

How to Tap into Crypto Payments and Web 3.0 for Banks, Merchants, and PSPs

An Essential Guide on Accepting Crypto and the Cash Management around It



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How to Tap into Crypto Payments and Web 3.0 for Banks, Merchants, and PSPs

An Essential Guide on Accepting Crypto and the Cash Management around It

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Editor's Letter



Mirela Ciobanu

Lead Editor

The Paypers



Did you know that computer memory chips – such as solid-state multimedia storage devices for electronic games, cameras, and MP3 players – are built on transistors? And while the working principles of a transistor were first proposed in 1925, the first working transistor entered production in early 1950, therefore 25 years later. This comes to strengthen Andreessen Horowitz's quotes on the potential of blockchain technologies. Andreessen Horowitz is a venture capital firm in Silicon Valley, California, that backs bold entrepreneurs building the future through technology.

'The decentralised ledger underlying Bitcoin was a fundamentally new kind of network—like the Internet—with possibilities that still hadn't been dreamed up, Andreessen said. He went on: Bitcoin offers a sweeping vista of opportunity to reimagine how the financial system can and should work in the Internet era, and a catalyst to reshape that system in ways that are more powerful for individuals and businesses alike.'

Nathaniel Popper, Digital Gold: Bitcoin and the Inside Story of the Misfits and Millionaires Trying to Reinvent Money

We have reached a point in technology development that opens so many possibilities for humanity, in terms of financial services (faster, cheaper, more transparent, fairer, inclusive payment systems) that can no longer be denied or ignored. Furthermore, these developments need to be understood, explained, and tested.

The Paypers' **How to tap into Crypto Payments and Web 3.0 for Banks, Merchants, and PSPs Report** aims just that: to provide a *go-to payment resource of crypto terms and concepts for those interested to understand the basics of crypto payments and their long term impact*; to share practical examples of cryptocurrency-enabled ecommerce and banking services; to present the latest developments in the regulatory landscape; and to reveal what are the most innovative companies in this space, that are building the next payment rails – the crypto rails.

We have interviewed our readership to find out more about their appetite towards crypto payments, and notwithstanding we found that 88% of respondents expect crypto to have an impact on the current payment infrastructure, which is why some are already 'testing the water'.

Why tap into crypto payments and Web 3.0

Most users are using crypto as an investment vehicle, but opportunities to use cryptocurrency, stablecoins like USDC and USDT as a means of settlement and exchange are rapidly expanding. At the same time, the emergence of central bank digital currencies explores 'innovative ways' for homes and businesses to make payments and transfer funds. In the ecommerce space, PayPal, Venmo, and Square now enable Bitcoin in their digital wallets, Flexa, a pure-digital payments network, is allowing for crypto to be spent at the point of sale, and Visa and Mastercard are actively working on stablecoin-based payment solutions. Furthermore, innovation in this space has accelerated with the rise of non-fungible tokens (NFTs) and decentralised finance (DeFi). →

Editor's Letter

Decentralised Finance (DeFi) is a permissionless infrastructure, fully secured by encryption, that enables people and businesses to perform transactions directly with each other, without needing institutions to act as intermediaries. DeFi offers the interesting potential to reduce costs and increase speed in payments by eliminating friction in terms of technology, contracting, and coordination between multiple parties. This is expected to impact many functions of today's payment and securities market infrastructures, such as clearing houses, RTGS, secure messaging, custody, exchanges, and FX services. Digital assets enable companies to make their idle cash work for them. It is also possible to obtain yield by depositing into decentralised lending pools such as Aave and Compound.

The journey has been bumpy so far, and not everyone is enthusiastic about the use of cryptocurrency in the system of payments and financial transaction, but for good reason – the currency is volatile, implies monetary risks, is associated with money laundering, and the list can continue. At the beginning of May 2022, Bitcoin, the world's most valuable cryptocurrency plunged. The **crypto slump** has been brutal.

Crypto and Web 3.0 payment industry survey

The longer-term potential for blockchain and digital currency-based payments remains. Despite all the turmoil, no one can deny crypto's potential to solve payment needs such as reconciliation, chargeback guarantees, risk management, fraud prevention, the cost of cross-border payments, and government regulation. There is a huge amount of ongoing payments technology innovation happening away from areas where crypto is seen as primarily a speculative digital asset.

To test this hypothesis, during the summer we surveyed banks, payment institutions, vendors, merchants, and AP / AR departments to gauge their interest in crypto infrastructure, tokens, and services for businesses and institutions. Not surprisingly, *the first edition of our INNOPAY/ The Paypers Payment Industry Crypto Monitor has some revealing findings*. For example, 88% of the respondents expect crypto to have an impact on the current payment infrastructure, which is why some are already 'testing the water'. But strikingly, many respondents are not yet offering crypto products or services due to unclear regulations and AML/KYC challenges.

Although some organisations are now offering services based on crypto technology, they are still in the minority (24%). Most of the respondents see various crypto-related opportunities and are keen to pursue them but are still very much at the exploratory stage: reading and researching the crypto opportunities (53%), talking with customers (43%), or preparing decision-making for usage or going to market (26%).

What's the effect on your business (the gains or threats)

Despite market-challenging conditions, there are still investments made in crypto companies, **according to KPMG**. Blockchain visionaries like Peter Smith, CEO of Blockchain.com agree that 'there is not a better time than to be building. You have to zoom out and think about the progress of technology and innovation and where we will all be in 3-5 years.' We need to adopt the builder's mindset to seize the technological innovation opportunities behind blockchains and DLTs to improve and democratise the payments industry.

According to an NDYG survey, in the last two years, consumers have become more interested than ever in Bitcoin products from their banks. As such, if financial institutions were to offer crypto products, they would gain new clients, increase engagement, avoid disintermediation, and more. All in all, there is a lot of potential for market participants to explore. →

Editor's Letter

The promise

After reading this report, we promise you will know what the main terms are used in crypto payments, what are the trends and developments in this space, and what is here to stay or is just hype. *The content together with a mapping of the crypto payment companies* will help you understand what the main players in this space are and find the appropriate technology partner in the crypto space to enable you to develop the crypto payment rails, secure them, and protect your customer, offer the best UX.

The Payers' **How to tap into Crypto Payments and Web 3.0 for Banks, Merchants, and PSPs Report** combines our proprietary research and expertise with insight from different stakeholders within the crypto space such as payments consultants and providers, lawyers, technologists, and many others. Hopefully, the info that is about to unravel, will assist you to decide if adopting crypto as a payment method, as a means of investment, to develop products based on the crypto ecosystem is for you.

We are grateful for you taking the time to download and read our report, and please don't forget to share your thoughts with us!

Enjoy your reading!

Rhian Lewis

Cryptocurrency: Just One Piece in The Payments Jigsaw



Rhian Lewis is a software developer and writer who has been deeply involved in cryptocurrency since 2013, as the author of *The Cryptocurrency Revolution*, the founder of London Women in Bitcoin, and the co-developer of portfolio tracker **CountMyCrypto**. She is a former digital journalist at *The Times* and *Sunday Times*.

Rhian Lewis ■ *Software Developer and Writer*

Who is Rhian Lewis for those who do not know it yet?

I'm a software engineer and writer who has been active in the crypto space since 2013, when I co-founded a cryptocurrency portfolio tracker. In 2020 I wrote my first book, *The Cryptocurrency Revolution*, because I thought it was important to try to answer some of the questions people ask about this technology. My second book, *Understanding Decentralised Finance*, will be published early next year. I also work as a developer relations advocate for a Web3 organisation called Boson Protocol.

“What we think of as ‘crypto’ is blurring into a multipolar world in which tokens issued by central banks, commercial banks, and large companies are used alongside those that are created on decentralised networks.”

Why are decentralisation and tokenisation so important to the advancement of our financial system?

There are two important areas here: improvements in efficiency and digitisation, but also the importance of retaining control over one's freedom to make payments.

We should remember that the world financial system as it is today is a stitched-together patchwork of national systems that have evolved from analogue systems based on moving pieces of paper around. As Simon Taylor points out, it is neither natively global nor natively digital: it is a digitised and globalised version of technologies and processes that were never designed from the ground up to work in this way. So, when it comes to tokenisation, there are many cost and time savings to be made.

The other area is more political: we have seen the consequences of large companies taking control of our data, as well as worrying trends where some repressive countries have used the banking system to freeze the funds of opposition politicians and protesters. A decentralised system makes it much more difficult for bad actors to punish or restrict people through their access to money.

Is crypto going to make a dent in our life? How will B2C and B2B payments be influenced?

I think it will have an impact, both indirectly and directly. When I say 'indirectly', I am talking about the development of payment systems and currencies that are not themselves cryptocurrencies (for example, Central Bank Digital Currencies and private stablecoins), which is existing currency, augmented with ideas that were developed around cryptocurrency. These should bring fast, cheap payments to the fingertips of people all over the world, including those previously excluded from such services. →

Alongside this, I envisage a whole range of payment systems springing up based on cryptocurrencies, especially loyalty schemes, where programmable payments and the idea of token-gated payments offer use cases that have never previously been possible. Another example is streamed payments, where for example employees might be able to receive their salary in small increments while they work, rather than the very clunky settlement systems we have at the moment.

You have also written about state-issued digital currency and bigtechs moving into digital currencies. What is your stance on CBDCs?

Innovation that works to improve digital inclusion is a good thing, and there will undoubtedly be many people who are digitally excluded – especially in developing countries – whose lives are currently made difficult by lack of access to digital payment services because they are unprofitable for banks to take on as customers. Giving these people the ability to use digital wallets and payment services is, as the proponents of CBDCs say, a huge benefit, both for these individuals and economic growth in general.

However, we need to be clear about the function and role of CBDCs. These are widely seen as superseding cash and making the use of cash transactions obsolete. It is important to remember that cash fulfils important functions in society – especially the right to privacy when transacting and the freedom to transact.

We can agree on the need to prevent large-scale money laundering of the profits of crime, but this does not mean that the only way to police this is to launch a granular surveillance system of everyone in society, which is what CBDCs risk becoming.

Imagine a system where your access to healthcare is restricted by whether you have bought too much sugary food or too many takeaways, for example, or one where the government may inform your employer if you have exceeded the recommended 14 units of alcohol per week. It is also easy to envisage a slippery slope where payment data is sold for profit so that advertisers know more and more about you.

The freedom to transact is in a sense even more important. In my opinion, CBDCs should not be programmable because this opens the door for governments to restrict access to certain items – books about certain political topics, perhaps.

Now, crypto is seen mostly as an investment vehicle, will this narrative change, and become a mainstream payment instrument? If CBDCs are developed, will consumers forget about crypto?

I really do not see a binary choice emerging between CBDCs and crypto – and I also believe that what we think of as ‘crypto’ is in fact blurring into a multipolar world in which tokens issued by central banks, commercial banks, and large companies are used alongside those that are created on decentralised networks.

If we look at stablecoins as an example, we can see USDC on Ethereum being used as a payments rail by the Visa network.

In terms of consumer choice, I think this means that individuals will have wallets that they use for payments with both their national currency, in the form of CBDCs, and also tokens running on public networks – aka ‘crypto’.

What do you think is next for crypto payments?

Revolut recently **announced** that their customers are able to make crypto payments directly from their wallets, and I think we will see the further convergence of fintech and crypto, where crypto becomes simply another way to pay. I also see crypto payments becoming more programmable and functional – for example, loyalty schemes where consumers who have a particular NFT in their wallet benefit from differential pricing, and so on.

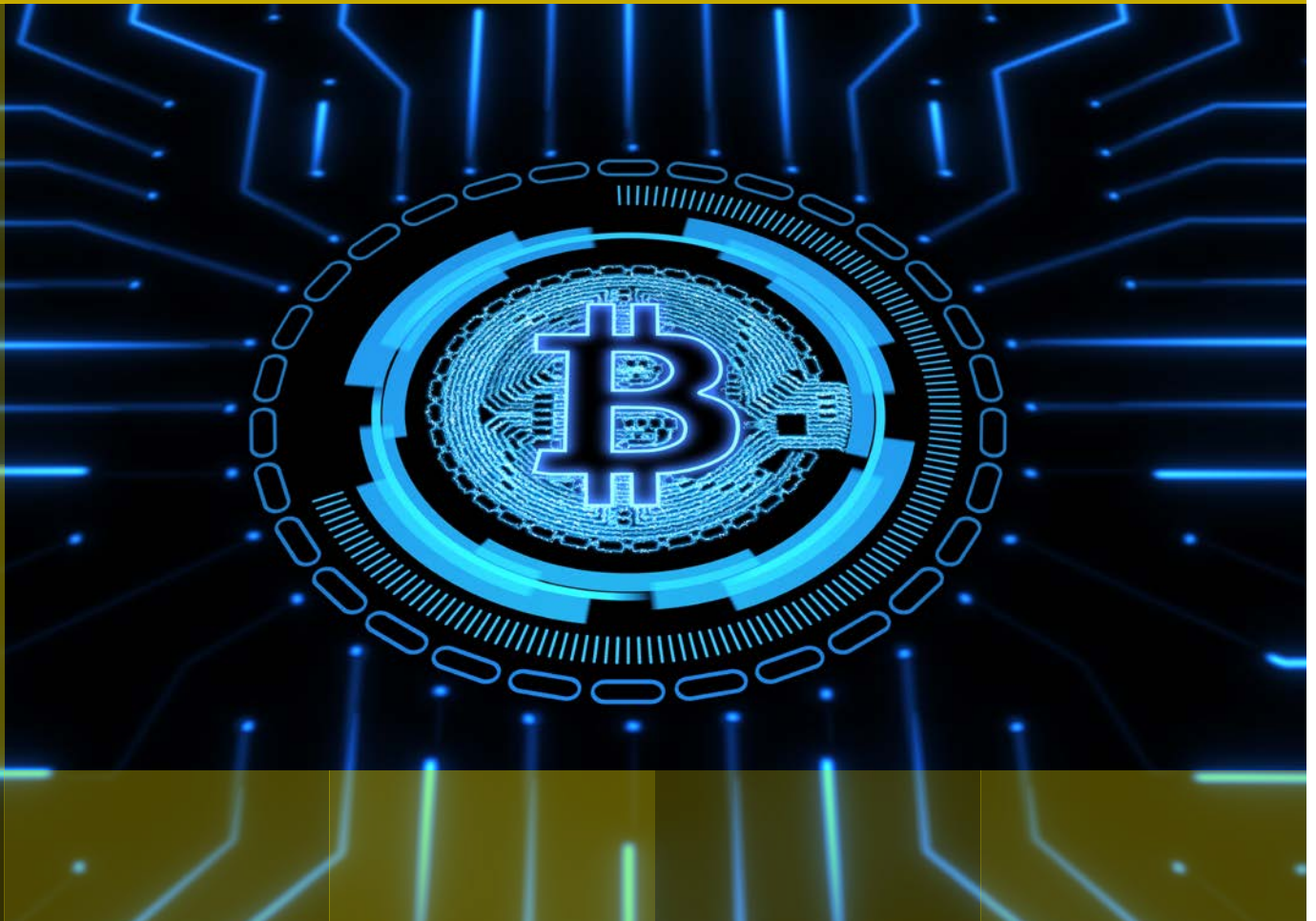
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The Basics of Crypto – Technologies and Concepts in A Nutshell



Every crypto conference you attend or podcast you listen to stresses the importance of educating consumers about crypto topics. This helps to overcome some of the hurdles faced when trying to understand how crypto works and how to adopt it. And it is understandable, as this space is new, a bit different from the traditional finance world, and quite technological.

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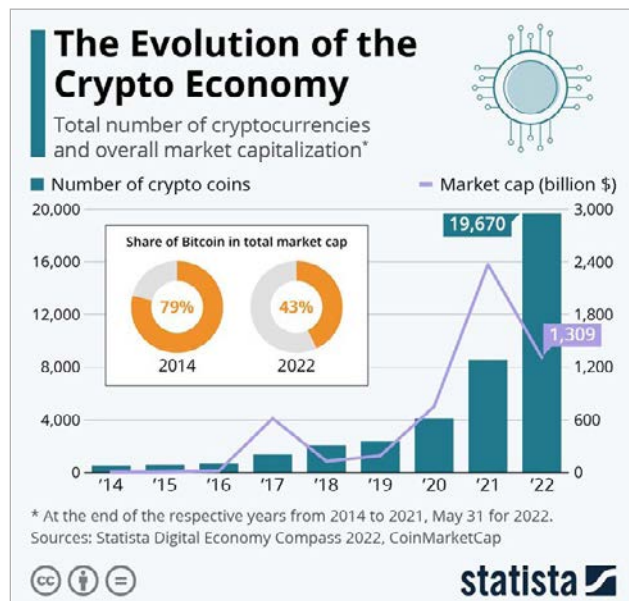
What's Going On (The Problem or The Opportunity)



Mirela Ciobanu is a Lead Editor of the Banking and Fintech domain at The Paypers. She is actively involved in drafting industry reports, carrying out interviews, and writing about the digital assets industry, the regtech space, digital identity, fraud prevention, and payment innovation. Mirela is passionate about finding the latest news on crypto, blockchain, DeFi, and fincrime investigations and is an advocate of the need to keep our online data/presence protected. As a writer, she aims to always get the best obtainable version of the truth. She can be reached at mirelac@thepappers.com or via [LinkedIn](#).

Mirela Ciobanu ■ Lead Editor ■ The Paypers

Since Bitcoin's inception, in 2008, the crypto industry has been on an ascensional trajectory, despite the bumpy journey that cryptocurrencies have been enjoying so far.



And this industry is growing due to its **visibility to a larger audience** – over 300 million people across the globe, no matter what age and background, have heard of Bitcoin and cryptocurrencies, are holding it, are transacting it, and are using it to buy stuff. **People have seen ads about crypto on YouTube**, television, online newspapers, during Super Bowl, etc. 2022 Super Bowl saw a marketing blitz from crypto brands such as **Coinbase, eToro, and FTX looking to attract mainstream audiences** to the growing space¹.

Famous people and their large institutions investing in crypto have also spurred crypto visibility, including JP Morgan Chase, PayPal, Goldman Sachs, BNY Mellon, and names like Cameron and Tyler Winklevoss, investors in the privately-owned Gemini exchange².

Interest in crypto could also be a consequence of the narrative according to which 'regulatory oversight might help the technology gain legitimacy'. The regulatory landscape for cryptocurrency is very dynamic, both within national jurisdictions as well as at a global level (if you think of IMF and BIS's active involvement). No wonder these have become so popular/visible for the wider audience if you think about the fast-paced regulations that are developed (for or against crypto) plus **their coverage in the media**.

Banks, merchants, and PSPs are also entering this space. Thomas Olsen, a partner at Bain & Company who advises financial firms on cryptocurrencies and other digital asset matters agrees that 'it might be 10 or 20 or years or sooner [when] effectively all assets are going to be in a digital format'. As such, **banks want to compete in this new world** and profit from it by experimenting with digital asset offerings³.

Research done by Deloitte in collaboration with PayPal shows that **merchants believe many of their customers currently have a significant interest in using digital currencies for payments**. Moreover, they are convinced that customer interest will increase in time, and nearly 75% reported plans to accept stablecoin payments, and almost the same reported plans to accept cryptocurrency payments, both by 2024⁴. →

While some businesses are prepared to adopt and allow crypto transactions, many are not and don't know exactly what crypto is/means, and this might cost them lose **a big portion of consumers that are into crypto.**

There are around 300 million crypto users worldwide, generally young, male Millennials in 74% of the cases. Their average annual income is around USD 100,000. Also, engagement with cryptocurrency is inversely proportional to age. Those with stronger engagement tend to be younger whereas those with weaker or no engagement tend to be older⁵. All in all, crypto consumer profiles and statistics show great interest coming from emerging markets and countries affected by inflation. The one-million-dollar question for merchants is how these segments can expand and tap into other segments with great potential (women, developed countries, etc.).

Besides the opportunity to build wealth and diversify investments or lower transaction fees, what triggers engagement with cryptocurrencies is also the idea of **being part of the financial way of the future.** Cryptocurrencies may or may not resist as speculative investment vehicles, but they are triggering transformative changes to money and finance. There is a lot of talk and innovation around concepts such as digital assets, tokenisation, stablecoins, CBDCs, the metaverse, and web 3.0, many of which are based on or share commonalities with crypto (therefore being crucial that we understand how these work).

On the other hand, many scams/frauds are happening **related to some crypto developments** – crypto projects that promise great returns, but they just trick consumers into buying their coins and then leaving the space. According to a **Chainalysis report**, in 2021, scamming revenue rose 82%, with a big part of it coming from rug pulls. This is a scam type where developers build what appear to be legitimate cryptocurrency projects before taking investors' money and disappearing. Money laundering is another criminal activity that crypto is associated with; criminals laundered USD 8.6 billion of cryptocurrency in 2021, up by 30% from the previous year, a report by blockchain data company **Chainalysis says**⁶.

These examples stress **the need to educate ourselves on concepts such as cryptocurrencies**, digital assets, NFTs, cryptocurrency wallets, cryptocurrency exchanges, the potential risk behind transacting on these platforms, etc. before we start experimenting⁷.

But the discussion is broader. **States, governments, and officials** are in favour of regulating crypto and have all started to pay more attention to the space, accept it exists, and consider all means to protect consumers⁸. Moreover, this space has started to be influenced by geopolitics and macroeconomics if you think about **Russia expressing plans to deploy blockchain for payment settlements** in the case of cross-border payments to bypass Western sanctions or the SWIFT system. Citizens in countries where inflation is high use crypto as a store of value. In 2022, crypto proved to be a reliable support for faster cross-border payments in areas affected by wars, floods, etc. Crypto critics emphasize its lack of environmental sustainability, prompting the industry to add the 'GreenFi' to the debate: increasing transparency, tokenising carbon markets, distributing clean energy, and making green energy more sustainable by adding mining and grid flexibility. But the switch from Proof-of-Work to Proof-of-Stake is often heralded as an answer to this debate⁹.

Many of the ideas stress above reveal that crypto is here to stay, and despite market-challenging conditions, many industry players have so far embarked on the crypto train – banks, fintech merchants, PSPs – to enable users to store, spend, and invest using crypto securely. This leaves plenty of opportunities for traditional companies that want to reinvent themselves, or for the new ones that are defining their value proposition to tap into a new, unexplored, and promising space – support crypto transactions. →

¹ Coinbase's viral ad, which just bounced a QR code around on a black screen like the old DVD screensaver, had installs jumping 309% week-over-week after the ad's airing Super Bowl. In addition to Coinbase, crypto trading platform eToro grew app installs by 132%, and cryptocurrency exchange FTX saw a 130% boost in downloads. In a similar move, to promote crypto to the masses, Fifa added Crypto.com as one of the **sponsors for 2022's soccer world cup in Qatar**, and despite recent staff cuts, Crypto.com appears to be continuing its **sports sponsorship spree this year**.

² They [Cameron and Tyler Winklevoss] are believed **to be the first to reach billionaire status by investing in Bitcoin**, reportedly holding about 70,000 coins. In 2021, **Tesla purchased USD 1.5 billion worth of Bitcoin** to begin accepting it as a form of payment.

³ **Morgan Stanley** offers cryptocurrency investments to their wealthy clients. **Deutsche Bank** revealed plans to develop a service to hold and trade cryptocurrencies for institutional investors in a 2020 report published by the World Economic Forum. In March 2021, **Goldman Sachs** rebooted its cryptocurrency trading desk after mothballing it in 2019. In March of this year, Goldman Sachs went a step further and became the first major US bank to carry out an over-the-counter crypto trade in partnership with Galaxy Digital, a crypto-focused asset manager. **JPMorgan** even started its digital currency in 2019.

⁴ These findings are supported by examples such as **Walmart** which appears to be venturing into the metaverse with plans to create its cryptocurrency and collection of NFTs. Other major companies **that accept Bitcoin** as a payment method include Microsoft, Home Depot, Whole Foods, Benfica, Virgin Airlines, **Visa, and Mastercard** are actively working on stablecoin-based payment solutions.

⁵ **In some markets surveyed by Visa**, wealthier consumers tend to be more likely to engage with cryptocurrency. Income does not universally play a role, but there are trends in Australia, the UK, Argentina, and Brazil where engagement is correlated with income or socioeconomic level.

Approximately 70% of users purchased crypto (initially) as a store of value or as a speculative investment, while only 20 to 25% of consumers use it for making payments online, **according to Nuvei**, a payment processing company. For various reasons, users still consider cryptocurrency as means of investment rather than a means to make purchases for goods or services.

Moreover, there is a broader acceptance of crypto in developing markets with a history of financial instability and a high proportion of the unbanked population. Consumers in emerging markets are more attracted to the opportunity to use cryptocurrency globally than consumers in developed markets due to transaction freedom and lower fees. More than a third of crypto-active owners in South Africa (38%), Argentina (34%), and Brazil (33%) are motivated by a lack of conversion fees abroad, Visa study continues.

⁶ Nefarious activities associated with the crypto space can rely on NFTs trade washing which involves an act in which the same asset is sold and purchased within a short time. A notable example of an **NFT wash trading case would be that of 'CryptoPunk 9998'** which was sold on the 28th of October 2021 for 124,457 ETH (worth USD 532 million at the time of the transaction). Before the wash trade, CryptoPunk 9998 had been trading in the USD 400,000 to USD 300,000 range. Algorithmic stablecoins that are poorly understood have led to people losing their lifetime money/investments as was the case of the **Terra (LUNA) crypto crash**.

⁷ For instance, **Revolut launched a series of short courses 'Learn & Earn'** on its banking platform and its first course 'Crypto Basics' helps educate customers on what cryptocurrencies are compared to fiat money; the meaning of a 'decentralised system'; cryptography; the mechanics of the blockchain technology; and the risks associated with crypto investments.

⁸ In June 2022, the EU brought crypto-assets, crypto-assets issuers, and crypto-asset service providers under a regulatory framework for the first time. The Council presidency and the European Parliament reached a provisional agreement on the markets in crypto-assets (MiCA) proposal which covers issuers of unbacked crypto-assets and stablecoins, as well as the trading venues and the wallets where crypto-assets are held. This regulatory framework aims to protect investors and preserve financial stability. Moreover, **in the UK**, the Bank of England's Financial Policy Committee called for 'enhanced regulation' of the crypto asset market to mitigate against potential risks, focusing on regulating stablecoins. These should meet the necessary standards for commercial bank money, and the taxation of crypto-asset loans and stakes from decentralised finance (DeFi) participants.

⁹ Proof of work and proof of stake are mechanisms through which a distributed network of participants can agree on which new block of transactions is added to a blockchain. But they differ in how they reach this endpoint.

Proof of stake requires participants to put cryptocurrency as collateral for the opportunity to successfully approve transactions. Proof of work enables agreement on which block to add by requiring network participants to expend large amounts of computational resources and energy on generating new valid blocks. It is more secure than proof of stake, but it's slower and consumes more energy.

The Paypers

Blockchain, Crypto, Tokens, NFTs, Stablecoins, CBDCs, Digital Assets, Defi, Web 3.0, The Metaverse, etc.? Are They All the Same?

Almost every crypto conference you attend, or podcast, webinar, etc. you listen to, stresses the importance of educating consumers about crypto topics to overcome some of the hurdles this industry is facing toward understanding how crypto works and adopting it. And it is true⁰, as this space is new, a bit different from the traditional finance world, and quite technological.

Over the next pages, we will try and explain some of the crypto space key concepts (such as blockchain, Ethereum, crypto, Bitcoin, stablecoins, CBDCs, tokens, NFTs, digital assets, DeFi, Web 3.0, and the metaverse) briefly.



BLOCKCHAIN – networks where all the magic happens

A Blockchain is a way of permanently recording and accessing secure information which is very difficult to change afterward and fully auditable. This is achieved using cryptography, networking, and consensus algorithms.

A blockchain is a growing **list of records, called blocks**, which are **linked using cryptography**. Each block contains a **cryptographic hash** of the previous block, a **timestamp**, and **transaction data**. The digital ledger is hosted across multiple computers – or ‘nodes’ – which track activity (or the transactions happening) between various users. By design, a blockchain is **resistant to modification of the data**. Once recorded, the data in any given block **cannot be altered retroactively without the alteration of all subsequent blocks**, which requires **the consensus** of the network majority.

In contrast to traditional models relying on a single, centralised source of truth, the blockchain is said to be ‘trustless’ because its distributed model is not dependent on universal trust in a single entity. Different models of blockchain networks enable various degrees of contribution, permissions, and roles for participants. These models are public blockchains, private blockchains, consortium blockchains, and hybrid blockchains.

Types of blockchains

1. Public blockchains are blockchains open to the public and have no access restrictions.

Sometimes, public blockchains are referred to as ‘permissionless’ blockchains because no one grants authority to someone else to interact with the protocol. Thus, any user that has access to the internet, **can send transactions** to it as well **as become a validator** (i.e., participate in the execution of a consensus protocol).

As the network needs to create value, foster cooperation among participants, and be secured, participants are incentivised (e.g. rewarded with crypto/tokens).

Because anyone can use a public blockchain to send and receive transactions (data), the network can become clogged and slow. Moreover, if there is a lot of activity on a blockchain, it can take a while for transactions to process and network fees can increase. Some of the largest, most known public blockchains are Bitcoin, Ethereum, Stellar, and Dash.

A bit of info about Ethereum

The Ethereum universe relies mainly on the Ethereum Virtual Machine or EVM (a canonical computer whose state everyone on the Ethereum network agrees on), network participants (Ethereum nodes), Ether (ETH – the native cryptocurrency of Ethereum), accounts (where ETH is stored), transactions (the formal term for a request for code execution on the EVM), smart contracts (reusable snippet of code which a developer publishes into EVM state). →

Nodes keep a copy of the state of EVM and can broadcast a request for this computer to perform arbitrary computations. Whenever such a request is broadcasted, other participants on the network verify, validate, and carry out ('execute') the computations. This execution causes a state change in the EVM, which is committed and propagated throughout the entire network. Cryptographic mechanisms ensure that once transactions are verified as valid and added to the blockchain, they can't be tampered with later. The same mechanisms also ensure that all transactions are signed and executed with appropriate 'permissions'. The processing cost of the nodes is paid for by the transaction initiator, by means of 'gas', which is an ETH fraction ('gwei').

Ethereum vs. Bitcoin – what's the difference?

Often referred to as a *first-generation* blockchain, Bitcoin wasn't created as an overly complex system, and that's a strength when it comes to security. The smart contract language in Bitcoin is extremely constrained and it doesn't accommodate applications outside of transactions very well.

The second generation of blockchains enables a greater degree of programmability on top of financial transactions. Different from Bitcoin's blockchain, Ethereum enables the creation of decentralised applications (dapps) that combine a smart contract (a script that, when called with certain parameters, performs some actions or computation if certain conditions are satisfied) and a frontend user interface.

2. Private blockchains are permissioned blockchains where participant and validator access are restricted and those interested to join the network must be invited by the network administrators.

Even if members of the private blockchain network **are known to each other, the transaction details are private, and the central authority** (the enterprise or business) decides who can read the transactions. Private blockchains offer more efficiency and faster transactions for private enterprises than public blockchains.

Transactions on both public and private blockchains are verified by consensus, but there are many ways in which consensus can be achieved. In a private blockchain, the consensus is usually achieved through a process called selective endorsement. It is based on the concept that network participants have gained permission to be there and that the participants involved in a transaction can confirm it.

The most common examples of private blockchains are **Ripple (XRP) and Hyperledger**.

3. Hybrid blockchains are blockchains that combine centralised and decentralised features. In an ideal world, this type of blockchain will mean controlled access and freedom at the same time.

The blockchain network is controlled by one entity that decides who can access specific data stored in the blockchain and what data will be open to the public. The hybrid blockchain protects users from privacy-related issues, however, it still allows third-party communications like shareholders and the public.

Examples of this type of blockchain include **XinFin** used for remittance, peer-to-peer trading platforms, blockchain-powered insurance, and online digital asset-linked identity, or **the LTO Network**, which focuses on decentralised identities (DIDs) and verifiable credentials (VCs) to help improve existing identification methods, replacing anonymity with privacy.

4. Consortium blockchains are blockchains controlled by several companies that are operating as nodes. These are designed by a group of multiple entities that want to use a decentralised network to collaborate.

Consortium administrators restrict users' reading rights as they see fit and only allow a limited set of trusted nodes to execute a consensus protocol. In this blockchain, the number of participants is known and verified, and authentication is conducted to reduce the risks of data and privacy threats. However, because the development speed of this blockchain depends on the cooperation of the participants, if participants can't reach an agreement, that will stall progress.

Examples of consortium blockchains are **Quorum** from ConsenSys and **R3's** blockchain platform Corda.

Blockchain technology can be integrated into multiple areas. Blockchain applications are created to be used for several industry sectors to reduce cost, increase transparency and fairness, and advance a specific sector's efficiency. Blockchain application use cases include supply chain & logistics, healthcare, retail & ecommerce, finance, property & real estate, media, NFT marketplaces, heavy industry & manufacturing, music, cross-border payments, internet of things, gaming, personal identity security, government & voting, anti-money laundering, advertising, original content creation, automotive, smart contracts. For the scope of this report, when we use the concept of blockchain we refer mostly to the financial sector.

CRYPTO is the umbrella term for the industry and cryptocurrency is the digital asset native to the public blockchain

What is cryptocurrency?

A cryptocurrency is a medium of exchange – anything widely accepted as payment for goods and services – secured by a blockchain-based ledger – a data store that keeps track of transactions. Blockchain technology allows users to make transactions on the ledger without reliance upon a trusted third party to maintain the ledger. Cryptocurrencies use decentralised control as opposed to centralised digital currencies and central banking systems.

The Bitcoin

The first cryptocurrency was Bitcoin. It was created by Satoshi Nakamoto and released in 2009. Since then, people have made thousands of cryptocurrencies across many different blockchains.

Bitcoin aims to challenge the power institutions in our society like banks and governments have over financial instruments and to give it to the people using money. Many times, it has been compared to gold or the internet. Like gold, Bitcoins would always be **scarce – only 21 million of them would ever be released** – and hard to counterfeit. Also, the Bitcoin network wasn't run by any central authority. Similar to how the internet was created, Bitcoin is built and sustained by all the people who hooked their computers onto the public blockchain (which anyone in the world could do).



In the beginning, Bitcoin:

- was seen as a **digital payment method that doesn't require users to hand over identifying information each time** they use it;
- equalled **universal money that doesn't have to be exchanged at every border**;
- promised the **fairness of a currency that even the poorest people in the world can keep in a digital account without paying hefty fees**, rather than relying on cash;
- promised the convenience of a payment system that makes it possible for online services to change small amounts of money, skirting the current limits imposed by the 20/ 30 cent minimum charge for a credit card transaction.

Nevertheless, because of its volatility, Bitcoin has been viewed as not such a reliable store of value (despite its built-in scarcity) and because of its restricted use as a medium of exchange, it remained primarily a tool for speculations. Also, the low transaction throughput (approx. seven transactions per second) of its blockchain makes it not an effective retail payment network, but merely a settlement system for large amounts. The innovation of the growing Lightning layer could fill in the retail payment needs, but time will tell.

Crypto wallets

To understand how Bitcoin works, some compare it with sending emails: the user doesn't understand exactly the computer science behind how it works, but the act of sending and receiving an email is a universal practice. Email addresses can be shared with anybody but only the password holder can access received messages. Bitcoin works similarly. →

You can share your Bitcoin address with anyone sending you money, but only you, with your password called a private key, can spend it. To understand how peers send and receive Bitcoin, it is important to understand the relationship between keys and addresses. Addresses that are used to receive Bitcoin are generated from numbers called private keys. This means that possession of Bitcoin itself is the possession of a number. Private keys are 256-character binary strings like this: 110010001....



These numbers can be stored in a smartphone application called a wallet, on dedicated memory devices called a hard wallet, simply written down on a piece of paper, or any other way you can store a number. The private key generates an address that is used to receive Bitcoin, but the address cannot be reversed or engineered to reveal the private key behind it, thanks to encryption technology. Bitcoin addresses look something like this:

1ExAmpLe0FaBiTco1NAdDr3sSV5tsGaMF6hd

That's it: private keys (send) and addresses (receive). Bitcoin can be sent around the network after it's mined without a central router to authorise or censor the transactions. Any peer in the network with Bitcoin software can send, receive, and survey transactions, but no single peer can prevent them from happening. People using a smartphone wallet do not need the full Bitcoin software to transact in Bitcoin. Wallets allow self-custody of Bitcoin private keys but rely on third-party nodes to relay transactions to the network if not used in tandem with a Bitcoin node.

Stablecoins

One of cryptocurrency's key drawbacks is that it is volatile (the prices are unpredictable and tend to fluctuate wildly), despite the decentralisation or intermediary-free transactions offered by Bitcoin. To compensate for this instability another important category of

cryptocurrency has been created – the stablecoins. These are somewhat resistant to volatility, so users won't see significant price changes.

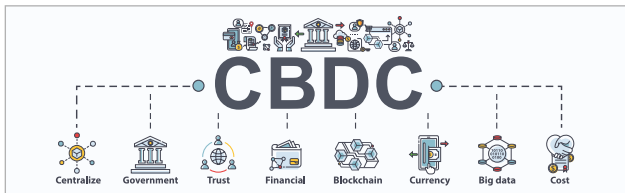
Stablecoins' prices are tied to a reserve asset like the USD or gold. For example, BUSD, USD Coin (USDC), and Tether (USDT) are all backed on a 1:1 basis with the USD. One BUSD or USDC or USDT is the same as one USD. However, there are also 'non-collateralised' stablecoins called algorithmic stablecoins¹.

The waves created by cryptocurrencies and stablecoins suggests that users are demanding more out of the traditional ways of payment, they want cheaper, faster, borderless transactions, and governments and central bankers are starting to pay attention.

Central bank digital currencies (CBDCs)

Central bank digital currencies (CBDCs) are digital versions of currency issued by central banks as a means of preserving and expanding existing monetary policy levers. CBDCs are the electronic version of the cash used by households and businesses to store value and make payments. **Many central banks across the world exploring CBDC projects. According to the Boston Consulting Group CBDC tracker**, there are now two live retail CBDCs in the world – in The Bahamas (Sand Dollar) and Jamaica (JAM-Dex). Also, there are 13 pilots, 18 proofs of concepts, and 72 central banks that have communicated publicly about their CBDC work.

The work and conversation around CBDCs have been sparked initially by Libra's development (now a defunct project), and by the payment's digitalisation boosted by COVID – at that time, the general knowledge was that the COVID-19 virus might live on banknotes and coins. Also, during the pandemic, governments embarked on a direct financial handout to the public ('helicopter money'), which (on future occasions) may be done more smoothly and targeted with CBDCs, because of their scale and (foreseen) programmability. At a macro level, the **ongoing geopolitical currency wars** have also led national central banks to consider the use of CBDC in international transactions and investments to bypass the US banking system SWIFT and reduce their dependence on the USD. Furthermore, CBDC could be an important adoption element in the **evolution of the world reserve currency**. And finally, **the innovation brought about using cryptocurrencies and concepts such as DeFi** is forcing financial institutions to modernise their infrastructure and adapt to a new way of conducting payments. →



If we think about the implementation model, there are two types of CBDCs:

- A **retail CBDC** refers to a digitised form of M0 money, coexisting alongside cash and issued by a central bank as a direct liability for general purpose, domestic circulation;
- A **wholesale CBDC** refers to financial institutions that carry reserve deposits with a central bank.

According to PwC research, wholesale efforts are more prevalent in advanced economies that have more developed interbank systems and capital markets. In contrast, retail CBDC projects are more common in emerging economies with financial inclusion expected as an outcome.

Regarding their underlying format, these can be:

- **Account-based CBDC** – the ownership of the CBDC is linked to an identity whereby a transaction is an update of payer and payee balance;
- **token-based CBDC** – the ownership of the CBDC is linked to proof. Using cryptography, it is possible to verify digital signatures to execute and verify the transfer. Thus, a transaction is a change of ownership of a specific unit of account or token.

Another way of categorising CBDCs is according to their distribution models:

Direct Model – all parties involved in the transaction will hold an account at the central bank. Payments will be transferred from one account to the other and all claims will be backed by the central bank. The central bank will issue the currency and manage a permission system to clear transactions. In addition, Know Your Customer (KYC) and anti-money laundering (AML) compliance requirements will be met by the central bank.

Indirect Model – the central bank will pass the digital currency token to the commercial bank or a non-bank financial institution (e.g. fintech), which will then distribute the currency and also handle KYC and AML requirements. The claim for the currency will be on the commercial bank or non-bank financial institution and not the

central bank. **This type of CBDC is also referred to as 'synthetic CBDC' by the IMF.**

The Hybrid Model – many central banks are working on a hybrid model, whereby the central bank distributes CBDC to a regulated intermediary such as a commercial bank or fintech, which handles the transaction and the KYC and AML requirements. However, importantly, the claim remains on the central bank.

In terms of perceived benefits, on one hand, CBDCs would enable governments and central banks to reduce the costs of managing and transferring cash and would boost financial inclusion for all segments of society due to having safe money accounts at the central banks. Plus, CBDCs make it easy for a central bank to keep track of every unit of the currency, supporting the fight against tax evasion and financial crime. Furthermore, the 'programmable money' potential of CBDCs holds considerable appeal for policymakers. Government support payments could be more efficiently and promptly distributed – with their use limited to defined categories of goods. Expiration dates could also be set on currency, either to encourage consumption or discourage consumption.

On the other hand, crypto enthusiasts oppose CBDCs development as these might violate data privacy and could become a means of control by a central or national authority. Other risks involve banks run if consumers pull too much money out of banks at once and purchase CBDCs, effectively replacing commercial bank money with central bank money, reducing the liquidity of the commercial bank sector.

Tokens and NFTs

A token means generally 'something that can represent something else'. For instance, we talk about a token of gratitude like a bouquet offered to represent that someone is grateful. Or think of a concert ticket that represents the attendance to a specified event in the future. Another example of a token is money. These represent an amount of value. Tokens can also describe fungible tokens. Fungible tokens are tokens that are equal because they represent the same thing. Money is a good example: one euro coin represents the same value. So, money, as well as cryptocurrencies, are types of tokens that are fungible.

An NFT is a token, where the 'N' stands for 'non' and means that this type of token is NON-fungible; it's NOT similar to another token; it's a unique token, and one does not equal the other. →

Within the financial world, tokens are a form of value represented and traded on a blockchain. Because of blockchain technology, we can make tokens that are digital representations, which are non-fungible. That makes it possible for anything in the real world to be represented by an NFT on the blockchain, being our house, the clothes we wear, or the piece of land we own. Everything can be represented digitally, art included. The most critical part of this process, however, is the conversion from physical to digital. Someone has to vouch that a token really represents e.g., the plot of land. This needs to be (verifiably) backed up by legal reality. So, here we see that there is counterparty risk. With digital art, this problem doesn't exist, because there is no physical component. Most of us started hearing about NFTs in 2021, especially those representing (digital) art. Digital art has been one of the first NFT use cases – maybe because before blockchain anyone could copy and claim to own digital pieces of art. However, because of their unicity, they can be used as identity verification means (Decentralised Identifiers, or DIDs) or as medical records (doctors can issue NFT birth certificates upon birth, and that NFT would represent the lifelong identity that they can use for all their medical records). However, the widely used case for NFTs is the gaming industry (digital collectibles such as those in 'Play-to-Earn Games' like Axie Infinity, are a common use case). Also, the supply chains can benefit from these developments – many goods and items, particularly those in the food sector, have a problem when it comes to verifying their provenance, the contents within the packaging, and the source of supply. NFTs may be tied to a product via the blockchain, giving it a tamper-proof NFT identity.



The Metaverse

Cryptocurrencies, tokens, NFTs, and anything that is created and stored digitally, is identifiable and discoverable, and has or provides value is considered a digital asset.

These (together with a user's digital identity) play an important role in supporting the metaverse. Early in its evolution, the metaverse is a seamless convergence of our physical and digital lives creating a unified, virtual community where we can work, play, relax, transact, and socialise.

A key point is that there is not only a virtual world but many worlds, which are taking shape to enable people to deepen and extend social interactions digitally. This is done by adding an immersive, three-dimensional layer to the web, creating more authentic and natural experiences via shared virtual worlds accessible through technologies such as virtual reality (VR), extended reality (XR), and augmented reality (AR).

Based on interoperability, these spaces aim to become a large and interconnected ecosystem where people can move freely (by using their digital identity) and take their digital assets with them. To move tokens and digital assets in the virtual world we need some protocols that are part of decentralised finance (DeFi). **Digital assets and DeFi** are together loosely known as web 3.0. **According to 11:FS' report on web 3.0**, web 3.0 is built on the primitives of crypto, but it talks more about the business models and economic opportunities.

DeFi

Decentralised finance (DeFi) refers to a set of newly emerging financial products and services that operate on decentralised platforms using blockchains to record and share data. These products and services are conducted without a trusted central intermediary such as a bank, and they include payments, lending and borrowing, trading and investments, capital raising (crowdfunding), and insurance.

Over the last two years, the DeFi landscape has evolved into a large network with integrated financial instruments and protocols.

According to The Block, cumulative revenue on DeFi protocols surpasses USD 4.5 billion as of March 2022, making it one of the most promising developments in the financial world. The protocol is defined as rules or standards that govern a specific task or activity.

DeFi protocols are specialised autonomous programs that have been designed to address issues related to the traditional finance industry and they aim to introduce more financial instruments. So far, DeFi protocols have formed an integral part of a complex ecosystem with numerous notable tokens and projects, and due to the substantial rise in the value of DeFi protocols, many startups in this area see plenty of opportunities. it's a unique token, and one does not equal the other. →

DeFi protocols are primarily designed for borrowing and lending applications in the financial sector.

An example of DeFi protocols is **Decentralised exchanges (DEXs)** that give traders an easier way to complete crypto transactions. As DeFi protocols run according to a series of smart contracts, these exchanges can attract large amounts of liquidity, often bringing yields for investors. To assess decentralised finance (DeFi) protocols, metrics such as the total locked value (TVL) have been created. In a DEX, experts can measure the total locked value (TVL) by adding up all the assets deposited in the exchange. Many of today's traders use this measure to understand a system's strength and potential. By counting all the coins currently staked within a protocol, TVL reveals the total supply underlying the system.

DEXs often replace traditional exchange order books with liquidity pools and **automatic market makers** (AMMs – which are a special algorithm codified in a smart contract that calculates the exchange price for every swap), that pair buyers and sellers depending on order prices and volume. These are pools of cryptocurrency assets that remain under the exchange's surface, waiting to clear any buy or sell order. The funds in the pool come from investors who deposit money to profit from transaction costs payable to pool users.

The most common financial activity throughout the DeFi ecosystem is **lending**. Similar to traditional lending institutions, some holders deposit their funds into a protocol to make a profit while others need currency in the short term borrowing from the pool of funds while posting their locked assets as collateral. As a result, the system increases the fluidity within crypto markets and creates new opportunities for everyone involved.

Another increasingly common phenomenon within the DeFi ecosystem is **derivatives**. These products give experienced traders a way to manage synthetic assets, produce future contracts, and boost overall yields from their complex investment portfolios.

Liquidity pools are the crypto funds that have been locked into a DeFi protocol through smart contracts. They are created through deposits, giving investors within a protocol the leeway to draw from a pool of accessible funds. Because they involve the direct and immediate locking of assets within a protocol, they can be measured within the parameters of crypto TVL.

To take part in DeFi protocols, traders must **stake** a certain amount of their crypto assets. Via yield farming, once these assets are staked, investors can earn profits through returns on them.

Disclaimer

As we have tried to be concise and stir your curiosity around the crypto industry, please keep in mind that the information we provide is a synthesis of the main concepts surrounding this industry. For a more comprehensive understanding of these topics, we suggest you do some further reading. You can find some links with resources below:

The Cryptocurrency Revolution: Finance in the Age of Bitcoin, Blockchains and Tokens, by Rhian Lewis

Layered Money: From Gold and Dollars to Bitcoin and Central Bank Digital Currencies, by Nik Bhatia

Digital Gold: Bitcoin and the Inside Story of the Misfits and Millionaires Trying to Reinvent Money, by Nathaniel Popper

Binance Academy

Chainalysis Academy

Ethereum Portal

¹ Algorithmic stablecoins do not have any associations with collateral. These are decentralised and focus on improving market price stability through pre-programmed supply for matching asset demand. Algorithmic stablecoins employ predefined stabilisation measures encoded in the different smart contracts on Ethereum. These typically rely on two tokens – one stablecoin and another cryptocurrency that backs the stablecoins – and the algorithm (or the smart contract) that regulates the relationship between the two. Algorithms regulate supply and demand – when there's too much demand for an asset but little supply of it, the price of that asset goes up – and vice versa.

The Paypers

What Is a Crypto Exchange?

A crypto exchange is a platform that allows customers to trade cryptocurrencies for other assets, such as conventional fiat money, or other digital currencies. Funding and withdrawal of accounts happen with credit card payments, wire transfers, or cryptos.

These exchanges work similarly to a broker, enabling users to trade cryptocurrencies among each other. So, exchanges facilitate the interaction, they are not the counterparties themselves. They make money by charging a small transaction, irrespective of market moves. They offer security features and storage options for digital assets that may be superior to maintaining wallet software on your own. Moreover, cryptocurrency exchanges have started offering custodial key storage for their users but this service should be used cautiously, as cryptocurrency exchanges are often targets of cybercriminals and fallible human behaviour.

Some crypto exchanges offer a variety of products and services, while others exist purely for buying and selling digital assets. Common services offered include wallet providers, Bitcoin exchanges, payment service providers, and venture capital. Other services include mining pools, cloud mining, yield services, peer-to-peer lending, exchange-traded funds, over-the-counter trading, gambling, micropayments, affiliates, and prediction markets.

Cryptocurrency creators are often independent of the cryptocurrency exchange that facilitates trading in the currency. However, exchanges need to integrate into each cryptocurrency infrastructure, and they will only do so when there is enough volume to justify the integration costs.

There are usually **two types of fees** for buying and selling crypto: trading fees and withdrawal fees. Trading fees may be charged as a flat percentage of the amount of crypto a user buys or sells. Also, an exchange may differentiate between orders that are 'makers' and those that are 'takers', charging a different percentage accordingly. Makers are orders that add liquidity to an exchange, meaning they do not fulfil standing orders, while takers remove liquidity from an exchange by completing orders that are waiting for a trade.

Also, despite some crypto exchanges claiming to charge zero fees, they charge a spread which is the difference between the rate at which they buy or sell crypto. Spreads can, and frequently do, wind up being much more expensive than if the user pays a percentage trading fee.

Many exchanges charge fees to withdraw coins from their platform which can be an issue for users that prefer to move their crypto to a secure third-party wallet or onto another exchange. Withdrawal fees typically vary by cryptocurrency.

Types of crypto exchanges include **brokers and traditional crypto exchanges, centralised, and decentralised exchanges**. Some traditional securities brokers can act as intermediaries between the cryptocurrency markets and investors who want to buy and sell digital assets. For instance, an over-the-counter broker (also known as an OTC desk) is typically used when executing a large buy or sell order (think 200 BTC, not 2 BTC). Traditional Crypto Exchanges are platforms that facilitate the buying and selling of digital assets based on daily market prices as set between the users. Some exchanges deal only in cryptocurrency trading pairs; others allow crypto-fiat trading pairs. **Centralised cryptocurrency exchanges** are overseen by a third party (called an exchange operator), which helps to ensure that customers sign up and trading runs smoothly. These platforms fall under KYC/AML regulations.

Blockchain and cryptocurrency were designed to remove a central authority overseeing transactions and usage. A **decentralised crypto exchange (DEX)** lacks third-party oversight, is open source, and depends on peer-to-peer (P2P) trading. DEXs also often require more technical skill and knowledge of cryptocurrencies to use than centralised exchanges. Future regulation may put restrictions on the uses of DEXs if the full innovative compliance possibilities are not explored. E.g. Binance offers a 'soul-bound' token to users who are fully KYC-ed. Users could use this token in other formal interactions, where the receiver can cryptographically verify the validity of the KYC status. →

Crypto Exchanges



DEX-Decentralized Exchanges



Trading on a crypto exchange

According to Forbes, most of the time, consumers pick an exchange with low costs but dwelling too much on the ins and outs of maker and taker fees can be counterproductive. That's because users can't choose whether their order is processed as a maker or a taker. Instead, it is recommended when choosing an exchange to consider overall fees and any discounts available for trading a certain amount each month or holding an exchange's native cryptocurrency.

Top centralised cryptocurrency exchanges, according to traffic, liquidity, and trading volumes include Binance, Coinbase Exchange, FTX, OKX, KuCoin, Gate.io, Huobi Global, Kraken, Bitfinex, Crypto.com Exchange. Examples of DEXs are Uniswap (v3), DODO, PancakeSwap (v2), Curve (Ethereum), Uniswap (Polygon), Kwenta, Uniswap (v2), Balancer, Uniswap (Optimism), Shibaswap.

The Paypers

Making Blockchain Scalable: Layer 1 Vs. Layer 2

Many are asking: why do we need crypto and blockchain within the payments space, don't we already have many electronic means of payment that are working just fine and are adapted to the digital native? The fact is that many of the current modern payment methods, especially for cross-border payments, still rely on traditional ways of sending money from one place to another, where the messaging about payment is broken from the actual payment. Take for instance the SWIFT network that doesn't transfer funds but instead, sends payment orders between banks using SWIFT codes. What crypto proposes is a paradigm shift where the message accompanies the payment in real-time.

And how does it do this? By building new payment rails based on blockchain technology. By this we mean not just Bitcoin's blockchain, but also many other DLTs and protocols like Ethereum, Ripple, Stellar, Binance Smart Chain, Solana, Avalanche, and others that are enabling transactions.

But then again many argue that these systems are not scalable. The Bitcoin blockchain can process approximately 5 transactions per second, with Ethereum handling roughly double the amount. And if we compare these numbers with Visa's handling of 1,500-2000 transactions each second, the blockchain stands no chance. So why not just use these solutions? Well, the main challenge is that Bitcoin, Ethereum, and other blockchains aim to compete with that while still maintaining a high degree of decentralisation.

Layer 2 protocols may be a solution. These protocols aim to boost the performance of the network while keeping some of the blockchain's initial properties. But first things first.

Layer 1

To understand what is layer 2, let's go back to the basics – the layer 1 network is the base layer, or the underlying infrastructure of a blockchain, also known as the main network or 'mainnet'. Layer 1 defines the core rules of the ecosystem, validates, and finalises transactions. The main features of layer 1 are decentralisation and security, supported by the diverse, global network of developers and participants like validators.

Examples of layer 1 protocols include Ethereum, Bitcoin, Solana, BNB Chain, Avalanche, Cardano, Algorand, Elrond, Celo, Terra, Near, Hyperledger, **and many others.**

Because of the immense resources it takes to maintain a fully functional ecosystem, layer 1 often lacks scalability. Bitcoin and other big blockchains have been struggling to process transactions in times of increased demand. A blockchain game could not realistically use the Bitcoin network due to lengthy transaction times. However, the game may still want to use layer 1's security and decentralisation.

For layer 1 scaling, some options include:

1. Increasing block size, allowing more transactions to be processed in each block. e.g. SegWit and the 2017 fork of Bitcoin (Bitcoin Cash)
2. Changing the consensus mechanism used: moving from Proof of Work (that is energy consuming) to Proof of Stake (what happened with the Ethereum 2.0 update). e.g. Celo is a layer 1 network forked from Go Ethereum (Geth) in 2017. The Celo Web3 ecosystem includes DeFi, NFTs, and payment solutions, with more than 100 million transactions confirmed. On Celo, anyone can use a phone number or email address as a public key.
3. Implementing sharding, which is a form of database partitioning. e.g. - Elrond is a layer-1 network founded in 2018 that uses sharding to improve its performance and scalability. The Elrond blockchain can process over 100,000 transactions per second (TPS).

Layer 2

However, to boost scaling, the best option is to have layer 2 solutions that are built on top of the main chains. Layer 2 refers to a set of off-chain solutions (separate blockchains) built on top of layer 1s that reduce bottlenecks with scaling and data. These protocols provide a second framework that offloads the burden of managing transactions from the mainnet and thereby enables greater transaction inclusion and throughput. →

Layer 2s on Ethereum include solutions like Arbitrum, Optimism, Loopring, zkSync, Polygon, Plasma, etc. E.g. By handling transactions on a separate Ethereum-compatible blockchain, Polygon aims to fix Ethereum's scalability issues. Polygon then returns transactions to the main Ethereum blockchain post-processing. This approach lowers the network load on Ethereum, speeds up transactions, and lowers transaction costs to less than a cent. By using Polygon, users can interact with any decentralised application (DApp) without ever having to worry about network congestion.

For Bitcoin, the most popular layer 2 protocol is the Lightning Network.

What is Bitcoin's Lightning network?



Bitcoin's Lightning network is a Layer 2 scalability solution making Bitcoin transactions cheaper and near-instant. The network is comprised of user-generated channels that send payments back and forth in a trustless fashion, meaning that the user doesn't need to trust or even know the counterparty. For instance, if I watch a video from another user, and I need to pay that user, I can pay for each minute of the video that I am watching by opening a lightning channel. As the minutes roll by, periodic payments could be made from my wallet to theirs. When I'm done watching, we would close the channel to settle the net amount on the Bitcoin blockchain. Because the transactions are just between me and another party and don't need to be broadcast to the whole network, they are almost instantaneous. And because there are no miners that need incentivising, transaction fees are low or even non-existent.

Lightning adoption and merchant acceptance

Despite the potential to disrupt the incumbents, current Lightning adoption is still tiny (but growing!). Arcane Research estimated that in Q1 22, Lightning facilitated USD 20–30 million in monthly payments. That's a 4x YoY increase, but a far cry from the USD 866 billion Visa facilitates each month.

Few merchants accepted Lightning payments when the initial network implementations were launched. As it became easier, merchants started to gradually accept Lightning payments. There are **over 50 online and physical stores that accept these types of payments** with the help of tech providers such as BTCPay Server and OpenNode. When El Salvador made Bitcoin legal tender, large companies like McDonald's and Starbucks were able to quickly integrate Lightning payments.

NCR Corporation and other point-of-sale companies have expressed interest in becoming interoperable with the Lightning network. Square, a large point-of-sale software and equipment provider for small and medium-sized businesses, and its parent company Block are one of the most pro-Bitcoin companies around. Their Cash App already integrates with Lightning and they have multiple Bitcoin-focused development units.

Blockchain bridges

Web3 has evolved into an ecosystem of layer 1 blockchains and layer 2 scaling solutions, each designed with unique capabilities and trade-offs. As the number of blockchain protocols increases, so does the demand to move assets across chains. To fulfil this demand, **we need bridges**.

Without a bridge, blockchains are siloed environments that cannot communicate with each other. This is because each network has its own set of rules, governance mechanisms, native assets, and data that are incompatible with the other blockchains. Moreover, blockchains can only send messages in one direction.

There is only one-way communication across a channel. One blockchain can send a message to another on one channel, but there's no way for the other blockchain to reply on the same channel and confirm that the message has been received. To establish trust between blockchains and make two-way communication possible, we need something in the middle, something that can bridge the gap between these blockchains. →

For example, if you own Bitcoin but want to participate in DeFi activity on the Ethereum network, a blockchain bridge allows you to do that without selling your Bitcoin.

Blockchain bridges can be used to lower transaction fees, explore blockchain ecosystems, enable users to own native crypto assets, and others. Another advantage of blockchain bridges is that they improve scalability. Some blockchain bridges can handle many transactions, improving efficiency. For example, the Ethereum-Polygon Bridge is a decentralised two-way bridge that works as a scaling solution to the Ethereum network. As a result, users can benefit from faster transactions and lower transaction costs. But the most important benefit of blockchain bridges is the ability to improve interoperability. They enable the exchange of tokens, assets, and data across different blockchains, whether between layer 1 and layer 2 protocols or various sidechains.

Bridges fall into two categories: trusted and trustless bridges. Trusted bridges depend upon a central entity or system for their operations. They have trust assumptions concerning the custody of funds and the security of the bridge. Users mostly rely on the bridge operator's reputation. Users need to give up control of their crypto assets.

The second category is formed by trustless bridges that operate using smart contracts and algorithms. They are trustless, i.e., the security of the bridge is the same as that of the underlying blockchain. Through smart contracts, trustless bridges enable users to remain in control of their funds.

Many bridging solutions adopt models between these two extremes with varying degrees of trustlessness.

What makes cross-chain bridges so vulnerable? According to **Chainalysis**, bridges are an attractive target because they often feature a central storage point of funds that back the 'bridged' assets on the receiving blockchain. Regardless of how those funds are stored – locked up in a smart contract or with a centralised custodian – that storage point becomes a target.

Also, the effective bridge design is still an unresolved technical challenge, with many new models being developed and tested. These varying designs present novel attack vectors that may be exploited by bad actors as best practices are refined over time.

The Paypers

Cryptocurrency Payment Gateways – The Interface to The Fiat World

The holy grail of financial transactions is removing as many intermediaries as possible and offering faster, cheaper, frictionless payments. Cryptocurrencies aim to solve these issues via cryptocurrency payment gateways. Nevertheless, we are still not there yet. Several factors have hindered crypto adoption for retail payments. These include:

- volatility, which imposes risk on any party required to hold and settle cryptocurrency into fiat;
- the unwillingness of users to pay in a currency that is appreciating;
- scalability and transaction throughput;
- increasing regulatory challenges;
- ubiquitous acceptance;
- fees and settlement times.

If we can solve these issues, cryptocurrency will be recognised as a better payment method than traditional payment rails, because it aims to return the sovereignty of money to individuals and merchants, plus it removes the need for multiple parties to mediate transactions and charge fees.



Crypto payment gateways enable businesses to accept cryptocurrencies as a form of payment, in contrast to traditional ‘fiat’ currencies such as the USD, EUR, and others. These gateways can be ‘crypto to fiat’ and ‘crypto to crypto’.

- a crypto-to-fiat payment gateway is a financial transaction service that accepts cryptocurrencies and converts them into fiat currencies for payout to the merchant’s bank account – most of today’s currencies can be considered fiat. They are any currency that is backed by a government and issued by them.

- a crypto-to-crypto payment gateway is a transaction tool used to either transfer crypto payments across one another or purchase different cryptocurrencies for payout to the merchant’s wallet.

Cryptocurrency payment gateways are not mandatory or necessary to carry out digital currency transactions. Users can also utilise their wallets to accept cryptocurrency payments. Still, gateways offload merchants of the extra work of exchanging cryptocurrency in real-time and managing a wallet. Moreover, they remove much of the anxiety, confusion, disinformation, and speculation that can come from a decentralised and unregulated source of value.

These gateways can be:

1. Off-chain payments – are facilitated by custodial services similar to traditional online and mobile payments. Those custodial services normally provide a list of accepted cryptocurrencies and act as settlement agent who bears the volatility and counterparty risks. Off-chain payments are not fully trustless (unlike the Bitcoin network), as the user depends on a custodian agent to use their services.
2. On-chain (layer 1) payments – these types of payments happen on-chain, meaning that the user pays their crypto directly from their wallet to the merchant’s wallet. The blockchain network validates the transaction. As a result, on-chain (layer 1) payments work like non-custodial crypto wallets, where the merchant is assigned an address to receive payment. The payment platform’s role is to integrate tools like APIs or UI plugins for those merchants who wish to offer crypto as a payment method. Worth mentioning here is that, according to [Crypto.com’s Macro Report](#), merchants accepting crypto might charge a higher fee (> 0.5.% of transaction volume) to compensate for their operational costs, in addition to the liquidity and volatility risks that come with handling cryptocurrencies. For retail users, the UX of making crypto payments should be like making a transfer over the blockchain network such as withdrawing money from an exchange to a wallet. →

3. On-chain (layer 2) payments – to settle transactions must faster, these kinds of payments will temporarily move some transactions off-chain. Only when transactions in off-chain channels are finished, they will be broadcasted to the whole on-chain network. An example of an off-chain payment is the Lightning Network which operates on top of the (layer 1) Bitcoin network. As we previously explained, the Lightning Network is a layer 2 payment channel established between two parties who want to transact. All transactions taking place within the channel are off-chain, and a global (level 1) consensus is not required. Because of this, these transactions execute quickly via a smart contract, with lower fees, and almost instantaneously. A typical payment channel has three phases:
 4. Both buyer and seller establish a channel by signing and funding it;
 - Because both are now findable, a payment path can be found to clear this peer-to-peer transaction through this payment channel;
 - Once one of the parties closes the channel, the balance is broadcasted to the Bitcoin (level 1) blockchain.

The speed and cost savings come from the fact that not every transaction is registered in the slower and more costly Level 1 chain and the aggregates of transactions (balances) that can be settled in batches. To draw a parallel with the current payment systems, it works similarly to how Automated Clearing House works in the high volume/low-value transactions of the fiat world.

Two significant factors differentiate crypto gateways from traditional payment processing.

- A customer pays via a crypto wallet, not a debit/credit card, or a bank account;
- The customer pays in cryptocurrencies, not in physical currencies.

Once the crypto payment gateway accepts a crypto payment, the merchant's payment processor will execute the transaction. But let's see how the payment flow is:

1. The merchant installs an open-source plugin that provides an interface to a Bitcoin/crypto wallet.
2. The customer chooses to pay in Bitcoin/crypto.
3. The conversion rate between Bitcoin/crypto and fiat is retrieved from an oracle¹.
4. The price of the goods is displayed in Bitcoin/crypto and fiat.
5. The customer transfers Bitcoin/crypto to the merchant wallet.
6. The cryptocurrency payment service instantly converts the payment into the currency the merchant chooses.
7. The money is added to the merchant account with the provider; it is deposited to their designated bank account in intervals decided on in their service contract.

Usually for step 6. merchants choose to convert the crypto they receive from their customers into stablecoins. Once the transaction is confirmed, the Bitcoin/crypto is sent to an exchange where it is liquidated into a stablecoin. These will allow merchants to accept cryptocurrency as payment without exposure to market risks or reliance on any third parties. Stablecoins are a critical component in enabling, among other things, fully-decentralised payment gateways. The merchant can decide at what interval to convert the stablecoins into fiat and can do so through a service that deposits fiat directly into their bank account.

For merchants, the benefits of processing payments via stablecoins spring from the fact that they can put them at work for yield in protocols (putting fiat at work has become more difficult and costly in a low-interested environment). Therefore, PSPs could give merchants yields for delaying payout into fiat by providing liquidity in automated lending pools e.g., Uniswap, Compound, Sushiswap, Liquidity, and various options. However, this option might be riskier, because regulation is limited, and there is no government protection (FDIC insurance in the US).

Merchants can also do this themselves, without middlemen, but not many will do this because this is not their core business. Some experts agree that once the merchants will perceive all the true benefits brought by crypto (and even then, they might decide not to take advantage), regular PSPs will re-plumb their back ends toward crypto. This is caused by the ability to offer more options and better propositions to merchants – de-commoditise online payments. The complexity of crypto is shielded from the merchant, adding new pockets of value to PSPs propositions. →



Fees

From what we learned so far, verification and validation transactions on blockchain incur energy and computational power consumption. Transaction validators are paid in small increments in the cryptocurrency transaction they validate, from which they pay their cost and make a profit. These fees are passed to the crypto payments provider that might charge them to the merchants they are working with so that they can continue operating and offering their services.

Pros and cons of crypto payment gateways

Crypto gateways remove the anonymity (due to KYC requirements) of who you're dealing with while maintaining your customer's preference for it. Also, they reduce the volatility risk by paying you the market rate for the tokens at the time the transaction was conducted. Also, you receive the funds in the account with your provider, who transfers them to you, and you don't have to worry about or attempt to understand cryptocurrency.

Nevertheless, a payment gateway is a third party, which cryptocurrencies were originally designed to bypass. This means that you pay small transaction fees when you use receive; you pay an additional fee when you use a cryptocurrency payment gateway, to take away the complexities. And related to security, if the payment gateway is hacked, you'll lose any funds you have in your account with the provider while you're waiting for them to be transferred. You need to be sure that your service provider can be trusted. Thanks to its decentralised nature and its reliance on cryptography, blockchain technology is completely trustless. In contrast, crypto payment gateways are centralised entities, meaning that it is trustful, capable of providing quality service, and secure enough to resist potential cyber-attacks as well as fallible human behaviour.

The Industry's View and the Impact, Challenges, and Benefits of Accepting Crypto



The major crypto tokens will come integrated within the regulatory landscape and technological advances to simplify the ecosystem, leading to less complexity, more transparency, and hopefully less risk due to human fallibility. This chapter is about this evolution. It intends to give an overview of where crypto assets and their infrastructures will impact, bring value, and which considerations and dependencies apply.

INNOPAY

Crypto and Payments: Change from Within



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Crypto assets and their infrastructures are poised to change the payments industry. For end-users not so much will change in terms of user interface and types of financial products. The transformation of the coming two decades mainly happens on the inside: in the non-visible part of payments. Very similar to the transformation of the telecom industry from analog to digital infrastructure through VOIP (VoiceOverIP) in early 2000. End users were not bothered, except through better and cheaper voice and video service. It led to an exponential growth of communication, displacing large parts of the incumbent TV and radio infrastructure.

By 2035, business and private users will experience the change in the payment industry through 'more for less'. Less cost and more choice. Choice in tokens, complementing today's fiat landscape. The major crypto tokens will come integrated within the regulatory landscape and technological advances will simplify the ecosystem, leading to less complexity, more transparency, and hopefully less risk due to human fallibility.

This contribution is about this evolution. It intends to give an overview of where crypto assets and their infrastructures will impact, bring value, and which considerations and dependencies apply.

Introduction

In today's finance sector, the protocols behind tokens such as Bitcoin and Ethereum drive the shift to innovative financial services such as payment, lending, borrowing, international remittance, derivatives, and asset transfers. The latest 'catch-all' terms to indicate this new world are 'web3' and 'decentralised finance' (DeFi). Web3 and its associated (very dynamic) technology stack can be seen as the infrastructure for

DeFi. In this section we touch upon the most important aspects of DeFi, followed by a deeper dive into its implication for the payments industry at large.

Bitcoin: the first incarnation of infrastructural trust

The roots of DeFi can be traced back to the 2008 [Bitcoin whitepaper](#) that set out a new system for digital cash where the transaction ledger is recorded in a chain of blocks ('blockchain'). Bitcoin makes it possible to transfer assets of value (digital tokens) between two 'peers', through open-source software and without a sign-up process for participation (i.e. permissionless). Users are in control of their assets through cryptographic client software securing transactions end-to-end, in combination with the inability of individuals (or groups of) actors to alter the protocol. So, no institution or company is involved or 'in the middle', as opposed to today's global system of value transfer via national fiat currencies. Therefore, trust is coming from the infrastructure instead of institutions. Transactions can happen faster and cheaper, and a minimal number of people and institutions are involved.

Since the start of Bitcoin, many other crypto initiatives have emerged, mostly centring around improving Bitcoin in terms of speed, functionality, and cost. Notably, Ethereum came to live in 2014, going beyond the scope of Bitcoin by expanding cryptographic functionalities towards those of a full computer. So, a sort of 'decentralised world computer' running so-called 'smart contracts'. These are just software that, after deploying into full production, run autonomously and cannot be stopped. The costs are borne by users through 'burning' (gas) tokens for processing costs. →

This global Ethereum infrastructure has become the breeding ground for DeFi, allowing the re-invention of traditional financial functions in a decentralised and permissionless fashion. Common names include Uniswap (exchange), Compound (lending), and Liquity (borrowing). The total DeFi ecosystem and financials are nicely captured by **DefiLlama**. There you see other alternatives to Ethereum (e.g. Solana, Avalanche, Tron, Polychain, etc), offering similar functionalities but on different chains. An important metric is the TVL (Total Value Locked), measuring the USD value of the digital tokens entrusted to the sum of all the DeFi protocols.

Figure 1 - Evolution of chains value share (TVL): blue is Ethereum, green is the Terra Luna crash (September 2022)

In **Figure 1** you see the drop in TVL of the past two years, mainly the result of the price slump in crypto. Also, the drop in the market share of Ethereum is clearly visible, while remaining the most dominant ecosystem. Plus, the rise and fall of the Terra Luna ecosystem are clearly visible.

Adjusting DeFi and crypto further

In summary: the term DeFi contrasts with CeFi referring to 'centralised finance', often meaning regulated institutions. Within this category there is also the term TradFi, indicating existing legacy players, which is a large subset of CeFi. In DeFi, users deal directly with smart contracts and have direct control over their funds (i.e. tokens). CeFi is mainly relevant at the boundaries of the fiat and the crypto world also called on/off ramps. Often, DeFi services are accessed through CeFi because this is easier for users than dealing with crypto tokens directly (see **Figure 2**).

Figure 2 - Examples of CeFi, DeFi, and TradFi

In this picture we see the two generic options users have: go directly to a DeFi provider or use a centralised (and regulated) party for crypto services. Often CeFi players use DeFi services to power their own offering to their (CeFi) customer.

Then there is the word 'cryptocurrency', which is derived from the abundant use of cryptography in all of the Web3 and blockchain world. However, all tokens do not pass the definition of 'currency' which should refer to 'medium of exchange', 'unit of account', and 'store of value'. Last but not least, currency always involves some form of sovereign nation attached to it. It is clear that the 'crypto-world' does not fulfil any of these criteria, which is why we will not refer to them as currency but rather as 'asset' or 'token'. It does not mean, however, that their utility in payments or store of value is not there, as we will see further down in this document.

Turbulent times again in the 2022 crypto winter

So far for the theory. In practice, we see a whole array of trust issues surrounding crypto infrastructures, including hacks, malafide actors, extreme volatility, irresponsible risk-taking, and bankruptcies. Everything is happening in the world of DeFi, Web3, and crypto. Not all solutions are decentralised as they suggest and not all technologies are properly tested. Often, the practice is the test with real money from real people. It turns out that human interventions are often the source of mischief. In 2022 we saw various cases of this, including the fall of Luna, Celsius, and Three Arrows Capital. MtGox's fall in 2014 had the same reason. It wasn't a technology failure, but a human failure. These are companies powered by humans, which took on too much risk by investing in assets with borrowed money from consumers and from each other. When the market tanked in early 2022, many of these companies rolled over. This is very similar to the Great Financial Crisis of 2008 when Lehman Brothers fell and dragged multiple institutions down. →

The recent crypto failures turned out to be ‘decentralised in name only’ (DINO) and should actually be regarded as Centralised Finance (CeFi). Another 2022 example is the hack of Binance, of USD 570 million. The Binance chain was halted for a short period, showing again the centralised aspect, which may come in handy in times of stress. The technology of DeFi powers all this and kept on working during the sharp downturn of the market. It resulted in fast liquidation and settlement of positions. A lot of pain but in a short period of time, which is a feature of crypto infrastructures. No government interventions were needed. The pain fell partly on ignorant and greedy individuals, which is a point of major concern as always with financial products and speculation. Regulation, education, and communication could help here.

Institutions seeking their role

Individuals and investors are by far the largest users of crypto and DeFi. In 2020, the first high profile stock listed companies started adding (mainly) Bitcoin to their treasury reserves, notably Tesla, Microstrategy, and **Block**. Traditional investors such as pension funds, banks, and ETF providers are still very reluctant because of regulatory uncertainty. It is not forbidden by regulation to engage in crypto and DeFi, but the risk of regulatory changes is too large for these institutions, and they rather wait until things stabilise more. In the meantime, some banks (e.g. JPMorgan Chase, Morgan Stanley, Goldman Sachs, US Bank, and BNY Mellon) have already started offering professional investor services such as custody to their private and business clients, authorised in 2020 by the Office of the Comptroller. In this fashion, banks can already participate without having their balance sheet exposed to crypto.

In the past decade, the regulations on crypto have advanced. It is now clear that crypto users are falling under similar KYC and AML rules as fiat users. Also, the fiscal treatment of proceeds of crypto is very similar to fiat balances and investment products.

It is also very likely that crypto will not have its own definition, but that regulators worldwide are trying to fit in with existing definitions (asset, commodity, security), which then informs which (already existing) rules apply. Given the regulatory efforts being made by officials, it looks as if crypto as an asset class is here to stay.

Better payments for less cost?

DeFi, Web3, and the crypto world as a whole offer the interesting potential to reduce costs, increase speed, and improve functionality in payments, lending, and borrowing by eliminating friction in terms of technology, contracting, and coordination between multiple

parties. This is expected to impact over time many functions of today’s payment and securities market infrastructures, such as clearing houses, RTGS, retail payments, cross-border payments, custody, exchanges, and FX services. It will not be a revolution, but an evolution. As usual, we tend to overestimate the short-term impact of trends but underestimate the effect of long-term trends. Crypto may well be another one of those trends, comparable with personal computing, internet, and mobile from the recent past.

How DeFi presents opportunities for the payments industry

Over the past decades, the financial ecosystem has evolved into a global maze of payment services, systems, and rules involving numerous players, including regulatory and supervisory bodies. How can DeFi be expected to fit into this ecosystem?

Today’s payments ecosystem can be simplified into the following high-level processes and actors (see **Figure 3**).

Figure 3 – Simplified representation of the complex and dynamic payments ecosystem.

Figure 3 shows the ‘bank-to-bank’ chain of payments for individuals and businesses. Credit card networks are built ‘on top’ of the banking systems so that digital transactions can be performed in any place and at any time, in brick-and-mortar stores, and online. On top of the credit card networks, all sorts of (CeFi) fintech payment innovation (e.g. Paypal, Stripe, Cash App) has developed in the past decade.

Crypto-infrastructures (e.g. Ethereum, Bitcoin, Stellar, Solana, Ripple, etc.) and related DeFi technology have the potential to bypass major parts of this traditional infrastructure. After all, there is a permissionless crypto address space all the way down to the individual user, as well as a low threshold for technical and legal participation in the network, which is based on the very latest internet technologies. Figure 4 shows how the payments ecosystem could look in a DeFi world. →

Figure 4 – The simplified payments ecosystem in a DeFi world.

We still see the existing banking systems, which interface to the crypto world via new companies offering exchange and custody services (a.k.a. on/off ramps). The part ‘in the middle’ is the jumble of various blockchain solutions of which there are many, with Bitcoin and Ethereum being the largest ones. Remarkably, we see a layer structure developing over the years each with their own objectives such as speed, functionality, decentralisation, and interoperability. This resembles the payments world as we know it. In crypto terms, this is called Layer 1 and Layer 2 (L1, L2). Think of L2 as the ACH (Automated Clearing House) vs L1 being the RTGS (Real Time Gross Settlement). RTGS (L1) is for large amounts (avg value EUR 5 million) where finality is needed all the way to the level of central banks (high amount, high risk, high stakes, low frequency, central bank money). ACH are centralised netting mechanisms (L2) for a group of participating banks for lower amounts to net large batches of lower-value transactions (e.g. retail, small business, pensions, salaries, benefits, etc) and then settle the balance periodically between the banks in commercial bank money. In the past decade, the settlement frequency increased to instant, offering a real-time experience, all the way down to individual users. The layering of blockchain shows the same considerations of speed versus security and functionality.

In the picture, we see fewer institutions and more user control. Once an asset exists on a blockchain, the user has full ownership and control through the use of (non-custodial) cryptographic wallets (e.g. Metamask, Coinbase Wallet, Trust Wallet, Coinomi, etc). The user also has the option to delegate control of the funds to custodial service providers such as (CeFi) custodians and exchanges (e.g. Binance, Bitfinex, Gemini, Kraken, etc). Additionally, digital assets can be moved around, irrespective of borders and jurisdictions. There is less need for intermediary parties (banks, acquirers, issuers, PSPs, etc.) to propagate transactions between payers and payees. In the world of crypto infrastructures, there will still be a need for service providers such as exchanges and custodians. E.g. users

can choose to use a service provider (custodial) to manage keys and access to the various blockchains, i.e. delegating the control of their assets. However, these service providers have so far tended to be new market entrants. This represents a clear opportunity for the incumbent financial sector for adding such functionality to their portfolios. A handful of traditional players are now embarking on buying and holding crypto assets for retail customers (e.g. PayPal, Revolut, Wirex, JPMorgan Chase, USBank).

Now that we have described the high-level principles of the new infrastructure component, we will dive deeper into the practice of today and the outlook for the future.

Examples of DeFi in practice

The way blockchain infrastructures can impact the world of payments is in the field of speed, cost, and functionality, merely across all segments such as B2C, remittances, and B2B.

Speed: this is always a relative measure. For international payments, a Bitcoin transaction (deemed as slow, because of its 10-minute block confirmation time) is very fast. For a retail payment, this is very slow, which is why service providers (offering a multitude of L1/L2 combinations) step in to offer real-time confirmation to merchants.

Cost: this can be lower as with fewer parties involved, the value chain is much shorter and hence cheaper, e.g. when it comes to remittances and other cross-border payments. Also, the risk of chargebacks is virtually zero, because fund holders initiate the payment transactions themselves through their private keys. Costs of KYC/AML are also here, very similar to regular banks.

Functionality: next to sending digital assets (including stablecoins) from A to B, smart contracts offer new possibilities for conditional payments as well as for yield, lending, and borrowing. All is possible within one infrastructure. In particular, the B2B arena benefits from such functionalities which go beyond payments and include adjacent processes (e.g. reconciliation, invoicing, payout).

The following describes some real-world cases of payments in crypto.

1. Countrywide payment systems and remittance

In September 2021, the El Salvador government launched a [Bitcoin and Lightning-based payment network](#) for handling both inbound remittance payments as well as point-of-sale payments. In a matter of months, the service was set up by various independent service providers and banks to provide wallet apps (such as Chivo and Strike) and gateways to the Bitcoin and Lightning network, all based on open-source components.

This initiative has three drivers:

1. Cheaper remittances. About 25% of El Salvador's GDP comes from abroad (mainly from the US). This usually entails a 5-10% fee being paid to the traditional banking system.
2. Financial inclusion. Unbanked people are included as well in this move from cash to digital payments, which require only a mobile phone to use.
3. Making Bitcoin legal tender. It does not mean repricing everything in Bitcoin, because the dollar is the unit of account. In practice, people have the option to pay someone in USD via Bitcoin against the USD rate of that moment. The state-sponsored Chivo wallet offers automatic conversion functionality, such that the users have their balances in USD and are not vulnerable to Bitcoin's volatility. The liquidity into fiat is provided through a government fund.

The initiative entails on the one hand merchants connecting their cash register software to the lightning network and having wallets downloaded by the population on the other hand. A mass media campaign offering a USD 30 sign-on bonus, led to 2 million app downloads in three weeks, also exposing some first usability and performance glitches of Chivo.

Cash register software vendors and acquiring banks had to update their merchant customer base with the latest software. Merchants and users can choose to hold their wallet balance in US dollars or in Bitcoin and can easily switch between the two in order to limit exposure to volatility.

The verdict is still out on whether this new infrastructure and the use of Bitcoin as legal tender are successful. There are many critics, of which a major part from abroad (including the IMF), who judge

this move away from traditional fiat money as an irresponsible and radical move. It is still early to judge its success. At least we can say that rolling out a cashless infrastructure with open source software in a few months is proven to be a serious possibility for communities, including countries. Payment is the first step for El Salvador, which is now in the process of redesigning their securities laws to accommodate tokenised securities including Bitcoin-backed bonds, all living on a blockchain.

After El Salvador's move, several other communities announced interest in lightning infrastructure and Bitcoin, including the Central African Republic (CAR), Honduras, and Mexico.

More on Lightning

Lightning is the scaling layer (L2) on top of Bitcoin (L1), allowing it to do near real-time Bitcoin transactions, at a very low cost. This makes Bitcoin payments available and affordable at the point of sale and for remittances because Lightning takes away the capacity limitations of the Bitcoin (L1) settlement layer. Lightning facilitates transactions outside of the Bitcoin blockchain, but attached to the Bitcoin blockchain through the concept of 'payment channels'. Opening a payment requires someone to put Bitcoin as collateral in a lightning transaction, after which Lightning payments can be routed between all other open payment channels. Very similar to ACH payments, where payments are netted before being settled. The channel owner has the option to close the channel at their discretion, effectively settling its balance with the L1 Bitcoin blockchain. With Lightning, not every Bitcoin transaction needs to go all the way to the Bitcoin blockchain, which is why it scales so well. Lightning will be extended with Taro, which allows the issuing and transferring of digital assets (stablecoins, securities, NFTs, etc) beyond Bitcoin.

As a decentralised system, it is impossible to obtain data about Lightning's adoption and usage. The only way to do this is to pool information (by a trusted third party) from the players involved in the ecosystem and come up with a picture, which is the best possible proxy for reality. [Arcane Research](#) monitors and publishes the developments on Lightning and the broader Bitcoin ecosystem. From their research (April 2022) we can see that the Lightning network grows fast, both in terms of value processed and in the number of transactions. This growth is fuelled by the growth of the nodes which are parties that offer the possibility to open and close payment channels. Some nodes are offered by major crypto players such as Kraken, Bitfinex, and Cash app.

This accelerates the number of users, who can access Lightning transactions, approximately 80 million, coming from 10 million in October 2021 when Chivo (El Salvador) and Paxful drove the number of users. The YoY USD volume grew 400% to approximately USD 20 million in February 2022. Arcane's report also shows the three main use cases for Lightning: 50% of the payments are private P2P payments which include remittances, 20% are with shops, and 30% are for funding and withdrawal with exchanges. More and more exchanges are implementing Lightning because this allows for faster and cheaper transactions.

2. Merchant acceptance

Bitpay is one of the first crypto payment acceptance services for merchants, live since 2013. It enables websites with a fiat check-out and offers buyers crypto as a chosen payment method. The Bitpay service calculates the corresponding amount in crypto in real time and displays this to the user. The user pays (e.g. by scanning an address QR-code with a wallet app) and confirms the transaction to the merchant after which the wallet pushes the agreed amount of crypto to an address of the merchant (with Bitpay). Typically, the merchant receives the amount in fiat from Bitpay and does not know which crypto was used. Bitpay shields all of that from the merchant.

In November 2021, Regal Group (operator of 500 cinemas across the US) **announced the acceptance of digital tokens** for buying movie tickets, popcorn, and drinks. By making use of the Layer 2 Flexa network, Regal allows users to directly spend a wide range of cryptocurrencies, stablecoins, and digital tokens (including Bitcoin, Ethereum, Dogecoin, Litecoin, GeminiDollar, DAI, Link, Atom, and BAT) from their wallet apps. Users pay by scanning a barcode displayed at the cash register and after user approval, the transaction is settled instantly. Regal gets paid out in fiat dollars through the regulated part of Flexa, which does the conversion from crypto to fiat. Also, here the merchant does not need to see which crypto is exactly used.

Regulations of KYC and AML prescribe that such merchant acceptance services perform a check on the payers. This is an extra (on-time) hurdle when using crypto for purchases. This is mainly done through online verification of identity documents. Such a process is not needed when using fiat methods because traditional fiat accounts already have KYC and AML built into their regulated operations.

3. B2B payments

DeFi offers innovative treasurers ample opportunities. Through a growing number of regulated exchanges, they can use, hold, and transfer stablecoin values more quickly and cheaply. No negative interest rates apply. More adventurous treasurers are going all in with non-fiat cryptos, such as the listed company MicroStrategy led by Michael Saylor. In the summer of 2020, MicroStrategy converted all its excess cash into Bitcoin, which was a major event in the crypto and DeFi community. Since then, **more companies have followed suit**, including Tesla and Square.

All major fiat currencies (including Yen, GBP, EUR, USD, and RMB) are available as stablecoin from various (private) providers. For USD notably, Tether and Circle are major players. They attract fiat and issue 1:1 digital tokens (USDT and USDC respectively). The key issue of course is whether their reserve backing is transparent and sound. This is an ongoing debate, as some stablecoin issuers have become large players in the money markets where fiat is parked in cash and bond holdings. The quality and liquidity of the backings are crucial in moments when crypto markets become distressed. 2022 saw numerous cases of this, where the situation with UST stablecoin by Luna/Terra did not end well. Mainly because the backing of UST was algorithmic (regulating the price by adjusting the creation and burning of tokens), and as such not backed by 'off chain' traditional fiat collateral. The other two mechanisms of backing stablecoins are with crypto (e.g. DAI) and commodities (e.g. gold via XAUT and PAXG).

Stablecoins offer speed of transactions across borders, which is why treasurers use this to augment their cash management options. Also, stablecoins as 'idle cash' offer ample possibilities for yield, by 'staking' stablecoins in various automated crypto markets as liquidity providers (e.g. Uniswap, Aave, and Compound). The transaction fees from those pools accrue (partly) to the providers of liquidity. This is not without risks, as explained previously. In a bull market, there are more yield opportunities because of more borrowing and exchanging, as opposed to a bear market (2022).

Holding tokens not representing a stable fiat value is an alternative but introduces price volatility. Think of ETH or Bitcoin, where treasurers can yield in the native token. ETH can provide yield since the Ethereum protocol moved to Proof-of-Stake validation of transactions, also referred to as 'The Merge'. Since September 2022, owners of ETH can secure transactions by putting their ETH 'at stake' and receiving (part of) the transaction fees, first indications amount to around 5% annually.

4. Institutions

Crypto payments for institutions start with the ability to hold (custody) crypto assets for customers. Typically, today investors and treasurers would make use of such service, as the management of own keys is much too cumbersome in a business setting. Specialised companies (e.g. Coinbase, Bitgo, Nydig, Anchorage, etc.) develop technology to supply to licensed entities. Especially banks in the US (Paypal, BNY Mellon), the UK (Revolut, Wirex), and Switzerland (Bank Frick, Signum) embark on offering custodial services to their clients. This is expected to grow in the coming years.

Final reflection

Crypto assets and their infrastructures are poised to change the payments industry. For end-users not so much will change in terms of user interface and types of financial products. The transformation of the coming two decades mainly happens on the inside: in the non-visible part of payments. Very similar to the transformation of the telecom industry from analog to digital infrastructure through VOIP (VoiceOverIP) in early 2000. End users were not bothered, except through better and cheaper voice and video service. It led to an exponential growth of communication, displacing large parts of the incumbent TV and radio infrastructure.

By 2035, business and private users will experience the change in the payment industry through 'more for less'. Less cost, and more choice. Choice in tokens, complementing today's fiat landscape. The major crypto tokens will come integrated within the regulatory landscape and technological advances will simplify the ecosystem, leading to less complexity, more transparency, and hopefully less risk due to human fallibility.



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INNOPAY is an international consultancy firm specialised in digital transactions. We help companies anywhere in the world to harness the full potential of the digital transactions era. We do this by delivering strategy, product development, and implementation support in the domain of digital identity, data sharing, and payments. Our services capture the entire strategic and operational spectrum of our client's business, the technology they deploy, and the way they respond to local and international regulations.

INNOPAY

Crypto Monitor: Crypto Will Change the Payment Industry



Douwe Lycklama is co-founder of INNOPAY, an international consultancy firm specialising in digital transactions. Douwe is a thought leader in data sharing, digital identity, and payments.

Douwe Lycklama ■ *Co-Founder* ■ INNOPAY



Mirela Ciobanu is a Lead Editor of the Banking and Fintech domain at The Paypers. She is actively involved in drafting industry reports, carrying out interviews, and writing about the digital assets industry, the regtech space, digital identity, fraud prevention, and payment innovation. Mirela is passionate about finding the latest news on crypto, blockchain, DeFi, and fincrime investigations and is an advocate of the need to keep our online data/presence protected. As a writer, she aims to always get the best obtainable version of the truth. She can be reached at mirelac@thepayers.com or via [LinkedIn](#).

Mirela Ciobanu ■ *Lead Editor* ■ The Paypers

The first edition of our INNOPAY/The Paypers Payment Industry Crypto Monitor contains some revealing findings. For example, 88% of the respondents expect crypto to have an impact on the current payment infrastructure, which is why some are already 'testing the water'. But strikingly, many respondents are not yet offering crypto products or services due to unclear regulations and AML/KYC challenges.

Although some organisations are now offering services based on crypto technology, they are still in the minority (24%). Our study* shows that the majority of the respondents see various crypto-related opportunities and are keen to pursue them but are still very much at the exploratory stage: reading and researching the crypto opportunities (53%), talking with customers (43%), or preparing decision-making for usage or going to market (26%).

Drivers of crypto products

The biggest reason for already offering crypto products is the fact that crypto enables innovation of current services and offerings (62%). Other key reasons are the changing demand from customers (55%) and opportunities for new business models (55%), followed by the reduction of costs (44%) and the increased ease of

processing – both in terms of settlement (43%) and possibilities for cross-border payments/remittances (42%). The respondents regard the possibilities of no chargebacks (26%), the possibility to make the yield on balances (12%), and no negative interest rates (9%) as less important.

Barriers to crypto products

Unclear regulation (71%) is by far the most important reason why respondents are not currently offering crypto products. This is followed some way behind by AML/KYC challenges (53%). Both of these reasons imply that the payment industry's use of crypto is being held back by trust issues.

Fast, secure, and low cost

It comes as no great surprise that most respondents (88%) expect crypto to have an impact on the payment landscape, but it is interesting to examine the underlying reasons: predominantly the security, speed, and low cost of crypto in comparison with today's payment infrastructure. However, many respondents recognise the friction point of crypto in terms of AML/KYC and that the tipping point is still some way off. Others only see very specific benefits in terms of use cases (e.g. digital custody transactions). →

Most of the 12% who do not expect crypto to have an impact on the payment landscape seem to see little added value in a 'parallel' system, while a handful believes that CBDCs will outrun crypto.

How will crypto have an impact?

When it comes to the impact areas of crypto infrastructures, respondents expect cheaper and fast settlement (78%), faster innovation (71%), more financial inclusion (55%), and more liquidity options for merchants and corporates (47%). No one in the study indicates that they expect merchants to offer their services for free, and only a few respondents expect cash will disappear (25%) and IT costs to decrease (15%).

Regulation, competitive forces, and geopolitical developments

Regulation, competitive forces, and geopolitical developments are seen as the three most important drivers in the adoption of crypto. The war in Ukraine is a very topical example of a geopolitical event in which the incumbent financial infrastructure has been weaponised by excluding Russia from global payment networks. This has contributed to increased awareness about the possibilities of crypto-based decentralised infrastructures.

The future of crypto in the payment industry

Members of the payment industry seem willing to offer crypto products and services and are preparing their organisations by gaining more knowledge about the technology and customer demands. While regulatory issues in particular appear to have been holding the industry back so far, new regulations in the foreseeable future (e.g. Mica) are likely to change this. Besides hopefully giving the payment industry more trust in crypto, this will also help organisations to build resilient, compliance frameworks to counteract the regulatory curve (e.g. digital onboarding, screening).

Click [here](#) to download the Payment Industry Crypto Monitor report in full.



* The survey for the study was conducted from June to September 2022 and involved answers coming from more than 100 respondents from the worldwide payments industry (merchants, banks, fintechs, regulators, consultants, etc.) about their understanding of crypto, and what they regard as its key aspects and relevance.



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Who Are the Main Actors of the Crypto Payment Chain



As Web 3.0 and crypto continue to grow in popularity, banks should prepare for the much wider propagation of stablecoins and CBDCs in the next two to three years.

Also, merchants across the board (from micro merchants to key accounts) see their customers interested in paying with cryptocurrencies and are willing to accept them as a means of payment, as long as there are no disadvantages in terms of risk, costs, or complicated processes.

BNB Chain Research

Introduction to Web3 Payments

Introduction

Leaving aside both the philosophical questions and the independence of the monetary policies of the central banks or any type of intermediary, Bitcoin was born as a network of payments between individuals. Payments have been a cornerstone for cryptocurrencies since their inception – including pre-Bitcoin experiments like DigiCash and BitGold – but its use, although increasingly widespread, is still not massive. Aside from the evident reluctance of some individuals to cryptocurrencies, there are certain technical barriers that hinder their adoption as a leading means of payment.

Today, the current crypto landscape is quite different from the end of the first decade of 2000 and has evolved by leaps and bounds, but some of the limitations inherent in a permissionless P2P network are still in place, which limits the possibility of paying with cryptocurrencies on a day-to-day basis.

General overview of payments in web3

Before getting into the limitations or trying to fix anything, it is necessary to review some concepts that make it easier to draw a map of the web3 payment ecosystem (powered by blockchain technology).

Payment can be simply defined as the exchange of an asset between two individuals generated by an agreed transaction. What is the reference asset in a web3 payment? Where and how are those assets stored? A web3 payment transaction will likely include a cryptocurrency, which is a digital unit of account issued on a permissionless and decentralised blockchain, such as BNB Chain.

Cryptocurrencies have high volatility, which makes them an asset that may not be best suited for payments, especially on a large scale. To avoid this volatility, stablecoins were created. Stables are cryptocurrencies whose value derives from a fiat currency in such a way that a 1:1 parity is maintained with the underlying asset (which is deposited in the form of cash or cash equivalent in the issuer's account of the stablecoin). In simple words, 1 BUSD is equivalent to 1 USD, making its use as a unit of account much more ideal.

Cryptocurrencies are stored in a digital wallet, which is the starting and ending point of any payment transaction.

In recent years, several centralised entities have realised the advantages that blockchain technology offers in terms of speed, traceability, settlement, and especially the endless possibilities that programmable money offers. Therefore, several financial institutions have already launched their permissioned blockchains with their own monetary policies.

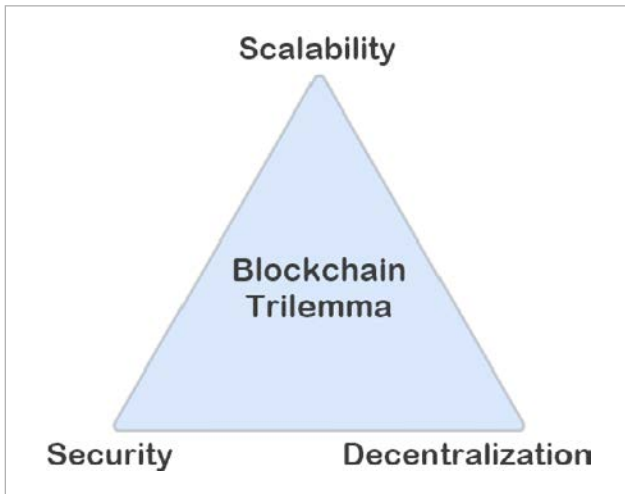
Governments and especially their economic arm, the central banks, are also exploring the implementation of a digital currency issued by a central bank using blockchain technology which is not considered cryptocurrencies but CBDCs (Central Bank Digital Currency). It should be noted that some CBDC experiments do not even use DLT.

Both CBDCs and cryptocurrencies issued by centralised entities do not share the differentiating characteristics of the general concept of cryptocurrency: its permissionless, decentralised issuance or its trustlessness. However, there are potential bottlenecks in the performance of a blockchain.

Blockchain trilemma for payments:

Blockchains are often forced to make trade-offs that prevent them from achieving all three aspects:

1. Decentralised: creating a trustless blockchain system that has no centre point for failure;
2. Scalable: the ability of a system to handle transactions/second;
3. Secure: the ability of the system to defend itself from attacks, bugs, and other malicious attacks. →



Blockchain infrastructure and performance

The latency and finality of transactions are immensely important for payment systems along with a user experience that is sleek and convenient. However, current systems allow for limited throughput of a maximum of 5k tps (best case) whereas **Visa can handle 24k tps**.

This has led to the creation of Layer 2s and other scaling techniques that decouples computation and scalability capabilities where transactions are batched and have a final settlement on Layer 1.

The Lightning Network on Bitcoin is specifically designed to cater to the requirements as a payment infrastructure where users can use it to pay for their day-to-day activities like buying a coffee or paying at grocery stores. However, the mainstream adoption of crypto for payments has been a pressing challenge.

BNB Chain is EVM compatible, allowing a block gas cap of 120M, i.e. how much gas you can burn in a block for EVM chains, Ethereum and Polygon are 30M. BNB Chain is the most optimised EVM chain that serves as a foundation for payments. The gas costs are relatively higher compared to other chains, however, to provide a better user

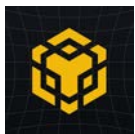
experience, BNB Chain is deploying zk-rollup, zkBNB, and sidechain infra for application specific blockchains. This would significantly bring down the cost of gas and increase overall performance.

BNB Chain payments ecosystem

One of the most repeated criticisms against cryptocurrencies is the impossibility of using them as a means of payment beyond that closed world that the blockchain is. BNB has several players who refute that statement.

Okse allows their wallet users to pay with cryptocurrencies in hundreds of countries and businesses with their digital debit cards issued by Visa. Everything is done permissionless and through a smart contract; the user just needs to send the funds from the wallet to the debit card contract, authorise it, and just do his groceries and pay. Projects like **PIP** also focus on native web3 users. It also allows social platforms payments to, for example, reward your favourite content creator or payments to web3 identities, being able to send a payment directly to a friend only using their BNB username. Streaming projects, like **Zebec**, streamline the payment of services or payroll of crypto-native companies, making possible the existence of companies fully powered by digital assets.

Payments are still a nascent category in crypto and it is still not clearly defined how it will look in a few years or what kind of projects will facilitate mass adoption. BNB Chain believes that payments will play a crucial role in crypto adoption and is therefore supporting all relevant projects building in this direction.



The **BNB Chain Research** is an industry-leading research lab actively engaged in thought leadership on key industry developments.

research.binance.com

Banking Circle

Banks Can Get On-Board the Digital Asset Train



Daniel Lee is responsible for the web3 initiatives in Banking Circle and relationships with the digital asset community. Formerly at DBS for 22 years, Daniel has extensive experience in the digital assets world. Prior to the DBS Digital Exchange, Daniel was the Executive Director and Head of Electronic Trading servicing intermediaries (broker-clients), digital exchanges, high-frequency traders, and market makers in the electronic trading space. He has experience in dealing with various regulators and exchanges across the region and was also responsible for the ETF business.

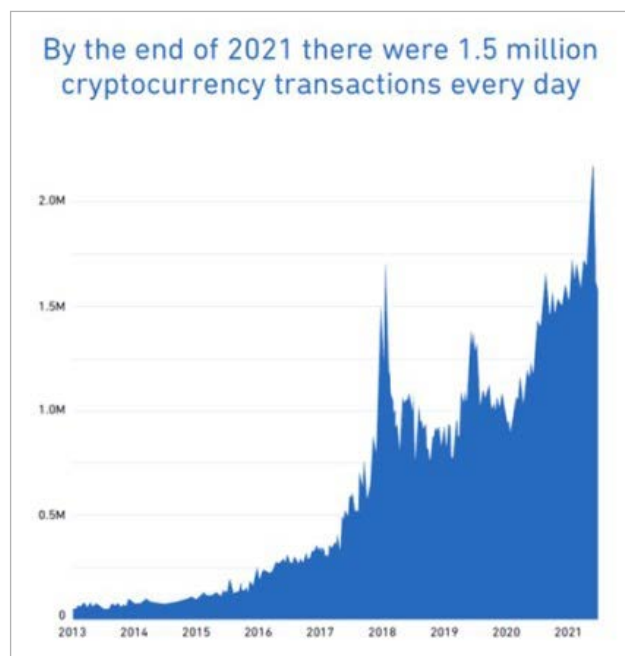
Daniel Lee ■ Head of Web3 ■ Banking Circle

Cryptocurrencies are moving into the mainstream, and growth will be fastest once traditional banks step fully into the race. Daniel Lee, Head of web3 at Banking Circle explores the Payments Bank's latest research and looks at how banks can fast-track crypto engagement by working with third parties.

Commonly considered a relatively new concept, the idea of cryptocurrency was first conceived in the Netherlands as early as the **1980s**. The 1990s saw some important leaps forward in digital cash, such as David Chaum's DigiCash, but it was not until 2009 that Bitcoin was launched, and quickly became the most widely used cryptocurrency. Progress for the new currency was slow, despite rapid technological advances that gave most households access to crypto if they wanted it.

Cryptocurrencies were designed to allow payments without banks, but this perceived benefit could be exactly what has held digital assets back from the mainstream for decades. The regulation and legacy that crypto sought to swerve – to make payments faster, cheaper, and more convenient – also give customers vital protection and stability that engenders trust. Without that, the customer base and potential growth are limited.

However, **recent research** reveals that crypto usage is growing faster than ever before, with total transaction volume reaching USD 15.8 trillion in 2021, up 567% from 2020. Around 300 million people now **hold crypto worldwide**, and 75% of users would like to use crypto to pay for goods and services.



Source: Comply Advantage

Where are the banks?

There are still hurdles to overcome for crypto to gain greater acceptance by mainstream banks. The ongoing volatility has meant crypto is far beyond most banks' risk appetites.

The recent crash of the **algorithmic stablecoin TerraUSD**, or UST, and the knock-on effect the crash had on Bitcoin, Ether, and Tether, demonstrate just how important it is that crypto is fully regulated. It also clearly shows the opportunity for bank-based stablecoins tethered to fiat currencies to ensure they are more stable than Terra, which originally used a complex mix of code and its sister token, Luna, to stabilise the process. →

Since the crash, Terra has been redesigned as a **blockchain** associated with the Luna token.

The Central Bank Digital Currencies (CBDCs) promise many of the advantages of crypto, but much lower volatility since they are digital versions of national currencies backed by government commitment. However, unlike cryptocurrencies, CBDCs are usually controlled centrally, thus it does not provide the benefits of a decentralised governance structure. Similarly, 'stablecoins' linked to assets such as fiat currencies or more established cryptocurrencies are less volatile than classic cryptos such as Bitcoin or altcoins, thereby reducing risk.

Regulating for success

Alongside improvements in risk, volatility, and security, regulation in this area is also developing, giving banks vital reassurance. Throughout 2021, regulators around the world began to roll out legislation related to handling virtual assets including crypto, covering investment rules, and consumer protection. Leading the way, the US passed more than 20 pieces of legislation by the end of 2021, defining how cryptocurrencies should be treated in areas from taxation to investment and payments.

With security improving, a coherent regulatory environment emerging, and CBDCs and stablecoins improving stability, we are moving to a new phase in crypto's evolution. Now is the time for banks to get on board, or they risk having to catch up later. They must develop a sound approach to web3 and crypto that helps them to stay ahead and build a competitive offering.

Importantly, due to their direct engagement with the clearing and settlement system, enduring consumer trust, and experience in shaping consumer protection regulation with governments, banks hold a significant advantage over Non-Bank Financial Institutions in powering the mainstream use of digital currencies. As such, the acceptance, transaction, and settlement of crypto will undoubtedly grow fastest when banks play a full role. Indeed, their overall absence from crypto to date may have hampered progress.

Getting on-board

Stablecoins are already being accepted as legal tender by major payment networks such as Mastercard, Visa, and PayPal, demonstrating their clear move into the mainstream. And, as stablecoins and CBDCs become more widely accepted and used, banks' customer relationships and high levels of trust mean they are likely to play an increasingly significant role.

Now, to prepare for the widespread adoption of digital currencies, banks should be working with third parties as part of their ongoing digitalisation strategy, to develop payment service infrastructures that can seamlessly intersect with crypto exchanges and wallets. This will help them add value for customers and generate revenue by acting as a bridge between the fiat and crypto environments. Expert third parties could manage the technical and regulatory issues, helping to deliver a seamless, end-to-end experience for bank customers looking to use stablecoins and CBDCs.

As web3 and crypto continue to grow in popularity, banks should prepare for the much wider propagation of stablecoins and CBDCs in the next two to three years. These currencies, more stable and secure, will soon overtake the more volatile classic cryptocurrencies including Bitcoin and altcoins. Hard to imagine today, perhaps, but it is also possible that CBDCs will soon begin to replace pure fiat currencies, particularly for digital payments.


So, there's no time like the present for banks to get on-board. Any bank without a coherent web3 or crypto strategy will quickly be left behind and forced to play catch-up.

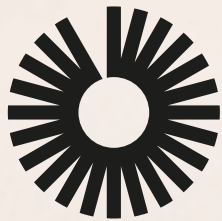
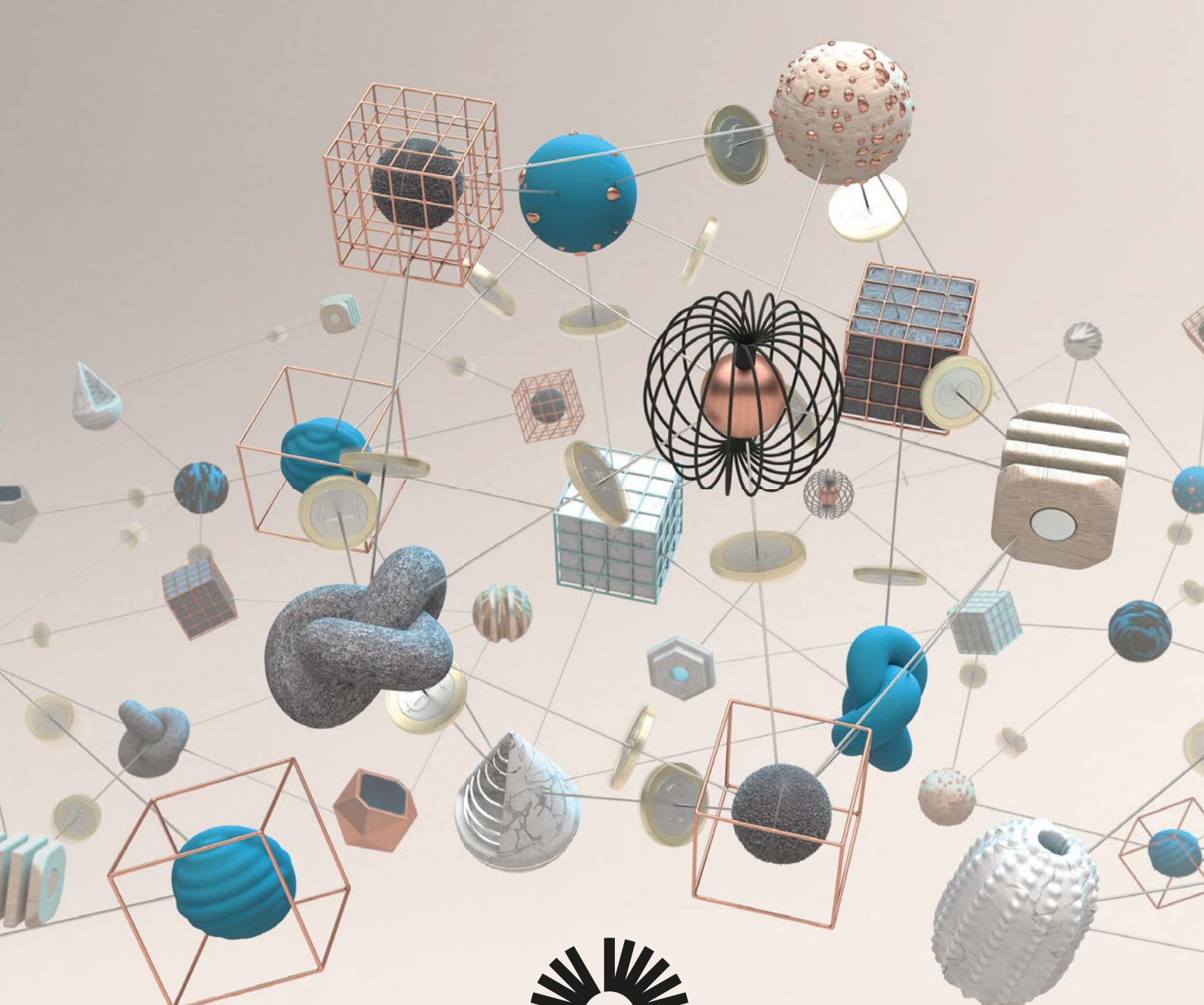
Banking Circle has published a white paper looking at the opportunities in the virtual asset marketplace: ***'As crypto evolves, how should banks approach CBDCs and stablecoins?'***



bankingcircle.com

Banking Circle is a fully licenced next-generation Payments Bank, designed to meet the global banking and payments needs of Payments businesses, Banks, and online Marketplaces. Banking Circle solutions power the payments propositions of more than 250 regulated businesses.

Info regarding how does your blockchain solution work	
Speed of transaction processing per second – TPS	Banking Circle runs on Ethereum and plans to add other networks during 2023.
Do you generate a token?	No
Related work – is your blockchain infrastructure designed/inspired from other infrastructures?	Banking Circle utilises existing blockchain infrastructure (Ethereum).
Business model	
Pricing model	POA
Investors	EQT VIII and EQT Ventures
Number of employees	400+
Future developments	For more details please visit https://www.bankingcircle.com/contact-us .
Customers	
Customers reference	Payments businesses using the core Banking Circle solutions include Stripe, Paysafe, PPRO, Nuvei, Checkout.com, Alibaba.
	View company profile in online database* 
	*The data present at the time of publication might be subject to changes and updates. For the latest stats and information, we invite you to check the profile in our online company database .



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Worldline

Crypto Acceptance at the Point of Sale and in Ecommerce



Sascha Münger is currently working as Head Competence Centre Crypto Related Products & Metaverse within the Global Business Division Commercial Acquiring at Worldline Global. In this role, he is responsible for products related to crypto payments at the point of sale and in ecommerce as well as future commerce scenarios in the Metaverse. Previously, he was responsible for the implementation of the payment processing module within the TWINT system at SIX Payments Services (predecessor organisation of Worldline).

Sascha Münger ■ Head Competence Centre Crypto Related Products & Metaverse ■ Worldline

Worldline payments expert Sascha Münger, Head Competence Centre Crypto Related Products & Metaverse explains how crypto acceptance works at both the point of sale and in ecommerce, and the benefits this new payment method can bring to merchants and consumers.

How popular are crypto payments among merchants?

According to our surveys, merchants across the board (from micro merchants to key accounts) see their customers interested in paying with cryptocurrencies and are willing to accept them as a means of payment, as long as there are no disadvantages in terms of risk, costs, or complicated processes. So, from our point of view, crypto payments are enjoying increasing popularity on the consumer and merchant side.

Moreover, crypto payments are becoming increasingly popular at the point of sale (POS) in the luxury sector, the hotel industry, and in restaurants. We also see a positive development in ecommerce as well as among merchants in the tech sector and charities. On the other side, the retail sector (grocery stores and supermarkets) is probably the slowest to accept this new payment method on a large scale.

What could be challenging for merchants when trying to tap into these new ways of paying?

The biggest acceptance hurdles include the volatility risk, the speed of transaction processing, and the integration of blockchain processes within the existing payment infrastructure. With our solution Worldline Crypto Payments, jointly developed with

Bitcoin Suisse, we enable merchants to accept crypto payments like any other payment method (such as credit cards or mobile payments) with the same payments and reconciliation processes. This simplifies the acceptance and merchants can integrate crypto payments in an easy and uncomplicated way.

Overview of Worldline Crypto Payments:

How to overcome these, to enjoy the benefits?

It is important for payment service providers to integrate crypto payments seamlessly into existing payment processes in an easy and user-friendly way for both merchants and their customers. Various factors, such as the time required for the transaction confirmation in the blockchain, must be solved by the payment processor. With Worldline Crypto Payments, merchants can accept cryptocurrency payments (Bitcoin, Ethereum, and the 2nd Layer protocol Bitcoin Lightning) risk-free, both at the POS and in ecommerce and can, thus, attract potential new customers with this innovative means of payment. →

What is a cryptocurrency POS system?

A cryptocurrency PoS system is a solution for deploying a cryptocurrency payment gateway. The PoS system enables merchants to accept cryptocurrencies. It is important for merchants not to be exposed to any acceptance hurdles and to be able to accept crypto payments like any other means of payment. For this reason, Worldline has opted for a simple 'Bring your own device' app for the integration of cryptocurrencies at the PoS. This app can easily be downloaded from the Google Play or Apple App Store on any of the merchant's devices. The merchant can accept crypto payments immediately after a brief onboarding process. Worldline also plans to integrate this App on Android-based POS terminals in the future. In addition, there is already an innovative solution for micro-merchants live, which enables crypto payments for merchants like farm shops or craft markets through a QR code sticker.

What other solutions are out there enabling crypto payments?

In ecommerce, Worldline offers the payment solution Worldline Crypto Payments as 'yet another payment means' integrated into the ecommerce solution Saferpay. This means that Worldline merchants can easily integrate crypto payments into their webshop directly or via a web shop plugin and enjoy all the benefits mentioned earlier. At Worldline, we believe that we are very well positioned with our POS and ecommerce solution and that we can react flexibly to the further development of the crypto market. For example, we'll be able to integrate new cryptocurrencies into Worldline Crypto Payments in a very short period of time or support new payment channels such as the Metaverse. Here, Worldline is already represented with its own showroom in Decentraland and is gaining experience along with its customers.

Besides payment processing at the POS, what other activities can crypto payment solutions enable?

We believe that the current form of crypto payments (e.g. Bitcoin or Ethereum) is only the beginning and that cryptocurrency payments

will be an essential part of the adoption of cryptocurrencies, as they can not only be held but also used for the purchase of goods and services in the same way as traditional fiat currencies. This will also help, for example, when central banks issue Central Bank Digital Currencies as Worldline Crypto Payments is already rolled out within the merchant base of Worldline, and new coins can be easily added to our payment solution. This will also help to establish new use cases (e.g. invoice payments with cryptocurrencies) around crypto payments quickly and efficiently, while at the same time achieving a wide adoption among Worldline merchants.

What are the next steps needed for merchants to adopt crypto payments at the point of sale and in ecommerce? How are Worldline's products and services supporting this evolution?

The payment solution Worldline Crypto Payments is a first step towards making cryptocurrencies available as a payment method at the point of sale and in ecommerce. Currently, this new payment mean is available for Swiss merchants and will be rolled out in other Worldline markets in 2023. In addition, education of merchants and consumers on cryptocurrencies is another important element Worldline will facilitate, as payments with cryptocurrencies are still in their initial phase of adoption and the advantages must be demonstrated to all players under real-life conditions. Being Europe's largest payment service provider, Worldline believes in the potential of crypto payments and is actively working on solutions to make cryptocurrency payments accessible to the broader public.


More Information about Worldline Crypto Payments can be found here:



WORLDLINE 

worldline.com

Worldline [Euronext: WLN] is a global leader in the payments industry and the technology partner of choice for merchants, banks, and acquirers. Powered by 18,000 employees in 40 countries, Worldline provides its clients with sustainable, trusted, and innovative solutions fostering their growth. Services offered by Worldline include instore and online commercial acquiring, highly secure payment transaction processing and numerous digital services. In 2021 Worldline generated a proforma revenue close to 4 billion euros.

Company	Worldline
	<p>Worldline is a global leader in the payments industry and the technology partner of choice for merchants, banks, and acquirers. Powered by 18,000 employees in 40 countries, Worldline provides its clients with sustainable, trusted, and innovative solutions fostering their growth. Services offered by Worldline include instore and online commercial acquiring, highly secure payment transaction processing, and numerous digital services.</p>
Background information	
<p>Year founded</p> <p>Website</p> <p>Target group</p> <p>Supported regions</p> <p>Contact</p> <p>Company's motto</p> <p>Member of industry association and/or initiatives</p>	<p>1973</p> <p>https://worldline.com/en/home.html</p> <p>Banks/FS, Fintech, Brokers, Crypto exchange/Blockchain and Crypto Companies, Merchants/Marketplaces (regulated entities), PSP/Acquirers, Telecom</p> <p>Europe</p> <p>nicolas.kozakiewicz@worldline.com</p> <p>Digital payments for a trusted world</p> <p>EMVCO, W3C, FIDO Alliance, EDPIA, EPI, MAG (ECB)</p>
Core solution	
<p>Crypto Rails B2B</p> <p>Crypto Rails B2C</p> <p>Crypto Rails B2B & B2C</p> <p>Crypto Exchanges</p> <p>DEX-Decentralized Exchanges</p> <p>Crypto Native PSPs</p> <p>Non-Crypto Native PSPs</p> <p>Crypto Card Issuers</p> <p>Crypto Wallets</p> <p>Custody</p> <p>Crypto Money Transfer</p> <p>DeFi Protocols</p> <p>Bitcoin ATMs</p> <p>KYC, AML Providers for Crypto</p> <p>Blockchain Analytics</p> <p>Borrowing and Lending</p> <p>Core solution/problems the company solves</p>	<p>Crypto infrastructure for financial institutions</p> <p>Crypto Rails B2B & B2C</p> <p>Non-Crypto Native PSPs</p> <p>Crypto Wallets</p> <p>Worldline proposes several services around digital currencies and payments: CBDC services (infrastructure, integration, online payments, offline payments), Stablecoin services (infrastructure, integration, online payments, offline payments, FYC, Acquiring, Issuing), Crypto acceptance (online, physical, and in the metaverse), Identity services, Service/Utility Token services.</p>
Service Provider Type	
<p>Crypto payment Service Provider - Gateway/Merchant Acquirer/Processor</p> <p>Banking product infrastructure</p> <p>Payments Infrastructure</p> <p>Settlement networks</p> <p>B2B payments</p> <p>POS/mPOS</p> <p>Liquidity and execution solutions</p> <p>Exchange</p> <p>Wallet functionalities</p> <p>On-chain analytics</p>	<p>x</p> <p>x</p> <p>x</p> <p>x</p> <p>x</p> <p>x</p> <p>x</p> <p>x</p> <p>x</p> <p>x</p>

Custody (vendor hosted custody, on-premise custody with multiple key handling solutions, hybrid key sharded solutions held by both the financial intermediary and the third-party vendor)	x
Info regarding how does your blockchain solution work	
Speed of transaction processing per second – TPS	Up to several thousands
Do you generate a token?	Yes
Related work – is your blockchain infrastructure designed/inspired from other infrastructures?	Yes
How is consensus reached (– relevant for sustainability/ electricity, etc.)?	Round robin, no energy waste.
Business model	
Funding rounds/Investors	Listed company
Pricing model	All business models are supported.
Investors	Please refer to our corporate investor page https://investors.worldline.com/en/home.html
Year over year growth rate	34.2%
Number of employees	18,000
Future developments	For more details, please contact our sales team.
Customers	
Customers reference	Worldline and Bitcoin Suisse launch WL Crypto Payments in Switzerland. Worldline operates several Private Stablecoins for different customers, like Da Vinci, PayFoot, and some non-disclosed big actors. Worldline is part of the Digital Euro prototyping with the European Central Bank.
	View company profile in online database*
	*The data present at the time of publication might be subject to changes and updates. For the latest stats and information, we invite you to check the profile in our online company database .

A Glimpse of the Future

Privacy and Identity in the Metaverse



What is the metaverse?

To answer this question as well as concerns on privacy and identity, Worldline has reunited a panel of expert speakers in Digital Trust and Emerging Tech.

Watch the session to gain insights into what the future of metaverse will bring us.



TripleA

Eric Barbier, CEO of TripleA, shares the benefits that merchants and PSPs can reap from accepting crypto payments, once their concerns are addressed.



Eric Barbier is a successful entrepreneur with >15 years of experience building FinTech & mobile payments companies. Before TripleA, he founded Thunes, a leading B2B payments network, and Mobile365, which was acquired by Sybase (now SAP). He is also the appointed board member of tech companies like AMEEX, STC pay, and Sleek.

Eric Barbier ■ CEO ■ TripleA

Eric, you have such great experience building successful payments companies and fintechs, what do you think are the fundamentals of establishing a solid crypto payments gateway?

The key operating principle is **compliance with the law**. A payment gateway cannot be a vehicle for money laundering or illicit activities.

Besides working closely with government bodies and global financial regulators, I make sure to put in place extensive checks and balances. TripleA is licensed by the Monetary Authority of Singapore (MAS). It is also registered with FINCEN and holds a Payment Institution Licence in the EU. Additionally, we are compliant with the Financial Action Task Force (FATF).

“ If you’d like to enjoy the benefits of crypto payments and payouts without having to hold and convert crypto, work with a licensed and regulated crypto payments partner.

Next, the **payment experience has to be seamless and intuitive**. It needs to facilitate the purchase for the payer, not be a friction point.

I made sure TripleA’s white-label crypto payment user experience is foolproof. We are wallet-agnostic, so crypto owners can pay using

any wallet. We also offer instant confirmation to provide the most seamless payment experience.

Last but not least it has to **streamline operations for the merchants**.

TripleA’s locked-in exchange rate and instant crypto-to-fiat conversion ensures that our merchant receives funds in fiat, according to the listing price. Our next-day bank settlement in local currency optimises their cash flow and ensures operational efficiency.

In the current context where people can be subject to scams, regulators are concerned about money laundering issues. What are the key benefits merchants and PSPs experience when working with a licensed crypto payments gateway?

In short, a licensed crypto payments gateway like TripleA shields merchants and PSPs from all compliance and regulatory concerns that come with accepting crypto.

We have a robust set of policies, procedures, and technologies to prevent money laundering or scams.

Sanction screenings are done on every transaction to detect payments linked to sanctioned individuals, organisations, or activities. We also work with top-class regulatory technology solutions that conduct real-time blockchain analysis for every transaction. Any suspicious activity will be flagged instantly, and the payment will be blocked. →

Where do you see most crypto payments adoption, and in what verticals?

We see the highest adoption rates on ecommerce retailers and marketplaces, especially within the luxury, hospitality, and gaming verticals.

Many Payment Service Providers (PSPs) and financial institutions are also responding to the market demand and coming on board.

Who are the slow adopters of crypto payments, and why? What are their main concerns?

They tend to be traditional businesses that are more risk-averse, or slow to adapt to market demand or new technologies. I hear them, and I fully understand their concerns.

Concern 1: Price volatility risk

Many corporations do not want to have cryptocurrency assets on their balance sheets because of the huge fluctuations in values.

Concern 2: Compliance

Businesses are unwilling to deal with the compliance complexities that come with accepting crypto payments.

Concern 3: Not equipped with the right resources

Many corporations want to accept crypto payments, but do not have the technological resources or manpower to do so.

Concern 4: Unaware of the benefits

Not all corporations are fully aware of the benefits of crypto payments or have their fingers on the pulse of its market demand.

How can one overcome these hurdles and reap the benefits of crypto payments?

The best way to go about it is to **work with a licensed crypto payment gateway with a customer-centric payment solution.**

The TripleA team has built a product that addresses merchants' specific concerns.

Addressing Concern 1: Price volatility risk

With our real-time crypto-to-fiat conversion and instant confirmation at the point of payment, TripleA frees corporations from holding and converting digital currencies. We shield them from the price volatility risk.

Addressing Concern 2: Compliance

TripleA's licensed payments solutions have strong compliance processes in place, to ensure that all businesses integrated with us will not be used as a vehicle for illegal activities and money laundering.

Addressing Concern 3: Not equipped with the right resources

TripleA's white-label solutions and easy integration allow corporations to go to market quickly with crypto payments without dedicating much internal resources.

Addressing Concern 4: Unaware of the benefits

We take it upon ourselves to share the key benefits: low transaction fees, quicker settlement periods, no chargeback, and the ability to reach new and affluent customer segments.

What advice would you give merchants and PSPs joining the crypto payments bandwagon?

Find the right crypto payments solution partner for your business. Spend some time to make sure that your crypto payments partner is licensed and regulated, to protect your business and your consumers.


A good crypto payments solution provider will also be highly customer-centric. Your customer's payment experience and security will be at the forefront.

If you'd like to start accepting crypto, feel free to reach out to sales@triple-a.io.



triple-a.io

TripleA is a cryptocurrency payment gateway licensed by Singapore's central bank. TripleA simplifies crypto payments for businesses, empowering them to increase revenues by tapping into the spending power of 350+ million crypto users. Its white-label solutions and instant crypto-to-fiat conversion enable businesses to pay and get paid in cryptocurrencies, volatility-free.

Company	TripleA
	<p>TripleA is a licensed crypto payment gateway empowering businesses to attract new customers and increase their revenue by seamlessly enabling crypto payments and payouts via their white-label solutions. Thanks to their instant crypto-to-fiat conversion, businesses are shielded from volatility risk and freed from handling and converting digital currencies.</p>
Background information	
<p>Year founded</p> <p>Website</p> <p>Target group</p> <p>Supported regions</p> <p>Contact</p> <p>Company's motto</p> <p>Member of industry association and/or initiatives</p>	<p>2017</p> <p>https://triple-a.io/</p> <p>Merchants, Marketplaces, Banks/FS, Fintech, Crypto Exchanges, PSP/Acquirers</p> <p>US, Europe, Middle East, APAC, Africa, LATAM, India, China, Global (except sanctioned countries)</p> <p>Office number: +65 6993 7824 Email: sales@triple-a.io</p> <p>Crypto Payments. Crypto Payouts. Grow your business.</p> <p>Member of MRC – Merchant Risk Council (https://merchantriskcouncil.org/), SBA – Singapore Blockchain Association (https://singaporeblockchain.org/), SFA – Singapore FinTech Association (https://singaporefintech.org/), 2022 Participant of Visa Accelerator Program TripleA is a Payment Institution licensed by the MAS (Monetary Authority of Singapore), the ACPR (French Prudential Control and Resolution Authority/Autorité de Contrôle Prudential et de Résolution), and registered with FinCEN (US Treasury Department)</p>
Core solution	
<p>Crypto Rails B2B</p> <p>Crypto Rails B2C</p> <p>Crypto Rails B2B & B2C</p> <p>Crypto Exchanges</p> <p>DEX-Decentralized Exchanges</p> <p>Crypto Native PSPs</p> <p>Non-Crypto Native PSPs</p> <p>Crypto Card Issuers</p> <p>Crypto Wallets</p> <p>Custody</p> <p>Crypto Money Transfer</p> <p>DeFi Protocols</p> <p>Bitcoin ATMs</p> <p>KYC, AML Providers for Crypto</p> <p>Blockchain Analytics</p> <p>Borrowing and Lending</p> <p>Core problem the company solves</p>	<p>Crypto Payments Processing</p> <ol style="list-style-type: none"> 1. Crypto Payments: Enabling businesses to accept payments in cryptocurrencies, without having to hold or convert cryptocurrencies 2. Crypto Payouts: Enabling businesses to pay in cryptocurrencies, without having to hold or convert cryptocurrencies <p>Crypto Native PSP</p> <p>Crypto Rails B2B</p> <p>Crypto Money Transfer</p> <p>With the fast-growing community of more than 350 million crypto owners, the demand from consumers to pay for in cryptocurrencies is accelerating.</p> <p>Businesses want to sell to this group of consumers with more than 1 trillion USD in spending power, but they do not want to:</p> <ul style="list-style-type: none"> - be exposed to any volatility and compliance risks; - deal with the complexities inherent to holding digital currencies on their balance sheets. <p>TripleA allows all businesses to enjoy the benefits of crypto payments & payouts, volatility-free, and in full compliance with applicable laws and regulations. Compatible with all crypto wallets, TripleA's white-label solution includes consumer and merchant-friendly essential features such as a locked-in exchange rate and instant notification. TripleA further offers T+1 bank settlements in 50+ local currencies, shielding businesses against volatility and from holding and converting digital currencies.</p>
Service Provider Type	
<p>Crypto payment Service Provider - Gateway/Merchant Acquirer/Processor</p>	<p>Crypto payment gateway</p>

Banking product infrastructure	We have a dashboard that allows users to view and manage all banking transactions, request payments via our invoicing tool, manage users, and more.
Payments Infrastructure	Crypto Payments Infrastructure
Settlement networks	Crypto-to-fiat settlement: T+1 Bank settlement/50+ local currencies supported Able to transfer to bank networks worldwide (excluding sanctioned countries – Cuba, Islamic Republic of Iran, North Korea, Syrian Arabic Republic)
B2B payments	Cross-border B2B payments
POS/mPOS	Crypto Payments POS
Liquidity and execution solutions	Liquidation/conversion of crypto to fiat at point of payment Liquidation/conversion of fiat to crypto at the point of payout
Related non-core services	A corporate debit card that allows businesses to spend their account balance
Custody (vendor hosted custody, on-premise custody with multiple key handling solutions, hybrid key sharded solutions held by both the financial intermediary and the third-party vendor)	Vendor hosted custody
Info regarding how does your blockchain solution work	
Do you generate a token?	No
Business model	
Funding rounds	We completed our seed round in May 2022.
Pricing model	Transaction fee, based on value transacted.
Investors	zVentures (Razer’s venture arm) Sequoia Rapyd Ventures 8i Ventures 1982 Ventures Insignia Ventures Partners Boleh Ventures
Year over year growth rate	2749%
Number of employees	50+
Future developments	We will continue building on our solutions to serve as a crypto bank for businesses. Some key features: - Card Issuance for TripleA Merchants - Expand off-chain payment partnerships with further global and regional decentralized exchanges - Ongoing and evolving compliance reinforcements to ensure our solution maintains the highest compliance standards as required by financial regulators
Customers	
Customers reference	We are trusted by over 15,000 institutions across all industries. Some of our customers and partners include: Fintech/PSP – Grab, Binance, AsiaPay, BigPay Retail – Charles & Keith, Stadium Goods Luxury – Farfetch Gaming – Razer Marketplaces – Novelship, G2A
	View company profile in online database*
	*The data present at the time of publication might be subject to changes and updates. For the latest stats and information, we invite you to check the profile in our online company database .

MRC

Should Merchants Accept Crypto in 2023? The Pros and Cons



Tracy Kobeda Brown is the VP of Programs and Technology for the MRC. She was head of product for Fragomen, Lockerz, and the CEO of Evil Genius Designs. Tracy created the American Eagle Outfitters website, ae.com, and served as CISO. She earned her Masters from Carnegie Mellon and her Bachelor's in Economics from The Wharton School.

Tracy Kobeda Brown ■ VP, Programs and Technology ■ MRC



Leo Parrill has extensive experience with content marketing and copywriting in the payments, technology, and gaming industries. He has a proven track record of creating and managing digital content with some of the largest technology companies in the world. He is proud to currently be producing and guiding the MRC's many content offerings.

Leo Parrill ■ Content Manager ■ MRC

Between inflation, supply chain issues, continued COVID-19 recovery, and ongoing geopolitical concerns, the payments landscape has shifted dramatically in the last year. Cryptocurrency continues to be an increasingly prominent feature of that landscape. As merchants rush to adapt to the new normal in the coming year, the question of whether to integrate digital currency as a payment method becomes increasingly important.

The decision is not a simple one. Enthusiasm for new technologies is a key part of innovation, but it must be tempered with strategic and practical implementation to be successful. Determining whether crypto is a good fit for a merchant's payments stack requires thoughtful analysis of the advantages and disadvantages cryptocurrency acceptance provides.

The advantages of accepting cryptocurrency

Many of the reasons consumers are drawn to **cryptocurrency as a payment method** are advantages for merchants as well. After an initial learning curve for consumers, cryptocurrency offers virtually instantaneous transactions that are cheaper than many traditional payment methods due to fewer third-party fees. Crypto also simplifies cross-border transactions and mitigates the inconvenience of currency conversion.

A powerful potential advantage of accepting crypto for merchants is the finality of the purchase. In most transactions, there are no refunds and no costly chargebacks. All sales are final. While this can free up resources, a potential downside is the added burden to customer service departments when a consumer regrets a purchase.

But perhaps the single most compelling reason merchants should consider accepting cryptocurrency: their customers want to pay with it. Providing the payment method that consumers want will empower them to spend more. It also enables those without access to traditional banking to engage with the economy and will likely continue to play a pivotal role in emerging markets.

These are some of the reasons **73% of small businesses** say that new forms of digital payments are fundamental to their growth, and why larger merchants have been cautiously exploring this space for a long time. →

The risks of accepting cryptocurrency

As compelling a reason as customer preference might be, there are obstacles that need to be considered as well.

The most obvious concern is continued volatility. The wild swings of even the most stable cryptocurrencies make pricing items a struggle and make cryptocurrency a challenging fit for subscription-based merchants where predictable revenue streams are a critical part of a successful business model. Eventually, these price swings may be less dramatic and more in line with traditional currency exchange rates, but it's impossible to predict when, or if, that will happen.

Another unpredictable element of cryptocurrency is the shifting regulatory landscape. It's still the early days of crypto, and the global patchwork of regulatory infrastructure makes compliance a challenge. This may cause problems for global merchants who must accommodate a wide variety of vastly different regulations. There are existing payments-related regulations that global merchants must consider, compliance requirements are not new, but the relatively untested legal and regulatory landscape of cryptocurrency makes predicting what's coming and adapting to it a significant challenge.

There's also the concern of additional fraud. Properly executed, cryptocurrency transactions are very secure; but adding new payment types always provides exposure to additional attack vectors. This is an inherent risk that comes with adopting any new payment method, but it's important to consider that fraud mitigation strategies will need to be updated and tailored to the unique profile of cryptocurrency fraud, and this process may require new staff training, new technologies, and at the very least, new KPIs and tracking methodologies.

There are other challenges too, including the best way to store cryptocurrency, privacy concerns given the transparency of the public ledger, how to account for it as revenue, and when to convert it to traditional currency. These are merchant specific considerations,

however, and likely secondary to the immediate challenges faced by organisations accepting crypto for the first time.

Should You Accept Crypto?

As of 2022, global crypto ownership rates average at 4.2% of the population, with over 320 million crypto users worldwide.

This is a number too large to simply ignore, though accepting crypto just because others are, is obviously not a viable strategy, especially if it's antithetical to your business model or not a good fit for your customers.

Perhaps it's best to start with a simple question: do your customers want to pay with crypto? If so, does your business model support it? Will it be profitable for your business based on customer demand? Do you have the resources to implement the logistical, legal, regulatory, and fraud infrastructure necessary to do it in the right way? Do you have the resources to stay current as crypto continues to evolve?

If the answer is yes, remember that as adoption grows, so do third-party companies that can help with this complex process regardless of your organization's size. There are many logistical considerations when adopting crypto into a payments stack, but it's much easier to accomplish than it was even a few years ago. Merchants don't have to do it all in-house, and they don't have to do it alone.

Even if the answer is no and you're not yet prepared to take that step, it's still wise to explore digital currencies and blockchain technologies, because they aren't going anywhere. These concepts continue to be valuable for a wide variety of business concerns, not just payment acceptance, and having the institutional knowledge necessary to successfully utilise them can provide a significant advantage in the years to come.



merchantriskcouncil.org

The **MRC** is a global community connecting ecommerce fraud prevention and payments professionals through educational programs, online community groups, conferences, and networking events. As a non-profit organisation, the MRC is headquartered in Seattle, Washington, but embraces members from across the globe.



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ACI Worldwide

Basant Singh, SVP & Global Head of Merchant Business Unit Providing Payments & Fraud Solutions, describes how bringing blockchain into the ecommerce ecosystem can unlock new payment rails for millions of digital currency owners while driving revenue and opening up new channels for merchants.



Basant Singh is a highly experienced payments industry executive with more than 20 years of experience spanning payments, fintech, and consulting services. He leads ACI Worldwide's Merchant and Payments Intelligence solutions portfolio, which encompasses a Payment Orchestration Platform to offer ecommerce, omnichannel payments, merchant fraud, and Alternative Payments. He has global business experience with merchant acquiring spanning direct and indirect channels, financial institution alliances, customer segments, and verticals.

Basant Singh ■ *Head of Merchant Segment* ■ ACI Worldwide

Crypto-backed ecommerce transactions are on the rise. How likely is mass adoption? Are merchants and consumers aligned?

We see two strong adoption trends emerging. Firstly, consumers are starting to see crypto as a currency for payments and not just as something to buy and sell as an investment. Secondly, many governments are looking at regulating digital currencies and using blockchain to empower populations, especially the underserved. Though this varies from country to country, momentum is accelerating at pace and is likely to fuel mass adoption within the next decade. At the same time, merchants are increasingly aware of the benefits of accepting real-time payments options, including crypto, as low-cost alternatives to cards. So, in general, merchants' and shoppers' desire to consider crypto as part of the payment mix is increasingly aligned.

“*There is a great opportunity in blockchain to boost revenue by removing currency conversion and interchange fees, beating the fraudsters in their tracks, and eliminating chargebacks.*”

Blockchain technology is enabling crypto and making other digital currency payments possible. Could it also be the next chapter for real-time payments, especially for merchants wanting to increase cross-border commerce?

Absolutely, it offers clear advantages for cross-border e-tailers, helping to control operational costs and as a potential acquisition magnet for young affluent international shoppers. Blockchain payments can boost revenue by removing currency conversion and interchange fees, as well as eliminating chargebacks, and reducing fraudulent transactions. As perceptions shift and crypto and digital currencies become more widely used, having 'pay-with-crypto' at the checkout may encourage spending and increase loyalty in key cross-border segments like fashion, electronics, and entertainment.

While for shoppers crypto payments are as easy as ABC, how do they sit within a merchant's payments ecosystem?

Merchant acceptance of crypto is only just starting to take off. **Paying on blockchain** technology is still a relatively new concept for many merchants. One of their biggest concerns is that it will upset normal business practices – adding complexity, impacting reporting, and making updates, regulation, and compliance even harder. This can be easily addressed by choosing a solution provider, like ACI, that can convert digital currencies into fiat currencies. Avoiding disruption while leaving merchants free to cope with the ever-changing e-payments landscape. →

What is the next phase in the evolution of digital currencies and how they are used in ecommerce?

Web 3.0 platforms are already being decentralised, using tokens and cryptocurrency to shift ownership and 'trust' to users, and giving them a say in how they are run. Today, NFTs are being used to tokenise anything and everything in the digital world e.g. a meme or a piece of digital art. In the near future, we could easily see merchants offering their customers digital currency powered loyalty schemes, gift card programmes, easy consumer financing options, and much more – all covered by the safe and private nature of blockchain.

Blockchains, crypto, and NFTs are converging at scale, with the metaverse the driving force bringing these elements together in an immersive experience. How can retailers, gaming, and digital entertainment explore the metaverse and navigate hype vs. reality?


Bringing instant and direct peer-to-peer transactions over the internet at zero cost, blockchain-based cryptocurrencies can create greater opportunities for commerce in the metaverse. This turns it from a virtual destination where the primary intention is to interact to a powerful transaction platform where every interaction can lead to a sale. For games, fashion, media, and tech brands that are currently leading the metaverse revolution, the ability to monetise the platform through seamless, effortless, instantaneous payment is what will turn it from a 'virtual playground' to a new and highly-strategic sales channel. Once again, the key to success will be having the right partners to help smooth the way, with real-time payment solutions that translate from traditional ecommerce environments into this new immersive domain.

If you are a merchant considering to accept payments over blockchain, globally, and would like to [learn about accepting over 120 cryptocurrencies](#) with just one API integration, contact us for a consultation with our blockchain [subject matter experts](#).



aciworldwide.com

ACI Worldwide delivers the software and solutions that power the global economy. Our mission-critical real-time payment solutions enable corporations to process and manage digital payments, power omni-commerce payments, present and process bill payments, and manage fraud and risk.

Company	ACI Worldwide
	<p>ACI Worldwide is the global leader in mission-critical, real-time payments software. Our proven, secure and scalable software solutions enable leading corporations, fintechs, financial disruptors, and merchants to process and manage digital payments, power omni-commerce payments, present and process bill payments, and manage fraud and risk. We combine our global footprint with a local presence to drive the real-time digital transformation of payments and commerce.</p> <p>ACI's Payment Orchestration Platform for the merchant segment, with vast connections to payment providers around the world, such as acquirers, APMs, Wallets, Crypto acceptance, etc., enables merchants to optimise their payment conversion at a much lower cost.</p>
<p>Background information</p>	
<p>Year founded</p> <p>Website</p> <p>Target group</p> <p>Supported regions</p> <p>Contact</p> <p>Member of industry association and/or initiatives</p>	<p>1975</p> <p>www.aciworldwide.com</p> <p>Payment Orchestration Platform target groups: Indirect: PSP, ISV, ISO PayFac, Fintech, Merchant Acquirers Direct: Merchants, Retailers, CPG, Hospitality & Travel, Gaming, Transportation, Airlines, Digital Entertainment, Market Places, Shared Economy</p> <p>Global</p> <p>For any queries, please feel free to reach out either via our phone, email or fill out our contact us form: Email: merchantpayments@aciworldwide.com Contact us: https://www.aciworldwide.com/merchant-consultation</p> <p>ACI collaborates with leading associations, technology, and software providers around the world to ensure that our customers can rely on the superior performance of our products and solutions. For details, please click here</p>
<p>Core solution</p>	
<p>Crypto Rails B2B</p> <p>Crypto Rails B2C</p> <p>Crypto Rails B2B & B2C</p> <p>Crypto Exchanges</p> <p>DEX-Decentralized Exchanges</p> <p>Crypto Native PSPs</p> <p>Non-Crypto Native PSPs</p> <p>Crypto Card Issuers</p> <p>Crypto Wallets</p> <p>Custody</p> <p>Crypto Money Transfer</p> <p>DeFi Protocols</p> <p>Bitcoin ATMs</p> <p>KYC, AML Providers for Crypto</p> <p>Blockchain Analytics</p> <p>Borrowing and Lending</p> <p>Core solution/problems the company solves</p>	<p>Crypto Payment Acceptance</p> <p>ACI Worldwide serves the full payment ecosystem, processing and managing digital payments, managing fraud and risk for merchants, banks, and intermediaries. The company enables real-time omni-commerce payments through its payment orchestration platform, directly to merchants, and indirectly to PSPs, while also offering multi-layered fraud management, including machine learning.</p> <p>Core Product: Feature Rich Payment Orchestration Platform for merchants; customisable to optimise merchants' individual payment connectivity, customer engagement points, and flows that drive their overall payment strategy.</p>

	<p>The platform delivers a direct connection to:</p> <ul style="list-style-type: none"> - Acquirers - APMs - Crypto Acceptance - Wallets - Fraud Management - Authentication (3DS) - Tokenisation - Payment capture widgets/channels - User access - Reporting - BI - Value add services such as delegated authentication or Smart Engage - Global and Local Acquiring/APMs - Dynamic routing and Smart retry payment flow
Service Provider Type	
Crypto payment Service Provider - Gateway/Merchant Acquirer/ Processor	x
Banking product infrastructure	x
Payments Infrastructure	x
B2B payments	x
POS/mPOS	x
Exchange	x
Wallet functionalities	x
Related non-core services	x
Info regarding how does your blockchain solution work	
Speed of transaction processing per second – TPS	The ACI Payments Orchestration Platform is blockchain agnostic.
Do you generate a token?	The ACI Payments Orchestration Platform is blockchain agnostic.
Related work – is your blockchain infrastructure designed/inspired from other infrastructures?	The ACI Payments Orchestration Platform is blockchain agnostic.
Sharding – sharding types (network sharding, transaction sharding and state sharding)	Not applicable
How is consensus reached (– relevant for sustainability/ electricity, etc.)?	The ACI Payments Orchestration Platform is blockchain agnostic.
Business model	
Funding rounds/Investors	ACI is a public listed company on NASDAQ
Pricing model	For pricing queries, please reach out via our Contact us form
Investors	ACI is a public listed company on NASDAQ
Year over year growth rate	Revenue: USD 1.4 Billion in 2021
Number of employees	Around 5000 globally
Future developments	As part of the Crypto offering of the Payments Orchestration Platform, ACI's roadmap includes a crypto loyalty program, payouts by crypto, bill pay by crypto, and BNPL with crypto.
Customers	
Customers reference	Customer information upon request. For a selection of ACI Worldwide case studies please click here
	View company profile in online database*
	*The data present at the time of publication might be subject to changes and updates. For the latest stats and information, we invite you to check the profile in our online company database .

Accept 120+ Cryptocurrencies With **One-Click, One API** and **Zero Fees**

Discover how to add crypto payments to your checkout

Tune into our latest on-demand webinar where Basant Singh, SVP and global head of merchant unit, talks about ***Unlocking Merchant Revenue Options With Crypto Acceptance.***



The Main Actors of The Crypto Payment Chain

Many industry players have so far embarked on the crypto train – banks, fintech merchants, PSPs – to enable users to store, spend, and invest using crypto securely.

The potential for market participants (banks, merchants, PSPs, and other businesses) is massive if we take into consideration the number of users (locally and globally), potential applicability (ecommerce, entertainment, transacting, payments, etc.), and the richness of technological solutions that underpin crypto and DeFi. Amidst demand for new forms of digital goods (gaming) and commerce like NFTs, a clear value proposition for crypto payments arises with consumers, based on digital simplicity and global ubiquity. The value proposition for merchant crypto payment acceptance is also coming into focus, revolving around incremental sales to millennial customers who increasingly transact on a borderless basis leveraging the convenience of wallet/apps form factors.

Regarding the role played by banks, consumers are more interested than ever in Bitcoin/crypto products from their banks. NYDIG, a technology and financial services firm dedicated to Bitcoin for institutions, private clients, and banks, revealed in a survey that **46MM+ Americans own Bitcoin today**. That's more than 22% of adults over the age of 18. Of surveyed Bitcoin holders, 81% want to move it to their bank. As such, banks can play a pivotal role in the transformation happening in the financial industry. Financial institutions can help consumers feel safe investing and storing their Bitcoin. Both with NYDIG, we believe that banks can play an even more critical role in the evolution of crypto by making it accessible in novel ways.

Therefore, this leaves plenty of opportunities for traditional companies that want to reinvent themselves, or for the new ones that are defining their value proposition to tap into a new, unexplored, and promising space – support crypto payments/transactions. For instance, users can choose to use a service provider to manage keys and access various blockchains. However, these service providers have so far tended to be new market entrants. This represents a clear opportunity for the financial sector.

As such, *we aim to map the players in this space* to help industry players gain access to valuable information regarding these promising tech solutions. The **Who Is Who in Crypto Payments and the Web 3 Ecosystem** section from our report includes **solution providers that are part of the crypto payments ecosystem** and focuses on the following categories:

Crypto Rails B2B are crypto providers that remove the complexity of working with digital assets. They do this by offering a full suite of services and solutions (transfer, settlements, sometimes even custody, payouts, fraud prevention, risk management, and cybersecurity) for financial institutions, merchants, other regulated entities (exchanges, neobanks, brokerages, etc.), and businesses in general.

Crypto Rails B2C are crypto providers that give instant access to consumers to crypto via an easy-to-use platform or user-friendly app/wallet. Via APIs, B2C providers can integrate local IBANs, fiat rails (like SEPA or Faster Payments), and real-time FX.

Crypto Rails B2B & B2C are crypto providers that serve both businesses (enabling these to accept, manage, and settle digital asset payments across a variety of blockchains and geographies) and end consumers.

Crypto Exchanges allow customers to trade cryptocurrencies for other assets, such as conventional fiat money or different digital currencies. Funding and withdrawal of accounts happen with credit card payments, wire transfers, or cryptos. →

The Main Actors of The Crypto Payment Chain

DEX-Decentralized Exchanges – Types of crypto exchanges include brokers and traditional crypto exchanges, centralised, and decentralised exchanges. A decentralised crypto exchange (DEX) lacks third-party oversight, is open source, and depends on peer-to-peer (P2P) trading. DEXs often require more technical skill and knowledge of cryptocurrencies to use than centralised exchanges. Future regulation may put restrictions on the uses of DEXs if the full innovative compliance possibilities are not explored.

Crypto Native PSPs are PSPs that have started offering their payment products and services built on blockchain and other DeFi protocols and web 3.0 tech.

Non-Crypto Native PSPs are traditional PSPs (that can also offer crypto).

Crypto Card Issuers allow you to convert crypto instantly and withdraw on an ATM that supports Mastercard or Visa.

Crypto Wallets store users' public and private keys while providing an easy-to-use interface to manage crypto balances. These don't hold the user's coins. Instead, they hold the key to their coins which are stored on public blockchain networks. There are two main types of crypto wallets: software-based hot wallets and physical cold wallets. The main difference between hot and cold wallets is whether they are connected to the Internet. Hot wallets are connected to the Internet, while cold wallets are kept offline.

Cryptocurrency Custody Solutions are third-party providers of storage and security services for cryptocurrencies. Their services are mainly aimed at institutional investors, such as hedge funds, who hold large amounts of Bitcoin or other cryptocurrencies.

Crypto Money Transfers are offering cryptocurrency as a convenient money transfer method. When it comes to transferring money internationally, Bitcoin and other cryptos offer a cheap way to send cross-border funds. This is because cryptocurrency transfers are decentralised, which means that users don't have to pay the slew of fees charged by middlemen for a traditional wire transfer. Once you have the wallet address, you just need to open your crypto wallet, enter the wallet address, select how much crypto you want to send, and you're done. There's usually a small fee to send crypto, called the 'gas fee', but this fee is often much lower than other methods like wire transfers or Western Union.

DeFi Protocols – The protocol is defined as rules or standards that govern a specific task or activity. DeFi protocols are specialised autonomous programs that have been designed to address issues related to the traditional finance industry and they aim to introduce more financial instruments. So far, DeFi protocols have formed an integral part of a complex ecosystem with numerous notable tokens and projects, and due to the substantial rise in the value of DeFi protocols, many startups in this area see plenty of opportunities. DeFi protocols are primarily designed for borrowing and lending applications in the financial sector.

Bitcoin ATMs – Similar to traditional ATMs, a Bitcoin ATM is a portal that enables users to engage in a financial transaction. The difference here is that traditional ATMs allow users to withdraw and deposit cash whereas Bitcoin ATMs allow users to buy and sell Bitcoin using cash. KYC, AML Providers for Crypto – Know Your Customer (KYC) and Anti-Money Laundering (AML) companies that enable crypto providers to conduct their KYC/AML programs, plus they help these providers detect, fight, and prevent fraud. →































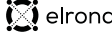







The Main Actors of The Crypto Payment Chain

Blockchain Analytics is the process of analysing, identifying, and ‘clustering’ data on the blockchain. Cryptocurrencies rely on encryption protection and decentralised peer-to-peer system. Ownership of funds is aliased by default while the stream is public and visible. Blockchain analysis provides information on the movement of cryptocurrencies, enabling many investigators to detect illegal transactions and assess the level of risks to meet regulatory requirements worldwide.

Borrowing and Lending – The most common financial activities throughout the DeFi ecosystem are lending and borrowing. In web3, customers don’t need to depend on banks or intermediaries to lend out their funds. Thu funds will be held by themselves, in a non-custodial wallet, which represents an account on the blockchain. The smart contract escrows these funds and only disburse them if certain conditions are met. The difference between traditional and web3 lending is that people can still look for loans, but smart contracts only release funds when the borrower produces sufficient collateral. Similar to traditional lending institutions, some holders deposit their funds into a protocol to make a profit while others need currency in the short-term borrowing from the pool of funds while posting their locked assets as collateral. As a result, the system increases the fluidity within crypto markets and creates new opportunities for everyone involved.

Over the next pages, we aim to map as many crypto players as possible that enable the quick move of funds. Please keep in mind that the list is based mostly on The Paypers’ research, is not exhaustive, and is open to being enriched. Any feedback is more than welcome at editor@thepappers.com or mirelac@thepappers.com.

Who Is Who in Crypto Payments and the Web 3 Ecosystem

Crypto Rails					
B2B					
					
					
					
					
					
B2B & B2C			B2C		
					
					

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Who Is Who in Crypto Payments and the Web 3 Ecosystem

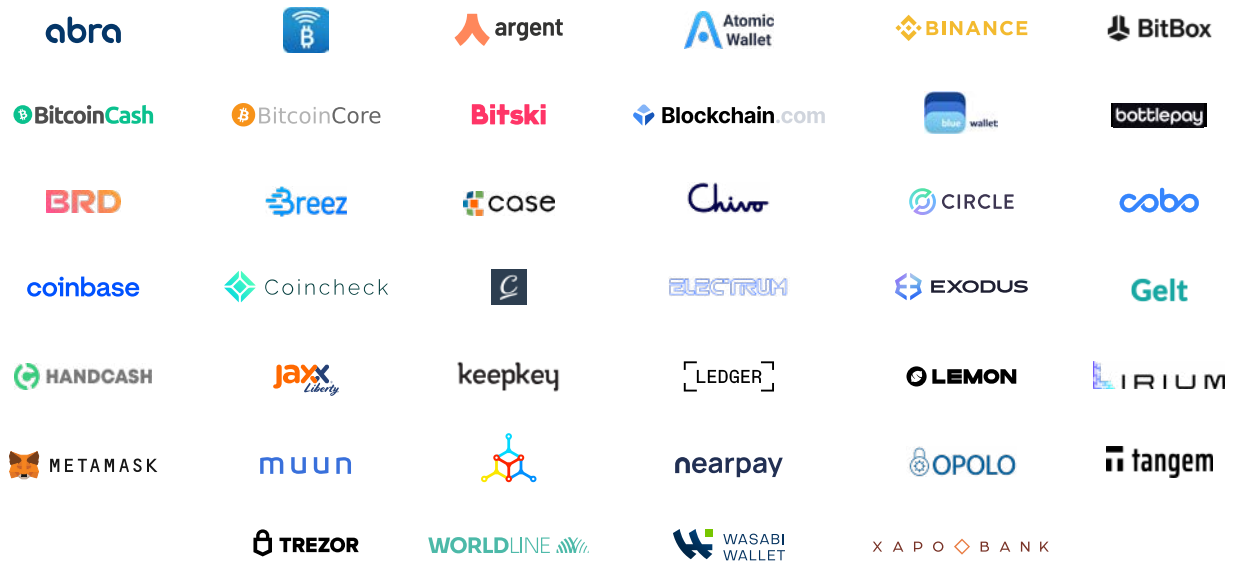
Crypto PSPs							
Crypto Native PSPs				Non-Crypto Native PSPs			

Crypto Card Issuers						

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Who Is Who in Crypto Payments and the Web 3 Ecosystem

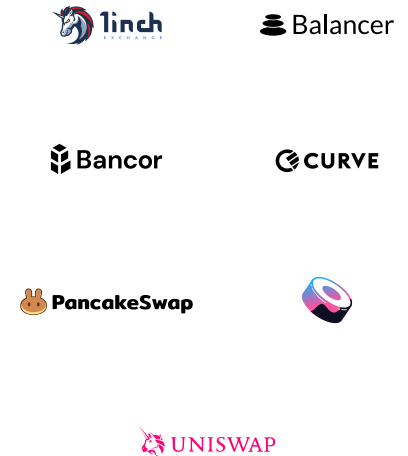
Crypto Wallet



Crypto Exchanges



DEX-Decentralized Exchanges



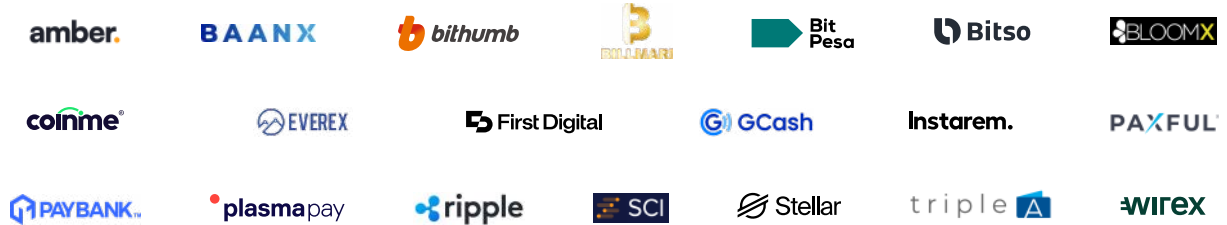
Custody



Researched by © The Paypers, 2022

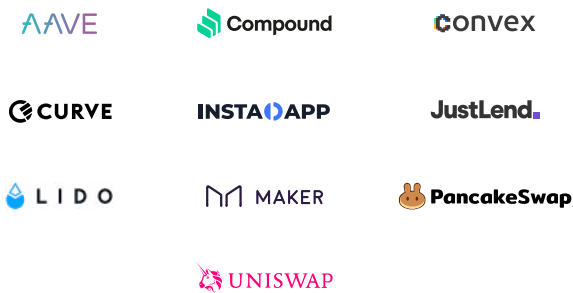
Who Is Who in Crypto Payments and the Web 3 Ecosystem

Money Transfer



Borrowing and Lending

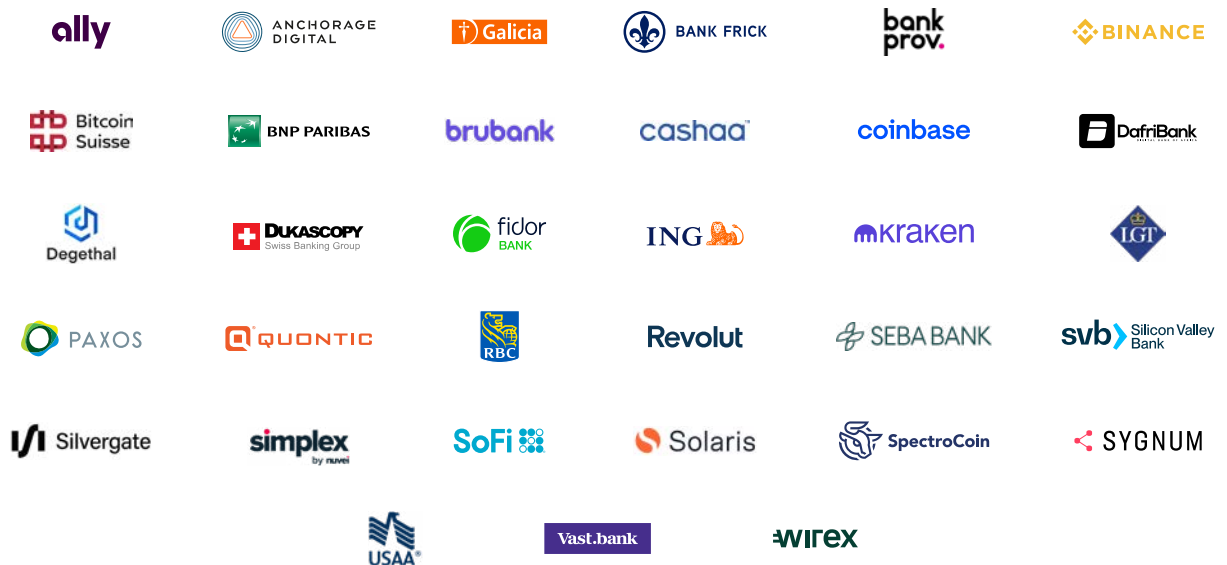
DeFi Protocols



Companies
































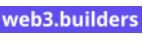




Regulated Financial Institutions Offering Crypto Products and Services



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Who Is Who in Crypto Payments and the Web 3 Ecosystem

KYC, AML Providers for Crypto					
KYC, AML					
					
					
					
Fraud Prevention			Blockchain Analytics		
					
					
					

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Some Relevant Stories



Blockchain infrastructures can impact the world of payments in the field of speed, cost, and functionality, merely across all segments such as B2C, remittances, and B2B. In the next chapter, we will read some stories that stress the best practices (and learnings) of crypto adoption in some regions.

GoCrypto

Lugano's Plan B: Building the Next Bitcoin City

The Swiss city of Lugano is transforming into a European crypto hub where crypto payments will enjoy equal status to other mainstream payment methods. The Municipality of Lugano is realising its vision through the highly-anticipated project, called Plan B.

Crypto in stores

The initiative behind Plan B is to set up a user-friendly blockchain-based infrastructure that will support crypto payments on all city levels, from small and medium-sized merchants to larger companies and even public services. Mid-September, Plan B Foundation – a joint initiative between the City of Lugano and Tether, the technology company supporting the blockchain-enabled platform that powers the largest stablecoin by market capitalisation (USD₣) – announced a collaboration with GoCrypto to officially bring Bitcoin, Tether, and LVGA payments to the city of Lugano.

‘Earlier this year, Lugano and Tether signed a memorandum of understanding to launch a strategic collaboration through several initiatives, including to help local businesses integrate their existing payment services with the permitted stablecoins and Bitcoin’, said Paolo Ardoino, CTO of Tether. ‘We have been working together to ensure the technological infrastructure is in place to support this and today we watch all of that hard work come to fruition.’

This will open the city up to new local and foreign visitors and attract crypto investors and innovative crypto projects while giving local merchants access to a wide new customer base of more than 300 million crypto users from all over the world.

The newest European Bitcoin city will differentiate itself from other crypto-friendly zones in Switzerland as it strives to achieve a significantly higher level of crypto adoption among its citizens. The City of Lugano aims to educate students and workers about the possibilities that cryptocurrencies bring not only as an investment tool but rather as a real-life means of payment. This is their plan B – the alternative to the current financial system and the perfect opportunity to follow the hottest trend in the world, and attract new customers, tourists, and innovative business ideas. Helping their citizens and all like-minded visitors to reach new potential in this ever-changing world.

One device, many wallets

The Swiss Municipality will initially promote Plan B among the merchants, who are already participating in the city's ‘My Lugano circuit’ program.



GoCrypto payments will be available at nearly a dozen merchants throughout the city, including McDonald's, art galleries, and many more. Citizens can easily make payments in USD₣, Bitcoin Lightning, and LVGA using their wallets. The city seeks to enable even more businesses to accept crypto payments. They serviced over 2000 customers during the Plan B Forum, the star-studded Bitcoin conference that took place in the city on October 28-29, 2022. By the end of 2023, the Plan B Foundation aims to enable more than 2500 merchants to accept Bitcoin, Tether, and LVGA.

According to Dejan Roljić, founder of GoCrypto, ‘the interest in crypto use is growing daily, and our solution enables crypto adopters to use the currencies as they were intended – as a highly practical means of payment. We are building a global cryptocurrency payment infrastructure and we want to make it as simple and straightforward as possible for businesses to accept cryptocurrency payments in their everyday lives’. He also added that ‘we are more than pleased to participate in any project that focuses on cryptocurrency payments, and the entire GoCrypto team is genuinely enthusiastic about the Plan B initiative’.

Customers will be able to pay with any crypto wallet that supports the mentioned currencies. The POS device will also support MyLugano App, where both residents and tourists can receive 5% to 10% cash back in LVGA tokens for every purchase. →

Every Plan B participant will be able to test and use the crypto payment infrastructure without any contractual obligation. As they will be able to opt in or out of the project at any given moment which gives them complete business freedom.

Simple and safe

The entire crypto payment process is extremely simple, resembling card payments. Merchants don't require any crypto knowledge to use the crypto-friendly POS terminal. What's more, they can choose to be settled in one of the supported cryptocurrencies or in Swiss Francs. While crypto settlements are instant and give the merchant the possibility to manage their crypto portfolio as they see fit, the local currency settlements keep the merchant's revenue safe from any potential crypto volatility risks. The GoCrypto gateway is fully regulated and equipped with the highest security standards on the market, making the merchant's payment experience reliable and completely secure.

For more information about the Plan B Forum in Lugano on October 28th and 29th, 2022 visit: <https://planb.lugano.ch/planb-forum/>.



gocrypto.com

GoCrypto is the global payments facilitator, enabling events, businesses, cities, and countries to integrate crypto payments on any desired scale. From pure crypto solutions to holistic services, supporting multiple payment methods on one point-of-sale. Available for physical and online stores.

Why Are African/Emerging Countries Adopting Crypto?



Dr. Estelle Brack is the Founder and Chairwoman of KiraliT, providing advisory and training services in money, banking, and financial services in the EMEA Region. Estelle holds a Ph.D. in Economics & Banking and has 25 years of operational experience in the banking sector – especially in Payments – with a global vision.

Estelle Brack ■ *Founder and Chairwoman* ■ KiraliT

The **IMF** has discussed, in its latest Global Financial Stability Report (April 2022), the significant increase in crypto-asset trading volumes against some emerging market currencies since the start of the pandemic.

Why are emerging countries' adopting digital currency?

A large part of this increase is due to speculative investment activities by emerging market residents. But a more structural shift toward crypto assets as a means of payment and/or store of value is also an explanation for this increase, and that could pose significant challenges to policymakers (see the October 2021 GFSR for a discussion on cryptoization).

For example, Tether – the largest stablecoin used to settle spot and derivative trades – has seen a notable rise in trading volumes against emerging market currencies. The most pronounced increase is in Turkey, where exchange rate volatility has been particularly high, and the overall use of crypto assets appears to have gained traction over the last few years.

More recently, trading volumes spiked following the introduction of sanctions against Russia and the use of capital restrictions in Russia and Ukraine.

The war in Ukraine has brought to the forefront some of the challenges that stakeholders face in terms of the application of AML/FT regulations and capital flow management measures – and, to some extent, sanctions. Crucially, the implementation of such measures requires that intermediaries verify the identities of the transacting parties, which burden considerably the procedures

for banks and limit the capacity of non-major banks in the global correspondent banking network to serve their customers willing to buy USD to export goods to Turkey or China, for example.

The crypto ecosystem is seen, to some extent, to allow users to circumvent such requirements through several means, including (1) the use of exchanges and other crypto-asset providers that would be non-compliant with sanctions and/or capital flow management measures; (2) poor implementation of adequate due diligence procedures by crypto asset providers; and (3) the use of technologies and platforms that increase the anonymity of transactions (such as mixers, decentralised exchanges, and privacy coins).

Crypto in Africa

An array of factors, from political repression to currency controls and rampant inflation, have fuelled the stunning rise of crypto assets in emerging countries, especially in Africa.

According to Triple A's latest **crypto ownership data** from September 2022, with an estimated 53 million cryptocurrency owners, the African continent now accounts for 16.5% of the global total. Nigeria, which has more than 22 million crypto owners, currently accounts for more than a third of the continent's total number of holders (the US has 46 million, India 27 million, Pakistan 26 million, Nigeria 22 million, and Vietnam 20 million).

According to Bitcoin trading platform Paxful, Nigeria was second only to the US for Bitcoin trading in July 2021. The dollar volume of crypto received by users in Nigeria in May 2021 was USD 2.4 billion, up from USD 684 million in December 2020, according to blockchain research firm Chainalysis. →

And the true scale of crypto flows through Africa's largest economy is likely to be much larger, with many trades untraceable by analysts.

Nigeria has one of the youngest populations in the world and is ripe for digital finance. With many people looking for ways to escape widespread poverty, pyramid schemes are proliferating.

Trading in foreign currencies is an everyday activity for many. Remittances into Nigeria from those working abroad, which increased to USD 5147.40 million in the first quarter of 2022 from USD 5021.57 million in the fourth quarter of 2021, have played a role.

Digital currencies can also provide insurance against exchange rate fluctuations; the value of the Nigerian naira has plummeted almost 30% against the dollar in the past five years.

In February 2021, the government of Nigeria took fright and banned cryptocurrency transactions through licensed banks.

In late July 2021, it announced a pilot scheme for a new central bank-issued digital currency (CBDC), eNaira, hoping to reduce incentives for those wanting to use unregulated crypto. Today, every Nigerian can – and does – exchange eNaira through text messages on mobile phones.

The Central African Republic became, in April 2022, the first country in Africa to welcome a crypto asset to its sovereign ranks by giving Bitcoin legal tender, after El Salvador in South America.

In both cases, Nigeria and CAR, the use of digital currencies might be limited to individuals and corporates already holding either a bank account or a mobile wallet. In Nigeria, the issuance of the eNaira by the CBN – and the potentially associated trust – might be the solution to convince more Nigerians to adopt this digital means of payment. However, it might not solve all difficulties that led Nigerians – and Africans more broadly – to adopt crypto assets for cross-border transactions or investment purposes. For the CAR case (and in Salvador), considering the particularly low level of *bancarisation* in the country – including mobile wallets – adopting Bitcoin and permitting its use by the population, with protection against change variations – using Bitcoin for its infrastructure – would only be beneficial if associated with waterproofing it from international markets and high volatility. A kind of white labelling Bitcoin. But just using Bitcoin at it is – and keeping its high potential levels of volatility – would be a major mistake and counter-productive idea, with a confusion between currency as a mean of payment, reserve of value, and an investment asset. Bitcoin remains, until now, the second.



kiralit.com

Kiralit is an advisory firm focusing on banking & financial services, including payments and new forms of money. We provide strategic advisory services to institutions established in Europe, Africa, and the Americas, helping them expand their business and building strategies for financial literacy and training.

Crypto Regulation



Alongside improvements in risk, volatility, and security, crypto regulation is also developing, giving businesses operating in this space vital reassurance. Throughout 2021, regulators around the world began to roll out legislation related to handling virtual assets including crypto, covering investment rules, and consumer protection.

Crypto Asset Regulation in Europe



Dr Estelle Brack | *Founder and Chairwoman* | KiraliT

Dr Estelle Brack is Founder and Chairwoman of KiraliT, providing advisory and training services in money, banking, and financial services in the EMEA Region. Estelle holds a PhD in Economics & Banking and has a 25 years operational experience in the banking sector – especially in Payments, with a global vision.



By mid-September 2022, over 20,600 crypto assets exist, with a total market capitalisation exceeding USD 999 billion.

Since Bitcoin emerged in 2008, the development of crypto assets has consisted of the multiplication of initiatives – among them some backed either by commodities, fiat currencies, other crypto assets (stablecoins), or seigniorage (CBDCs). It has also witnessed a transformation from speculative investment to a balanced portfolio stablemate.

Acknowledging the increasing number of individuals accessing crypto assets not only to speculate but also as a substitute to inaccessible international fiat currencies – such as the USD – governments around the world remain divided on how to regulate the emerging asset class.

The growing 'cryptoization' of emerging countries has been identified both by the FSB and **the IMF** as a threat to financial stability.

'Crypto-asset markets are fast evolving and could reach a point where they represent a threat to global financial stability due to their scale, structural vulnerabilities, and increasing interconnectedness with the traditional financial system.'

The EU financial regulators warned consumers that many crypto-assets are highly risky and speculative: **the European Supervisory Authorities (EBA, ESMA and EIOPA – the ESAs)** and **the European Supervisory Authorities (EBA, ESMA and EIOPA – the ESAs).**

The Council presidency and the European Parliament reached June 2022 a provisional agreement on the markets in crypto assets (MiCA) proposal which covers issuers of unbacked crypto-assets, stablecoins, as well as the trading venues and the wallets where crypto-assets are held. First issued in September 2020, MiCA is a framework set to increase consumer protection, establish clear crypto industry conduct, and introduce new licensing requirements. This should bring more clarity to the European Union (EU), as some member states already have national legislation for crypto assets, but so far there had been no specific regulatory framework at the EU level.

Crypto assets are legal throughout most of the EU, although exchange governance depends on individual member states. Meanwhile, taxation also varies by country within the EU, ranging from 0% to 50%. In recent years, the EU's Fifth and Sixth Anti-Money Laundering Directives (AMLD5 and AMLD6) have come into effect, which tightens KYC/CFT obligations and standard reporting requirements. →

Crypto Asset Regulation in Europe



France

In April 2019, the Plan d'Action pour la Croissance et la Transformation de Entreprises (PACTE – Action Plan for Business Growth and Transformation) adopted by the French National Assembly established a framework for digital asset services providers. France's Financial Market Authority (AMF) has adopted new rules and regulations for crypto asset service providers and ICOs, related to the PACTE. Ordinance N° 2020-154452, was issued on December 9, 2020, to compliment France's crypto asset regulations. In June 2021, the regulations were finalised and went into effect.

Firms are now subject to mandatory registration and subject to stricter KYC regulations. The rules established new AML/CFT rules related to digital assets. They imposed new requirements on crypto exchanges and prohibit anonymous accounts, expand AML/CFT and KYC obligations to better harmonise the French AML framework with Financial Action Task Force (FATF) principles, and respond to new risks associated with digital assets. Lawmakers in France have recently debated changing the tax structure related to cryptos. Cryptos are taxed similarly movable property. Occasional traders are charged a flat tax of 30% while miners and professional traders are taxed 45%.



Germany

The German government was one of the first countries to provide legal certainty to financial institutions, allowing them to hold crypto assets. Regulations stipulate that citizens and legal entities can buy or trade crypto assets as long as it is done through licensed exchanges and custodians. Firms must be licensed by the German Federal Financial Supervisory Authority (BaFin). BaFin views and classifies cryptos as 'units of account' within the meaning of the German Banking Act. They are therefore not legal tender, money, or foreign exchange notes or coins. The regulators have agreed, however, that they are deemed 'crypto-assets' in accordance with the definition of financial instruments. Germany has signed up to requirements under AMLD5. It has established licensing requirements for custody services. Crypto assets are, however, based on agreement and accepted as a means of exchange or payment or as an investment, and can be transferred, stored, and traded electronically. The German Federal Central Tax Office considers cryptocurrencies as private money for tax purposes. For individuals, gains of less than EUR 600 held for less than a year are considered tax-free. Sales of cryptos held for more than a year are tax-exempt in Germany. If neither of the conditions is met, the gains are taxed subject to ordinary income rates.



The Netherlands

The Dutch Central National Bank De Nederlandsche N.V. (DNB) requires crypto firms to register with it. Dutch regulations require VASPs to provide identifying information on themselves and their customers. The DNB also supervises crypto service providers' compliance with the Sanctions Act 1977. The DNB defines cryptos as 'a digital representation of value that is not issued or guaranteed by a central bank or a public authority, is not necessarily attached to a legally established currency and does not possess a legal status of currency or money, but is accepted by natural or legal persons as a means of exchange and which can be transferred, stored, and traded electronically'. In May 2020, the Dutch Implementation Act amended Dutch AML rules and implemented 5MLD. The Netherlands does not impose taxes on capital gains, but rather imposes a deemed interest on the value of all assets minus all liabilities. The deemed interest is taxable against a flat rate of 31% in 2021 and 30% in 2020.

Crypto Regulation



Charles Kerrigan | Partner, Crypto and Digital Assets Team | CMS

Charles is a specialist in emerging technologies including crypto, digital assets, decentralised finance, Web3, and AI. He works on corporate finance and venture capital transactions in crypto, tokenisation, NFTs, Web3, and DeFi. He works on consulting projects on blockchain and AI for public bodies, policymakers, standards institutions, and corporations.



UK

The current framework of UK cryptoasset regulation:

The UK Financial Conduct Authority (FCA) recognises three main types of cryptoassets.

- **Exchange tokens** are not issued or backed by any central authority, they are intended to be used as a means of exchange and do not fall within the regulatory perimeter of the FCA;
- **Security tokens** have specific characteristics that mean they meet the regulatory definition of a 'specified investment' and do fall within the regulatory perimeter of the FCA;
- **Utility tokens** grant holders access to a current or prospective product or service, generally, they do not grant holders rights that are the same as those granted by 'specified investments' and therefore fall outside of the FCA's regulatory perimeter. However, if they meet the definition of e-money they will fall within the FCA's regulatory perimeter.

Sale of cryptoassets is governed by the financial promotions regime, prospectus regulation regime, and consumer protection legislation:

- The **financial promotion** (broadly, any marketing activity) of a cryptoasset is not permitted unless it is issued or approved by a person authorised by the FCA or the Prudential Regulation Authority. All promotions must comply with the Committees of Advertising Practice Code and Advertising Standards Authority guidelines.
- If a cryptoasset is a security and is offered to the public or admitted to a regulated market, the issuer must publish a **prospectus** or make use of an exemption.
- Consumers are protected by legislation including the Consumer Rights Act 2015. These regulations provide consumers with rights and remedies in relation to the supply of **online goods and services**.

Taxation: HMRC regularly publishes guidance in relation to cryptoassets. Depending on the nature of the activity, **individuals and businesses** buying and selling cryptocurrencies may be subject to capital gains tax or/and income tax or corporation tax. →

Money Laundering Regulations (MLRs): the MLRs apply to both regulated and unregulated cryptoasset businesses. UK businesses must comply with obligations to ensure that they do not facilitate money laundering, such as by undertaking ongoing risk assessments; maintaining appropriate policies; implementing controls and procedures; conducting staff training; undertaking customer due diligence; record keeping; and reporting.

Funds: establishing, operating, marketing, or managing a fund that covers cryptoassets including unregulated cryptoassets may trigger licensing requirements in the UK. Additionally, cryptocurrencies are unlikely to be permissible for inclusion in fund products that require FCA approval, such as exchange-traded funds.

Mining: the mining of cryptoassets is not restricted in the UK and is not an expressly regulated activity. HMRC considers that the profits of mining are taxable for individuals and businesses either as trading profits or under the miscellaneous income provisions.

UK border rules: cryptoassets are not regarded as money, nor are they seen as equivalent to fiat currency in the UK. Therefore, there are currently no border restrictions and no obligation to declare cryptoasset holdings when crossing the border.

Reporting requirements: reporting requirements contained in financial regulation or anti-money laundering legislation apply in relation to certain cryptocurrency transactions.

Estate planning: HMRC has confirmed that it considers cryptoassets to be property for the purposes of inheritance tax.

The information in this article is generic and should not be viewed as legal or financial advice; in particular, the Financial Services and Markets Bill has just introduced a new amendment that gives HM Treasury and the FCA the powers to institute a regulatory regime for cryptoassets via secondary legislation. Rules relating to cryptoassets are fact-dependent and subject to regular changes. Non-UK rules can apply to UK cryptoasset holders and activities in certain circumstances.

Crypto Regulatory Landscape and Trends



Mirela Ciobanu | Lead Editor Banking & Fintech | The Paypers

Mirela Ciobanu is a Lead Editor of the Banking and Fintech domain at The Paypers. She is actively involved in drafting industry reports, carrying out interviews, and writing about the digital assets industry, the regtech space, digital identity, fraud prevention, and payment innovation. Mirela is passionate about finding the latest news on crypto, blockchain, DeFi, and fincrime investigations and is an advocate of the need to keep our online data/presence protected. As a writer, she aims to always get the best obtainable version of the truth. She can be reached at mirelac@thepayers.com or via [LinkedIn](#).

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US

Regulators around the world began to roll out legislation related to handling virtual assets including crypto, covering investment rules, and consumer protection starting in 2021. By the end of 2021, leading the way, the US passed more than 20 pieces of legislation, defining how cryptocurrencies should be treated in areas from taxation to investment and payments.

The basics

In the US, **cryptocurrencies are not considered legal tender** by the Financial Crimes Enforcement Network (FinCEN) and the Internal Revenue Service (IRS). Still, the IRS defines it as 'a digital representation of value that functions as a medium of exchange, a unit of account, and/or a store of value' and has issued tax guidance accordingly. **In March 2014**, it said that Bitcoin and other cryptos will be taxed as 'property' and not currency.

Cryptocurrency exchanges are legal and fall under the regulatory scope of the Bank Secrecy Act (BSA). FinCEN sees exchanges as money transmitters on the basis that cryptocurrency tokens are 'other value that substitutes for currency'. As a result, cryptocurrency exchange service providers must register with FinCEN, implement an AML/CFT program, maintain appropriate records, and submit reports to the authorities. In response to guidelines published by FATF in June 2019, the US financial authorities made clear that it expects crypto exchanges to comply with the 'Travel Rule' and collect and share information about the originators and beneficiaries of cryptocurrency transactions.

Meanwhile, the US Securities and Exchange Commission (SEC) considers the majority of **cryptocurrencies to be securities** and applies securities laws comprehensively to digital wallets and exchanges. By contrast, **according to Comply Advantage**, the Commodities Futures Trading Commission (CFTC) has adopted a friendlier, 'do no harm' approach, describing **Bitcoin as a commodity** and allowing cryptocurrency derivatives to trade publicly. Most likely the 'Howey test' will determine whether a digital token is a security or not. Bitcoin does not pass, but proof of stake solutions (e.g. Ethereum, Solana) may prove to be good candidates.

The sale of crypto is generally only regulated if the sale constitutes the sale of a security under a state of Federal law or is considered money transmission under state law or conduct otherwise making the person that transacts using crypto a money services business under Federal law, **according to Global Legal Insights (GLI)**. →

Bitcoin/crypto mining is legal in every state, but some organisations and jurisdictions may place limits on this activity. For instance, the US Marine Corps bans service members from using government-issued devices to mine cryptos. Also, New York State's Environmental Conservation Committee is proposing a two-year moratorium on Proof-of-Work mining for all types of crypto, as this is energy intensive.

Some background and history around crypto regulation

In January 2021, **The Office of the Comptroller of the Currency (OCC)** published a letter clarifying national banks' and federal savings associations' authority to participate in independent node verification networks (INVN) and use stablecoins to conduct payment activities and other bank-permissible functions.

In August 2021, **Chair Gary Gensler presented SEC's stance on cryptocurrency** and the crypto market. He said that many of these **tokens are offered and sold as securities**. The Chair believes we have a crypto market now where many tokens may be unregistered securities, without required disclosures or market oversight. This leaves prices open to manipulation and investors vulnerable. The final verdict is still up in the air, while the need for clarity and improved conduct is higher than ever after the 2022 failures where many users lost billions.

In his view, **crypto trading platforms, lending platforms, and other 'decentralised finance' (DeFi) platforms can involve securities, commodities, and banking laws**. He also stressed that the American public is buying, selling, and lending crypto on these trading, lending, and DeFi platforms, and there **are significant gaps in investor protection** (a fact proven by the FTX case). Turning **to stablecoins**, Gensler mentioned that the use of stablecoins may facilitate those seeking to sidestep a host of public policy goals connected to the US' traditional banking and financial system: anti-money laundering, tax compliance, sanctions, and the like. Further, these **stablecoins also may be securities and investment companies**. 'To the extent they are, we will apply the full investor protections of the Investment Company Act and the other federal securities laws to these products' he added.

At the beginning of December 2021, **crypto executives debuted on Capitol Hill** and urged light regulation of their booming industry. Eighth months later, the **Federal Reserve Board announced final guidelines** that outline how crypto firms can access master accounts at the Fed. A Master Account is the record of financial rights and obligations of an Account Holder and the Administrative Reserve Bank (or any other Reserve Bank maintaining a Master Account identified in Operating Circular 1) for each other, where opening, intraday, and closing balances are determined.

In September 2022, the White House released the first-ever framework for the responsible development of digital assets. The framework followed President Joe Biden's March 2022 Executive Order (EO). The EO outlined a series of policy objectives for the US regarding digital assets and called for the development of the framework and necessary inter-agency coordination.

Since March 2022, agencies across the US government have worked together to develop this framework and policy recommendations that advance the six key priorities identified in the EO:

- consumer and investor protection;
- promoting financial stability;
- countering illicit finance;
- US leadership in the global financial system and economic competitiveness;
- financial inclusion;
- and responsible innovation.

The resulting framework included a series of reports, legislative proposals, future frameworks, and commitments for future reports.→

When it comes to **protecting consumers, investors, and businesses**, digital assets pose meaningful risks due to the price volatility of these assets. As outlined in the report, the Administration plans to encourage regulators like the SEC and CFTC to aggressively pursue investigations and enforcement actions against unlawful practices in the digital assets space. The reports encourage national agencies to issue guidance and rules to address current and emergent risks in the digital asset ecosystem and to collaborate to address acute digital assets risks facing consumers, investors, and businesses.

As digital assets and the mainstream financial system are becoming increasingly intertwined, they create channels for the turmoil to have spillover effects. This was reflected by the crash of the ‘so-called’ stablecoin TerraUSD and the subsequent wave of insolvencies that happened in May 2022. To avoid similar situations from happening, the Treasury will work with other agencies to identify, track, and **analyse emerging strategic risks that relate to digital asset markets**.

When it comes to **fighting illicit financing**, the Administration concluded that digital assets have facilitated the rise of ransomware cybercriminals; narcotics sales and money laundering for drug trafficking organisations; and the funding of activities of rogue regimes, as was the case in the recent thefts by the Democratic People’s Republic of Korea (DPRK)-affiliated Lazarus Group. To mitigate some of these risks, the President will evaluate whether to call upon Congress to amend the Bank Secrecy Act (BSA), anti-tip-off statutes, and laws against unlicensed money transmitting to apply explicitly to digital asset service providers – including digital asset exchanges and nonfungible token (NFT) platforms. Furthermore, relevant departments and agencies will continue to expose and disrupt illicit actors and address the abuse of digital assets.

Another important aspect stressed by the framework is **the development of a US-based Central Bank Digital Currency (CBDC)**. Recognising the possibility of a US CBDC, the Treasury will lead an interagency working group to consider the potential implications of a CBDC, leveraging cross-government technical expertise, and sharing information with partners. Now, **banking giants and New York Fed started a 12-week digital dollar pilot**. The pilot, which is called the regulated liability network, will test how banks using digital dollar tokens in a common database can help speed up payments.

What’s next?

The collapse of FTX is further evidence that the market for digital assets requires ‘very careful regulation’, **according to US Treasury Secretary Janet Yellen**. Yellen continued, ‘in other regulated exchanges, you would have segregation of customer assets...the notion you could use the deposits of customers of an exchange and lend them to a separate enterprise that you control to do leveraged, risky investments — that wouldn’t be something that’s allowed’.

All in all, Yellen and many of her colleagues across the executive branch are in a higher urgency now to implement a comprehensive regulatory plan for digital assets.

Crypto Regulatory Landscape and Trends in Asia

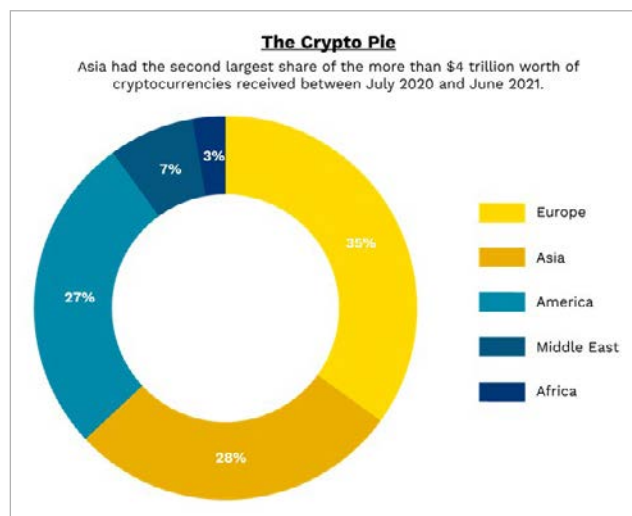


Phillip Finnegan | Advisor Emerging Payments Association | Asia

An active member of the payments community, he had served on several industry groups. Phillip has held several key roles in payments including First Data, Clear2Pay, FIS, ACI, Temenos, Laybuy, and advisor for fintech.



Before we delve into more details regarding crypto regulation in different Asian countries, it is worth mentioning that there is a significant representation of Asia Pacific in top countries by ownership of crypto, according to **Finder Cryptocurrency Adoption Index**. Emerging economies like Vietnam, India, and Indonesia are **leading the charge when it comes to cryptocurrency adoption**, underscoring important use cases for digital assets tied to remittances and financial inclusion. Moreover, according to **Chainalysis**, Asia had the second-largest share of more than USD 4 trillion worth of cryptocurrencies received between July 2020 and June 2021.



Source: Chainalysis

	2022 Chainalysis' Latest Cryptocurrency Adoption Index Rank	Legal – mining	Legal – possessing, investing	Legal – payments	CDRC
Australia	-	Yes	Yes	?	In discovery
China	10	No		No	In development – may not be blockchain based
Hong Kong	-	Yes	Yes – restricted to high net worth	No	In discovery
India	4	Yes – unregulated	Yes	Yes – no low	In discovery
Philippines	2	Yes – unregulated	Yes	Yes	In discovery
Singapore	-	Yes	Yes	Yes	No firm project
Vietnam	1	Not regulated	Yes	No	In discovery

In the table above you can find out more about crypto bans, mining, investing, etc. in countries like China, Hong Kong, Singapore, Vietnam, the Philippines, Australia, and India.

Crypto Regulatory Landscape and Trends



Hong Kong

Similar to Singapore, international finance has long been a strength and focus of the economy of Hong Kong. The market, supported by an open regulatory environment, saw the founding of significant players in the crypto industry including Crypto.com and BitMEX. A popular stablecoin, Tether, was also launched in Hong Kong. The regulatory environment considered cryptocurrency as virtual commodities and not legal tender, money, or payment methods. This classification allowed the industry to flourish without the close supervision of the Hong Kong Monetary Authority (HKMA). According to blockchain data firm Chainalysis, Hong Kong saw USD 60 billion worth of incoming cryptocurrencies between July 2020 and June 2021. According to a 2021 [survey by VISA](#) 18% of Hong Kong's population owned crypto. This growth of crypto and associated assets attracted the attention of the nation's regulators who saw an increasing level of connection to existing financial markets.

In 2019, Hong Kong began an optional licensing approach for platforms serving retail investors in a limited set of cryptocurrencies, not capturing the full range of offerings. This framework resulted in limited licenses sought and granted, and the industry largely free from regulation.

In July 2022, the Legislative Council of Hong Kong reviewed legislation to regulate the market Anti-Money Laundering and Counter-Terrorist Financing laws, responding to recommendations of the Financial Action Task Force on Money Laundering (FATF) which sets the global standards in the field. This would require licensing for all virtual service providers. The hurdles of this legislation would be similar to traditional financial institutions.

In 2021, Securities and Futures Commission (SFC) began to review the impact of unlicensed trading on investors and potentially significant losses. Like other markets in the region, Hong Kong has begun to review limited cryptocurrency to professional investors in addition to licensing requirements for exchanges. This would limit trading to individuals with a portfolio value over HKD 8 million (USD 1 million) – leaving crypto accessible to roughly 7% of the nation.

AML and CTF are key issues for many regulatory bodies in Hong Kong, particularly those focused on crypto, where legislation is being reviewed in 2022.

The Hong Kong Monetary Authority (HKMA) is pursuing a vision of 'Fintech 2025' which includes steps towards a CBDC, or e-HKD, and closed a round of industry consultation in mid-2022. In September, HKMA announced that it will complete a series of [pilots to validate the approach and use cases](#). The establishment of a CBDC within Hong Kong will be watched closely by many stakeholders to determine if this becomes a threat to their business models and consider privacy. The market in general though will welcome clarity through this process on the future of the industry.

Crypto Regulatory Landscape and Trends



China

With an available and talented workforce, China was a pioneer in many aspects of the early blockchain industry. Significant exchanges and mining operations were established with the Beijing-based Bitman the world's largest blockchain hardware provider at one point. Throughout the years though the industry faced a number of challenges including bans issued on crypto in 2013, when banks were banned from running crypto transactions, and further bans in 2017.

In August 2021, China's Central Bank declared all cryptocurrency transactions illegal. The position on this ban from its government is to prevent economic instability and act on financial crime through decentralised systems. Alternate views are that **the ban closes a loophole bypassing conventional restrictions in China**, ensuring capital liquidity remains in the market. It is estimated by Chainalysis Data that **more than USD 50 billion of cryptocurrency value exited Easy Asia** in 2019 and 2020, with most of this representing flows out of China.

The 2021, many of the largest miners exit the market immediately post the announcement of the ban, with a noticeable **drop in the global hash rate for Bitcoin mining**, a measure of computing power being allocated to crypto. The miners and the crypto market had grown significantly despite the 2017 ban on crypto announced by the Chinese government. A similar 2017 ban restricted financial institutions operating in crypto markets and with supporting businesses, it did not go so far as to ban crypto ownership.

Despite this 2021 ban, **China remains active in global crypto usage with a 10th overall ranking** in 2022, up from 13th the previous year, according to industry observer Chainalysis. Chainalysis commentary suggests that data shows the ban has either been ineffective or not fully enforced. There is some grey in the approach to crypto and **tacit support for some aspects of web3 technology** – for example, non-fungible tokens (NFT) can only be purchased using China's fiat currency and have been rebranded as 'digital collectables'.

With many firms relocating out of China as a result of the ban, there has been a movement of talent to markets with less demanding regulatory requirements across the Asia Pacific. A few businesses shifted focus to other web3 use cases to leverage knowledge developed through crypto exchanges and mining. These use cases include crypto derivative products and NFT games. Alibaba has applied blockchain to verify court documents that have achieved government support.

The PBoC is looking to be one of the first major central banks in the world to launch its own digital currency, eCNY, and in doing so would be able to monitor the transactions more closely, in a way akin to other payment instruments. This CDBC for the eCNY may not be based on blockchain as suggested by a speech delivered by Peoples Bank of China in September. Whilst smart contracts were outlined in the principles for the solution there was no specific focus on blockchain.

Crypto Regulatory Landscape and Trends



Singapore

Singapore has consistently been a leader in financial services and took an early lead in encouraging cryptocurrencies. This island nation has welcomed fintech for some time, setting up a Fintech Sandbox in 2016. Further, **Singaporean sovereign wealth funds of Temasek** and GIC have participated actively in cryptocurrencies through reported investments in crypto exchanges, including Coinbase, up to early 2022.

Over the recent years, Singapore has begun to introduce regulations on crypto, including AML, CTF, and improved transparency for consumers. Examples of this change in approach, particularly to protect consumers, incorporate regulating the advertising of crypto to the public which extended to outlawing crypto ATMs in early 2022 which were considered an advert. The move, under **the Monetary Authority of Singapore (MAS) guidelines** published in January 2022, emphasised MAS's strategy that crypto services should be offered to more sophisticated and informed investors over the general public.

In February 2022 MAS clarified that it would not regulate non-fungible tokens (NFTs), but rather apply its powers solely to areas of payments already under its jurisdiction, leaving the NFT market largely unregulated.

MAS has introduced stringent licensing requirements to operate as digital service token providers, requiring strong risk management capabilities. The application process for a license to operate as a crypto exchange is robust and demanding. **Many exchanges have withdrawn their application to meet the standards** set by the Payment Services Act (PAS), most notably Binance. Authorities are also reviewing **options to restrict retail investors' ability to purchase** crypto assets in order to protect users from volatility. This policy change is largely in response to **the collapse of several high-profile crypto groups**, including Singapore-based Three Arrows and Terraform Labs, in addition to falling valuations globally.

In general, the tone of engagement with the crypto industry is moving to a risk-based view, with a centralised authority looking to standards that can assist the industry to grow in a managed way, whilst trying to protect the interest of consumers. There are bright spots in response to the regulatory changes. In September 2022, DBS expanded the trading of cryptocurrency to its high-net wealth customers. DBS is one of the approved and licensed providers through MAS.

'What we really need is some sort of check or driver's license to ensure [retail investors] understand the risks. That doesn't exist', said Zennon Kapron, director of Kapronasia, financial technology research and consulting group. 'Whether that comes from banks like DBS is another question'.

MAS, also the central bank, does not back or issue crypto at this point. There have been a number of **pilots for DLT and Blockchain technology for back-end payment functions** such as clearing and settlement for payments and securities. Through 2022, the case for a CBDC has been reviewed a number of times, with the position taken by the government and MAS that there is **no compelling case for issuing a CBDC at this time**, although is completing work to prepare for a CBDC when conditions change.

Crypto Regulatory Landscape and Trends



Vietnam

For an economy ranked 53rd in terms of GDP, **crypto ownership in Vietnam is very active**, a 2021 survey showing that 20% of Vietnamese had already purchased Bitcoin. Further, the survey found that **28% of total crypto transaction value is supported by institutional and large payments**. As the government does not recognise cryptocurrencies as legal tender today, there are no taxes applied which has further encouraged use. Crypto ownership is widespread across the country with the most gender-diverse ownership globally, with 44% of females surveyed owning crypto, according to a 2022 Finder survey. This level of ownership and growth in crypto adoption is driven by remittance, where migrant workers wish to send money home without expensive cross-border transfer fees and intermediaries.

There have been a number of crypto scams in the market with investors taking a stake in non-existent schemes, initial coin offerings, and projects. Given limited laws on crypto, there are few protections for consumers in the event of losses.

Government support for crypto has been extensive including the establishment of the Vietnam Blockchain Association by the Ministry of Home Affairs to promote research and development of blockchain technology in Vietnam. This body also sits alongside several industry bodies that were created in the last few years to promote the application of crypto in this thriving Southeast Asian market.

Cryptocurrencies have been specifically banned, and liable to fines, for trade relationships by the State Bank of Vietnam (SBV). This ban precludes financial institutions from handling and operating in cryptocurrency markets. The government though tolerates possessing and investing in cryptocurrencies with no prohibitive laws, although this is under review, allowing retail consumer use. Mining is not regulated and the SBV has issued risk warnings to cryptocurrency retail investors due to fluctuating values.

Like many governments in the APAC region, Vietnam's government is undertaking several reviews led by the Ministry of Justice (MOJ), the Ministry of Finance (MOF), and the SBV into developing frameworks for blockchain in their country including a CBDC. The review is due in 2023 with no timetable set for policy recommendation and implementation.

This review is likely to address key issues around user protection and taxation. It will also **address government concerns with the growth of banned payment solutions** Alipay, WeChat Pay, and similar apps which could be addressed by its own digital payment solutions, including a CBDC. It is important to note that Vietnam has a large unbanked population with over 60% of the population lacking access to traditional banking services. This provides an opportunity for technology such as cryptocurrency to reach this underserved population.

The move to a CBDC also enables Vietnam to drive its own economy less reliant on US dollars and the Chinese Yuan, building independence for the economy. Whilst the CBDC study has been commissioned (July 2022) partnering with the Philippines and Japanese technology blockchain company, Soramitsu, there are no commitments or timelines to implement a CBDC in Vietnam.

Crypto Regulatory Landscape and Trends



Philippines

The COVID-19 era propelled crypto adoption within the Philippines and has seen the Government and its regulators react to attempt to catch up to usage. Philippines Reserve Bank Governor Benjamin Diokno has been quoted saying **'the volume of transactions involving virtual assets grew 362%** year on year to nearly 20 million in June 2021'. In July 2022, the volume on peer-to-peer cryptocurrency exchanges **grew to new peaks in total value**, sitting at USD1.9 million, still relatively small to non-crypto payments. The country ranked second, only behind Vietnam, in Chainalysis Global Crypto Adoption 2022 index. Many commentators see that the COVID-19 area prompted a move to digital payments and for the Philippines market; the ease of access to crypto drove adoption, in particular for cross-border transfers with the diaspora of the Philippines working outside the country. There is an easy conversion of cryptocurrency to fiat currency in the country through Automated Teller Machines (ATMs) **including through the Union Bank of the Philippines**. Given the technical barriers for crypto transfers are low, all the unbanked require are a mobile and internet connection.

Since the government required registration of cryptocurrency exchanges, **there are 19 official virtual asset service providers approved and active** in the country, offering a range of services. Although, in August 2022, the Philippines central bank, Bangko Sentral Pilipinas (BSP), announced that it would stop accepting Virtual Asset Service Provider (VASP) license applications for three years, institutions under BSP supervision could continue to apply for a VASP license. Around the same time, the government further issued warnings to investors about the risks of cryptocurrency and similar to other countries in the region, the central regulator has prominently cautioned retail investors and focused on increasing education for consumers considering entering the crypto market. The **BSP is collaborating with the industry** to monitor and track financial institutions using blockchain technology.

The regulator defines cryptocurrencies as virtual assets rather than currency given the speculative nature of the investment. BSP though does not see crypto serving as a key payment instrument in the short term due to volatility and KYC issues. It also sees issues with the irreversibility of transactions and the ability to support cancellation or reversal of transactions – features of key payment solutions.

From an international perspective, the Philippines has not been seen to take enough action in anti-money laundering and counter-terrorism financing – which has flowed to the management of cryptocurrency. It has been reported, for instance, that a money laundering operation involving cryptocurrency funds, **was allegedly used to finance the activities of terror networks** operating in the south of the country.

The acceptance of crypto and blockchain technology within the Philippines has contradictory messaging from regulators and political groups. For example, the 3-year ban on new VASPs contrasts with the **strong desire to increase the level of digital payments**, including crypto, emphasised in speeches by recently elected President Ferdinand Marcos Jr.

The country has also embarked on an **investigative pilot for CBDC announced in April 2022** in an effort to support strong domestic and cross-border digital payments. It is intended to develop a long-term CBDC roadmap for the central bank, leveraging external advice from around the world. The project's scope also includes addressing AML and CTF in response to international concerns.

Crypto Regulatory Landscape and Trends



Australia

Australia has long been an attractive market for Paytech with a stable environment, a familiar regulatory environment, and openness to new technology. Financial Services features as a large component of the Australian economy and has world-class researchers in blockchain development. **Its universities rank highly for blockchain research** and the country ranks 6th globally in the number of blockchain-related patents. This has also extended to crypto adoption across the market and several homegrown providers.

A 2022 report by Finder **ranked Australia as 4th in crypto adoption** out of 26 countries highlighting a strong interest in crypto at a retail level. Whilst not mainstream, many retail consumers have been attracted to crypto as a potential for benefiting from value increases and simply exploring the use cases of the technology. On the mining side, there are no legal restrictions on mining crypto in Australia with required capital gains tax due on any profits from any crypto-related effort. All transactions are required by law to be registered with AUSTRAC for tax and KYC requirements.

With such a strong take-up, there has been increasing interest by regulators and steps taken towards increased controls on the crypto industry, plus **reviewing the need for local custody** including requiring storage of digital assets in the country. Currently, all that is required for an exchange in Australia is to register with AUSTRAC. In 2021 a federal government select committee report identified that licenses would be required for currency exchange providers **to ensure compliance with key requirements of AML/CTF and tax**. Following a change of government, the newly elected government announced significant steps towards regulating the crypto industry in August 2022, as part of a number of reforms to respond to developments in the payments space from BNPL to crypto. The government is adopting an approach to respond to newer products in the market, attempting to have laws catch up to technology.

Government bodies such as the Australian Securities and Investments Commission (ASIC) are particularly concerned about the number of scams associated with crypto that are impacting consumers. Financial services regulators such as **APRA are warning of the operational risks** introduced through crypto and the need to consider these assets and obligations related to fraud, cyber, conduct, AML/CTF, and technology risks. APRA is completing a review of the operational risks related to crypto and looking to implement requirements over 2023-25 which will be extended to stablecoins and cryptocurrencies.

Debanking has impacted a number of crypto exchanges when banks refused or withdrew financial services due to perceived risks around these entities generating concern for the industry. This is an issue being reviewed by the government and regulators needing to improve access and provide clarity to the cryptocurrency ecosystem as the sector develops.

- Note to PF - Read and consider for more content - <https://www.globallegalinsights.com/practice-areas/blockchain-laws-and-regulations/australia>

As a market that encourages fintech and innovation, **the Reserve Bank of Australia is undertaking a one-year review into a CBDC**. The Bank has not yet identified a strong use case given recent investment in payment systems rails and innovation through real-time payments initiatives such as NPP and Osko. This initial one-year review will include a limited CDBC pilot and identify use cases to understand applications in the Australian market.

Crypto Regulatory Landscape and Trends



India

Ranked 4th in 2022 in adoption for crypto and with 29% of the population holding a form of cryptocurrency, India represents an interesting market for the sector. At a regulatory level, the cryptocurrency sector has faced several challenges and headwinds in its history.

The country has yet to officially outlaw crypto on the whole and has delivered contradictory messages on its position. In 2016, the country imposed a complete ban on all crypto-related activities, from mining to buying, selling, and holding assets. Later in 2018, companies focused on digital assets **could not work with banks for a time**, due to a ruling from the Reserve Bank of India (RBI) – the country’s central bank – **but those restrictions were removed in 2020** following action in its Supreme court. At that point, clarification of the government and RBI’s position on crypto was expected in 2021. In 2021, legislation was prepared, with the Cryptocurrency and Regulation of Official Digital Currency Bill trying to prohibit all private cryptocurrencies in India, although this bill has not been passed. A pause was taken whilst consideration of a CBDC and implications of a full ban on crypto were completed. In February 2022, Reserve Bank of **India Deputy Governor T Rabi Sankar said** in a speech that ‘the best option to tackle risks posed by crypto assets in India is likely to be an outright ban’.

In this challenging environment, the country has a significant number of exchanges providing on-ramps from fiat currency including the Indian rupee and the USD. Although exchanges such as Coinbase have suspended all operations in the market in 2022 and Indian exchanges have considered moving some of their operations offshore, many of the population attempt to invest in crypto through foreign exchanges.

In early 2022, the Indian government directed the Reserve Bank of India to undertake the development of a CBDC. This ‘digital rupee’ should be issued by the central bank, using blockchain. In the same budget statement, the Indian government also set additional taxes on crypto transactions of 30% on the income of any digital asset and a 1% tax. Despite these moves to embrace and tax crypto technology, the **Finance Minister did not provide firm clarity** on policy planning and a government position for crypto, leaving a great deal of uncertainty for the sector.

India – in the sheer volume of customers, a high number of technical resources, significant use of crypto by consumers, and the ability for crypto to provide low-cost cross-border services – has the qualities of being a global crypto centre; though, for now, the regulatory and government policies create a significant level of uncertainty in the industry.

Crypto Regulatory Landscape and Trends in LATAM



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Argentina

In Argentina, there is no specific law or consolidated legal regime for crypto-related activities. However, certain disseminated regulations and warnings have been issued from time to time by local authorities, which together conform to a local regulatory framework for the industry.

Since the early days, the Central Bank of Argentina (BCRA) has said that crypto-assets do not constitute 'currency' in the legal sense, because they have no legal tender (either local or foreign), as they are not issued or backed by any government or central bank. Based on that approach, the BCRA has not assumed a formal jurisdiction over crypto activities, but prohibited banks from offering digital-asset products to their customers and also established certain limitations to operate through the official FX market for persons who trade with crypto assets.

The AML authorities (UIF) described the legal nature of crypto assets as a digital representation of value, with no legal tender, but with similar uses as currencies. While crypto activities are not subject per se to AML regulations, other obligated entities (such as banks and credit card operators) must report to the UIF monthly, for statistical purposes and enhance KYC monitoring, over any operations that their clients perform with crypto assets.

Concerning capital market regulations, the local Securities Exchange Commission (CNV) does not consider crypto assets as securities subject to its regulations either. However, the CNV said in the past that it may intervene if it detects that a certain issuance of tokens meets all the conditions to be considered a public offering of tradable securities (though no precedents of intervention exist so far). A sort of sandbox has been recently launched by the CNV for exploring these types of innovative products.

On the other hand, the tax authorities (AFIP) treat crypto assets as if they were securities, levying their sale with income tax, and their possession with patrimony tax. In addition, Internet platforms must report AFIP monthly the balances and movements of digital assets operated by their customers. →

There are two bills of law pending discussion in Congress, intending to regulate the activities of crypto exchanges and capture crypto activities within AML laws. The success of these bills is uncertain.

From a practical perspective, the Argentine market has been a pioneer in the adoption of crypto solutions for day-to-day usage, mainly due to inflation constraints, FX restrictions, lack of sufficient banking access, and a techy enthusiastic population.

Even though crypto activities in Argentina do not require a regulatory license, and most initiatives are offered from offshore, the offering of local-fiat associated services requires having a local presence and, if they are coupled with e-wallets or prepaid cards, registration with the BCRA as a Payment Service Provider and/or with the UIF as a Card Operator may be needed.

Apart from the classic exchange trading, current trends include the use of crypto wallets to make regular purchases, either with prepaid cards or QR Codes, receiving a % cashback. On the B2B market, white-label crypto partnerships through the use of APIs are also in expansion. Tokenization in agribusiness and the real estate sector, as well as NFTs for gaming and entertainment, are also increasing. And, of course, staking and DeFi products are also being promoted, but with certain care due to recent investigations conducted over Ponzi-like schemes.

September 1st, 2022

Crypto Regulatory Landscape and Trends in LATAM



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CMS Carey & Allende



Chile

On 3 September 2021, the President of Chile, through Message No. 172-369, announced a bill to promote competition and financial inclusion through innovation and technology in the provision of financial services, better known as the Fintech Bill (the 'Bill'). At the beginning of September 2022, the Bill reached the final stages for its approval. Also in September 2022, the trial before the Antitrust authorities, in which three national cryptocurrency exchanges sued the ten most important banks in the country, was ended after the parties reached an agreement. In April 2022, the Chilean Financial Market Commission (the 'CMF'), considered crypto assets as a financial instrument a category designed for those assets in which investment advice is regulated. So, although there is currently no specific regulation regarding cryptocurrencies in Chile, during this year the state of things has evolved to the point that it can be considered that the crypto market in Chile will be open soon.

Even though there is no regulatory clarity, legally, cryptocurrency has been considered as incorporeal good and the main regulatory pronouncements in this regard are the following:

1. The CMF has considered that cryptocurrencies are not securities and, therefore, are not subject to its regulation, although the first pronouncement of the authority referred only to BTC, in April 2022 this consideration was extended to all cryptocurrencies in general. A different situation applies to digital assets, as entities that regularly give investment advice for financial instruments, in which case they are under the CMF supervision.
2. The Central Bank of Chile does not consider cryptocurrencies as a national or foreign currency that is accepted as legal tender, therefore, has not applied the international exchange regulations, the rules for the formal exchange market, and, even, the sectoral regulations of bank line of business. Likewise, as cryptocurrencies are not considered a regulated means of payment, but rather a socially accepted means of payment between the parties to a transaction, the authority of the Central Bank over the participants of this payment system has not been enforced.
3. The Chilean IRS has published its own regulation which aims to tax the higher value that results from investing in cryptocurrencies in general, including purchase and sale, swaps, and staking among other kinds of transactions. →

4. On the side of the ML/FT authorities, they have been reluctant to affirm that they regulate activities related to cryptocurrencies. Even in 2021, the Financial Analysis Unit included a chapter regarding virtual assets in its red flags guidelines. It should be considered that the participants of this market have taken autoregulation measures to ensure their platforms are not used for ML/FT activities. The Fintech Bill includes several fintech activities within the scope of supervision of the Financial Analysis Unit.

The lines of business that have been developed for now in Chile are mainly cryptocurrency exchanges, crypto-collateralised loans, investment services regarding cryptocurrency, and cryptocurrency remittance.

In Chile, the main crypto exchanges are those who managed to keep bank accounts open once banks began to close all accounts that could be linked to crypto during 2018. Because of a protective remedy issued by the antitrust authorities, the market was able to keep operating.

In Chile, the main exchanges are centralised exchanges, which are websites focused on offering options to buy and sell crypto and carry out cryptocurrency trading operations through digital platforms. Through these, it is possible to perform staking, leveraged operations, and loan negotiations with cryptocurrencies or derivatives investments, but right now in Chile both the services and the variety of cryptocurrencies are limited. The main Chilean crypto exchange offers BTC-backed loans. These new collateralised loans are offered with advantageous conditions over the common credits present in the market, the only condition being to maintain certain levels of liquidity in cryptocurrencies in the exchange's custody. The range of investment products has been expanded on the one hand, to regulated investment advice as mentioned above. However, fund managers have launched specialised funds in cryptocurrencies and some of the players have set up businesses based on cryptocurrency brokerage and the ease of diversified investment through baskets.

One of the main use cases of cryptocurrencies in Chile is international remittances, since it allows the sending of value to relatives of residents in Chile at lower prices than traditional services, highlighting, in this case, the use of stablecoins such as USDT and USDC and specialised service providers.

The use of cryptocurrencies as a means of payment has not been regulated and hasn't had great diffusion among the users, even though APIs and code for automated payments are available as services provided by exchanges and payment processors. The main effort to put crypto-based means of payment in the hands of consumers is through payment cards, and one of the main exchanges announced that it began the registration process as a card issuer.

It is necessary to point out that this same year a new regulation was published that would allow low-value payments to be compensated through specialised clearinghouses. This is an opportunity to use such infrastructure to clear cryptocurrency payments through the participation of major exchanges and digital wallet providers.

Crypto Regulatory Landscape and Trends in LATAM



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CMS Rodríguez-Azuero



Colombia

In Colombia, cryptoassets are still unregulated as they are digital and not financial assets. This means that transactions carried out with cryptoassets are not equivalent to transactions performed with legal currency (Colombian Peso) and therefore are not subject to the same scrutiny and regulation by the Financial Superintendency (SFC) or the Central Bank. As the Central Bank has explained in multiple concepts, cryptoassets are not considered to be a foreign exchange/currency under national legislation which means that they cannot be used to pay debts under the exchange rate regime. According to the Central Bank, cryptoassets are not securities and in consequence, they are not part of the Colombian Stock Market, hence supervised financial entities cannot legally invest in this type of digital assets.

For the past year, the SFC alongside the Ministry of Finance and the Central Bank enabled a regulatory sandbox for Financial Entities to explore the provision of Virtual Assets Services by partnering with different Virtual Asset Service Providers (exchanges). These partnerships are currently undergoing various tests for cash-in cash-out operations for the purchase of financial products issued by the Virtual Asset Service Providers and their trial period is expected to run until at least December 2022 – although it could be further extended. Following the sandbox's first successful year of operations, in July the SFC issued for public consultation a Draft Circular (available only in Spanish [here](#)) aimed to regulate the provision of certain Virtual Asset Services by Financial Entities. The SFC would establish that all Supervised Financial entities who are currently undergoing test in the Regulatory Sandbox would have up to 2 months after the end of their trial periods to implement all obligations set forth by the Circular. The Circular would – among others – allow Supervised Entities' collective investment and private equity funds to invest in foreign investment funds whose underlying assets consist of cryptoassets. Other entities such as Trust Companies would also be allowed to carry out fiduciary businesses with cryptoassets and Supervised Entities that perform the distribution of foreign funds would be allowed to invest in these types of assets.

The Draft Circular, however, does not change the nature of cryptoassets in the country, maintaining their unregulated status. More importantly, the Draft Circular would not allow Supervised Financial Entities to directly perform operations with cryptoassets, meaning that all digital asset operations will have to be performed by pre-approved non-regulated third parties. Even though the Draft Circular does not make Virtual Asset Services Providers subject to the SFC's regulation, it does include obligations for Supervised Financial Entities to carry out regular and profound verifications over these Provider's minimum level of compliance with SARLAFT, security, operational, technological, information, and cybersecurity obligations. This Draft Circular would also force Supervised Financial Entities to increase information and warning information for Financial Consumers regarding the use and possible harms of cryptocurrencies, as well as the duty to disclose that they will not be responsible for any fluctuation or liquidity risks that virtual assets pose for their owners.

Cryptoassets Regulatory Developments



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Brazil

The volume of investments in cryptoassets has increased in Brazil in recent years, which turned those assets into a widespread phenomenon among both retail and institutional investors.

Along with the growth of investments, improvements in the cryptoassets regulatory landscape have also been seen in Brazil based on different regulatory grounds: from statements issued by the Central Bank of Brazil (Central Bank) and the Brazilian Securities and Exchange Commission (CVM) to bills proposed and currently under discussion in the National Congress.

Central Bank Communiqué No. 25,306

The path was first paved by the Central Bank Communiqué issued on February 19, 2014, on which the Central Bank clarifies the risks involved in the so-called 'virtual currencies'.

In this Communiqué, the Central Bank sets forth that virtual currencies are not electronic currency (which is backed by Brazilian fiat currency, the 'Real') as acknowledged by the applicable Brazilian legislation. The Central Bank also states that electronic currency is used as a payment method in Brazilian Reais, which is not the case for virtual currencies, since they are not issued by the Central Bank or any other governmental entity. Based on this understanding, cryptoassets in principle would not be under the jurisdiction of the Central Bank. →

Central Bank Communiqué No. 31,379

The second Communiqué was issued by the Central Bank on November 13, 2017. In this opportunity, the Central Bank restated its alerts that virtual currencies are not issued, nor guaranteed, by any monetary authority. Furthermore, the Central Bank highlights the risks that the holder of virtual currencies may experience, such as loss of assets, eventual involvement in illicit activities, and non-compliance with FX laws in Brazil (in cases in which virtual currency is used to perform cross-border payments). However, in the end, the Central Bank concludes that, considering the volume of transactions involving virtual currencies, such assets did not represent a threat to the National Financial System. Notwithstanding, the Central Bank would follow the developments of the market and eventually take action, as deemed necessary.

CVM Note in November 2017

On November 16 2017, it was the turn of the CVM to make its public statement regarding the crypto landscape in Brazil. On the occasion, the CVM clarified the risks presented by the Initial Coin Offerings ('ICOs'). ICOs are public offerings of tokens aiming at raising funds and, in this sense, these tokens may be securities according to Brazilian legislation if meeting certain criteria. In these cases, the applicable capital markets regulations must be complied with, and distributions must be submitted for registration with the CVM. Furthermore, the CVM also indicated that the intermediation of securities must be performed by authorised entities that follow anti-money laundering and suitability regulations, besides using the infrastructure authorised by the CVM, such as central depositories, custodians, and bookkeepers.

Circular Letter 1/2018/CVM/SIN

The second statement from the CVM was issued on January 12, 2018. On the occasion, CVM has continued the interactions with market players that have been raising questions about the ICOs statements of November 2017. The CVM said that cryptocurrencies are not financial assets and, therefore, could not be acquired directly by investment funds in Brazil. Conclusions were yet to be made with respect to investment funds that would invest in cryptoassets abroad.

Circular Letter 11/2018/CVM/SIN

In its third statement, the CVM attested to the possibility of indirect investment in cryptoassets through the acquisition of quotas of investment funds and derivatives abroad, as long as they are admitted to trade in the relevant jurisdictions. The CVM also made some risk considerations regarding the issuer, compliance with anti-money laundering regulations, and hackers' attacks, among others.

CVM Guidance Opinion 40

Another recent development in the cryptoassets regulation landscape in Brazil was the issuance of the CVM Guidance Opinion 40 on October 11, 2022, about cryptoassets and the securities market. In the Guidance, the CVM reinforces the previous statements, asserting the existence of three types of tokens, based on their function (payment tokens, utility tokens, and asset-backed tokens). The CVM also states that asset-backed tokens may be securities, depending on the economic essence of the vested rights, and thus could eventually attract the CVM regulations. Informational rules and the role of brokers and crypto exchanges and managers of investment funds are also addressed.

Bill No. 4401, of 2021

One of the latest chapters of the crypto crusade in Brazil was the presentation on December 13, 2021, to the Brazilian Senate, of a Bill to regulate virtual assets services providers. The Bill was approved by the Senate on April 24, 2022 and sent to the approval of the House of Representatives on May 05, 2022. The Bill defines virtual assets, establishes authorisation to all entities that want to provide virtual assets services, and foresees an entity to supervise the virtual assets service providers, among others.

This is in a nutshell the legislative and regulatory landscape of cryptoassets in Brazil. The actions taken by the Central Bank and the CVM had certainly clarified the understandings of those government bodies towards cryptoassets, but much more is needed in order to provide a safe and sound environment for crypto investment in the country. A law that defines and regulates cryptoassets, as well as the roles of gatekeepers (such as exchanges), is essential to increase the confidence of investors and service providers and boost the development of new products backed by this type of asset in Brazil. In this sense, the unfolding of the crypto regulation that will arise from the approval of the Bill currently under discussion in the Brazilian National Congress is worth following.

Final Remarks



DeFi, Web 3.0, and the crypto world offer the interesting potential to reduce costs, increase speed, and improve functionality in payments, lending, and borrowing by eliminating friction in terms of technology, contracting, and coordination between multiple parties.

Paving the Way to Payments Modernisation – Final Remarks

Crypto assets and their infrastructures are poised to change the payments industry. For end-users not so much will change in terms of user interface and types of financial products. The transformation of the coming two decades mainly happens on the inside: in the non-visible part of payments.

Most of the media focus has long been on cryptocurrency as a speculative asset, and this has been rewarding given the number of spectacular stories. *But the benefits of cryptocurrencies and blockchain technologies as payments and securities infrastructure receive less attention.*

DeFi, Web3, and the crypto world offer the interesting potential to reduce costs, increase speed, and improve functionality in payments, lending, and borrowing by eliminating friction in terms of technology, contracting, and coordination between multiple parties. This is expected to impact many functions of today's payment and securities market infrastructures, such as clearing houses, RTGS, retail payments, cross-border payments, custody, exchanges, and FX services. *A focus on these 'more boring' applications of crypto assets and blockchain is fundamentally important.*

To tap into crypto payments potential, many complain about a lack of regulation. However, regulation and policy conversations about the crypto and Web3 ecosystem are happening across the globe. This is partly driven by the huge growth of the crypto sector over the last two years, which is impossible to ignore. Moreover, these have started to be more nuanced, maybe also triggered by the 'bad' happening in this space (regulators didn't think too much about customer protection funds until LUNA and FTX crashed).

Key areas regulators are addressing include how to authorise and oversee market participants, maintain financial and market integrity, manage financial stability, and ensure consumer and investor protection.

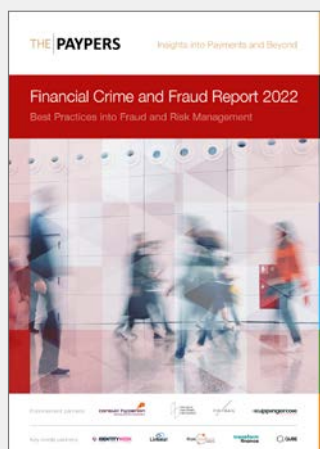
Setting off on the right regulatory track is critical. A holistic, balanced, and collaborative approach is needed, offering near-term certainty but flexibility to accommodate future evolution. It is more a matter of applying existing and amended rules to crypto, than of devising new rules specifically for crypto.

The future of crypto in the payment industry

Members of the payment industry seem willing to offer crypto products and services. They are preparing their organisations by gaining more knowledge about technology and customer demands. While regulatory issues in particular appear to have been holding the industry back so far, new regulations in the foreseeable future (e.g. MiCA) are likely to change this. Besides hopefully giving the payment industry more trust in crypto, this will also help organisations to build resilient, compliance frameworks to counteract the regulatory curve (e.g. digital onboarding, screening).

Don't Miss the Opportunity of Being Part of Large-Scale Payments Industry Overviews

Once a year, The Paypers releases four large-scale industry overviews covering the latest trends, developments, disruptive innovations and challenges that define the global online/mobile payments, e-invoicing, B2B payments, ecommerce and web fraud prevention & digital identity space. Industry consultants, policy makers, service providers, merchants from all over the world share their views and expertise on different key topics within the industry. Listings and advertorial options are also part of the Guides for the purpose of ensuring effective company exposure at a global level.



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