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HOW BLOCKCHAIN AND CRYPTO COULD IMPACT FINANCIAL INCLUSION AND BUILD WEALTH

FINANCIAL SECURITY PROGRAM
aspen institute

10 Use Cases to Closely Watch

	Potential to Impact Financial Inclusion	Potential to Impact Wealth Building
Use Cases Enabled by Blockchain	1. **Self-control of identity verification and wallet:** enabling individuals to manage their digital identities securely via self-sovereign, decentralized IDs. In parallel, self-custody wallets enable people to securely hold their assets without risk of loss from an exchange failure. 2. **Supply chain credit:** creating asset-backed tokens that represent goods in transit or stored in warehouses allows SMEs to access collateral-based supply chain credit. 3. **Collateralized consumer credit:** creating asset-backed tokens of a person's valuables (like appliances, car, jewelry, artwork), allowing new forms of collateral-based consumer lending.	6. **Fractional ownership:** tokenizing assets for diverse investment and ownership models ranging from real estate to financial assets. 7. **NFTs:** offering indisputable proof of ownership for digital or physical goods enables creators to protect and monetize their intellectual property and assets. 8. **Delivery of public benefits:** streamlining KYC and the enrollment experience across benefits programs.
Use Cases Enabled by Crypto	4. **Stablecoins:** expanding global access to low-cost, U.S. dollar-based savings, especially valuable in regions facing currency instability. 5. **Real-time & cross-border payments:** facilitating instant cross-border transactions, like remittance and B2B, and real-time payroll, reducing costs.	9. **Investing in "digital assets" (i.e., coins) like Bitcoin or Ether:** allowing individuals to buy-and-hold coins provide appreciation potential; however, given boom-bust price cycles and lack of intrinsic valuation models, whether these coins become a suggested investable asset is yet to be determined. 10. **Staking or Yield Farming:** enabling individuals to earn a return on their assets, like bonds, in micro-increments and varied durations.

1-3: Use Cases for Financial Inclusion Enabled by Blockchain

In the years ahead, blockchain could be applied to expand access to the financial system both in the U.S. and globally. Here are three potential ways in which this could happen:

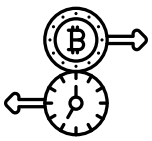
> "Financial inclusion exists when the financial system provides all people with the ability to access, utilize, and reap the benefits of a full suite of financial products and services that facilitate stability, resilience, and long-term financial security"[1]

1. Self-control of identity verification and wallet:

Identity verification plays a pivotal role in granting access to the financial system. 11% of U.S. citizens, or 21 million people, lack a government-issued photo identification, including about 25% of African American citizens of voting age.[2] Globally, 300 million people – about 18 percent of the 1.7 billion unbanked adults globally– cite a lack of proper identity documentation as the main barrier to opening a bank account (World Bank Findex Survey, 2017).[3] Unlike conventional online platforms, decentralized identity systems grant users the freedom to choose what personal information they share, with the ability to revoke access. Built on the blockchain, this approach mitigates risks tied to centralized identity management, such as data breaches, identity theft, and privacy loss.

Self-sovereign identity, or decentralized identity, gives individuals control over their personal data and its access. Similarly, a self-custody wallet offers autonomy with control over their private keys which are used to access and manage assets held either as a token on a blockchain or in cryptocurrency. Combining self-custody and self-sovereign features, these digital wallets provide users with the means to secure their own digital keys (i.e., to sign or access transactions, statements, credentials, documents or claims). Importantly, individuals retain the right to decide who accesses their personal information and wallet.

Real World Examples: The German arm of Deloitte Consulting issues digital 'Know Your Customer' (KYC) and 'Know Your Business' credentials for individuals and businesses to store their own credentials and select how and with whom to share them. Block (formerly Square) has developed a protocol that facilitates the exchange of assets using decentralized networks "by providing a framework for establishing social trust, utilizing decentralized identity and verifiable credentials to establish the provenance of identity in the real world."



2. Supply chain credit:

Asset-backed tokens that represent ownership of goods in transit or stored in warehouses could be used as collateral for financing - enabling greater access to financing for supply chain participants. These same tokens could be programmed with specific rules and parameters to enable new types of financial instruments. For example, a tokenized asset representing a physical good in the supply chain could be programmed to automatically be rerouted based on real-time price or demand information. The

small- and medium-sized enterprises which power global supply chains have an estimated unmet credit need of $5.2 trillion, according to the World Bank and IMF. Unlocking the value contained within these intermediate goods has the ability to expand access to affordable business credit.[4]

Real World Example: IBM Blockchain World Wire leverages blockchain technology and stablecoins to tokenize assets and enable near-instant settlement of transactions between participants in the supply chain. The platform allows businesses to tokenize invoices, purchase orders, or other financial instruments, which can then be used as collateral for obtaining financing. IBM is also using block chain for dispute resolution across numerous industries.

3. Collateralized consumer credit:

In the U.S., 45 million people are either considered "credit invisible" or lack a credit record to have a credit score.[5] Further, only about half the U.S. population has a credit score considered "prime" which enables access to low-cost credit.[6] The cost of credit invisibility or low credit scores can be high: financially vulnerable households spend 8% of their income on financial services.[7] Innovations focused on these populations could improve their ability to access affordable, low-cost credit products.

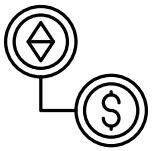
Through tokenization, real-world assets can be represented as digital tokens on the blockchain - allowing individuals to use them as collateral for loans. These tokens bring liquidity to traditionally illiquid assets. For example, real estate, which is typically a long-term investment with limited liquidity, can be tokenized into fractional, timebound ownership, allowing investors to easily buy, sell, or use these digital tokens as collateral for loans. Other forms of assets, like land, cars, or valuables like artwork, appliances, and jewelry could also be collateralized in the same manner.

In time, a history of timely repayment on these collateral-based loans could help people gain access to unsecured (i.e., without collateral) credit. Future credit bureaus could, for example, evaluate on-chain data, algorithms, and reputation systems for creditworthiness. Furthermore, on-chain credit scoring may reduce reliance on traditional credit scores, making credit more accessible to underserved populations in the U.S. who can lack a credit score or reliable credit history, and in countries with limited access to traditional credit reporting infrastructure. It also opens up new markets for cross-border lending where lenders and borrowers can be evaluated based on their global transactions recorded openly to the blockchain, rather than on most credit data which remain isolated in each country's national credit bureau(s).

Real World Example: An early entrant, Cred Protocol is a decentralized credit score based on a person's on-chain activities. Lending protocols, identity protocols and fintechs use the score to qualify applicants and offer capital-efficient loans.

4-5: Use Cases for Financial Inclusion Enabled by Crypto

In the years ahead, crypto could be applied to expand access to the financial system both in the U.S. and globally. Here are two potential ways in which this could happen:



4. Stablecoins:

Stablecoins are a type of cryptocurrency whose value is pegged to a government-issued currency, like the U.S. dollar or Euro. As a store of value, stablecoins could expand global access to low-cost, U.S. dollar-based savings. The total market capitalization of stablecoins exceeds $130 billion as of June 2023.[8]

Amidst worldwide economic instability and currency fragility, exacerbated by climate change-related natural disasters, individuals in low- and middle-income countries across Latin America, Africa, and Asia might increasingly turn to USD-pegged or Euro-pegged stablecoins to save. Nations such as Turkey, India, Ghana, Nigeria, and Brazil have already experienced significant currency depreciation, losing over half their value in USD terms over the past decade.[9] In the years ahead, stablecoins could facilitate broader access to dollar-denominated savings on a global scale.

Real World Example: The most common stablecoin is USDC, issued by Circle, and is backed with dollar-for-dollar reserves.

5. Real-time and cross-border payments and payroll:

Traditional payment systems often are slow and rely on multiple intermediaries, leading to delayed funds transfers and steep transaction fees – or, in the case of American payroll, payroll lending. Stablecoins present an avenue to facilitate instant, or near-instant, settlement and transfer of funds, overcoming geographical distances.

This is particularly valuable for cross-border payments, which often incur high fees - averaging 6.24% of funds sent worldwide[10] - and take days to complete. Further, traditional cross-border payment systems can be inaccessible for individuals in underserved regions or without access to a traditional bank account. Stablecoins operate on blockchain networks, which offer an open and accessible environment to anyone with internet connectivity.

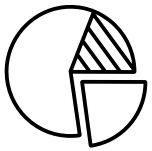
Real-time payroll also holds promise for low-wage workers. Instead of ensuring one- to two-week waits to receive money they have already earned – or resorting to "early wage access" solutions – workers could earn wages in micro-increments in real-time as they work. While obviously not addressing the root cause of routinely negative cash flow, this real-time flow of compensatory value into a worker's account or wallet would reduce the need for cash-strapped workers to use high-cost lending caused by mismatches or mistimings in earnings and

expenses. It could also amplify the power of "dollar-cost averaging" with much more frequent, if not real-time, purchasing of wealth-building assets inside of workplace retirement plans as paycheck deductions flow into retirement accounts on a much more frequent basis.

Real World Examples: Incumbent Western Union has been using Bitcoin in the Philippines but is expected to unveil new crypto products in the near future based on recent patent filings.
Zebec enables real-time and continuous streams of payments and financial transactions for payroll and other financial transactions. Using Zebec, employees can be paid by the second.

6-8: Use Cases for Building Wealth Enabled by Blockchain

In the years ahead, blockchain could be applied to expand wealth-building opportunities for more people both in the U.S. and globally. Here are three potential ways in which this could happen:



6. Fractional ownership:

Tokenization of assets could enable new investment and ownership models for high-return assets, ranging from real estate to financial assets. By allowing individuals to more affordably purchase fractions of assets in micro-increments, people from lower income or lower wealth households would have the ability to invest in assets traditionally reserved for wealthy or institutional investors, such as commercial real estate, art, or venture capital. Further, fractional ownership can also help people to diversify their portfolios and potentially benefit from the appreciation and income generated by these assets. As with any investment that can fluctuate in value, however, new investors will need consumer protections, clear and transparent disclosures, and access to support and advice that can help them more safely participate in these markets.

Real World Examples: Current examples of off-chain fractional ownership include Robinhood (public equities) and Masterworks (art). In 2022, Robinhood reported 23.0 million net cumulative funded accounts and 11.4 million Monthly Active Users in December 2021. The assets under management at the end of 2022 was $62 billion. As of November 2022, Masterworks has 550,000 members and approximately $550 million assets under management. Real estate is one area in which on-chain tokenization is occuring. Ekta Real Estate, which uses its own blockchain to fractionalize interest-bearing physical assets, allows individuals to invest in a digital asset, a non-fungible token, that provides dividends, yield and other rewards as the real-world asset, real estate, appreciates in price.

7. NFTs:

Indisputable proof of ownership of digital or physical goods could enable creators to protect and monetize their intellectual property and earn money. While NFTs, or non-fungible tokens, can represent ownership of digital assets, physical assets, such as real estate, luxury goods, or rare items, most of their current usage is for digital assets including artwork, music, virtual real estate, or other creative works. NFT holders can potentially license or monetize their NFTs by granting usage rights or selling digital rights to the associated content via smart contracts and receive royalties on subsequent sales of the NFT. This allows NFT holders to generate income from their assets, contributing to their overall wealth over time. Again, as with any investment that can fluctuate in value, however, new investors will need consumer protections, clear and transparent disclosures, and access to support and advice that can help them more safely participate in these markets.

Real World Example: Today, creators, including musicians, journalists, and designers, use different platforms to sell their work using watermarks and licensing restrictions to determine how that work can be used. However, once purchased, creators cannot easily track usage or licensing adherence. The most recently proposed NFT smart contract, ERC-721C, empowers creators to dictate what percentages are doled out, when, and how frequently. According to Statista, sales of NFT collectibles grew by roughly 15 percent year-on-year, totaling $11.8 billion in 2022.

8. Delivery of public benefits:

Many public benefit programs require individuals to provide proof of identity to prevent fraud and ensure that the benefits reach the right recipients. However, traditional identity verification processes can be cumbersome, time-consuming, and prone to errors. In addition, individuals may lack official identification documents, have outdated or incomplete records, or face challenges in accessing government agencies to verify their identity.

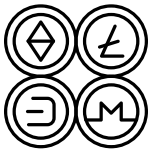
Blockchain-based identity systems have the capability to securely store personal information. This could allow efficient and reliable verification of eligibility for public benefits while protecting user privacy. Such systems could streamline KYC and the enrollment experience across a multitude of federal and state benefits programs. Hypothetically, public benefit programs could use smart contracts enabled by blockchain to address some of the key challenges faced in the delivery of public benefits, including real time assessments of eligibility for public benefits (such as income or employment), child custody verification, and identity verification. Using blockchain in this way would require additional expertise of public benefit administrators and policymakers to ensure those tools addressed the complex requirements of public benefits policy and provided adequate consumer protections to public benefit recipients, often some of the most financially vulnerable people in the U.S.

> "Having wealth, or a family's assets minus their debts, is important not just for the rich—everyone needs wealth to thrive. Yet building the amount of wealth needed to thrive is a major challenge. Nearly 13 million U.S. households have negative net worth. Millions more are low wealth; they do not have the assets or liquidity needed to maintain financial stability and invest in themselves in the present, nor are they on track to accumulate the amount of wealth they will need to have financial security in retirement. Together, these groups represent at least half of all U.S. households."[11]

Real World Examples: In 2017 Illinois launched a pilot program called "Digital Birth Certificates" that utilizes blockchain to securely store and manage birth records. More recently in 2023, New York City is exploring the same. In both cases, the goal is to provide individuals with better control over their personal data and streamline the process of accessing public benefits.

9-10: Use Cases for Building Wealth Enabled by Crypto

In the years ahead, crypto could be applied to expand wealth-building opportunities for more people both in the U.S. and globally. Here are two potential ways in which this could happen:



9. Investing in "digital assets" (i.e., coins) like Bitcoin or Ether:

The purchase and ownership of cryptocurrency coins could provide a new path to wealth building. The total market capitalization of cryptocurrency coins exceeds $1 trillion as of June 2023.[11] Further, the addition of popular cryptocurrencies like Bitcoin and Ether to Block's CashApp and PayPal's Venmo and PayPal apps has made access to digital assets more accessible - more than 57% of Americans have access to cryptocurrency through apps they already use on their smartphone.[12] However, cryptocurrency coins are prone to boom-bust price cycles and extreme fluctuations in their value.

10. Staking or Yield Farming:

Similar to the structure of bonds, staking involves holding and "locking up" cryptocurrencies in a specific wallet or platform to support the operations of a blockchain network. As a staker, you continuously earn rewards throughout the staking period, typically in the form of additional tokens which can be compounded or sold for additional income, contributing to gradual growth of personal wealth. The specific reward mechanism and frequency depend on the consensus algorithm, the token economics of the blockchain network you are staking, and staking period or duration.

Yield farming, also known as liquidity mining, involves providing liquidity to decentralized exchanges or liquidity pools in exchange for tokens or fees. As a liquidity provider, you'll earn rewards based on various factors, such as trading fees generated by the platform, incentive tokens provided by the exchange or pool, or yield generated from lending and borrowing activities. These rewards are usually distributed proportionally to your share of the liquidity pool.

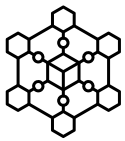
The key distinction between staking and yield farming is the "lock-up" period of the digital asset. With staking, your tokens are committed for a predefined period. Conversely in yield farming, your tokens remain liquid and can be withdrawn as per the agreed-upon conditions.

Real World Examples: The DeFi protocol Aave currently has $7.7 billion in total value locked meaning that $7.7 billion in crypto assets is being held as collateral for lending. According to DeFiLlama, as of 6/19/23 the total value locked across all DeFi platforms is $42.09 billion.

Looking Ahead

While it has proven impossible to predict the future of crypto, we are confident that the use cases outlined here will not emerge in a linear fashion – and without the right enabling conditions, they may not come to pass at all. For these financial inclusion benefits to be realized in the world of crypto and accrue to the benefit of financially insecure households in America, we need a clear regulatory framework and innovative builders who both understand and are designing for people's real financial needs while ensuring that privacy safeguards are put into place at every step.. We also need an ongoing, data-driven understanding of whether and how crypto and its associated financial tools and products are owned and used by financially insecure households. At the present moment, for example, there remains a clear need for quantitative and demographic analysis of crypto ownership in America. A shared, data-driven understanding of the current state of play on crypto ownership would meaningfully advance today's conversation by driving specificity around both the risks and opportunities within this ecosystem.

As the capabilities of crypto-driven tools expand, it is also essential to invite users to the table. There's a tremendous opportunity here to engage directly with and to embed the voices and perspectives of financially insecure households in the policy and product design process. Now that we can see more clearly what may be possible on the supply side of this equation, we are deeply interested in the demand side. Consumers can tell us what exactly, from their experience, would be good about new ways of establishing and verifying digital identity – and what wouldn't work. Or, they might share what they would like about real-time payroll, and what new challenges this might create in their financial life. This is the right moment for curious leaders from across sectors to ground their thinking about crypto in the preferences and needs of people, so that we may, together, shape this system to be inclusive by design.



Want to learn more? Read our Introductory Guide to Blockchain, Crypto, and Household Financial Security for Policymakers and the Social Sector.

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Endnotes

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