

Tokenisation: Revolution or Evolution?

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At a glance

- Tokenisation of an asset, in a nutshell, is the issuing of a digital representation of that asset, administered on a blockchain.
- The blockchain must be viewed as the infrastructure layer of an enhanced network architecture, such as the internet. Blockchain forms a public transaction ledger, keeping a distributed record of all transactions that have happened on the chain and thus creating an auditable trail of activity.
- One shortcoming of the internet, in its original form, is that information which is shared does not need to be synchronised, implying that a record in one place can differ from a record in another place.
- To solve the issues related to centrally stored data, blockchain creates new services on top of its infrastructure, which cannot be done with the same level of security and traceability on any existing infrastructure, such as the internet.
- Asset tokens use the blockchain infrastructure to administer ownership claims to an underlying, tradeable asset. The benefits of tokenisation over other forms of trading are in some cases simply down to cheaper, more efficient and secure infrastructure, but there are also completely new use-cases.
- The potential implications of asset coins are significant. There are, however, two major hurdles in the form of regulation and technology standards.
- Asset tokenisation represents the democratisation of investing. Once the infrastructure is there and the regulatory framework is properly set up, however, it will be possible for any investor to own any form of asset.
- 2021 has been a transformative year for tokenisation. New rules, advanced technology and the opening-up of cryptocurrency for institutional investors have all contributed to wider adoption and maturity.

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We view asset tokenisation as sustaining innovation, with disruptive elements.

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Tokenisation: Revolution or Evolution?

Tokenisation of an asset, in a nutshell, is the issuing of a token as a digital representation of that asset, administered on a blockchain. Since this is still abstract, let's take a step back and analyse the different components.

First of all, there is a big difference between blockchain and tokens/cryptocurrency. The blockchain must be viewed as the infrastructure layer of an enhanced network architecture. The best-known example of a network is the internet, which forms the basis of interconnectivity between local and international servers. E-commerce, social media and many other services have been rolled out by virtue of this interconnectivity since the internet's origins in 1991. With the advent of the internet, we observed an interesting behavioural bias that still applies today: Amara's law. People massively overestimated its short-term impact (leading up to the dotcom bubble) but underestimated its long-term implications.

Looking at the possibilities of this new infrastructure in the 1990s, no one could have predicted the impact that current "big tech" platforms like Amazon, Alibaba, Google and Facebook would have on our day-to-day lives. At the same time, people were ready to declare traditional brick-and-mortar, advertising agencies and postal services dead. In the framework of Christensen (see text-box on page 2), it is fair to think of the internet as sustaining innovation rather than disruptive innovation as most companies simply adapted to the new online reality and used it to their advantage. Brick-and-mortar businesses created so-called omni-channel experiences (client service in store, shopping and price comparison online), advertising agencies changed their strategy from paper-advertising to online advertising and postal services moved from delivering letters to delivering online orders. However, the disruptive elements of the new technology should not be dismissed, as evidenced by the many companies that failed to adapt and integrate the new technology and left a void for newcomers to fill.

The same rationale described above applies, in our view, to blockchain. Although there are many underlying technologies at play, the basic principle is the same. Invented in 2008, blockchain

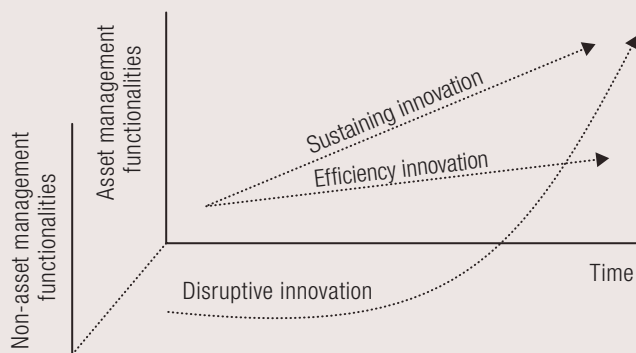
forms a public transaction ledger, keeping a distributed record of all transactions that have happened on the chain and thus creating an auditable trail of activity. One shortcoming of the internet, in its original form, is that information which is shared does not need to be synchronised, implying that a record in one place can differ from a record in another place. This is concerning when the content of the record matters, for example when transacting money or registered assets. To solve the issues related to centrally stored data (which was Byzantium's general problem – double spending, fraud etc.), blockchain creates new services on top of its infrastructure, which cannot be done with the same level of security and traceability on any existing infrastructure, such as the internet. The first application of the blockchain was for so-called payment coins. Next to the best known example, Bitcoin, there are more than 3,500 cryptocurrencies available with a total market cap of around USD 2.50 trillion.¹

We differentiate between three groups of cryptocurrencies, as described by the Swiss Financial Market Supervisory Authority (FINMA).² Payment coins were the first application of blockchain technology. The main goal of payment tokens is to facilitate online payments without the need for traditional financial intermediaries. Bitcoin, Monero, Zcash are well known examples. Next to payment coins, there are also utility coins which enable the owner to use the coin to pay for a transaction that involves its underlying infrastructure. Ethereum is a good example here. When using a smart contract, the execution of a contract consumes "gas" and that is paid via Ether. Therefore, the more you use the Ethereum blockchain to write smart contracts, the more usage the coin gets, hence the higher the value of that coin should be. The final category consists of asset coins. Asset coins are a digital representation of that asset, administered on a blockchain. The underlying asset can be anything, from real estate to diamonds and copyrights. An asset coin, therefore, always refers back to a basic underlying value, namely that of the tokenised asset. In this whitepaper, we will focus on asset coins. These will, in our view, have the biggest impact on the asset management industry and will also have the highest chance of long-term survival in a fully regulated ecosystem.

¹ investing.com, October 2021.

² FINMA.ch, 2018 guidelines for ICOs.

Disruptive versus sustaining innovation



Source: C. Christensen, LOIM, 2020.

When looking at new technologies it is important to differentiate between three groups of innovation. Let's take the example of the asset management industry. If the technology enhances the existing services (like faster computers for trading, or more efficient back-office operations) of the asset manager, we talk about efficiency innovation. When the technology creates new functionalities within the existing asset management range of services, we talk about sustaining innovation. When the technology serves people outside of the asset management industry (a new client group who does not necessarily get involved because of the traditional asset management functionalities), we talk about

disruptive innovation, if that technology ultimately makes it into the "traditional" asset management service offering and starts to compete with the traditional asset management functionalities. Incumbents are the most likely long-term winners when it comes to sustaining and efficiency innovation because they already have a market position and simply need to integrate the new technology into their offering. Newcomers are the most likely long-term winners of disruptive innovation, because incumbents pay no attention to the new technology (because it is outside of their traditional functionalities), until it is too late and the disruptive innovators start to target their markets.

We view asset tokenisation as sustaining innovation, with disruptive elements. It is clear that the first group of token users were not interested in traditional asset management functionalities (like optimizing risk/return trade-off and asset preservation). However; that niche group is not large enough to get traction in the technology. Now that the financial industry is exploring blockchain technologies and asset tokens within the functionalities of the "traditional" asset management services it should be classified as sustaining innovation, rather than disruptive. But the disruptive elements are still present and when incumbents do not respond adequately to new technological developments that impact their existing asset management functionalities, it is very much possible that they find themselves on the losing end in the long term.

The parallels with the internet cannot be clearer. Both technologies reached the peak of their short-term hype about 10 years after their invention, and both are creating industries and services that no one could have predicted. One of the longer-term effects that could have a meaningful impact in the coming years is the large-scale roll-out of asset tokens. Asset tokens use the blockchain infrastructure to administer ownership claims to an underlying, tradeable asset. The benefits of tokenisation over other forms of trading are in some cases simply down to cheaper, more efficient and secure infrastructure, but there are also completely new use-cases which would not be possible without blockchain.

Fractional ownership of direct real estate is an example of an asset group that is impossible without asset coins; owning a REIT or asset-backed securities is not the same as owning a direct claim to the underlying asset. Likewise, owning part of a painting is a potential future new use-case too. Gold-coin, on the other hand, is an ownership claim to physical gold which is stored in a vault. This coin is administered on the blockchain and can be traded. It was already possible to trade in gold (futures and forwards for example), with investments recorded by regulated entities such as exchanges and custodians, but the entire process is much more efficient when executed in the form of tokens.

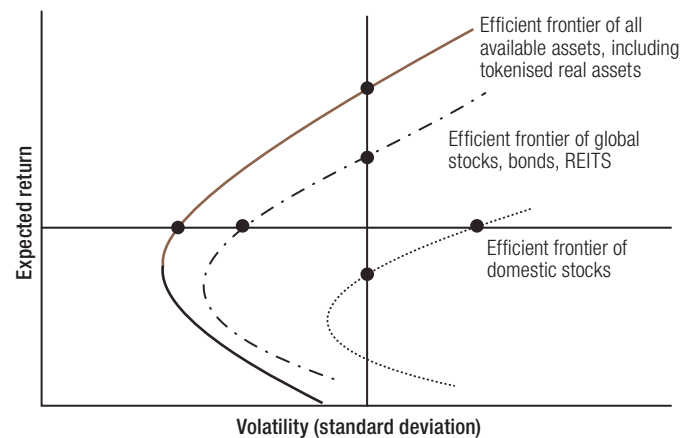
In summary, “Distributed ledger technologies (DLTs), such as the blockchain, have the potential to transform financial markets. From their most visible application in equity issuance and capital raising for small companies through Initial Coin Offerings (ICOs), to post-trade processes, clearing and settlement of securities, the technology has the potential to challenge the current construct of financial markets, affecting infrastructure and participants alike.” (OECD, 2020)

The potential implications of asset coins are significant. There are, however, two major hurdles in the form of regulation and technology standards. When the internet emerged, regulation was not a concern and the focus was on the technology standard, which developed quickly. Mass adoption can only be reached when a technology is simple to use without having to think about it. Regulation is an extra layer on top in the case of tokenisation, which makes it harder to implement and will inevitably slow down the process. This is because the financial industry has to comply with much more rules and regulations than most other industries. The reasons for regulatory oversight are obvious and new technologies should, at a minimum, comply with those rules or even enhance the entire regulatory oversight.

Once the infrastructure is there and the regulatory framework is properly set up, however, it will be possible for any investor to own any form of asset, be it real estate, private companies, a claim to the NAV of a mutual fund, copyrights or any other underlying. As long as the ownership claim is protected by law and administered in immutable distributed ledgers, it can be held and traded by every type of investor. Asset tokenisation represents the democratisation of investing. In the past, ownership of buildings, paintings, custom-made corporate bonds or other high-ticket securities was dominated by institutional investors; in this new reality, however, everyone can own and trade these assets.

From a theoretical perspective, the risk-return trade-off, as captured by Markowitz, is likely going to change. Tokenized assets are probably going to be low- or uncorrelated to global listed stocks, bonds and REITS. In Markowitz theory, combining assets which have a correlation lower than one results in a so called efficient frontier which benefits from the principle of diversification. The bigger the choice of uncorrelated assets, the higher the degree of diversification. Simply said; finding uncorrelated assets amongst global stocks is easier than finding uncorrelated assets within a single country. The asset management industry has used

this principle for a long time to optimize portfolios and provide clients with the best risk-return trade-off possible within the mandate of the fund. We all understand the basic principle that a higher expected return coincides with a higher risk. If we add tokenized assets to the mix of investible assets, the risk return dynamics are likely to improve though. An investor would get a higher expected return for the same amount of risk, or a lower risk for the same amount of expected return. This is not because the underlying expected return or risk of the individual assets has changed, rather that the opportunity set of uncorrelated assets has increased. hence diversification benefits increase.



Source: LOIM, 2020.

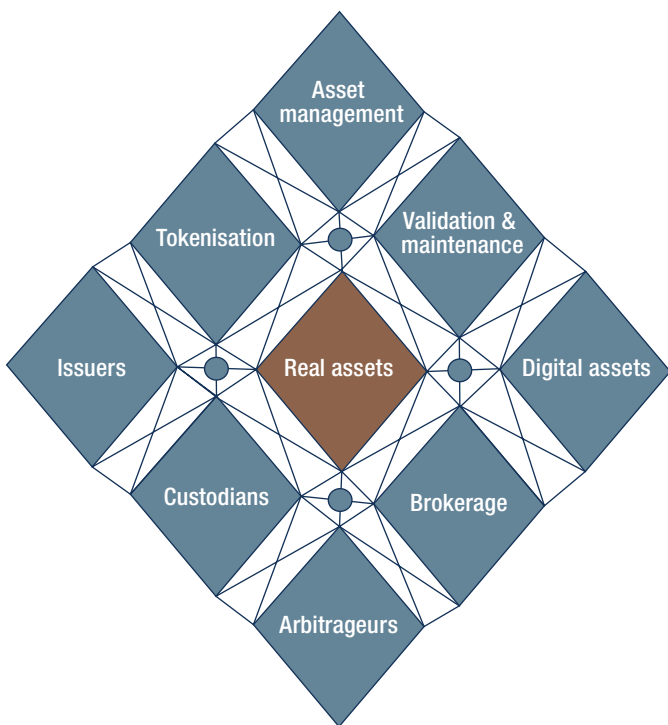
To some, asset tokens might just seem like a fad to be relegated to the same pile as cryptocurrencies, but there are substantial differences between payment coins and asset coins. We do not foresee a specific future for payment coins other than as digital representations of existing fiat currencies (managed by central banks). We do, however, foresee a future for asset coins, the first examples of which are starting to appear. There are exchanges and custodians working on this today, regulators (such as the Swiss Financial Market Supervisory Authority) are coming up with ground-breaking rules to govern the space, and technology firms are hard at work optimising the underlying infrastructure. For now, we see use-cases in real estate, medium-sized private companies and commodities because of the rules for investor protection as they are applied currently under the existing securities laws. FINMA differentiates between movable and immovable assets when it comes to investor protection of the tokens. According to FINMA (2020):

“There are possibilities to tokenize immovable property. Companies or funds can be the owner of the immovable property and potential investors can buy or subscribe for shares and/or participation certificates which can be tokenised. Movable property Rights in rem, such as the ownership of a classic car or a collection of art can neither be represented by a title nor traded via this title. Ownership of movable property can therefore basically not be transferred by moving a token. The tokenisation of movable property itself is therefore not feasible under current Swiss law. However, as soon as the ownership of a movable property and the direct possession of it do not coincide, the ownership relationships could be represented in a decentralised register. To sum up, a tokenisation of movable property is feasible as long as the direct possession remains with a third party.”

Given the fact that the appropriate ownership vehicles have already been created within real-estate and commodities, these have been the most important focus points. That is not to say that movable assets, such as art will never be tokenised. The structure for it needs to be developed. FINMA made an important and exemplary first step by introducing the “blockchain law” at the start of 2021. This should make clear what the regulatory requirements are to operate licensed activities on blockchains and create a clear set of guidelines for those who want to tokenise new assets.

Who can benefit from asset tokenisation?

Asset tokenisation is still in its infancy, yet there has been substantial progress in regulation and technology over the past couple of months. We now see classical cars, paintings (both physical and digital), private companies and real estate being tokenised and ending up in investment portfolios of both private and institutional investors. We believe that progress in this area will lead to substantial changes in the asset management ecosystem. Not only will there be new asset classes available, all of which will need analysis and portfolio management, but there are professions to be created specifically for this new market. The picture below shows just some of the market participants, although we are likely missing many of the actual jobs that will be involved, just like no one could have predicted social media and e-sports on the back of the internet.



Source: LOIM, 2020.

There are both good and wrong methods of tokenisation. In our view, good methods protect investors and make sure there is a legal connection between the token and the asset. We can see several examples of tokenised assets today where this legal connection is not clear. For example, the first Twitter message by Jack Dorsey (founder of Twitter) was sold via a non-fungible token (NFT) for USD 2.9 million in 2021. The buyer, however, does

not have any rights to this asset. The tweet cannot be altered or deleted, for example. In our view, these kind of token sales should not be representative of the future. We believe token holders should have a legal claim to the underlying asset and its uses. Just as shares in a company represent a legal claim to a proportion of the underlying assets of that company. Next to the legal framework, we also think the investor protection rules from equities and bonds should apply to tokens. Pump-and-dump schemes are comparable to boiler-room activities in penny stocks and should be prevented to protect investors. This is easier said than done, however, given the global nature of tokens versus traditional equities and bonds. A discussion of these elements is beyond the reach of this paper, so we will focus on the tokenised assets assuming legal, regulatory and investor protection are in place. There are many new functionalities and jobs that will be needed.

The first requirement to tokenise an asset is to have the technology available to do so. This implies that there need to be distributed ledger technology protocols set up for this purpose and that the technology is certified and available to all market participants. There will in all likelihood be entities paid to maintain the integrity of the distributed ledger technology or, in case of a public chain infrastructure, the remuneration will be in the form of crypto.

To be tokenised, an asset must first be validated. Property claims must be checked and the state of the asset determined. To be clear; this is not the case today. Furthermore, should the protocols require it, the asset must be stored in a safe location and insured against theft/fire/damage etc. For example, a claim against gold in the form of a gold coin needs to be backed by physical gold in a safe somewhere and insured against all harm that can reduce the value of the physical asset. The ownership of this gold must also be legally checked to match the entity that offers it.

In the next step, the digital representation of this physical claim (the token itself) needs to be created, stored and secured. This happens via a smart contract which is registered on the blockchain, but there are entities needed to write these smart contracts and check their legality. The token must always represent a claim to the underlying asset. There cannot be a mismatch between asset and token, as the entire system is dependent on trust in the token. For digital assets, such a synchronization is reasonably straight forward, but real assets require new protocols to assure this link. These digital tokens must be kept safe until they are issued.

A broker will work together with issuers to bring the tokens to an exchange (several exchanges are developing asset security platforms at the moment), where they will be traded. Just as with the publicly-traded securities we have today, all kinds of legal steps need to be checked and a market needs to be created.

Custodians will hold onto the digital assets once issued and will remain essential in the post-trade settlement process. Most custodians, however, are new players. Only a handful of traditional custodians are working on cryptocurrency now. Although everything is ultimately registered on the blockchain, there will still be the need for independent validation of book entries to and maintenance of the ledger. Custodians can fulfil this role in maintaining the integrity of the market. It might very well be that a requirement for listing on an exchange is an annual (or more frequent) validation of the status of the underlying asset by independent parties which must sign off on it, just as auditors do on annual reports.

On the other side of the table, we find market participants, such as retail and institutional investors, estimating the value of the token to determine whether to become a buyer or a seller. Besides buyers and sellers, arbitrageurs will also play an important role. Especially in on-off chain transactions (where an asset trades both in and outside the distributed ledger environment), these parties must arbitrage away the differences in value, either by physically buying the underlying asset and selling the token, or selling the asset and buying the token. The value of the asset must also be equal on different exchanges. Today, we observe an illiquidity premium in commodity futures trading, for example. This implies that gold in the Japanese market trades at a different price than gold in the US market just because the underlying futures contracts are more or less liquid on their respective exchanges. With global exchangeability of tokens, this should no longer be the case. And if it were the case, arbitrage opportunities would arise.

Asset management will change substantially if tokens become part of the investible universe. Equity or bond strategies, which are now based on listed quotes, can be enriched by tokens of private bonds or companies. This will alter asset management, because up until now, the markets for private debt and private equity have been very different to public markets. How will portfolios look in the future and who will analyse these new tokenised assets? How long will the two co-exist? And will there be an incentive for private

companies to ever list on a fully-regulated exchange when they can raise capital and trade ownership claims in the form of tokens? These are just some of the many questions that will eventually be answered when the technology rolls out over time.

An interesting new winner might emerge as well. Private banks are well positioned for this evolution in investing. These banks have wealthy clients who might want to make a portion of their assets liquid and can use the bank as a custodian or issuer. At the same time, private banks have clients seeking asset diversification, which can be optimised by including asset tokens in existing portfolios by means of using the validated assets of other clients. Potentially, small ecosystems could emerge that, once connected, start to form the market.

In any case, incumbent asset- and wealth managers will have to invest in order to stay relevant. These investments encompass technology and people. One of the critical points will be how the C-suite of current asset managers will react to this new world. Most of them see cryptocurrency as a fad that will go away. Most of them don't differentiate between payment coins and asset coins. Most of them think that, in case asset coins do get big, asset managers will fast follow as they have done all these years prior as well. In all three instances, critical mistakes are being made, in our view, because crypto tokens and blockchain technology will not go away, asset coins are likely to have a substantial impact on the industry and, most importantly, fast following doesn't work anymore. Talent is scarce. On the technology side, most people don't want to work for financial institutions, and would rather work for big tech companies or start-ups. And on the asset side, there are only a limited number of experts available on specialised assets. Fast following a competitor who just rolled out a portfolio of classic-car tokens is not that easy if there are no people to analyse or manage those portfolios!

The question at the start of this section was "who can benefit". Many people can benefit from asset tokenisation, but not necessarily the same people that benefitted from asset/wealth management growth so far. There are similarities to the internet, in that new jobs will be created and ways of working will change. Only those who are flexible enough and invest in the right resources will still be relevant in the long run and many new companies will arise on the back of this new technology.

Revolution or Evolution?

Many things have to align for this future to materialise. We do not yet have a technology standard, we do not yet have a global regulatory standard and we do not yet know how to treat tokens from a tax/accounting perspective. What we do know is that there are many people, across the world, working to solve these issues. Legally, tokens are, in some cases, already seen as a replacement of one digital technology with another. Electronic book entries in securities registered in central securities depositories are replaced by cryptography enabled dematerialised securities based on DLT-enabled networks.³ However, this is not yet the global standard and a couple of advanced regulators will need to take the lead in setting that standard. It is unlikely that we will end up with a single technology used uniformly across the world. We will probably have technologies optimised to tokenise different asset classes. Integrating these distributed ledger technologies is the most likely longer-term outlook.

Tokenisation is not just a fantasy. At the moment, there are tokenised commodities, real estate, shares and equity funds. They exist and are traded on exchanges and comply with the respective legislation. Although this is mostly experimental and small-scale, the pioneers working on this new concept today might eventually be the winners of tomorrow.

In terms of investing, we would apply the picks-and-shovel approach at this stage. We do not yet know who the ultimate long term winners of this trend will be, just as with gold-digging. We do know who can supply the market with the expertise and services required to bring this technology forward like those who provide the picks and shovels to the gold-diggers. These can be IT-service

companies, consultants, exchanges and, in some cases, tech-savvy incumbents. In this early stage of investing, we prefer to combine a basket approach with the picks-and-shovel approach, implying we spread the investment risks over multiple positions, rather than concentrating on one or two specific winners. When time progresses, concentration becomes a better strategy and a strategic position in a small group of companies can be preferable.

Coming back to the evolution or revolution question: it's most likely an evolution. Bringing real assets to market in a tradeable form where everyone can invest is quite revolutionary in both technological and conceptual terms. However, mass adoption will probably follow an evolutionary path rather than full disruption. Will the asset management industry look different a decade from now when asset tokens have become a reality? For sure! But the nature of this innovation is in fact mostly sustaining. In Prof C.

Christensen's disruptive technology framework, this implies that many participants today will simply integrate it into their business when the technology matures. Just as with the internet, where we now see pure online strategies as well as omni-channel strategies, those that do not integrate at all are likely to disappear over time. But here again, it must be noticed that the existing infrastructure is efficient in many cases and it is possible to gradually keep an eye on developments. Complacency, on the other hand, can be fatal. With all the new jobs that are going to be created as a side-effect of this new technology, many new companies will likely emerge and some are expected to become the mega-caps of the next decade, just as we now see a plethora of internet companies at the top of most exchanges globally.

³ OECD, 2020; FINMA, 2020.

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