

Testimony of Sheila Warren, Chief Executive Officer, Crypto Council for Innovation

Joint Hearing of the California Assembly Banking & Finance Committee and the Senate Banking & Financial Institutions Committee - "[Harmful Innovation: What FTX's Collapse Means for Consumers and California's Approach to Crypto](#)"

I. Introduction

Thank you for the opportunity to testify today on both the tremendous benefits and opportunities associated with the adoption of digital assets in the state of California. I am grateful for the engagement and leadership shown by so many on both committees.

I am pleased to represent the Crypto Council for Innovation (CCI) – a global alliance of industry leaders across the digital assets and Web3 space. We use an evidence-based approach to support governments worldwide that are shaping and encouraging the responsible regulation of this innovative technology. And, we are proud to have many California-based members.

I myself am a native Californian, born and raised in Huntington Beach, who has lived in San Francisco for almost 20 years. My three children are native San Franciscans, and our ties to the Golden State are deep. Over the past two decades, my time as an attorney, entrepreneur, product builder, and NGO executive has focused on the intersection of technology, law, diversity & inclusion, civil rights and Web3. This journey took me from corporate law at Cravath Swaine & Moore to the San Francisco nonprofit TechSoup to building out the World Economic Forum's Blockchain and Digital Assets team in the Presidio. I have also served in many advisory roles including for the Crypto Research and Design Lab, the OECD and World Bank, and the California Blockchain Working Group.

CCI is a global alliance of industry leaders in the digital asset and Web3 sectors, which serves to educate consumers and policymakers and advocate for policy that spurs responsible innovation. Our members include Andreessen Horowitz, Block, Coinbase, Electric Capital, Fidelity Digital Assets, Gemini, Paradigm and Ribbit Capital. We believe that trusted partnership between government and business stakeholders is key to crafting inclusive policy that benefits consumers and industry alike.

Testimony Roadmap

This testimony has five parts. First, I discuss the current moment and what it means for crypto policymaking and regulation. Then, I provide examples of crypto in action. Third, I cover further

opportunities both domestically – including California use cases – and internationally. Fourth, I discuss policy recommendations. Finally, I offer concluding thoughts.

II. It is a critical moment for crypto policymaking and regulation.

Let me begin by addressing the title of this hearing.

I won't mince words: it was a devastating year for many engaged in the industry. I am constantly aware of the people who are behind these numbers and how the greed and irresponsibility of a few leaders in the crypto space affected so many. But we should also be clear that this is what was at the core of the negative headlines: people. The reasons to be horrified by the actions of these few individuals is well-covered territory.

I appreciate the nuance in addressing the specific events. As I've said many times, the collapse of FTX does not mean the collapse of crypto, as some have asserted.

In fact, polling data confirms that there is sustained, and even growing, interest in crypto and Web3. Morning Consult data found that crypto ownership remains stable, despite the industry volatility. Almost 19 percent of U.S. adults say they own crypto. This is consistent with data released in January 2022. So, those who own crypto are in it for the long-haul.¹ A poll that CCI conducted ahead of the midterm elections found that nearly 1 in 2 people on both sides of the aisle said that crypto is a long-term part of the economy.² Recent private polling data has even found an uptick in activity. In the unpublished poll conducted in January 2022, 25 percent of those surveyed said they had invested in, traded, or used a cryptocurrency – up from 18 percent in July 2022.³ This suggests that there is sustained and increased interest post-FTX.

On the build side, we are seeing deepened investment of those who really believe in the promise of the technology. Electric Capital's 2022 Developer Report, based on 250 million code commits across open-source repositories, found a 5 percent increase year-over-year in crypto developers and 122 percent increase over three years.⁴ Overall growth is good, but dig into the data, and there's a more interesting story: Last year, there was an 8 percent increase in full-time developers and 8 percent decrease in one-time developers. So, we are seeing the exit of "crypto tourists" who are there just for the quick gains and bull markets, amidst those that are actually building crypto products. I take this long-term outlook as a very good sign for the space.

Indeed, the events highlight some of the benefits of the technology. Crypto came out of the 2007-2008 financial crisis, and a desire to create a system that provided an alternative to the

¹ <https://morningconsult.com/cryptocurrency-insights-hub/>

² <https://cryptofoinnovation.org/1-in-7-voters-own-crypto-with-support-across-party-lines/>

³ Unpublished private polling data conducted by an industry organization.

⁴ <https://www.developerreport.com/developer-report>

irresponsibility we saw in some institutions.⁵ We have seen decentralized projects survive, and even grow, in bear markets because of intentional design choices.⁶ And, where there was overlap between FTX and decentralized finance, we were able to see vulnerabilities through on-chain data and automated execution meant “Alameda’s outstanding exposure to DeFi protocols [was] minimal because there [was] no wiggle room to renegotiate with or seek extensions from DeFi protocols.”⁷ As such, the systems remained resilient.⁸

There is still a long way to go in terms of security, user experience, and learning about optimal incentive design, among other things. But, as one group put it: “the vision of [decentralized finance] is a financial system where what happened at FTX is not just improbable, but impossible.”⁹ This may explain why we have seen continued growth in the number of DeFi users across projects, even following the FTX events.¹⁰

So, as more people become interested in crypto, it’s critical to have frameworks in place that protect consumers and foster innovation – and I’ll get into what that might look like later in my testimony.

The FTX events show that there is already a framework in place for bad actors. Sam Bankman-Fried being charged with eight distinct criminal counts shows that bad behavior in the crypto ecosystem is already subject to a variety of laws and regulations. There are (subject to the legal process) consequences when someone (or a group of individuals) breaks the law. But for some, this may be too little, too late.

How do we prevent something bad from happening in the first place – and what are the rules of the road for honest actors? This is the question for governments around the world in 2023.

There have been long-standing calls from the industry for regulatory clarity, but the urgency and pressure on governments are now higher than ever. While there were some who were content to sit this issue out, the events of last year make it almost impossible for policymakers and regulators not to have a view on these important topics.

Proactive policymaking is key to consumer protection. There are real humans behind these transactions and stories. They deserve to make the most of the opportunity that crypto presents, while being protected from undue risks. Education and grassroots outreach efforts – across consumers, policymakers, and industry – are key. There are many in the crypto industry who

⁵ <https://www.coindesk.com/podcasts/the-breakdown-with-nlw/13-years-on-the-meaning-of-chancellor-on-the-brink-of-second-bailout-for-banks/>

⁶ <https://www.coindesk.com/layer2/2022/07/22/why-defi-might-be-safer-than-traditional-finance/>

⁷ <https://www.galaxy.com/research/insights/ftx-contagion-impact-on-defi/>

⁸ *Id.*

⁹ <https://decrypt.co/115149/defi-is-the-answer-to-the-ftx-crisis-but-we-must-get-better-at-communicating-it>

¹⁰ <https://dune.com/overthedunes/total-defi-users-over-time>

value consumer protection above all and eagerly want to partner with policymakers and regulators alike.

To move the needle on this issue, we need thoughtful work on outreach and education.¹¹ This includes: (1) Community engagement models that involve “building with, not for.” Members of communities know people’s stories, their needs, and the barriers they are facing. Often, the missing piece is resourcing and on-the-ground partnership. (2) Conducting more research and gathering more data. We know the broad trends – but we need practical information on what things like drivers of distrust, gaps, and education look like in practice. (3) Understandable disclosures. At the end of the day, consumer protection is about ensuring that average consumers can make informed decisions within a set of choices that work for them. Information should be presented in a manner that doesn’t require a law degree or technical background to understand.

Getting to the heart of people’s needs – and how we ensure that new systems are intentionally built to serve them – is the type of work that is critical as we write the rules for a new, digital economy.

III. Crypto refers broadly to a wide range of use cases and applications. At its core is the idea of an ownership-based, digital economy.

The history of crypto and explanations of the technology underpinning it are well-documented. Rather than repeat this content, I want to highlight what is new about crypto and the vast range of activities covered within the Web3 ecosystem. If I can leave you with one message, it is that the industry is wide-ranging and moving quickly. This makes nuanced policymaking and educational efforts vital.

A. Crypto’s Value

First, what’s new?

Crypto is a broad term that covers a wide range of use cases and applications. The core shift it represents is from the current model of intermediated interactions to an ownership-based digital economy. For a long time, we have relied on third parties to facilitate trust in many aspects of our lives, such as transactions, identity provision, and governance. In many cases, intermediaries have handsomely profited from intermediation. And, at worst, some

¹¹ One example of these ideas in action is the Crypto Research and Design Lab (CRADL), which I co-founded. The goal of CRADL is “to put people at the center of crypto.” The lab combines three functions – design, crypto, and social impact – that often operate in silos: cradl.org

intermediaries have exacerbated inequalities,¹² sewn distrust,¹³ and restricted much-needed access to individuals.¹⁴

What if we could put some of this power back into the hands of individuals and give consumers a broader set of choices? This is the question at the core of Web3.

Using a unique combination of cryptography, incentive design, and decentralized operations, blockchain technology allows for a decentralized form of record keeping and value exchange. As the recent Executive Order explains, blockchain “refers to distributed ledger technologies where data is shared across a network that creates a digital ledger of verified transactions or information among network participants and the data are typically linked using cryptography to maintain the integrity of the ledger and execute other functions, including transfer of ownership or value.”¹⁵

This innovation has opened a new model for peer-to-peer value exchange in the digital economy. Though the first use case was financial, the innovation found in the Bitcoin white paper¹⁶ has opened a world of possibilities. Conversations about central bank digital currencies (CBDCs),¹⁷ digital art and non-fungible tokens (NFTs),¹⁸ digital identity,¹⁹ and decentralized finance²⁰ – some of which I will dive into shortly – would not be possible without this fundamental transformation.

Let me also address some criticisms of crypto directly:

Criticism 1: Crypto does not contribute to financial inclusion, but to “predatory inclusion.”

I find the narrative of “predatory inclusion” incredibly problematic, as it assumes that individuals are not attuned to their own needs and experiences. In essence, this argument suggests that people are only interested in crypto because they are too uneducated or unaware to know any better. This is a part of a paternalism that we have seen in the United States and throughout the world, which aims to channel individuals to systems that may or may not work for them – and that, in many cases, deliberately excludes them.

¹² <https://journals.sagepub.com/doi/pdf/10.1177/00027642211003162>

¹³ https://www.eurofound.europa.eu/sites/default/files/ef_publication/field_ef_document/ef22042en.pdf

¹⁴ <https://documents1.worldbank.org/curated/en/552411525105603327/pdf/The-decline-in-access-to-correspondent-banking-services-in-emerging-market-s-trends-impacts-and-solutions-lessons-learned-from-eight-country-case-studies.pdf>

¹⁵ <https://www.whitehouse.gov/briefing-room/presidential-actions/2022/03/09/executive-order-on-ensuring-responsible-development-of-digital-assets/>

¹⁶ <https://bitcoin.org/bitcoin.pdf>

¹⁷ <https://www.bis.org/publ/bppdf/bispap125.htm>

¹⁸ <https://time.com/5947720/nft-art/>

¹⁹ <https://podcasts.apple.com/us/podcast/money-reimagined-getting-internet-identity-right-30/id1532770300?i=1000494157635>

²⁰ <https://www.weforum.org/whitepapers/decentralized-finance-defi-policy-maker-toolkit>

But we know from research that end-users know their circumstances best, and can pinpoint many of the issues and barriers contributing to their circumstances. However, their voices are not effectively brought into policy dialogue, and therefore the picture becomes over-simplified. As such, there are missing accounts of end user needs, use cases, and experiences.²¹

The report on the Economic Well-Being of U.S. Households in 2021 by the U.S. Federal Reserve found that, though financial well-being rose in the U.S., there are parts of the U.S. economy that the financial system underserves.²² Some one in five Americans said they are “just” getting by or find it “difficult” to get by financially.²³ Even more surprising, 6 percent of adults (nearly 20 million Americans) do not have a bank account. This increases as the numbers break down further: Black (13 percent) and Hispanic (11 percent) adults are more likely not to have a bank account.

The most recent FDIC Survey of Household Use of Banking and Financial Services found the most-cited reasons for not having a bank account were: (1) not having enough money to meet minimum balance requirements and (2) a lack of trust in banks.²⁴ This paints a fairly clear picture of who is getting left behind: poor households and those who historically have reason to distrust formal institutions.

The data shows that these individuals are turning to crypto. Those with no bank account, no credit card, and no retirement savings were more likely to select “crypto for transactions” than “no crypto” and “crypto for investment.”²⁵ So, their crypto use was not focused on speculation – it was focused on filling a gap in financial services. This is in line with findings from the Atlanta Federal Reserve, which reported that “instead of focusing on helping these people become banked to increase financial inclusion, a more effective approach could be giving cash users access to digital payment vehicles that don’t depend on traditional bank accounts.”²⁶

In my view, it is impossible to have a discussion about money without talking about power and structural forces. A description of the Black Blockchain Summit notes: “online and in person, on the campus of Howard University in Washington, D.C., an estimated 1,500 mostly Black people have gathered to talk about crypto – decentralized digital money backed not by governments but by blockchain technology, a secure means of recording transactions – as a way to make money while disrupting centuries-long patterns of oppression.”²⁷ Leaders from Black and Indigenous communities have highlighted ownership and transparency as a key to building

²¹ <https://usa.visa.com/content/dam/VCOM/regional/na/us/sites/documents/veei-lets-give-voice-to-end-users.pdf>

²² <https://www.federalreserve.gov/publications/2022-economic-well-being-of-us-households-in-2021-executive-summary.htm>

²³ <https://www.federalreserve.gov/publications/files/2021-report-economic-well-being-us-households-202205.pdf>

²⁴ <https://www.fdic.gov/analysis/household-survey/index.html>

²⁵ <https://www.federalreserve.gov/publications/2022-economic-well-being-of-us-households-in-2021-banking-and-credit.htm>

²⁶

<https://www.atlantafed.org/-/media/documents/promoting-safer-payments-innovation/publications/2020/09/30/shifting-the-focus-digital-payments-and-the-path-to-financial-inclusion/Shifting-the-Focus-Digital-Payments-and-the-Path-to-Financial-Inclusion.pdf>

²⁷ <https://time.com/6106706/bitcoin-black-investors/>

generational wealth for these communities.²⁸ Others have traced the ways in which historical and structural forces may be driving interest in crypto among minorities and social justice communities.²⁹

As a recently-released report highlights:

“It turns out that the popular narrative of the ‘crypto bro’ is misleading. Purchasers of digital assets actually vary widely in terms of demographics:

- Average cryptocurrency buyer is under 40 (mean age is 38);
- 55% do not have a college degree;
- 44% of crypto traders are not white;
- 41% of traders are women; and 35% have household incomes of less than \$60K annually.”³⁰

Banks and financial institutions have had decades to serve these populations effectively and they have not. Crypto represents a unique opportunity to build systems from the ground up, using models of inclusive design that are responsive to community needs. Everyone deserves options that work for them. More can be done to ensure equal access for all and this is something that crypto was designed to do. It should be thought of as a tool in the policymaker's toolbox. Importantly, more data is needed here. Crypto is in its early days and while some efforts are underway, additional work is needed to understand these complex dynamics and how crypto can further contribute to financial inclusion.³¹

People are interested in crypto for a reason – it's up to governments to enable choice, while keeping consumers protected via guardrails for the system.

Criticism 2: Crypto has had plenty of time to scale, and it has not.

The first Bitcoin block was mined a little over fourteen years ago on January 3, 2009. As I have outlined, that represented a remarkable first step in innovation for the digital economy. But, it was just that – a first step. Those who point to the “long life” that crypto has had may be missing some critical points of context.

First, using the genesis block of Bitcoin is a bit misleading as a starting point. Bitcoin has served a very important and specific purpose, but that is not the site of a lot of the current innovation in the space. Other chains have been designed from the outset to support a wider range of use cases by design, but there have been more recent developments. For instance, Ethereum – which is where decentralized finance, NFTs, and more got their start – was initially released in

²⁸ <https://www.youtube.com/watch?v=aHAWFcYeCqM>

²⁹ <https://www.coindesk.com/layer2/2022/02/16/why-bitcoin-is-a-tool-for-social-justice/>

³⁰ <https://www.kansascityfed.org/research/payments-system-research-briefings/the-cryptic-nature-of-black-consumer-cryptocurrency-ownership/>

³¹ <https://medium.com/cradl/crpto-or-not-successful-financial-inclusion-projects-share-these-two-factors-36c2df818d52>

July 2015.³² Even then, the initial release was viewed as just the beginning. Ethereum's creator, Vitalik Buterin, has shared a longer-term outlook for Ethereum, which involves several phases and system upgrades.³³ For example, you may have heard about the successful completion of the first phase, the Merge, which took place in September 2022 after years of work.³⁴

Disruptive technological change takes time and patience to mature. The foundations of the internet were laid in the 1960s, the first internet browser was launched in 1990, and the App Store was launched in 2008. From there, we saw the creation of the social media, FinTech, and e-commerce applications that power our lives today. That's more than 50 years of history.

Crypto is just at the beginning of a similar journey. But, whether it reaches its potential depends on decisions we make today. And, just as California has been the hub of innovation for the Internet and its applications – whether in Silicon Valley, Hollywood, or beyond – it can remain the center of its next generation, Web3.

Second, we need to consider the industries that crypto and blockchain technology are disrupting. Crypto is not the same as ChatGPT – there is money and risk involved, there are highly technical and regulated aspects, and the business models look very different. It has taken a long time for financial services to evolve, but once services improved, the uptake has been exponential and is significantly re-shaping the way we interact with money and financial services.

41 percent of Americans say they don't use cash for purchases in a typical week – compared to 24 percent in 2015.³⁵ About 7,500 bank branches in the U.S. closed between 2017 and 2021.³⁶ We have been using checks since the 1800s – and have only recently moved into the world of sending rent digitally, paying for coffees on nimble tablet setups, and filing taxes online.³⁷ It's time to imagine what's next.

Third, we are seeing uptake and interest in crypto. There were over 250 million crypto users in 2022, with growth projected to continue over the next five years.³⁸ As discussed, we have seen an increase in the number of decentralized finance users and crypto owners, even following the FTX events. This growth is especially pronounced in developing and emerging economies.³⁹

³² <https://www.coindesk.com/markets/2015/07/30/ethereum-launches-long-awaited-decentralized-app-network/>

³³ <https://twitter.com/VitalikButerin/status/1588669782471368704?s=20>

³⁴ <https://ethereum.org/en/upgrades/merge/>

³⁵ https://www.pewresearch.org/fact-tank/2022/10/05/more-americans-are-joining-the-cashless-economy/ft_2022-10-05_cashless-economy_01a/

³⁶ <https://ncrc.org/the-great-consolidation-of-banks-and-acceleration-of-branch-closures-across-america/>

³⁷ https://www.atlantafed.org/-/media/documents/research/publications/economic-review/2008/vol93no4_quinn_roberds.pdf

³⁸ <https://www.statista.com/outlook/dmo/fintech/digital-assets/cryptocurrencies/worldwide#transaction-value>

³⁹ <https://blog.chainalysis.com/reports/2022-global-crypto-adoption-index/>

I'm sometimes asked what the "breakout application" is for the Web3 ecosystem, and my response is that I think we need to think about scale differently. Instead of building one thing to serve everyone – we've seen the problems with that approach – maybe we should be thinking about building multiple different instances of services that are designed by communities to meet their specific, and even sometimes temporary, needs.

Importantly, research shows there has been an increased focus on hyperlocal efforts and community empowerment. That is, moving from a model that extracts from communities, to a model that invests long-term in communities - on terms that communities themselves deem relevant.⁴⁰ The best model builds with, not for, communities.

Criticism 3: Crypto does not have real-world use cases.

As I will describe in greater detail in the next section, this claim is patently false. There are many around the world for whom crypto represents an important option – and in some cases, a lifeline in times of need.

While uptake has been slower in the United States for a variety of reasons, this does not mean that there isn't interest and activity. For example, a recent report from the Crypto Research and Design Lab (CRADL) summarizes the contributions of ten projects across seven use case categories: Identity and Personal Data, Environmental Sustainability Assets, Control of Creative Output, Community Development, Decentralized Infrastructure, Decentralized Finance, and Other Emerging Uses.⁴¹ This demonstrates that crypto goes well beyond financial use cases and is actively looking to serve the needs of end-users. For example, the Shoah Foundation and Starling Labs are using blockchain technology to capture, store, and verify testimonies from survivors and witnesses of 14 genocides and episodes of mass violence.⁴² As one of the summary notes: "Ultimately, all 5 petabytes of the foundation's archive, which contains 115,000 hours of video, will be stored in hundreds of places using the Starling Framework's authentication. Stephen Smith, the foundation's executive director, says this is particularly important at a time when disinformation campaigns seek to downplay the greatest horrors of our shared past. 'The competition over history is very real,' he warns."⁴³

I'd also like to note that crypto's value is demonstrated by the fact that people are using crypto *despite* its current user experience. To-date, it has been highly technical, somewhat confusing, and not as easy to use as some of the alternatives out there. We have a lot of work to do in terms of making products that are user-friendly. An analysis of popular crypto apps found that "User Experiences are overwhelming, unfocused, and filled with 'landmines'... [and] the next

⁴⁰https://docs.google.com/presentation/d/1mhPJSTJ1i_rI0QkJyUwoPU6lgG3-pUPan6ViiGaTmwv/edit#slide=id.g150cfb97ded_0_185

⁴¹https://docs.google.com/presentation/d/1eBndy3YnNYQEJ41pa08SgdslKvrtK2neQdhDB9lI0lo/edit#slide=id.g1beb7788244_2_269

⁴²<https://www.youtube.com/watch?v=FOPRhf8B6wg>

⁴³<https://www.fastcompany.com/90731729/inside-starling-lab-a-moonshot-project-to-preserve-the-worlds-most-important-information>

phase of cryptocurrency experience development will need to continue focusing on the fundamentals: design infrastructure and solutions that don't require people using apps to master technical concepts."⁴⁴

But, people see a real gap being filled, so they have navigated the world of clunky UX and teaching themselves in order to access much-needed and much-wanted options. Indeed, research has found that “the more people understand the value propositions of using cryptocurrencies, the more likely they are to adopt them” – but the industry needs to re-think its onboarding and ideas of crypto literacy to make this a smoother experience.⁴⁵ Put differently, in many instances, this is a question of improving the wrapper rather than the underlying technology.

B. Examples of Crypto in Action

Now, I turn to what this all means in practice. While it is important to understand the basics of the technology, I think there needs to be a shift from asking, “crypto: how does it work?” to “crypto: what is it good for?”. I highlight some examples of crypto in action, though this list is by no means exhaustive.

Decentralized Finance (DeFi)

Another example is decentralized finance, or DeFi, which provides financial services without the traditional intermediaries. DeFi is perhaps one of crypto's most prominent use cases, given its market size and value transacted. One of the core tenets of DeFi is to be part of building an open monetary system, accessible to everyone globally to provide basic banking service options.

It is well known that there is a burgeoning fringe banking industry in the United States. Through a variety of predatory lending practices, money lenders are able to charge high fees when loaning money to individuals with pressing needs for capital.

The scale of predatory lending is massive. There are more than 23,000 payday lenders in the United States.⁴⁶ To put that into perspective, that's almost twice the number of McDonald's restaurants.⁴⁷ And that doesn't even include various other lending mechanisms, including rent-to-own services, auto title loans, or pawnshops. People resort to payday loans and fringe banking because of barriers to the traditional financial system. These include the punitive nature

⁴⁴ <http://bit.ly/uxincryptoreport>

⁴⁵ <http://bit.ly/onboardingtocrypto2022>

⁴⁶ <https://www.cnbc.com/2021/02/16/map-shows-typical-payday-loan-rate-in-each-state.html>

⁴⁷ *Id.*

of credit scoring in the traditional banking world, minimum balances to keep accounts open, and other barriers to participate in the traditional financial system.

There are innovative products in crypto that offer alternative ways to trustlessly take out loans without agreeing to predatory practices. Though crypto lending is not without risk, the risk factors look very different. More importantly, opting into crypto and DeFi is to opt out of predatory and discriminatory banking practices. Crypto owners are more likely than the average U.S. adult to cash checks or purchase money orders from non-bank providers, pay bills through services like MoneyGram or Western Union, take out payday loans, and take out auto title loans.⁴⁸

Throughout crypto, the total market capitalization of lending protocols is around \$4 billion, a fraction of the \$8 trillion market capitalization of the world's largest banks. To date, \$393 million in dollars have been lent via crypto platforms, with 95 percent of that amount from the past calendar year alone.⁴⁹ Notably, compared to the traditional loan options: the average personal loan interest rate in the U.S. is 10 percent (9.38 percent in 2021),⁵⁰ while crypto loan rates tend to be significantly lower, with rates ranging from 0.01-3.8 percent in 2021 across four major decentralized lending platforms.⁵¹

DeFi can also be used beyond traditional finance. For instance, academic literature has suggested that the unique combination of decentralization, interconnected autonomy, openness, and intelligence makes blockchain technology a key enabler of various energy-related use cases.⁵² These include peer-to-peer energy transactions, efficiency gains in electric vehicle charging, carbon emissions certification and trading, synergy of the multi-energy system, and more.⁵³ Once again, these are not theoretical propositions. Initiatives like “regenerative finance” – or ReFi – are working to bring these climate-focused projects to life.⁵⁴ In one such example, the Climate Collective mapped more than 250 projects spanning carbon credits, biodiversity, energy markets, waste management, and more.⁵⁵

Crypto Assets in Philanthropy and Aid

⁴⁸ https://go.morningconsult.com/rs/850-TAA-511/images/220630_State_of_Cryptocurrency_Report.pdf

⁴⁹ <https://tokenterminal.com/terminal/markets/lending>

⁵⁰ <https://www.businessinsider.com/personal-finance/average-personal-loan-interest-rates>

⁵¹ <https://linen.app/interest-rates/borrow/historical?interval=1>

⁵²

https://pdfs.semanticscholar.org/b6b1/5293d4f0a36aa155671023062ea3fc22e64a.pdf?_qa=2.98485663.1428055600.1655216566-2003207876.1655216566

⁵³

https://www.researchgate.net/publication/330089877_Blockchain-Based_Management_of_Shared_Energy_Assets_Using_a_Smart_Contract_Ecosystem

⁵⁴ <https://www.coindesk.com/laver2/miningweek/2022/03/27/crypto-carbon-can-blockchain-networks-fix-carbon-offsets/>

⁵⁵ <https://kumu.io/climate-collective/web3-climate-map>

Recent events in Ukraine present one such example. Following the start of the war, the crypto community quickly galvanized to raise approximately \$100 million in aid to support the Ukrainian government.⁵⁶ Working with a local exchange, the Ukrainian government was able to receive and use the cryptocurrency quickly to buy essential items for the war effort.⁵⁷ This was supplemented by other efforts, such as crypto-based charity Ukraine DAO, which raised millions of dollars via the sale of NFTs.⁵⁸

Michael Chobanian, a Ukrainian entrepreneur and president of the Blockchain Association of Ukraine, testified before the U.S. Congress in May 2022, describing the essential nature of the crypto relief campaign. He detailed how “the minute the crypto landed on these addresses, the government could use them so immediately. No bureaucracy.” In short, Chobanian emphasized that blockchain and crypto “will be the technology that we’re going to use to rebuild our country.”⁵⁹

Crypto has also provided immediate aid in other high-stake crisis situations. Following the second wave of COVID-19 in India, the crypto community quickly mobilized to raise money for the “India COVID Crypto Relief Fund”.⁶⁰ Several key players in the space donated and encouraged others to do the same. This included a donation from Ethereum co-founder Vitalik Buterin, which was worth more than \$1 billion at the time of donation.⁶¹ The funds were used for beds, training, and augmenting the country’s public health infrastructure. Importantly, the fund was community driven and helped finance local, grassroots COVID-19 relief efforts.⁶²

We have seen in these times of crisis that people want to organize and help, but traditional tools and cumbersome requirements can create friction or even stand in the way of these altruistic efforts.

Crypto Assets in Remittances and International Payments

The best-known use case is crypto assets. Crypto assets have been used in a number of arenas, but show particular promise for international payments and remittances because these transactions have historically been high-cost and heavily intermediated.

Remittances – estimated to reach \$630 billion in 2022 – represent a significant opportunity. According to the World Bank’s Remittance Prices Worldwide database, the global average cost

⁵⁶ <https://www.coindesk.com/business/2022/03/09/ukraine-has-received-close-to-100-million-in-crypto-donations/>

⁵⁷ <https://donate.thedigital.gov.ua/>

⁵⁸ <https://cointelegraph.com/news/ukraine-dao-raises-over-6m-via-nft-sale-to-aid-ukrainian-citizens>

⁵⁹ <https://www.protocol.com/newsletters/protocol-fintech/crypto-ukraine-senate-hearing>

⁶⁰ <https://cryptorelief.in/>

⁶¹

<https://www.forbes.com/sites/ninabambysheva/2021/05/12/etheriums-co-founder-vitalik-buterin-donates-over-1-billion-to-india-covid-relief-fund-and-oth-er-charities/?sh=4a804cb36548>

⁶² *Id.*

of sending \$200 was 6.4 percent in the first quarter of 2021, which is more than double the Sustainable Development Goal target of 3 percent by 2030.⁶³ Estimates show that cross-border payments underpinned by blockchains could save approximately \$4 billion a year.⁶⁴

Crypto operators have stepped in to provide these services at a lower cost. For example, in Sub-Saharan Africa, banks are the most expensive agents for sending money, charging 10.2 percent in fees on average. This is closely followed by 7.7 percent from money transfer operators, while post offices charge 5.5 percent. Meanwhile, crypto service providers such as BitPesa can process remittance payments with 1 to 3 percent in fees on average, representing significant cost savings for those who need them most.⁶⁵

MoneyGram, one of the world's largest cross-border transfer services, is partnering with Stellar, a decentralized digital currency protocol, to allow users to send USDC (a stablecoin) to recipients. Recipients can cash out in local currencies via the MoneyGram network.⁶⁶ Similarly, Coinbase has a cash-out service across 37,000 convenience stores, supermarkets, and department stores in Mexico. Customers have the choice of cashing out or investing their balance into cryptocurrencies.⁶⁷ This is an example of tailoring services to the needs of the customer. In Mexico, 86 percent of all transactions are in cash.⁶⁸

Cryptocurrencies are also increasingly used in countries where access to financial institutions is slow and cumbersome, or where such access has been otherwise significantly depleted because of war, disaster, or terrorism.⁶⁹ I have personally worked in this area – including building a product designed to facilitate international donations – and can attest to the complexity involved.⁷⁰

Non-Fungible Tokens (NFTs)

NFTs are yet another use case opening up new opportunities for individuals, especially in arts and culture.

A classic challenge for entertainers, artists, and other content creators is reaching an audience and generating sufficient income. Digital media crystallized this challenge. The Internet radically reduces the costs of copying and distributing digitally based work in comparison to its physical counterparts, making it harder for creators to monetize their work. Blockchain applications can

⁶³ <https://www.worldbank.org/en/news/press-release/2021/11/17/remittance-flows-register-robust-7-3-percent-growth-in-2021>

⁶⁴ <https://www.mckinsey.com/industries/financial-services/our-insights/blockchain-and-retail-banking-making-the-connection>

⁶⁵ <https://forkast.news/cryptocurrencies-remittance-africa-blockchain-bitcoin-money-transfers-fees/>

⁶⁶ <https://ir.moneygram.com/news-releases/news-release-details/moneygram-announces-innovative-partnership-stellar-development>

⁶⁷ <https://www.coindesk.com/business/2022/02/15/coinbase-enables-mexican-users-to-easily-cash-out-of-crypto-sent-to-them/>

⁶⁸ <https://blog.coinbase.com/theres-now-a-cheaper-easier-way-for-your-friends-and-family-in-mexico-to-cash-out-the-crypto-you-2fb095df8324>

⁶⁹ <https://podcasts.apple.com/bz/podcast/a-best-of-2021-holiday-special-haitis-transition/id1543450828?i=1000546010814>

⁷⁰ <https://www.wcoinnetwork.org/wcoin-blog/shella-warren-waqmi-women-of-the-week-fv9kp-si835-57dvy-32hc9-dwnxm-mkf8m-sm72j>

help address this challenge. Specifically, NFTs can help creators manage digital rights to the content they create.

Such NFTs represent unique or quantity-limited digital items – like a work of art or piece of music – linked to blockchain records. Each individual NFT has a unique identifier. Entries on the blockchain record information about ownership of, and associated with, the NFT. Subsequent entries can record transactions, such as transfer or sale. Smart contracts can also be programmed to pay creators royalties from the work's secondary market transactions.⁷¹ Artists and their families can sell their digital art and receive royalties for the lifetime of the NFT. This is very different to traditional art where an artist sells for one-time payment.

NFTs expand opportunities for creators and their audiences to connect directly. Traditional artists like poets and fine artists can reach a broader audience by representing poems or pictures in NFTs than they can by relying solely on books, auctions, and dealers for distribution.⁷² For example, the poet Ana Maria Caballero makes NFTs from spoken-word performances of her award-winning poetry.⁷³ Blockchain technology allows her to reach her audience without the need for a third-party seller, which is limited for poetry.⁷⁴ Similarly, musicians can sell NFTs incorporating their songs that embed royalty rights in the smart contracts.⁷⁵ This allows audiences to support their favorite musicians and feel more connected to the music.⁷⁶ DJ Steve Aoki noted that he made more money from one NFT drop than in 10 years of music advances.⁷⁷

We have also seen how NFTs have opened up opportunities for those who may not have had opportunities within traditional arts and entertainment. A 2019 analysis of 18 major art museums found that 85 percent of artists were white and 87 percent were male.⁷⁸ As of 2018, art by African American artists made up just 1.2 percent of the global auction market.⁷⁹ Additionally, artists are exploring new mediums and venues for displaying their art, as the world is becoming increasingly digital. However, this can raise several challenges, especially for digitally-native artists, including monetization models, intellectual property rights, and attribution.

By contrast, NFTs do not have the same gatekeepers. As such, we have seen cultural movements enabled by this novel technology. For example, there have been emerging collectives of artists of color, LGBTQ+ artists, and neurodivergent artists.⁸⁰ Moreover, several artists have said that NFTs have changed their lives, especially those that create in a

⁷¹<https://opensea.io/>

⁷²<https://www.entrepreneur.com/article/422999>.

⁷³ *Id.*

⁷⁴ *Id.*

⁷⁵<https://time.com/6124814/music-industry-nft/>.

⁷⁶ *Id.*

⁷⁷<https://decrypt.co/92938/steve-aokimore-money-nfts-decade-music>

⁷⁸<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6426178/>

⁷⁹<https://www.sothebys.com/en/articles/for-african-american-artists-the-market-remains-woefully-unbalanced>

⁸⁰<https://www.forbes.com/sites/rebekahbastian/2021/10/24/the-diversity-equity-and-inclusion-potential-of-nfts/?sh=2eff26303179>

digitally-native manner.⁸¹ Entire communities – as discussed later in this comment – have burgeoned around NFT projects, bringing together individuals from around the world.

Blockchain technology can also improve the operation of the secondary market for media to the benefit of the creators. For physical media, it may be difficult for a creator to track the resale or transfer of their work, or encourage the exchange of it among fans. Tokenizing their work in the form of NFTs may create a more robust market and may facilitate the creation of communities around the work, all to the benefit of artists and their audiences.⁸²

Finally, the programmability of NFTs opens new possibilities. For example, in August 2021, NFT platform Art Blocks raised more than \$23.5 million for charity through its platform.⁸³ A documentary project raised nearly \$2 million in two days via the sale of NFTs.⁸⁴ Other industries have recognized the potential as well, with explorations and applications across restaurant groups⁸⁵, real estate⁸⁶, live events⁸⁷, and even domain names⁸⁸. This has given rise to the rapid growth and adoption of NFTs in the luxury⁸⁹, sports⁹⁰, and gaming⁹¹ industries.

Decentralized Autonomous Organizations (DAOs)

Decentralized autonomous organizations (DAOs) are an emerging form of membership organization that relies on these concepts. Generally, membership interests in a DAO are represented by tokens, ownership of which can be tracked on blockchains. DAOs then place decision-making in the hands of members who directly exercise those rights by voting with their tokens. DAOs may also deploy smart contracts to govern their operations and execute the decisions made by their members.⁹²

At its core, a DAO is an organizational structure with blockchain technology and tokens underpinning the operations. As such, there have been a diverse set of applications of the DAO

⁸¹ <https://fortune.com/2021/08/06/nft-art-ppleasr-fortune-cover-ethereum-defihow-crypto-changed-my-life/>;

<https://www.coindesk.com/tv/nft-all-stars-now-ive-found-my-people-how-nfts-changed-fewocious-life/>;

<https://techcrunch.com/2021/03/11/beeples-69-million-nft-sale-marks-a-potentially-transformative-moment-for-the-art-world/>;

⁸²

<https://www.coindesk.com/podcasts/coindesks-money-reimagined/funding-culture-and-empowering-artists-with-nfts-feat-lethabo-huma-and-cuy-sheffield/>;

⁸³ <https://cryptobriefing.com/art-blocks-nfts-raise-23-5m-for-charity-august/>;

⁸⁴ <https://www.coindesk.com/markets/2021/07/19/ethereum-documentary-featuring-vitalik-buterin-raises-1036-eth/>;

⁸⁵ <https://foodfightersuniverse.com/>;

⁸⁶ <https://www.entrepreneur.com/science-technology/how-nfts-could-change-real-estate/382816>

⁸⁷ <https://www.coindesk.com/layer2/sportsweek/2022/07/29/why-we-need-nft-ticketing-for-sports-events/>;

<https://www.coindesk.com/business/2021/10/28/nft-ticketing-gets-boost-with-mobile-app-from-yellowheart/>;

<https://www.coindesk.com/business/2022/08/31/ticketmaster-partners-with-blockchain-firm-dapper-labs-to-issue-nfts-for-live-events/>;

⁸⁸ <https://ens.domains/>;

⁸⁹ <https://www.bloomberg.com/news/articles/2022-08-03/luxury-brands-gucci-tiffany-co-dive-into-nfts-despite-slump?sref=dCvCdmbQ;>

⁹⁰ <https://www.coindesk.com/learn/sports-nfts-how-to-get-in-the-game/>;

⁹¹ <https://messari.io/report/the-digital-gaming-frontier>

⁹² https://coopahtroopa.mirror.xyz/ EDvn4cs9tDoOxNGZLfKL7JiLo5rGkkEfRa_a-6VEWw;

<https://www.governing.com/community/can-we-turn-shareholders-into-public-decision-makers>

model and explosive growth in this area. It is estimated that the number of participants in DAOs grew in 2021 from 13,000 to 1.7 million people worldwide.⁹³

I will highlight a few examples:

Gitcoin is a DAO that is focused on funding open-source software. A public good, open-source software has been historically under-valued and difficult to create a business model for.⁹⁴ Using a DAO model for decision-making about priorities and fundraising, Gitcoin has raised approximately \$64.7 million in funding for open-source software to date.⁹⁵ Its community includes 312,000 monthly active developers, and there have been almost 3,200 grants funded through its platform.⁹⁶

Komorebi DAO is another model for providing capital within the industry. This DAO was created specifically to fund female and non-binary founders, who are historically under-represented as founders receiving venture capital funding (women received just 2 percent⁹⁷ of venture capital funding in 2021). As Komorebi states: “An overarching ethos of crypto is to serve and equalize access to financial and non-financial applications and opportunities across all segments of the global population. We believe this begins with backing founders that represent the diverse group of people we are building for.” With the intent of leveling the playing field, the DAO invested almost \$500,000 into seven women and nonbinary-led projects over the course of one year.⁹⁸

Yet another type of DAO is one that makes decisions on the future of a given project or protocol. We have seen these DAOs throughout the decentralized finance space. Examples include Aave,⁹⁹ Compound,¹⁰⁰ and Uniswap.¹⁰¹ Many of these DAOs manage billions of dollars in their treasury, using this capital to both make product improvements and invest in public goods for the ecosystem.¹⁰² This is a part of “progressive decentralization,” wherein projects teams hand over the reins to a decentralized community over time.¹⁰³

DAOs have also become a tool for organizing around arts and culture – often going hand in hand with my previous example, NFTs. For example, Crypto Coven is a project started by five women that generated more than \$20 million in sales.¹⁰⁴ The collection of 9,999 witches is owned by more than 5,000 addresses.¹⁰⁵ Owning an NFT is only one aspect of the project – a

⁹³ <https://www.weforum.org/agenda/2022/06/are-dao-the-business-structures-of-the-future/>

⁹⁴ <https://digitalpublicgoods.net/blog/why-open-source/>

⁹⁵ <https://gitcoin.co/>

⁹⁶ *Id*

⁹⁷ <https://www.bloomberg.com/news/articles/2022-01-11/women-founders-raised-just-2-of-venture-capital-money-last-year?sref=dCyCdmBQ>

⁹⁸ <https://medium.com/komorebi-collective/reflecting-on-a-year-of-komorebi-dao-8adfd6117cf>

⁹⁹ <https://governance.aave.com/>

¹⁰⁰ <https://compound.finance/governance>

¹⁰¹ <https://gov.uniswap.org/>

¹⁰² https://coopahtroopa.mirror.xyz/_EDyn4cs9tDoOxNGZLfKL7JlLo5rGkkEfrA_a-6VEWw

¹⁰³ <https://a16z.com/2020/01/09/progressive-decentralization-crypto-product-management/>

¹⁰⁴ <https://www.businessinsider.com/crypto-coven-nft-witches-popular-with-women-in-web3-vc-2022-2?r=US&IR=T>

¹⁰⁵ <https://opensea.io/collection/cryptocoven>

community has been built that offers education, in-person meetings, and building stories and games through multimedia. From the start, there was also a focus on diversity and inclusion.¹⁰⁶ For instance, in November 2021, the project partnered with leaders in the space to give away NFTs, with a focus on those who were curious about learning and did not yet own an NFT.¹⁰⁷ Another example is PleasrDAO. Originally convened to support a specific artist (pplpleasr), the DAO has since evolved and is “experimenting with novel concepts in digital and community art ownership.” These ideas include fractionalizing art pieces, allowing for partial ownership, and applying innovations within DeFi to distribute value back to the community.¹⁰⁸

Digital Identity and Privacy

Another area that holds significant promise is reimagining identity systems – especially in a privacy-preserving manner. Current models are structured so that the individual is neither privy to sole ownership of their own identities, nor the proprietary data associated with each individual. As discussed, for many, the promise of Web3 lies in the ability to own and manage your personal information and data. Critically, the difference between decentralized identities and the status quo is that decentralized identification is neither “account based”, nor solely provided by a centralized intermediary.

One example is the World Food Programme’s Building Blocks initiative. Currently the world’s largest implementation of blockchain technology for humanitarian assistance, it aims to facilitate the provision of identity to refugees (as of 2018, 80 percent of the roughly 65 million refugees in the world did not have identification).¹⁰⁹ The program is active in Jordan and Lebanon and supports over 1 million people per month. It is estimated that Building Blocks provided \$325 million in cash assistance, processed 15 million transactions, and saved \$2.5 million in bank fees.¹¹⁰ Another example is a company called Aid:Tech. It has been working to establish digital identity infrastructure for aid. Over the company’s lifetime, they have disbursed \$300 million in funds across 500,000 users.¹¹¹

Other projects have focused on providing the technical underpinnings for identity services. Spruce ID is building a toolkit for decentralized identification, as well as a product that allows individuals to keep a “personal data vault” that allows individuals to store digital credentials, private files, and media to blockchain accounts.¹¹² Espresso Systems is building privacy-preserving technology to allow parties to verify user credentials without seeing all the details.¹¹³ The technology is designed to be used across a number of use cases, including

¹⁰⁶ <https://www.fwb.help/wip/crypto-coven-oral-history-web3>

¹⁰⁷ https://twitter.com/crypto_coven/status/1464786199495725057?s=20&t=01rOR7baXbEYw064tnZ6ZQ

¹⁰⁸ <https://pleasr.org/#>

¹⁰⁹ <https://www.cnbc.com/2018/05/10/blockchain-refugees-identity-wfp.html>

¹¹⁰ <https://innovation.wfp.org/project/building-blocks>

¹¹¹ <https://www.aid.technology/about>

¹¹² <https://www.spruceid.com/>

¹¹³ <https://www.espressosys.com/>

decentralized finance, credit scoring, and payments¹¹⁴. Ceramic Network is a decentralized network for composable data that can be used to store any kind of signed information. The network is particularly well-suited as a universal routing layer for storing decentralized identifiers (DIDs) and their associated metadata, data schemas, policies for usage of web services, access control permissions, and other documents that collectively enable boundless interoperability between an ecosystem of connected wallets, applications, databases, and services.¹¹⁵

Digital identification tokens, zero knowledge proofs, and sophisticated forms of encryption present can also support improved approaches to customer identification and verification. This includes the ability of customers to gain more control over their digital identities and, for example, to be able to satisfy successive financial institutions that their identity has already been verified without having to provide sensitive personal information to another financial institution.

Novel mechanisms can be used to create and maintain digital identity records, including (but not limited to) the adoption of digital identity verification techniques that can use a combination of decentralized blockchain based technologies and secure “off-chain” data repositories. Specifically, there are tools under development that can allow digital identity information to be stored securely, and that use digital markers or tokens to enable the persons whose identity information is requested to confirm for a financial institution at onboarding that their identity has been verified, without providing the sensitive PII itself. This provides a mechanism for customers to control the dissemination of information about his or her identity, thus better protecting privacy, while also enabling access to financial services.¹¹⁶ We discuss this concept in greater detail in our February 2022 Response to FinCEN’s Request for Information on the Modernization of U.S. AML/CFT Regulatory Regime.¹¹⁷

IV. Crypto represents an opportunity for historically excluded populations, both in the United States and abroad.

Crypto represents a once in a generation opportunity to re-think foundational systems. The financial system was developed and evolved in an analog economy. And, we know it has left many behind in that evolution. Almost 20 percent of Americans have neither access to a bank account nor adequate access to financial services through other means.¹¹⁸ The rates are higher among adults with lower income, adults with less education, and Black and Hispanic adults. As

¹¹⁴ <https://www.espressosys.com/blog/configurable-asset-privacy-case-studies-payments>

¹¹⁵ <https://blog.ceramic.network/introduction-to-the-ceramic-protocol/>

¹¹⁶ https://www.capco.com/-/media/CapcoMedia/Capco-2/PDFs/Decentralized_Identity_Disrupting_KYC.ashx;

<https://www.forbes.com/sites/forbestechcouncil/2021/12/10/how-decentralized-identity-is-reshaping-privacy-for-digital-identities/?sh=247c3e6e3226>

¹¹⁷ <https://cryptoforinnovation.org/wp-content/uploads/2022/08/Comment-Letter-FinCEN-Feb-2022.pdf>

¹¹⁸ <https://www.federalreserve.gov/publications/2022-economic-well-being-of-us-households-in-2021-banking-and-credit.htm>

discussed, these individuals are served by alternative financial services like payday, pawn, or car title lending.¹¹⁹

Importantly, financial inclusion is a complicated topic; no technology will be a silver bullet for solving it. Research from the World Economic Forum found a number of factors that could contribute to financial exclusion.¹²⁰ For example, globally these may include socio-cultural and demographic barriers might include distrust of the traditional financial system or governments, challenges around digital or financial literacy, physical safety concerns, or others like religious and gender-based barriers or cultural views of money. Infrastructure barriers may include weak or unreliable electricity supply, limited internet connectivity, limited mobile phone access, lack of identity documentation, or lack of physical proximity to services. Financial barriers could be high prices and fees for financial services, lack of digital financial history, or minimum account balance requirements. We've seen many of these reflected in the data cited within this testimony.

We have been overdue for an update to our financial rails that can improve efficiency and reduce cost – meaning better services and choice for the customer. I am especially excited about the potential for greater financial inclusion and access.

A. Domestic Opportunities – California and the United States

We are pleased to see Governor Newsom's administration leading the way in harnessing the potential of blockchain technology. Just last month, the California DMV announced a [partnership](#) to explore utilizing blockchain technology and smart contracts for record keeping and car title transfers. The initiative promises to bolster compliance and improve efficiencies across the board.

This was one of many cases highlighted in the California Blockchain Working Group's Roadmap published in July 2020.¹²¹ Other potential application areas included supply chain, utilities and natural resources, and civic participation. I was honored to serve on the Working Group and contribute to that effort.

As discussed in that report, In California – the largest economy in the U.S., the fifth (and [almost fourth](#)) largest in the world, and a state with no [ethnic majority](#) – the opportunities are immense. I'll focus on three areas:

¹¹⁹ <https://www.fdic.gov/analysis/quarterly-banking-profile/fdic-quarterly/2009-vol3-1/fdic140-quarterlyvol3no1-afs-final.pdf>

¹²⁰ https://www3.weforum.org/docs/WEF_Value_Proposition_of_Stablecoins_for_Financial_Inclusion_2021.pdf

¹²¹ <https://www.govops.ca.gov/wp-content/uploads/sites/11/2020/07/BWG-Final-Report-2020-July1.pdf>

First, California has been a hub of experimentation for serving historically un- and under-served groups – especially minorities and small businesses. For example, City3 is an Oakland-based project working on crypto education, community-directed funding, and a cheaper payments network for local businesses. In 2022, the project on-boarded over 1,100 individuals to Web3 wallets, with 60 percent representation from people of color. This hyper-local and community-responsive approach is critical for populations that don't trust existing systems – and uniquely enabled by crypto and decentralized models.

Second, remittances are a key part of California's economic picture. In 2021, California accounted for over one-third of all remittances sent from the U.S. to Mexico. The average cost of sending \$200 has hovered around [5 percent](#), or \$10. For the [average remittance sender](#) – migrant workers who send around \$370 per month in 2-3 installments, these fees add up quickly. Meanwhile, we've seen crypto facilitate remittances at a cost of 1 to 3 percent around the world, representing significant savings for those who need it most.

Third, non-fungible tokens, or NFTs, are an emerging area of importance for the state that's the capital of media and entertainment. We know that NFTs have opened doors for creators, especially underrepresented groups like women and people of color, and digital-forward artists. As James Andrews, a black, California-based creator, [put it](#) in a report focused on Black People's Experiences in Web3: "The platforms have notoriously retained all the value, and have made us sharecroppers on the platforms... We got to think about infrastructure in Web3. I'm not just building an NFT project, I'm building an NFT platform." Halim Madi, a Lebanese immigrant and digital poet based in Santa Barbara, has noted NFTs can also address issues of erasure for marginalized communities. When describing one of his recent projects, a collaboration of NFTs inspired by the Declaration of Independence, he [said](#), "Once something has been put on the blockchain, it can't really be tampered with, as long as computers exist."

These are just a few of *many* examples. So, there are significant opportunities to bring in those that have been historically excluded. But doing so comes with its own set of risks. This underscores the need for careful regulation.

California can be a leading example for the country, which faces many of the same challenges on a larger scale.

As many have noted, technologists have made claims of democratization and promoting equity in the past, but at the end of the day, whether a technology lives up to its promise depends on decisions made in the early stages.

To this end, I am heartened by what I have seen in the crypto community. First, we have seen organic movements focused on education and a recognition that historically excluded

populations need to be a part of shaping crypto. For example, Black Bitcoin Billionaires grew out of a room on the technology platform, Clubhouse, growing from 2,000 to 130,000 club members in one year.¹²² The community's development attracted institutional support from major industry players, like CashApp.¹²³ Second, we are seeing deliberate attempts from the industry to measure itself and understand how to build more inclusive communities. This includes, for instance, crafting “hyper-local” hackathons and researching how to create better structures for diversity and inclusion in the industry.¹²⁴ In fact, there are entire academic communities dedicated to evaluating digital self-governance within the industry.¹²⁵ These issues are complicated and require intentional focus – crypto is asking the hard questions.

B. Opportunities Abroad

In many places in the world, especially where people are living under authoritarian regimes or suffer from hyperinflation, crypto can provide a lifeline to store value out of the reach of corrupt or poorly run governments. It has also been a tool in enabling advocates of democracy – particularly in areas where free speech and dissidence are not protected.

There are numerous examples of dissidents using crypto as a tool in speaking out “against powerful and entrenched politicians who largely control trust within their borders.”¹²⁶ Bitcoin was a critical tool in Nigeria’s #EndSARS campaign against police brutality, after the Feminist Coalition’s bank account was shut down.¹²⁷ Previously, individuals used it as a mechanism for circumventing police corruption.¹²⁸ A dynamic of censorship also led the Hong Kong Free Press to rely on Bitcoin donations.¹²⁹ Similarly, in Russia, a crackdown on independent media has prompted news organizations to collect and use crypto to keep the lights on – especially as many have had to cease operations around the country.¹³⁰ Following a controversial 2020 election in Belarus, protesters faced mass arrests, Internet shutdowns and other backlash. A non-profit in Belarus provided Bitcoin grants to individuals who were affected by repression and financial monitoring.¹³¹ Put simply: having options like crypto matters for democracy and freedom.¹³²

Indeed, countries that have had significant crackdowns or bans on crypto have historically not prioritized democratic principles.

¹²² <https://time.com/6106706/bitcoin-black-investors/>

¹²³ <https://www.blackbitcoinbillionaire.com/>

¹²⁴ <https://project-cradl.notion.site/Crypto-Research-and-Design-Lab-50a7127f34ed4c88ad95c7cedf7f9e36>

¹²⁵ <https://meta.gov.org/>, <https://commonsstack.org/>

¹²⁶ <https://www.forbes.com/sites/rogerhuang/2020/10/19/dissidents-are-turning-to-cryptocurrency-as-protests-mount-around-the-world/?sh=3291ffff584c>

¹²⁷ <https://www.coindesk.com/tech/2020/10/16/nigerian-banks-shut-them-out-so-these-activists-are-using-bitcoin-to-battle-police-brutality/>

¹²⁸ <https://www.coindesk.com/tech/2020/08/26/unconfiscatable-using-bitcoin-to-resist-police-extortion-in-nigeria/>

¹²⁹

<https://www.forbes.com/sites/rogerhuang/2020/10/19/dissidents-are-turning-to-cryptocurrency-as-protests-mount-around-the-world/?sh=3291ffff584c>

¹³⁰ <https://www.bloomberg.com/news/articles/2022-05-10/putin-s-crackdown-pushes-independent-russian-media-into-crypto?sref=dCyCdmbQ>

¹³¹ <https://www.coindesk.com/policy/2020/09/09/belarus-nonprofit-helps-protestors-with-bitcoin-grants/>

¹³² <https://time.com/5486673/bitcoin-venezuela-authoritarian/>

Further examples of where crypto has been able to support local populations can also be found in Latin America. In 2020, digital assets provided one of the few means by which the U.S. government was able to deliver assistance to individuals with acute needs in Venezuela.¹³³ For many, it represents something very fundamental: choice in a time of instability and uncertainty.¹³⁴ Venezuelan residents have noted the criticality of crypto assets in the face of hyperinflation.¹³⁵

This has been the case in other regions as well. For example, civilians in Afghanistan, where financial services have become unreliable, have been using crypto in part to hedge against Taliban seizure of assets.¹³⁶ Sanzar Kakar is an Afghan American who created an app that helps Afghans transfer crypto. Kakar says the country's "crypto revolution" is a result of the U.S. sanctions against the Taliban and Haqqani group, who are now in power. In its first three months, the app registered more than 2.1 million transactions and had 380,000 active users.¹³⁷

This type of adoption curve is not uncommon in frontier economies. Brazil's largest digital bank reached 1 million users in just one month.¹³⁸ One in five individuals in Vietnam have used crypto.¹³⁹ A total of 56 percent of adults in Nigeria and 54 percent of adults in Turkey trade crypto at least once a month.¹⁴⁰ A Mastercard survey found that one-half of Latin Americans have used crypto, with more than one-third saying they have made an everyday purchase with a stablecoin.¹⁴¹ This is compared to a worldwide average of 11 percent saying they have made a purchase with a digital asset. Asia accounts for one-half of all crypto users.¹⁴² In 2021, worldwide adoption grew 880 percent, with emerging markets largely driving this growth.

V. California urgently needs to take a forward-looking approach to policymaking.

It's important to note that while there is much promise for crypto and blockchain technology to revolutionize not only finance, but also so many of our legacy systems, there are also risks. As Governor Newsom's executive order suggested, it is critical that legislation and regulation

¹³³ <https://www.coindesk.com/markets/2020/11/20/us-government-enlists-usdc-for-global-foreign-policy-objective-in-venezuela-circle-ceo/>

¹³⁴ <https://medium.com/open-money-initiative/money-on-the-edge-discovering-openings-in-a-closed-system-dad55d0bd7bd>

¹³⁵ <https://www.nytimes.com/2019/02/23/opinion/sunday/venezuela-bitcoin-inflation-cryptocurrencies.html>

¹³⁶ <https://fortune.com/2022/04/24/afghan-crypto-buyers-keep-money-out-of-taliban-reach-stablecoin-herat/>

¹³⁷ <https://www.aljazeera.com/news/2022/3/21/crypto-provides-fix-for-some-in-crisis-hit-afghanistan>

¹³⁸ <https://www.bbc.co.uk/news/world-asia-60715707>

¹³⁹ <https://www.coindesk.com/business/2022/07/26/brazils-largest-digital-bank-nubank-reaches-1m-crypto-users-after-just-a-month/>

¹⁴⁰ <https://www.barrons.com/articles/why-crypto-is-taking-root-in-emerging-markets-51653323319>

¹⁴¹ <https://qz.com/africa/2187447/more-than-half-of-nigerias-adults-are-monthly-active-crypto-traders/>

¹⁴² <https://www.ft.com/content/1ea829ed-5dde-4f6e-be11-99392bdc0788>

¹⁴¹

<https://mastercardcontentexchange.com/news/latin-america/en/newsroom/press-releases/pr-en/2022/june/latin-america-s-crypto-conquest-is-driven-by-consumers-needs/>

¹⁴² <https://www.ft.com/content/1ea829ed-5dde-4f6e-be11-99392bdc0788>

enable responsible innovation while mitigating risks for consumers and investors, noting that in some cases, these two groups are the same.¹⁴³

In the past year, we have seen failures of legitimate projects, as well as outright fraud committed against customers transacting in digital assets – resulting in significant losses for consumers and harm to real people. It is critical that we establish regulatory guardrails and consistent consumer protection requirements as this industry continues to grow and develop. And it is critical that these requirements are not performative but actually serve to empower users of these new systems.

Currently, there is no comprehensive federal regulation of digital assets. Instead, companies are subject to a patchwork of state laws, such as the New York Bitlicense, its limited purpose trust charter, and Wyoming's trust charter – as well as regulation by enforcement from federal agencies, which often fails to protect investors because it happens after the fact.

Blanket enforcement harms innovation and investor protection because it does not allow for a thoughtful compliant way for companies to bring to market the innovative products and services that are clearly in demand. The lack of clear, consistent, and transparent regulation continues to bring significant uncertainty to all stakeholders across the ecosystem.

As California undertakes the important work needed to establish a formal licensing framework, policymakers can and should look to lessons learned from other state regimes.

For example, the New York Department of Financial Services has established a bespoke regulatory framework for digital assets. The DFS early on recognized the potential of these assets and the need to regulate them in a way that protects consumers while promoting innovation.

DFS has focused on requirements relating to capital reserves, preventing money laundering, and cybersecurity – goals we applaud – all of which are subject to regular examination, reporting, and supervision. And under the leadership of DFS's current Superintendent, we have seen renewed momentum in improving the agency's ability to regulate in this space.

However, as the industry has continued to grow and evolve over the past seven years in New York and elsewhere, we have encountered some challenges that can help inform California's development of a similar regulatory regime. It's important for state regimes to continue to lead in

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<https://www.gov.ca.gov/2022/05/04/governor-newsom-signs-blockchain-executive-order-to-spur-responsible-web3-innovation-grow-jobs-and-protect-consumers/>

fostering product development that serves consumer needs and promotes safety and security in the marketplace.

A state regime should establish clear and transparent expectations for the timing of application approvals. In New York, it's not uncommon for the timeline from license application to approval to be significant, sometimes taking years. This is both due to the everchanging complexity of the industry and the historical lack of crypto expertise and staffing. Without a clear deadline, many innovators are left unable to operate in New York.

To ensure a consistent consumer protection standard, California should seek to coordinate with other states to combat cases of fraud and market manipulation. Additionally, standards and best practices regarding useful disclosures and the custody of digital assets should be developed.

California should lead when it comes to reciprocity and harmonization of state regimes with similar requirements and standards. This can include, for example, coordination of regulated entity exams with other state regulators, similar to the way state money transmitter license frameworks coordinate with one another for examination purposes. In addition, reciprocity with other states would avoid redundancy and create a streamlined set of standards and requirements.

VI. Conclusion

It is critically important for regulation to keep pace with innovation. I recognize that digital assets are built on a technological underpinning distinct from that of the traditional financial markets, and, accordingly, it is essential that any regulatory framework should properly account for such distinctions. There should be a clear and reasonable timeframe for companies to transition into any new state framework. As part of all this, I would strongly encourage California to continue to seek input from market participants. The Crypto Council looks forward to working with you over the course of this session to advance these important issues.

Thank you again for the opportunity to discuss these important topics and your support for the regulatory certainty that will be established by this legislation. I look forward to answering your questions.