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Robeco FinTech

Despite crypto winter, Digital Asset projects are still thriving

- From crypto winter to regulatory spring
- Digital Assets starting a long term innovation cycle
- Real use cases solving real world problems

The Digital Assets industry was under pressure through 2022 with Cryptocurrency prices correcting sharply, as tighter global financial conditions impacted capital markets. The Digital Assets ecosystem is certainly used to a great deal of volatility, and the implosions of the third largest stablecoin Terra USD (LUNA), crypto lending platforms Celsius and BlockFi, crypto hedge fund Three Arrows Capital, and cryptocurrency exchange FTX, are making it a hard crypto winter. This reminds us of the dot com bubble where, amid steep user growth [Figure 1], investors gave massive valuations to internet-based business models which were speculative and sometimes fraudulent. Underneath the surface, however, powerful trends are developing, based on underlying blockchain technology, that will ripple through the world of finance and business for many years. For this new ecosystem to reach its potential we believe a clear regulatory framework will be required for Digital Assets, in the same way global regulators stepped in 2008 making traditional finance stronger.

Article
For professional investors
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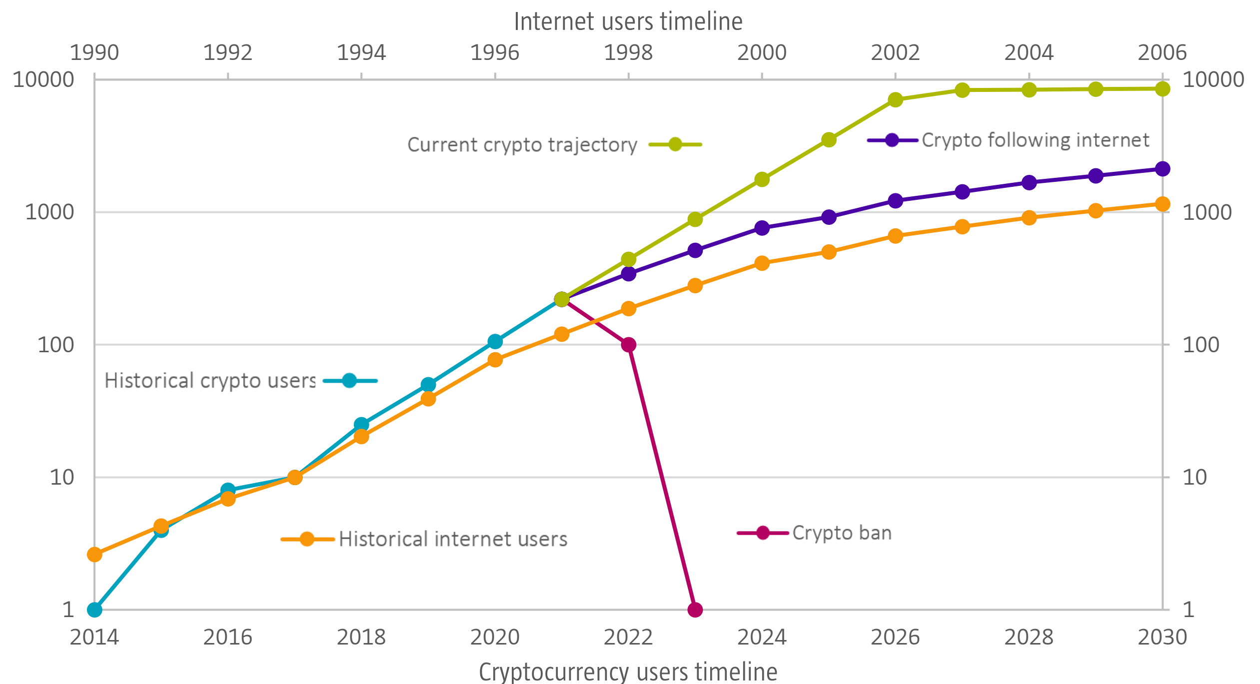
Moving towards Web3: read-write-own

Bitcoin emerged back in October 2008 in the wake of the global financial crisis and this remains the most recognized digital asset. An exclusive focus on Bitcoin ignores the disruptive potential of the Digital Assets ecosystem though. Ethereum's launch in July 2015 was arguably as significant, and the first applications that ran on the blockchain were created in 2016. Since then, Ethereum is increasingly being recognized as the cryptocurrency that is key to building a Web3 version of the internet, including a new financial infrastructure. Before Bitcoin, the concept of encrypted virtual

assets with a value attached to them was not new, but the use of a publicly available distributed ledger technology – or blockchain – was. This is the true underlying innovation that Bitcoin brought to the world.

Figure 1 | Cryptocurrency user adoption scenarios



Source: World Bank, Crypto.com, Robeco estimates, 2021.

Blockchain technology is a record of transactions that does not require an external authority to validate the authenticity and integrity of data, or in the definition of blockchain experts Don & Alex Tapscott, "an incorruptible digital ledger of economic transactions that can be programmed to record not only financial transactions but virtually everything of value"[1]. Blockchain technology is being used to create an ecosystem of mostly decentralized protocols, that aims to provide many types of Web3 services in a decentralized and non-governed way. As a consequence, Web3 has become a catch-all term for the vision of a new, better, internet, or, the third generation of internet services – built upon the core concepts of decentralization, openness, and greater user utility. Blockchains, smart contracts and tokens are used to give power back to the users in the form of ownership. You could summarize it as: Web1 was read-only, Web2 is read-write, and Web3 will be read-write-own.

Crypto winter rescue plan? Regulation

The crypto market went on a bull run over 2020-21, exceeding anybody's expectations, with Bitcoin passing the USD 60,000 mark and Ethereum the USD 4,000 in November 2021. When global liquidity started to tighten, crypto prices were hit badly; and after multiple months of slumping prices, the first player in the space collapsed, followed by several more in a cascading effect. Meanwhile, Bitcoin institutionalized and as a consequence started to increasingly behave like a traditional asset class [Figure 2]. Clearly the global crypto assets market is experiencing a bitter crypto winter, and this stormy environment gave rise to more widespread financial distress than previous cycles. On one side, a weak traditional financial market – dictated by pandemic normalization, high inflation, tight monetary policy, war – translated into a weak crypto market. On the other side, a combination of increased participation in the multifaceted crypto world, rising leverage opportunities, weak risk mismanagement, and contagion effects amongst firms all contributed to the market-cap of Bitcoin and Ethereum declining by ~75% from the 2021 peak.

[1] Don & Alex Tapscott, Blockchain Revolution (2016)

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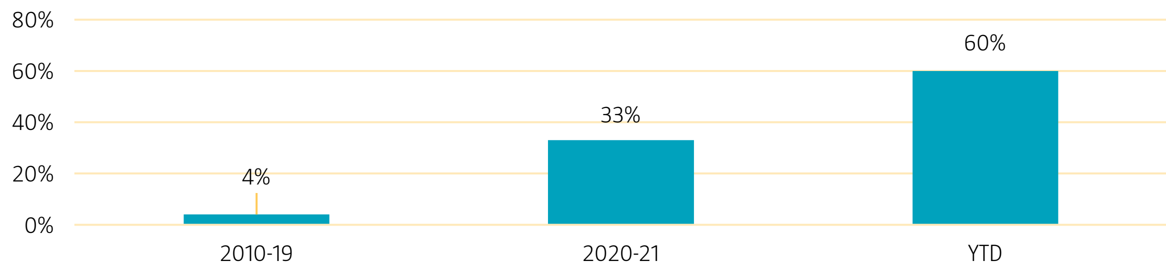
Figure 2 | Increasingly high correlation between Bitcoin and equity returns over the last few quarters



Source: Bloomberg, Bernstein, Robeco analysis.

In the spring of 2022 we saw Terra’s Luna algorithmic stablecoin, which ranked among the top 10 most valuable cryptocurrencies, wiping out investors by collapsing by more than 98% in 24 hours. Shortly after that Celsius collapsed, and the Bankruptcy Court had approved January 3, 2023 as deadline for its customers to file a claim. Then the third largest cryptocurrency exchange, FTX, collapsed, with its rival Binance giving up on the idea of acquiring it. Alameda Research, a subsidiary of FTX, which held a significant portion of its reserve in FTT (the token created by FTX), was found to have a secret exemption from certain aspects of FTX's auto-liquidation protocol. The significance of the FTX meltdown and the potential implications for the crypto financial system remind us of 2008, with the media gaining eyeballs and shares by comparing FTX to Lehman Brothers. The next domino to fall was BlockFi on the 28 November 2022, filing voluntary bankruptcy after announcing a few weeks earlier it was halting withdrawals in the wake of the FTX liquidity crisis. FTX was only the straw that broke the camel's back for BlockFi. The firm was already in trouble after experiencing losses of around USD 80 million from the Three Arrow Capital collapse earlier in 2022, and it ended up turning to FTX to ask for a rescue. Not the right creditor, as Captain Hindsight would say! In the last weeks of 2022, concerns started spreading about the issues affecting the largest OTC trader Genesis, and the risk it could represent the next blow-up.

Regulators are scrambling to respond

The light in the dark here is the sense of urgency hitting global regulators. The 2022 cycle is separating the strong from weak. It made clear that business models based on market-making, trading and exchange under the same ownership cannot work without a defined, level playing field. It’s also clear that under-collateralization in search of efficiency just does not work in crypto decentralized finance (DeFi). It also made clear that crypto banks offering high yield deposits to retail customers and lending that money to crypto hedge funds is a doomed strategy. It is almost surprising how long it took for these opaque, unnecessarily complex, business models – aggravated by high leverage, lack of oversight, no separation of duties and poor risk management – to implode. We believe regulation will be key to preventing more crypto obituaries – especially around the centralized part of the industry, as that is where most of the blow-ups happened.

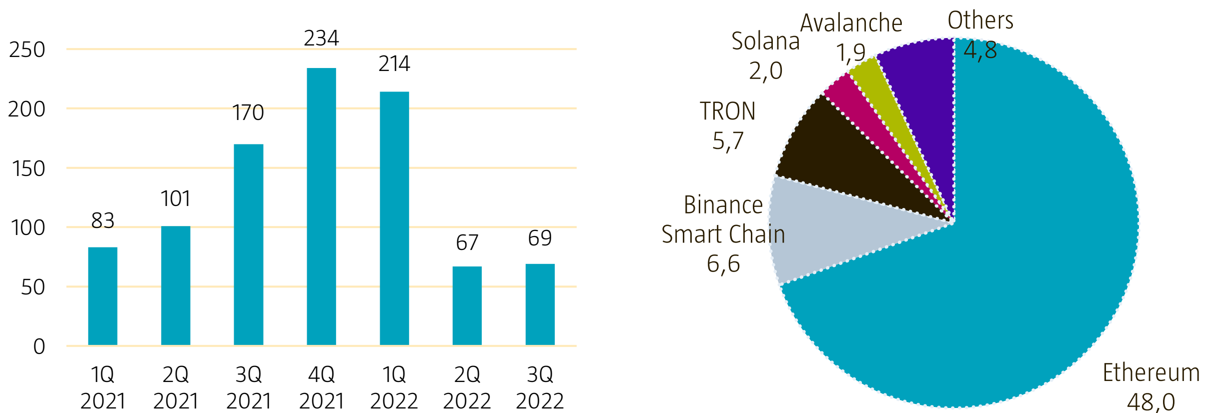
The progress in fixing the crypto regulatory gap has been slow. Largely, because regulation always lags innovation, and blockchain technology is relatively new. In addition, there has been little interest from the crypto industry in taking action on the back of the fear that strict regulation would undermine innovation, expansion and the profits that were being made. The protection standards developed over decades of experience in securities markets have simply not been met in the crypto industry, and this is what framed opportunities for unsustainable business models to develop and blow-up, with a parade of unpleasant consequences.

Regulatory standards should mitigate downside risks while promoting innovation – an aim that is embedded in most recent legislation drafts. Over the past months we started to see some steps forward, with the European Union designing its primary legislative plan to manage the crypto industry ('Markets in Crypto-Assets agreement', MiCA) and the White House presenting the findings and suggestions of its research on the space ('First-Ever Comprehensive Framework for Responsible Development of Digital Assets'). DeFi players are likely to be obliged to hold 100% reserves when issuing stablecoins, disclose more information about their balance sheets when engaging in lending, increase clients' assets safeguarding while limiting asset concentration, and to adopt more careful risk management. Clear regulation would in turn boost user trust and engagement, driven by developers building solutions to real world problems.

Despite crypto winter, Web3 development is still thriving

As shown in Figure 1, user adoption of cryptocurrencies has outpaced the internet user adoption path with over 300 million users. Obviously, given recent turmoil the number seems overstated. Coinbase reported 8.5 million monthly transacting users in 3Q22, down from its peak of 11.4 million in 4Q21. The Total Value Locked (LVT) in DeFi has also come down significantly over the last couple of quarters [Figure 3].

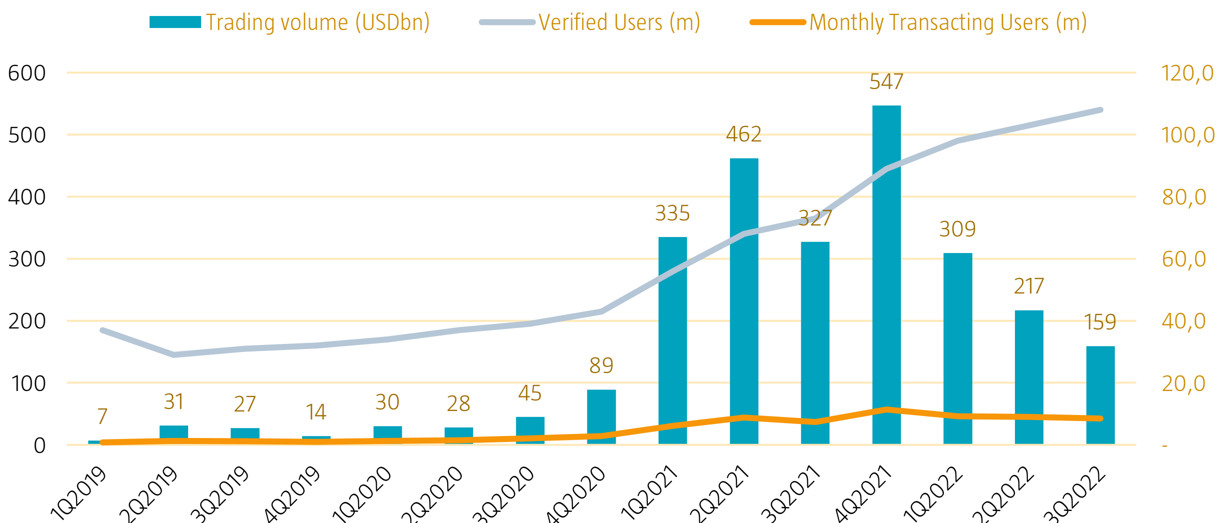
Figure 3 | USD 69 billion in Total Value Locked in DeFi as of September 2022



Source: DappRadar. Data as of September 2022.

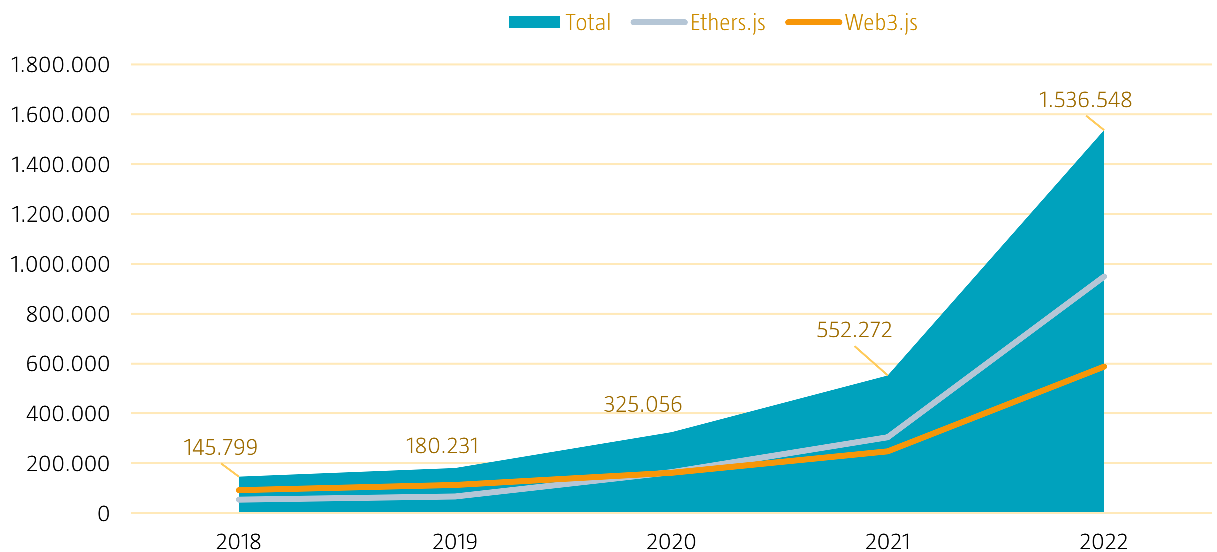
However, developments in the space are still continuing and awareness and interest remain high. Despite user activity declining, Coinbase reported 108 million verified users at the end of September, which is 48% more compared to September 2021 [Figure 4]. Alchemy, a blockchain development platform empowering Web3 users, pointed out in their Web3 development report that two critically important Web3 libraries, Ethers.js and Web3.js, have almost tripled over the past year, reaching over 1.5 million downloads a week [Figure 5]. Similarly, developers submitted more than 17.375 smart contracts (see Box 2 below) to Etherscan in September, an yearly increase of 160%; while DappRadar estimates that 12.495 dApps (see Box 1 below) currently exist across all chains, up from around 1.000 in 2018.

Figure 4 | Coinbase: continuously growing users base despite volumes being dragged down



Source: Bloomberg, Robeco analysis.

Figure 5 | Ethers.js and Web3.js downloads



Source: Web3 Developer Report, Q3 2022.

After FTX's collapse, probably the worse catastrophe in the crypto market so far, we notice significant resilience. dApps figures around unique active wallets dropped only 5% over October. HODL trends – acronym for the "Hold on for Dear Life" strategy – in Bitcoin and Ethereum remain encouraging, pointing to long-term owners continuing abstain from event-driven panic selling. The number of wallets on chains spiked [Figure 6], together with the number of new user (up 20-50%), daily user activity (up 10-20%) and transaction momentum (up 70-90%) across Ethereum Layer 2 scaling solutions[2]. All those figures are pointing back to the remark that interest in the space is holding up, and blockchain developments are still thriving. Are they also flagging that the FTX unwind is accelerating the move towards on-chain and decentralized solutions? Possibly. Is this a wakeup call for shifting the focus from token prices and speculative trading to the underlying technological disruptive potential? For sure.

Box 1: Web3, dApps, Layer 2 blockchain solutions

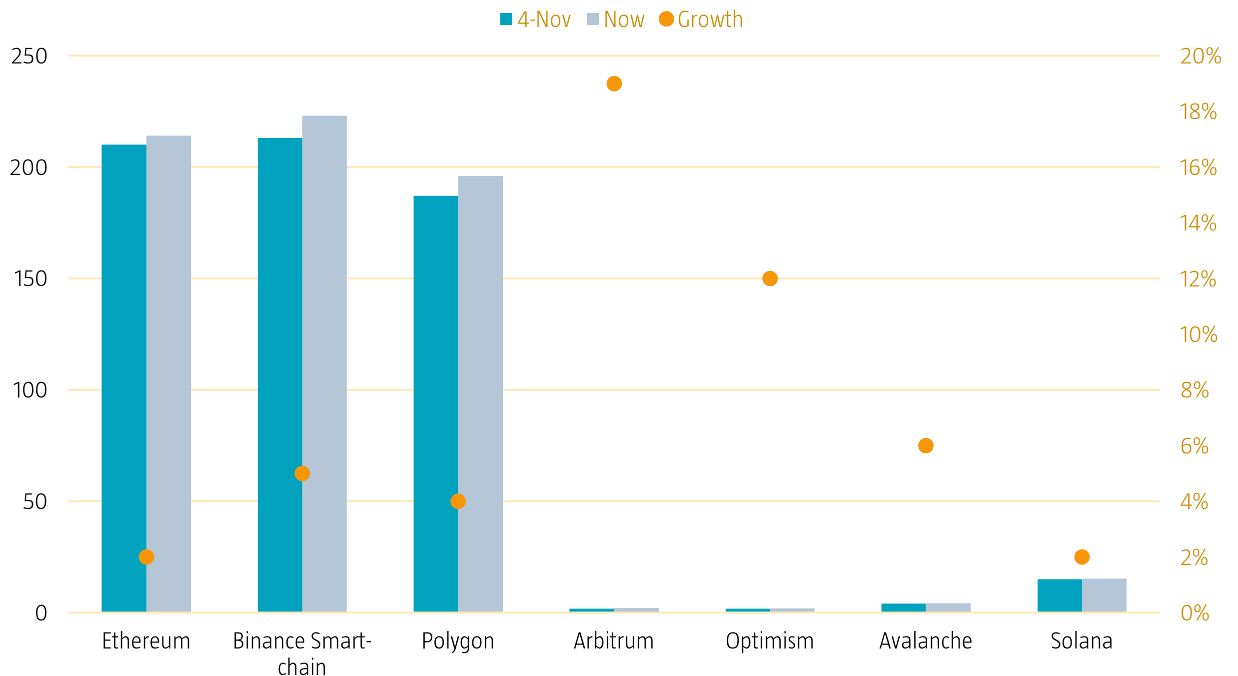
Web3: Web3 has become a catch-all term for the vision of a new, better internet. At its core, Web3 uses blockchains, cryptocurrencies, and NFTs to give power back to the users in the form of ownership. Web1 was read-only, Web2 is read-write, Web3 will be read-write-own.

dApps: Apps are centralized applications. dApps are decentralized applications that run on a peer-to-peer network, such as a blockchain, using smart contracts.

Layer 2 blockchain solutions: Three desirable properties of a blockchain are that it is decentralized, secure, and scalable. The blockchain "trilemma" states that a simple blockchain architecture can only achieve two out of three. Want a secure and decentralized blockchain? You need to sacrifice scalability. The main goal of scalability is to increase transaction speed (faster finality) and transaction throughput (higher transactions per second) without sacrificing decentralization or security. This is where layer 2 networks come in for Ethereum. Those solutions provide scaling for the blockchain so that a growing number of exchanges and platforms are able to use the network. Technically, they allow you to build on top of the original blockchain[3].

[2] https://ethereum.org
[3] 'Crypto markets in 20 charts...what explains the resilience?' by Bernstein (5 December 2022)

Figure 6 | Number of unique wallet addresses (000s) jumped by 10-20% for Layer 2 solutions following FTX collapse



Source: Etherscan, Binance Scan, Polygon Scan, Arbitrum Scan, Optimism Scan, Snow Trace, Dune Analytics, Bernstein, Robeco analysis (data points as of end-November, 2022).

Corporations have been increasingly interested in developing solutions based on blockchain. Multiple players have started integrating blockchain technology to increase efficiencies, decrease costs and generate incremental revenue streams. Most importantly, they have been implementing projects that are largely unaffected by token prices. Examples include Nike, Gucci, Adidas and Dolce & Gabbana leveraging NFTs to generate incremental revenue in the present and in perpetuity through the creation of loyalty streams, MGM applying smart-contracts to concert tickets with additional perks, JP Morgan processing more than USD 430 billion worth of tokenized intra-day repo transactions, and Walmart tokenizing its supply chain to reduce a specific food's provenance tracking from 7 days to 2.2 seconds.

Taking this all together, we believe there are lots of reasons to be cheerful: (i) flows and activity are moving to the (semi) regulated custodians, exchanges and market makers, (ii) TradFi is still building engagement, with growing examples of recent collaborative efforts, and (iii) on-chain activity continues to build.

Solving real world problems: use cases

The blow-ups and scandals recently witnessed around crypto have happened in the centralized space – with unseparated clients' money, soft risk management, high leverage, and loose regulatory scrutiny all being responsible. Those risks are significantly contained at the DeFi level, which is why we continue to believe in the power of blockchain-based decentralized networks, and why we continue to see funding flowing in this portion of the Digital Assets world – with projects being increasingly less abstract, and use cases addressing real-world needs.

Table 7 | Non-exhaustive list of blockchain technology real real-world use cases, diverse and expanding

Use case	Description via example
Low-cost, high-efficiency cross-border payments	Decentralized blockchain networks help cross-border corporations transfers and remittances overcoming high costs, low speed, operational complexities, low transparency, and limited access.
Low-cost or pay-for-use services	Blockchain-based alternatives bring Web2 business models (e.g. data storage, cloud computing, internet connections) to the next level of efficiency, safety and flexibility (Web3).
Transparent, efficient logistics and supply chain management	Asset token assigned to goods to be moved or shipped improve visibility, and hence management, of potential issues like delays, wrong destinations or theft – ultimately impacting profits.
Enhanced ecommerce customer experience	Asset tokens improve customer experience by allowing certainty around availability of the item on sale on the marketplace, and this improves sales conversion.
Financial inclusion	Asset tokenization allow retail participation in otherwise inaccessible investment opportunities and overcome information asymmetries for illiquid markets.
Trusted, efficient green bonds market	Digitized green bonds via smart-contracts allow for green-washing avoidance thanks to real-time data tracking and recording; this in turns allows for cheaper funding for the issuer.

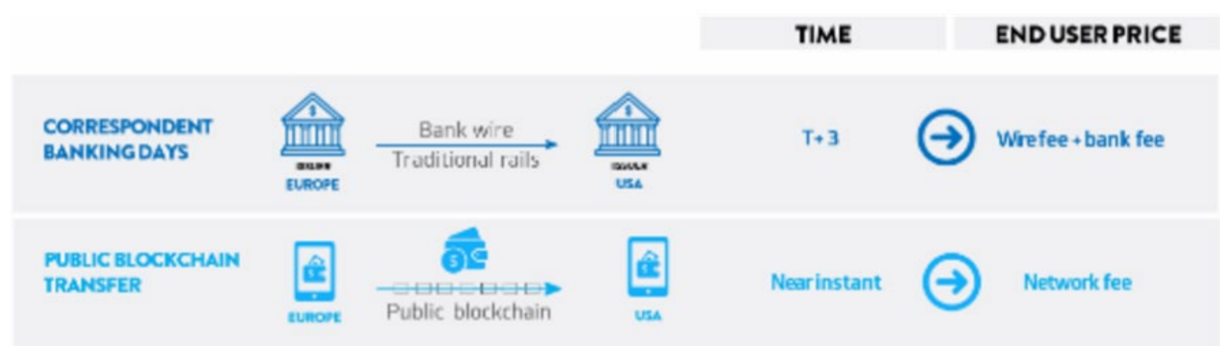
Source: Robeco analysis.

Payments and remittances via stablecoins

Global annual cross-border payments volumes are expected to grow around 5% CAGR until 2026. 10% of volumes are originated by individuals, and a portion of those transactions is represented by remittances. Remittances are expected to total USD 802 billion in 2022 (World Bank), and while they are significant source of income for 800 million people across the world (UN), their average cost is high ranging from 11% for banks to 3.5% for mobile operators and 6.5% for the post office.. While we have witnessed significant global economic integration over the last few decades, the cross-border payments system has struggled to keep pace. International transactions typically flow through the global banking network, with the burdens of high costs, low speed, operational complexities, low transparency, limited access (especially in some less developed markets) and limited scope (especially for non-dominant currency pairs).

The crypto ecosystem is slowly stepping in as a solution to solve those problems. An example among others is Ripple, which aims to create a decentralized global network of financial institutions by providing them with a fast, cheap and compliant alternative to SWIFT. Another example is Stellar, that enables individuals to trade money directly with each other across borders (and currencies) through its open-source decentralized blockchain platform. Those models are ultimately based on transactions being validated by a decentralised group of participants on the blockchain.

Figure 7 | Payments through traditional rails vs. blockchain rails



Source: Visa Consulting Analytics – Digital Currency in Europe.

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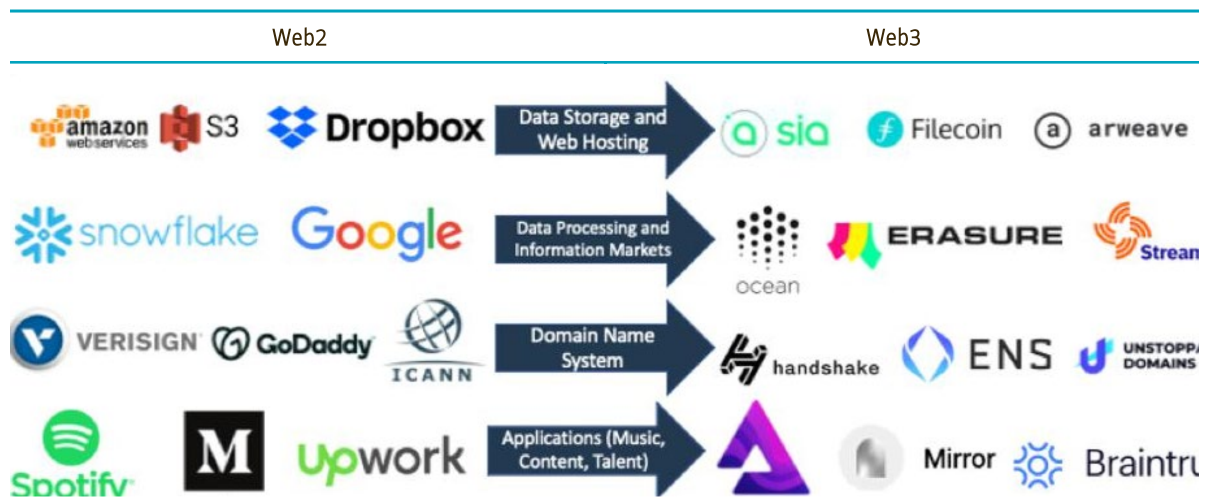
Web2 vs. Web3

Blockchain-based alternatives are bringing Web2 business models to the next level – at times as competitors to traditional players, at other times representing the perfect partner to elevate products to embrace a more comprehensive set of needs. The way Web2 giants and Web3 protocols are increasingly intermingled points to the relevance and scale we envision for permissionless, ubiquitous, open-sourced software.

Figure 8 | From Web3 traditional players to Web2 alternatives



Source: Messari, 2022.

A first example is cloud computing, anything that involves delivering hosted services over the internet (the cloud) to offer faster innovation, flexible resources and economies of scale. While Google and Amazon have been kings in offering best-in-class solutions, the Web3 era is making room for those services being available for a fraction of the price and exponentially higher efficiency and flexibility. What makes this possible is a decentralised and open source cloud computing marketplace connecting those 'having' unused computing capacity with those 'needing' it, on the back of transparent, validated and tracked agreements among parties.

The ability to store data and files is another need that Web3 protocols have the potential to better address relative to Web2 traditional subscription storage models like Dropbox and AWS. Web3 solutions can add a layer of security and permanency thanks to blockchain-technology while paying-for-use. They can also offer a decentralized marketplace where individuals can store and access data. A third area being explored by blockchain-based alternatives is wireless internet connection. Around 1 million hotspots owners today feed a global decentralized wireless network that ultimately powers IoT systems such as Google Home, Amazon Echo and any other smart devices. Once again, Web3 is able to maximize efficiencies thanks to 'individuals with excesses' being matched with 'individuals with needs', while exponentially reducing the 'shut-down' risks given the multitude of individuals participating to the decentralised network.

Box 2: Tokenization, Smart contract

Tokenization: Tokenization is the process of onboarding on chain real assets, hence transforming items of value into tokens that reflect that value. You can tokenize literally anything. A piece of art, a contract, precious metals, a bottle of wine, a property, a project.

Smart contract: Smart contracts are programs stored on a blockchain that run when predetermined conditions are met. They are typically used to automate the execution of an agreement so that all participants can be immediately certain of the outcome, without any intermediary's involvement or time loss. They can also automate a workflow, triggering the next action when conditions are met[4].

[4] https://www.ibm.com/topics/smart-contracts

Real asset tokenization, from investing to logistics to ecommerce

Tokenization transforms a real-world asset into a digital asset via blockchain. One of the direct consequences of this process relates to the investment opportunities and financial inclusion it creates. Fragmenting an asset into as many pieces as wished allows retailers to participate to trades that would otherwise (and traditionally) be exclusive to high-end individuals and institutions. Similarly, asset tokenization helps overcome information asymmetries for the most illiquid markets that are usually characterized by large corporates settling bilateral agreements.

Another promising use of tokenization is logistics. Trust in logistics industry is largely hampered by the lack of visibility into in-transit shipments. This leaves businesses completely unaware of any delay, damage, theft, wrong destination, incomplete documentation or congestion at the port, ultimately impacting profits. An immutable asset token assigned to each shipped good, that moves on consensus-basis from party to party together with the underlying real good – restores that trust. So, the exporter transfers the token to the forwarder once the container is filled, then to the carrier when the freight is placed on the ship, then to customs before customs clearance, then to inspection agencies, and so on until the goods are delivered at the final port. Similarly in ecommerce, the association of a token to the selling good improves customer experience, as it avoids end-customers going through the process of ordering a good and at the very final step not being able to finalize it as 'the item actually is no longer available for shipment'. An associated token grants the availability of any item on sale in the marketplace.

The take-away here is the additional value and unprecedented opportunities asset tokenization brings. It eliminates intermediaries, increases transparency, democratizes access to unbanked investors, trades 24/7/365, raises flexibility through tailored investments, allows for automation via smart contracts, and ensures data immutability unlike traditional databases. Sygnum and SEBA are examples of companies addressing the opportunity in the investment world, while Nestle, Walmart and IBM are examples of companies investing in the application of blockchain and tokenization for supply chain management and broader logistics.

Green bonds efficiency improved through smart contract-based carbon credits

Still at an early stage in terms of application capability but with significant value add potential, smart contracts are being explored as the means by which to improve green bonds market efficiency. Backed by several authorities, the Genesis 2.0 project currently aims to use carbon credits to monitor green bond issuers’ commissions to reduce GHG emissions. There are several advantages around digitizing green bonds. One is cheaper funding for green investments, serving issuers. Another one is digital tracking and real-time data recording, serving investor trust. It allows for emission double-counting elimination and real-time transparency of the environmental outcome of the asset funded by the bond’s proceeds. It essentially limits greenwashing. Climate risk is higher than ever before, so using blockchain technology to address environmental issues is as relevant as it is revolutionary.

Creativity is the only limit

Clearly we are in the middle of a bitter crypto winter that is seeing the meltdown of multiple players across multiple Digital Assets segments. This is the third iteration of the crypto cycle after 2013-14 and 2017-18, and it does not look too different from what we experienced in the financial crisis of 2008 – with a combination of light regulation, very poor risk management, and high leverage generating a bubble. 2008 did not signal the end of the financial world as we know it however. In fact, it made it better thanks to a strong regulatory response. If global regulators are going to step in with the same purpose in the Digital Assets world and manage to onboard the traditional finance protections, we truly believe we will continue to see blockchain-based projects thriving and venture funds continuing to be supportive. Which, for the record, has never stopped happening despite the recent earthquakes in the space.

After 2022 it would be easy to dismiss the whole Digital Assets world but that would be a mistake. The power of the underlying blockchain technology brought to the world through Bitcoin is huge. If the right regulatory framework is set and energy around the space continues to persist, then really creativity is the only limit. We are extremely curious to observe developments around the decentralized networks and each of the blockchain-based structures being built – within and beyond the financial space. In fact, while real world issues that could be addressed are countless, the expression of its potential is still at a very early stage and it is crucial to continue tracking developments. Blockchain-based solutions such as smart-contracts or tokens are increasingly able to bring current services to the next level, whether in cloud computing, data storage, logistics, investment democratization, or green bonds.

As part of our FinTech equity strategy, we invest in several companies that leverage blockchain technology using the 'pick and shovel' approach. There are few listed equity investments giving exposure to the rise of Digital Assets, but we are closely following developments and stand open to opportunities, especially as regulation improves, people's confidence matures, and business models become more established and sustainable.

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