

Enabling financial inclusion and access

In our banking system, it has always been expensive to be poor. With blockchain, fees on remittances and overdraft charges are nonexistent. The United Nations' World Food Programme is currently running "the largest implementation of blockchain technology for humanitarian assistance" to distribute funds to refugees in conflict zones.^{xii} In the initial program, more than 100,000 refugees were given encrypted IDs and blockchain wallets, to which the UN WFP was able to distribute funds for use in refugee camps. This allows the refugees and WFP to bypass potentially unreliable local financial institutions, while providing greater security than distributing cash, and a clearer path towards corruption-proof aid delivery.^{xiii}

^{xi} <https://www.givetrack.org/>

^{xii} <https://innovation.wfp.org/project/building-blocks>

^{xiii} <https://www.ledgerinsights.com/un-world-food-programme-uses-blockchain-for-direct-payments/>

The United States' Role

The United States has historically been a hub for innovation. It is not too late for the U.S. to lead in digital assets and blockchain technology. The U.S. has all the ingredients for success: talent, a deep knowledge base, financial capital and resources, a trusted legal system for doing business, and a robust entrepreneurial spirit.

Many governments and companies look to the U.S. government as the leader on regulation, frameworks, and standards. Other countries have recognized our reticence on blockchain and digital assets as an invitation to occupy that space.

The CFTC, as the regulator of U.S. derivatives markets, has an important role^{xiv} to play in establishing the guardrails and market environment for blockchain and digital assets, especially as the volume of crypto-related futures and options markets has expanded.^{xv} We expect the derivatives on digital assets to expand significantly over the next few years, with leveraged products entering the markets, similarly to existing derivatives markets. Though market infrastructure services and innovation have matured over the past decade, we still see gaps. For example, for a \$2-3 trillion cryptocurrencies market, there is an estimated \$5-8 billion of crypto insurance coverage, which may not provide comprehensive coverage against risks, such as theft and hacking.^{xvi} To date, only a handful of companies, including a Chicago-based start-up, are partnering with traditional insurance brokers and underwriters to provide the needed insurance coverage.

^{xiv} https://gbbcouncil.org/wp-content/uploads/2021/11/Derivatives_Regulatory_GSMI2_Standalone.pdf

^{xv} <https://gbbcouncil.org/wp-content/uploads/2021/11/GSMI-2.0-Introduction-to-Crypto-Derivatives.pdf>

^{xvi} <https://www.blockdata.tech/blog/general/crypto-custody-the-gateway-to-institutional-adoption>

Conclusion

After a decade, we have only scratched the surface of digital assets' and blockchain technology's potential – harnessing this technology to solve real-world problems and expand economic opportunities will be a generational effort. We are encouraged by increased communication between the government and private sector aimed at creating and implementing policies that foster growth and create jobs in the blockchain and digital assets space.

It is possible to find a balance in which the government works with stakeholders to simultaneously mitigate risks, implement prudent regulation, and nurture the rapid growth of a multi-trillion-dollar industry.

Thank you for your time; I look forward to answering your questions.