

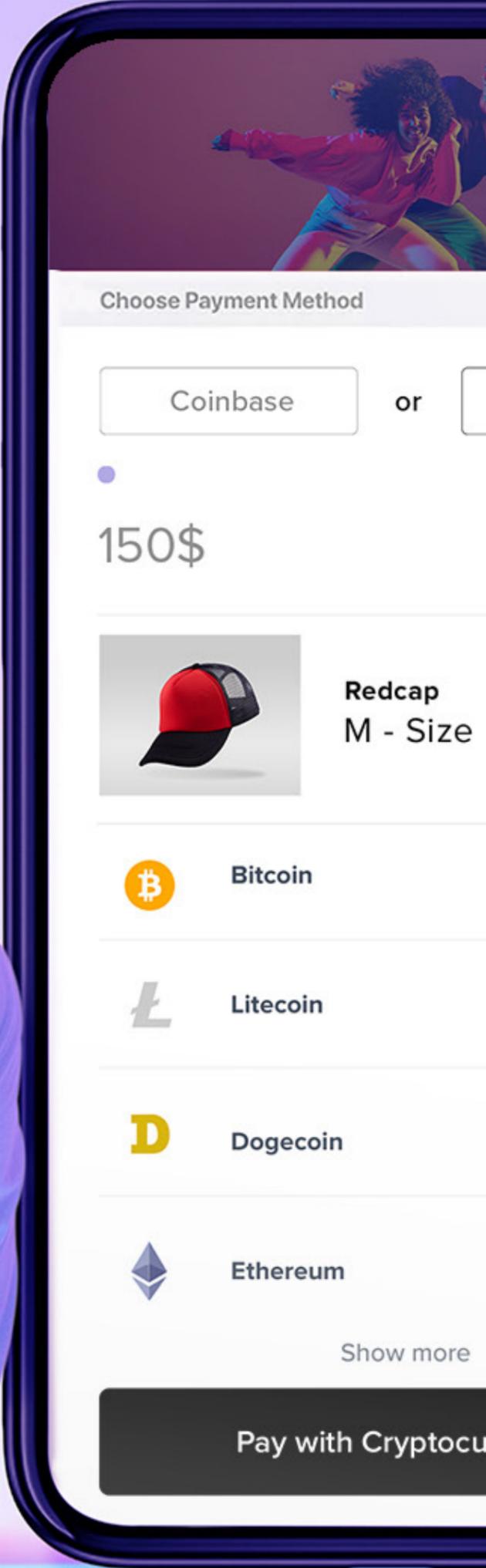
WHITE PAPER

MYSTERY TO OPPORTUNITY:

The future of crypto payments

nuvei

 **Flagship**
ADVISORY PARTNERS



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INTRODUCTION

Foreword: Yuval Ziv, Managing Director Digital Payments at Nuvei

We at Nuvei have long been believers in the long-term potential of crypto, in the last year innovation has accelerated with the rise of non-fungible tokens (NFTs) and decentralized finance (DeFi) — the latest example of the latent potential of blockchain technology. These innovations have introduced millions of consumers to crypto but one of the use cases that has remained elusive is crypto as a “means of exchange”. However, multiple regulatory, technological, and corporate adoption drivers are creating the right catalysts for accelerated crypto payments adoption and acceptance.

At the same time, the emergence of a new generation of cryptocurrencies, including stablecoins and central bank digital currencies suggests that we are at tipping point for the usage of cryptocurrencies in C2B commerce. The potential for global merchants is tremendous with opportunities to support new commerce experiences and to reach more customers, locally and globally. Optimizing the customer journey through frictionless payment experiences will be more important than ever.

At Nuvei we have significant experience at making it simple and secure for our merchants to offer the world’s leading cryptocurrency payment methods. Our commitment to the future of crypto is reinforced by our recent acquisition of Simplex, the leading fiat-cryptocurrency gateway provider. We look forward to working with our merchants to take advantage of the emerging opportunities.



Yuval Ziv
Managing Director Digital Payments at Nuvei



Foreword: Joel Van Arsdale, Flagship Advisory Partners

Payments experts often ask themselves – what problem does this solve? Cryptocurrencies have clearly solved the demand for digital, anonymized wealth storage.

The problems being solved by crypto payments are more elusive. Successful C2B mass-market payments require both consumer and merchant demand, in addition to security for consumers and operational clarity and simplicity for merchants. We can now see a clear value proposition for crypto payments arise with consumers, based on digital simplicity and global ubiquity amidst demand for new forms of digital goods and commerce like NFTs.

But the crypto payment transactions must be more secure and merchant acceptance must be more visible. 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. International trade unrestricted by fiat challenges is a clear long-term, potential bonanza.

Consumer demand for crypto payments will continue to grow, but mainstream merchant acceptance will only accelerate with regulatory clarity. We hope that general regulatory clarity will be spurred by the rise of CBDCs, although hardline actions by China and others remains a risk that only CBDCs become openly permissible in coming years. Powerful actors including big tech, payment networks, and even some governments are aligning around crypto at the center of global digital commerce.

Once the market overcomes crypto payments' fundamental trust challenges in the next few years, these actors will push crypto payments into mainstream adoption. Payment service providers (PSPs) on the forefront of crypto will then benefit amidst rising demand from merchants.



Joel Van Arsdale
Flagship Advisory Partners



EXECUTIVE SUMMARY

Bitcoin, the world's first cryptocurrency, was originally designed as a medium of exchange. But while being hugely influential overall, 12 years after its introduction Bitcoin has failed to gain meaningful traction as a mainstream consumer-to-business (C2B) payment method. Cryptocurrencies and their underlying blockchain technology have exploded in the last decade in form and value but cryptocurrencies continue to function primarily as speculative stores of value.

Crypto payments in C2B merchant acceptance are still nascent today. Crypto merchant payments today represent an estimated annual volume of \$6 billion, a tiny fraction of the \$10 trillion C2B global eCommerce market. Most crypto payment volumes today are driven by merchants in specific verticals such as online gaming, adult entertainment, and digital services. Mainstream merchants have not yet accepted cryptocurrencies as a viable alternative alongside traditional payment methods. Lack of regulatory clarity, consumer purchase experience friction, and privacy and security concerns remain roadblocks to mainstream merchant acceptance.

However, we are now at a point of market inflection, where several forces of disruption and market initiatives have come to the forefront creating the right catalysts for accelerated acceptance and usage of cryptocurrencies in C2B commerce. Regulators globally are intensifying their scrutiny of crypto which we expect to give way to greater regulatory clarity. Accelerating

evangelism from key payments ecosystem stakeholders and influencers (e.g., Visa, PayPal) is driving awareness and interest. Technological innovations such as non-fungible tokens (NFTs), stablecoins, and central bank digital currencies (CBDCs) expand the horizon of possibilities for merchants and consumers. While hurdles and uncertainties remain as to when and how cryptocurrencies will go mainstream, we expect crypto payments to emerge as a viable and widely-used medium of exchange in digital commerce in the next several years.

This white paper examines the history, current state, and future expectations for the evolution of crypto merchant payments. Note that we focus in this paper on C2B payments and not on person-to-person (P2P) or business-to-business (B2B).

We first demystify the universe of cryptocurrencies and their current state, starting from the genesis of Bitcoin (section 1). Next, we dissect the current state of cryptocurrencies in merchant acceptance, assessing current merchant uptake and payments maturity across select merchant verticals and acceptance drivers and barriers (section 2). Finally, we forecast waves of evolution and adoption that we expect to disrupt and accelerate crypto payments in the coming 3-5 years. We close with a future vision for how mainstream adoption could develop, with the objective of illustrating the future possibilities that crypto payments hold.

Unravelling the crypto payments universe

SECTION 1

1st Generation: Bitcoin, laying the foundations for crypto payments

Bitcoin, the world's first cryptocurrency, was introduced in 2009 as an alternative medium of exchange to fiat-based currencies. Developed out of a complex interplay of cryptography-based algorithms, Bitcoin was structured as a fully decentralized network where transactions could be verified through cryptography and recorded in a public distributed ledger called a blockchain. The original objective of Bitcoin was to develop a peer-to-peer (P2P) decentralized payment system that could operate without any involvement from central banks or financial intermediaries.

The initial uptake of Bitcoin as a medium of exchange was promising, quickly rising to be a popular medium of exchange for gifts and rewards on internet forums. However, Bitcoin P2P payments quickly migrated from mainstream towards the dark web and less scrupulous use cases. Crypto's design offers inherent privacy with limited traceability, which clearly appeals to the massive black market for money movement.

Over time, Bitcoin failed to gain traction in mainstream C2B commerce (see figure 1) as it also struggled with structural and technical limitations related to its speed, scalability, and power needs:

- Bitcoin transaction requests could vary from taking a few seconds to up to ten minutes depending on network congestion
- Bitcoin handles less than 10 transactions per second versus Visa's ability to handle up to 65,000 per second
- The Bitcoin 'mining process' is a massively energy intensive process. To put this in context ~1.2 million Visa transactions could be powered by the energy consumed for a single Bitcoin transaction on average (1777.57 kWh).¹

It was also clear, throughout Bitcoin's growth, that a lack of regulatory oversight and clarity created mainstream acceptance and usage hesitation.

¹<https://digieconomist.net/Bitcoin-energy-consumption/>

BITCOIN GENESIS



Bitcoin, the first cryptocurrency, was only launched in 2009



Created by an unknown person or group of people under the pseudonym Satoshi Nakamoto



Designed to be a peer-to-peer payment network that could function as a medium of exchange



Its underlying blockchain technology has proved revolutionary, complex and rapidly evolving

Figure 1: Bitcoin Genesis & Limitations in C2B Commerce

Sources
Flagship analysis

LIMITATIONS IN C2B COMMERCE

Regulatory



- At its outset, the regulatory environment around crypto was non-existent (by design)
- Most financial institutions and investors will not transact unless there is regulatory clarity

Technology



- Bitcoin was the first blockchain of its kind and failed to offer the optimal technology and infrastructure for C2B payments
- User experience was sluggish with transactions taking several minutes to authorize

Awareness



- Initial awareness was low, largely being restricted to specific internet forums or the dark web
- Merchants had limited know-how benefits and poor knowledge on the partners and enablers

Today, Bitcoin continues to appeal to consumers mainly as a speculative store of value rather than a medium of exchange. Price volatility also limits more mainstream usage, given the ongoing, frequent,

rapid price appreciations and declines. As illustrated in figure 2, Bitcoin reached an all-time high in April 2021 reaching \$65,000 but the price then fell by 50% just one week later. Speculators embrace this price

volatility, but this lack of stability dissuades mainstream commerce which fundamentally seeks to avoid value speculation.

Bitcoin Historical Prices

(in USD; from March 2010 to Sept 2021)



Figure 2: Bitcoin Historical Prices (in USD; from March 2010 to Sept 2021)

2nd Generation: Inspiring new crypto payment ecosystems

Arguably the greatest success of Bitcoin has been its underlying blockchain technology² which inspired the development of a broad ecosystem of cryptocurrencies and tokens, many better suited to payments. Since 2017 the number of cryptocurrencies has quadrupled from c.1,300 to c.6,000 today, with the current market capitalization at \$2.2T, growing from \$200B in the same period³.

Like Bitcoin, other forms of cryptocurrency establish their value, ownership, and issuance through cryptography on a decentralized platform — generally a public blockchain — rather than through governments. Over the past 12 months, we've seen institutions and individuals pile into the crypto market driving historic levels of ownership and value, touching \$2T market cap (figure 3) and over 300 million users worldwide recently.⁴

²Note that blockchain's underlying distributed ledger technology has massive implications on payments well beyond C2B commerce. However, we do not dissect these broader implications for distributed ledger technology given our focus on C2B payments.

³CoinMarketCap; 2021

⁴Tripe A, <https://tripe-a.io/crypto-ownership/>; 2021

2,152 Total Market Cap

Note: Total market cap of all crypto assets, including stablecoins and tokens.

Sources: CoinMarketCap

Market Capitalization Comparison: Total Market vs BTC and ETH (in USD bil., 17 Sept 2021)

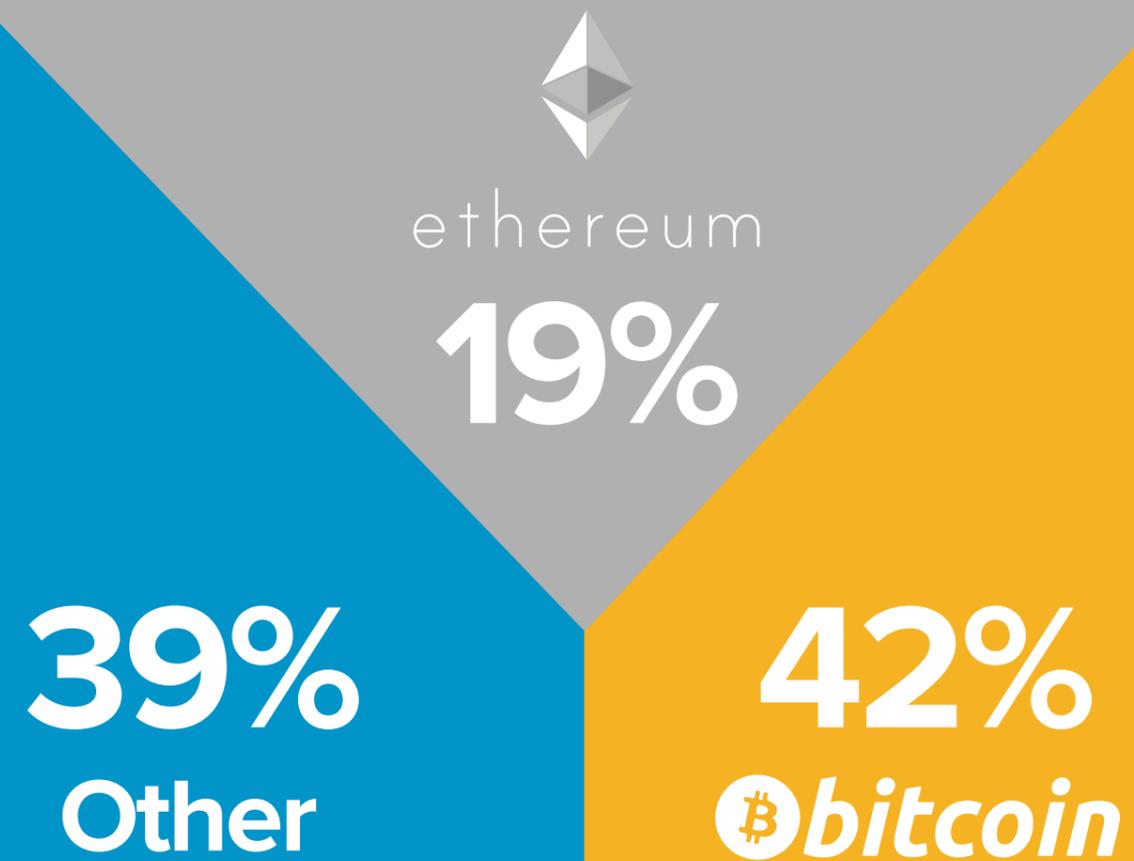


Figure 3: Market Capitalization Comparison: Total Market vs BTC and ETH (in USD bil., 17 Sept 2021)

Blockchain technology continues to evolve with new platforms powering new use cases. For instance, the Ethereum network introduced in 2015 has become the most widely used blockchain platform for various financial services applications. Like Bitcoin, Ethereum has a cryptocurrency called Ether, but it has more widespread application than just a medium of exchange or a store of value. Ethereum enables the developer community to build decentralized applications (dApps) on its blockchain via smart contracts (which function like computer programs executed on the blockchain). Two of the recent, sexiest technological innovations in crypto: DeFi (decentralized finance platforms), and NFTs (non-fungible tokens) are predominantly built using the Ethereum network. DeFi enables new financial products that operate on cryptocurrencies, running autonomously and executing specific financial functions — trades, loans, or other transactions automatically when

specific conditions occur. One application is yield farming which has gained significant popularity over the past year. Yield farming enables crypto owners to stake or lend their crypto assets in return for rewards in the form of additional cryptocurrency. Note that we discuss NFTs further in section 3 of the paper (under Wave 4). As highlighted in figure 4, several blockchain-based platforms such as Ripple, The Lightning Network, Solana and others, have arisen to address capability gaps in cross border and C2B payments. However, most of them have failed to gain meaningful scale due to lack of buy-in from consumer and merchant communities and their inability to work with current infrastructures. Many of these platforms are still early in their maturity, and we expect ongoing evolution of these platforms as they integrate into the broader payments marketplace and infrastructure.



Platform	Launch	About	Use Case Examples
 ripple	2013	Blockchain based, that integrates with banking systems	<ul style="list-style-type: none"> ● Settlement of global transfers ● Asset exchange ● Remittance
 Algorand	2019	Open source decentralized app/ blockchain network	<ul style="list-style-type: none"> ● Multilateral trade ● Settlement of complex transactions ● Debt settlement
 SOLANA	2020	Blockchain based, with focus on speed and efficiency (Ethereum challenger)	<ul style="list-style-type: none"> ● Decentralized finance ● Decentralized applications ● NFTs ● Digital ownership ● Global commerce
 Polkadot.	2020	Multi-chain artitecture, fousing on connecting with external networks	<ul style="list-style-type: none"> ● Enabling interoperability between chains (transactions, identity, file storage, data, IoT, finance and privacy)
 HYPERLEDGER <small>BLOCKCHAIN TECHNOLOGIES FOR BUSINESS</small>	2015	Enterprise open-source blockchain software with a modular architecture	<ul style="list-style-type: none"> ● Identity management ● Privacy and confidentiality ● Transaction execution
 BITCOIN LIGHTNING NETWORK	2015	Overlays the blockchain, using payment channels between parties (when channel is closed, it is added to the blockchain)	<ul style="list-style-type: none"> ● Bitcoin micropayments ● Decentralized finance ● Chat and gaming

Sources
Flagship analysis, company websites

Figure 4: Next Generation Platform Examples

3rd Generation: Stablecoins and Central Bank Digital Currencies (CBDCs) — new frontiers in crypto payments



	CRYPTOCURRENCY	STABLECOINS	CBDCs
Background	<ul style="list-style-type: none"> ● A currency that does not depend on central banks 	<ul style="list-style-type: none"> ● Developed to mitigate volatility and improve payment use case 	<ul style="list-style-type: none"> ● Digital currency issued by central banks directly to citizens
Traits	<ul style="list-style-type: none"> ● High volatility ● Limited utility for payment acceptance 	<ul style="list-style-type: none"> ● Issued by private entities ● Can be backed by assets, or pegged to FX or commodities 	<ul style="list-style-type: none"> ● Retail: C2B transactions ● Wholesale: interbank transactions
Examples			<ul style="list-style-type: none"> ● E-Yuan (China) ● E-Krona (Sweden)

The inherent valuation volatility of cryptocurrencies inspired the development of a new generation of digital currencies leveraging crypto technologies focused around stable and predictable valuations. Two such innovations are stablecoins and central bank digital currencies (CBDCs); each designed to avoid the volatility which limits crypto's usage for commerce. Stablecoins and CBDCs are driving excitement based on their potential to catalyze mainstream acceptance and usage of digital currency for commerce.

As the name suggests, stablecoins are cryptocurrencies with values pegged to a fiat currency, a basket of fiat currencies, or to specific exchange-traded commodities. Stablecoins are significantly less volatile than cryptocurrencies. Ever since their inception, stablecoins have primarily been used by crypto traders as a mechanism to store proceeds from their crypto investments, avoiding fiat conversion fees and protecting against volatility risks, that traditional cryptocurrencies fail to offer.

Sources
Flagship analysis, company websites

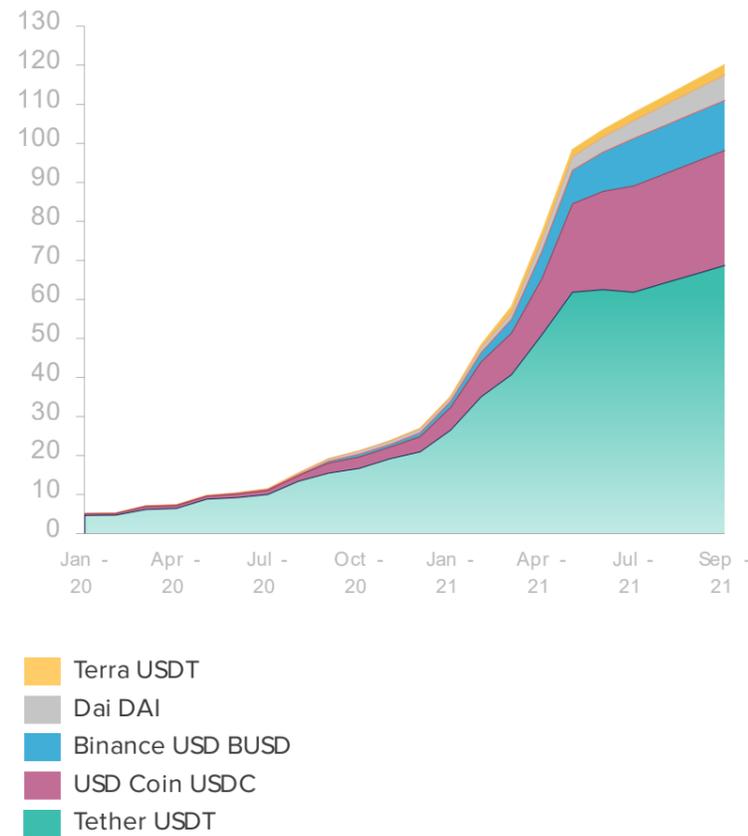
Figure 5: Comparison of Cryptocurrency, Stablecoins, and Central Bank Digital Currencies

As shown in figure 6, stablecoins have grown in recent months and years, with the current market cap in excess of \$120B. There are more than 100 stablecoins in existence globally.⁵ The majority of the volume today continues to be exchange traded, with payments volumes accounting for less than 5% of transaction activity. We are now seeing wider acceptance of stablecoins in mainstream commerce. Visa recently announced support for USDC settlements on their network rails⁶ which will further encourage traditional payment players' support and mainstream merchant acceptance.

Some stablecoins are riskier than their moniker may suggest. Often a single entity/issuer controls and operates the stablecoin with responsibility for maintaining the stability and security of the peg. Issuers face conflicting incentives with opportunities to generate higher returns by investing in risky assets or by lending against underlying asset reserves. In response, investors are increasingly demanding major stablecoin issuers to issue attestation reports on their reserves, where third-party auditing firms verify the information provided. Many stablecoin issuers, such as Circle, Paxos and Gemini, began issuing reports in 2018 and 2019.

⁵The Block; 2021
⁶Visa, [https://usa.visa.com/about-visa/newsroom/press-releases.releaseId.17821.html#:~:text=29%2C%202021%2D%20Visa%20\(NYSE,actively%20used%20open%2Dsource%20blockchains](https://usa.visa.com/about-visa/newsroom/press-releases.releaseId.17821.html#:~:text=29%2C%202021%2D%20Visa%20(NYSE,actively%20used%20open%2Dsource%20blockchains)

Market Capitalization of Major Stablecoins (in USD bil.)



Number of Active Stablecoins

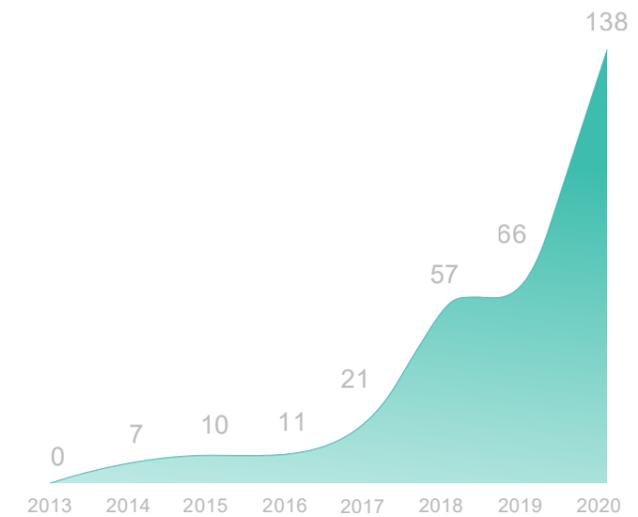


Figure 6: Market Cap of Major Stablecoins (USD bil.; Sep 2021) & Number of Active Stablecoins

However, the most widely traded stablecoin on the market (USDT) is controlled by a company called Tether. Tether originally claimed that every Tether was 100% backed by fiat currency. A 2019 investigation revealed that at one point it only had about 75% of its issued funds backed by fiat USD and that it had used over \$800M of its funds to cover up a major trading loss. Increased regulatory supervision and oversight will bring welcome consumer safety and confidence to stablecoins.

We also see the ongoing emergence of, and massive potential for CBDCs, inspired by the security and traceability of the blockchain technology and piloted by several central banks globally. CBDCs are a new form of digital money that can be issued by central banks directly to its citizens and are likely to reside on regulated centralized blockchains. CBDCs can be thought of as a fully digitized version of fiat currencies. While CBDCs are a relatively recent phenomenon,

we already see several leading countries planning or implementing this technology. According to a 2021 BIS survey, 86% of central banks globally are beginning to develop CBDCs, with around 60% still experimenting with proof-of-concepts and 14% already running pilots.⁷ Some markets such as China and Sweden have even launched initial versions of CBDCs in closed pilots. CBDCs are likely to be eventual endpoints for cryptocurrencies in mainstream commerce. In section 3 we will examine the implications of CBDCs in detail (under Wave 2).

Although not core to the focus of this paper, the potential value of blockchain and digital currency-based payments for international trade (e.g., cross-border, B2B payments) is massive. Considering today's many transacting pain points in international trade (counter-party risk, transaction and contract validation, timing, cost of payments, government regulations, etc.), blockchain-based payments, free

from fiat restrictions would be welcomed by many. We consider cross-border B2B to be potentially the largest potential use case for crypto payments, albeit slow to develop with many roadblocks. We also see this use case first arising in emerging markets.

⁷Bank of International Settlements, <https://www.bis.org/publ/bppdf/bispap114.pdf>; 2021

Crypto payments: Who is paying with crypto today?

Despite penetrating mainstream investing, crypto payments adoption today is low. With an estimated 300 million crypto users worldwide, only approximately 15-25% are using crypto for merchant payments. Crypto users are relatively homogenous: generally young (millennials) men with average annual incomes in excess of \$100K (figure 7, illustration of user demographics in the US). According to a separate BitPay survey, approximately 70% of users use crypto

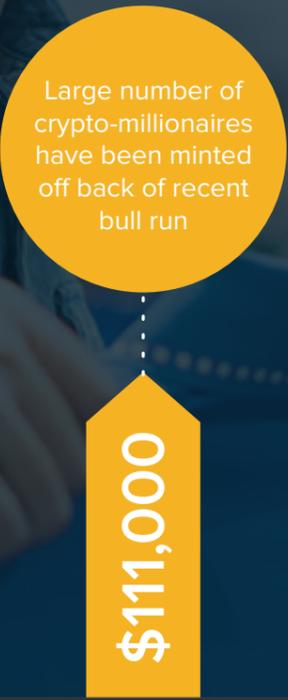
only as a store of value or for speculative investment, while only approximately 25% users use it for making payments online.⁸

In developing markets with a history of financial instability and high proportions of unbanked populations, we see broader embracement of crypto (not just the homogenous wealthy young men seen in developed markets). Crypto offers a mechanism to

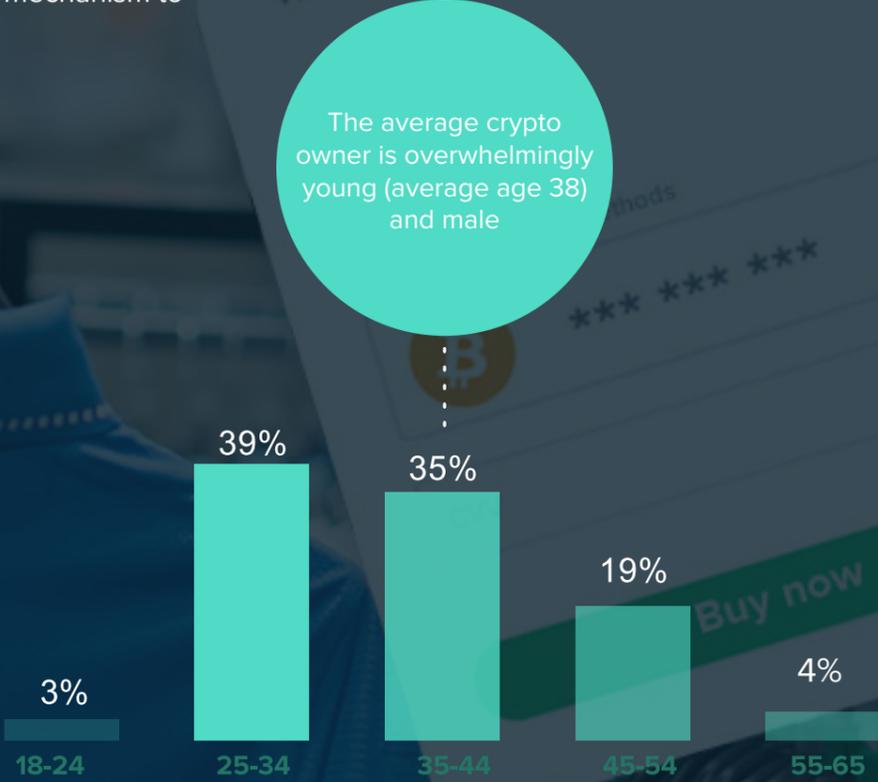
store and transfer funds without a bank account and, while speculative, carries less perceived risk than an unstable government. We also see strong uptake of stablecoins in outbound P2P remittances, allowing consumers to prevent paying expensive money transmission fees. El Salvador's adoption of bitcoin is a harbinger of actions to come, albeit one being derided in today's market.



GENDER SPLIT AMONG CRYPTO HOLDERS



Average household income of crypto holders (in USD)



GENDER SPLIT AMONG CRYPTO HOLDERS

The average crypto owner is overwhelmingly young (average age 38) and male

⁸PYMNTS BitPay Study, <https://www.pymnts.com/cryptocurrency/2021/pymnts-bitpay-study-how-consumers-want-to-use-crypto-to-shop-and-pay-in-2021-and-after/>
Sources: Gemini

Figure 7: US Crypto Owner Profile

Interest in crypto has soared during Covid. Crypto owners in the U.S. tend to be younger, tech savvy consumers who use modern day trading platform such as Robinhood.

Global Gaming Merchant

Tracing the current maturity of merchant crypto acceptance

SECTION 2

Crypto payments acceptance today

As we have shown in the previous section, cryptocurrencies have mostly failed to gain meaningful traction in mainstream commerce. Stablecoins and CBDCs offer promise to break the logjam inhibiting acceptance, but each are still at a relatively early stage of development.

Based on our research, crypto payments in digital C2B merchant commerce (i.e., eCommerce) is still mostly nascent today, accounting for an estimated \$6 billion of annual volume. As we illustrate in figure 8, this is a tiny fraction relative to the size of global eCommerce volumes today (\$6 billion vs. >\$10 trillion of total B2C eCommerce). Despite its limitations, Bitcoin continues to be the most widely used cryptocurrency in C2B commerce accounting for c.60% of the total payment volumes.⁹

⁹Bitpay, <https://bitpay.com/stats/>; 2021
Note
Excluded are card issuing revenue pools (crypto wallet issued cards for making online purchases)
Sources
Flagship analysis

**Global eCommerce Volumes:
Traditional vs. Crypto Payments**
(in USD bil.)

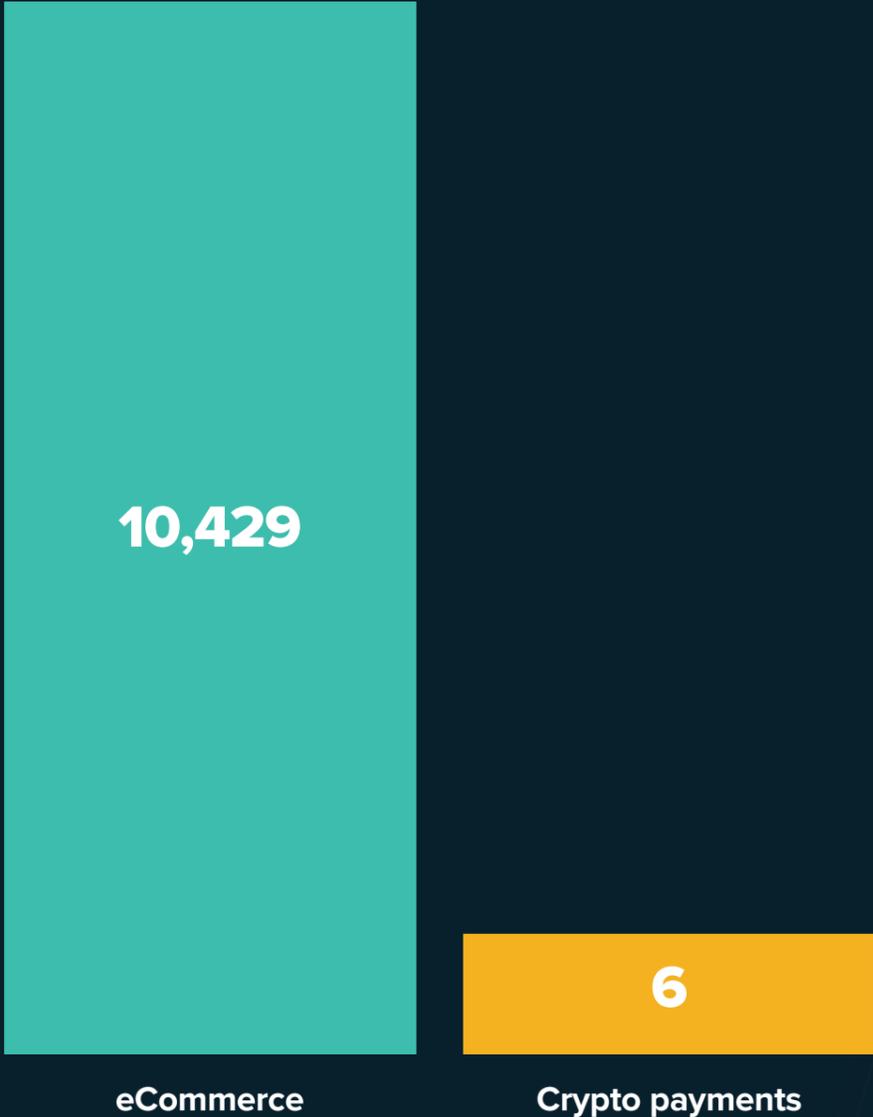


Figure 8: Global eCommerce Volumes – Traditional vs. Crypto Payments (USD bil.; 2021)

In figure 9, we dissect the current merchant vertical mix for crypto payments today. Most crypto payment volumes are concentrated in merchant verticals that tend to accept the broadest possible set of alternative payments such as online gambling, adult entertainment, digital content (e.g., VPN, precious metals), and digital-gaming (noting that online gambling and adult entertainment account for roughly two thirds of crypto payment volumes). Merchants in these more regulated verticals are early adopters of crypto given that they see crypto acceptance as potentially driving incremental volumes from the young, wealthy, male segment of consumers. Cryptocurrencies also work across borders without requirements to set up local connections, settlement, and servicing. This is also part of the appeal for digital merchants, who themselves are often globally focused. The benefits of crypto contrasts to the fragmented landscape of local APMs and traditional/local PSPs. Crypto appeals to specific customer demographics, offering them privacy and anonymity. While these high-risk verticals have been the main drivers of crypto volumes, it is worthwhile highlighting that crypto contributes to less than 3% of their gross merchandise volumes, indicating the nascency of crypto payments in eCommerce today.

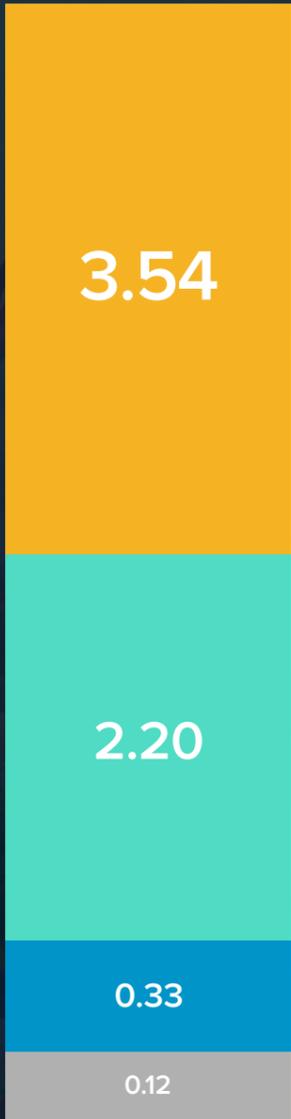
Beyond high-risk verticals, we also see the emergence of crypto exchanges and NFTs as rapidly emerging merchant acceptance verticals. Crypto exchanges have been instrumental in offering mainstream merchants crypto on-ramps and off-ramps, increasingly issuing prepaid cards for consumers to spend crypto balances in online and offline commerce. NFTs are a new breed of tokenized digital ownerships, enabling creators to digitize specific asset categories such as artwork, collectibles, and digital media. NFTs and cryptocurrencies are gaining early traction in the mobile gaming industry which has always been at the bleeding edge of commerce and payment innovation. The next revolution in gaming will be powered by crypto and NFTs which we profile in section 3 (Wave 4).

In mainstream eCommerce retail verticals though, crypto payments are largely absent today. There are a few marquee brands that offer crypto acceptance alongside traditional payment methods. As we depict in figure 10, **merchants that support crypto payments today are generally positioning their brands to be seen as ground-breaking.** Leading merchants such as Tesla, Square, Overstock are classified as 'true believers.' These merchants believe that crypto is foundational to the future of commerce. We also see several merchants (such as Coca Cola and Microsoft) acting as **'aspirational', seeing crypto acceptance as a means to energize their brands with global millennials.** These merchants are attracted by the halo of being associated with crypto and desire to position themselves as innovative and early adopters. Finally, we see merchants that are positioned to attract specific crypto-native demographics (e.g. young, tech savvy **millennials**), **aiming to expand the addressable target market. Starbucks and Surfshark are some of the merchants we place into this category.**

Global Crypto Payments Turnover by Vertical

(USD bil.; 2021)

6.19 USD bil.



Verticals

<p>Gambling & Gaming</p>
<p>Dating & Adult Entertainment</p>
<p>Digital Content</p>

Key Drivers

- Offer to attract specific gaming consumer demographic.
 - Economic substitute to cards and wallets, which tend to incur interchange for pay-ins/pay-outs.
 - Offers players to stay anonymous.
-
- Lot of regulatory obstacles to go into business globally and they have trouble implementing payments in general.
 - Privacy aspects of cryptocurrencies are also an attraction for consumers.
-
- Digital goods such as VPN providers have privacy overlap.
 - Demographics of gaming companies tend to have significant overlap with crypto users.

Sample Merchants

Sources
Company websites, Flagship analysis

Figure 9: Global Crypto Payments Turnover by Vertical (USD bil.; 2021)

Merchant Rationale for Accepting Crypto Payments

TRUE BELIEVERS

- Those with a vested interest in the success of the ecosystem, either as owners of digital asset businesses or as significant holders of cryptocurrencies
- Truly believe in foundational premise behind blockchain and are positioning businesses to be crypto native from the ground up

 overstock™  TESLA  Square

ASPIRATIONAL AND OPPORTUNISTIC

- Companies that want to make a statement and create a buzz
- Aiming to expand addressable target market by attracting crypto native demographics to purchase their products/services
- Incremental sales and margin from new customers
- Attracted by the halo of being associated with crypto, positioning themselves as innovative
- Economics is not the driver today, limited volume

 Coca-Cola
 airBaltic

 Surfshark®



 playasia

 dishTV

Sources

Flagship analysis, company websites

Note: Tesla suspended vehicle purchases using Bitcoin in May due to climate change concerns but continues to advocate for cryptocurrencies

Figure 10: Merchant Rationale for Accepting Crypto Payments

Adoption won't happen overnight. I expect retail and ecommerce to be first to transition but am most excited about the transformative impacts of crypto payments in more complex industries such as real estate and airlines in the longrun.

Crypto Intermediary

Traditional travel and hospitality merchants have largely stayed away from adopting crypto payments widely. Early adopters such as Expedia began accepting crypto in 2014 but have since backtracked, due to low consumer usage.¹⁰ While a handful of airlines offer crypto payments today (primarily due to faster payment settlements and low/no chargeback risk compared to cards), most travel merchants and leading OTAs are reluctant to offer crypto due to the regulatory unclarity and the lack of a clear business case.

We see emerging acceptance in specific luxury services categories where a business case based on attracting crypto wealth is more obvious (e.g., private jet rental, luxury hotels, etc.). These merchants are motivated in part by seeing these young, wealthy crypto users expand their usable base of payment instruments (e.g., wallets, crypto cards, etc.). For large purchases in particular, crypto offers clear convenience benefits relative to moving money via cross-border bank transfer.

¹⁰Yahoo, <https://uk.finance.yahoo.com/news/expedia-stops-accepting-Bitcoin-driving-230729890.html>

Merchant misconceptions and barriers to adoption

Despite merchant adoption, hot spots and some notable brand names now accepting crypto, broader acceptance is hindered by the prevalence of real inhibitors as well as blockers which we see as misconceptions (described in table 1 below). Several of these misconceptions today can be attributed to poor merchant education and awareness and quite contrary to actual reality.

	Misconception	Reality
1	Crypto settlement: Merchants assume that if they accept crypto payments, the settlements will be in crypto, exposing them to price volatility, custody, and taxation risks.	The most widely used model is to accept crypto but settle in fiat. Crypto custody and related services are offered by specialized PSPs (e.g., BitPay) that can offer risk mitigation against such risks.
2	Fraud and chargebacks: Merchants are fearful that crypto acceptance will be accompanied by higher levels of fraud and chargeback.	Cryptocurrencies have extremely low levels of fraud due to 'push' nature of the payments. Many specialized PSPs guarantee each transaction and good capabilities to prevent fraud.
3	Volatility risk: Merchants are exposed to volatility risk as crypto price may fluctuate while the consumer is in the checkout flow.	This is mostly the case for specific crypto such as Bitcoin. PSPs that serve merchants typically offer a 15-20 minute window, locking and guaranteeing the rate for this period.
4	Weak economics/lack of a business case: Merchants perceive crypto payments as expensive to accept and often incur high mining fees.	Crypto payments are generally cheaper for merchants compared to cards. The mining fees are borne by the consumers and not the merchants accepting them.
5	ESG concerns: The cryptocurrency mining process is resource intensive and may lead to detrimental environmental concerns.	This is valid for specific crypto such as Bitcoin. For most emerging crypto currencies, stablecoins and CBDCs, the mining process is far less resource intensive.

Market observations by crypto intermediaries & enablers:

Merchants fear that if Bitcoin prices fluctuate during checkout they will be impacted. We take the risk – merchants do not. When you checkout, we generate an invoice of the crypto based on prevailing crypto exchange rate. Invoice valid for 15 mins. If customer pays in the timeframe, we guarantee the merchant the amount.

Crypto Intermediary

All crypto transactions are taxable and there are consequences on tax declarations for capital gains, difficult to track and justify.

Crypto Intermediary

There is strong merchant appetite to accept crypto but consumer demand is lagging.

Crypto Intermediary

Merchants assume that settlements will be in crypto, but the prevailing settlement model is actually in fiat which accounts for approximately 80% of volumes. Also, easier to reconcile, as products are priced in fiat.

Crypto Intermediary

Crypto payments are akin to 'push-based' bank transfers and differ from cards. Meaning, they are irreversible transactions which result in lower fraud and chargeback levels with tangible cost savings for merchants.

Chargebacks can occur when using a lost/ stolen card and crypto is pushed from a wallet (where credentials are stored with a very high level of security).

Crypto Intermediary

ESG concerns related to mining restrict larger merchants from aligning themselves too closely with cryptocurrencies.

Crypto Intermediary

Specialist crypto PSPs work very differently compared to traditional PSPs; they function more as a bank with a trading desk. When a consumer makes a payment in crypto, the specialized PSP locks a crypto-fiat rate from one of its partner exchanges. At the end of the transaction, the PSP credits the merchant with fiat. Many PSPs have a trading division where the crypto is actively traded across exchanges to drive higher returns.

Crypto Intermediary

Along with these misconceptions, there are several regulatory, technical, and operational barriers to mainstream merchant adoption that we outline below.

1. Regularity unclarity and restrictions: Crypto payments are relatively new, and the current regulatory environment is seen as either restrictive or simply too grey. Lack of regulatory clarity is the primary reason behind low merchant acceptance for crypto payments today. Several markets today have strong policies in place against holding or transacting with crypto, as we outline in figure 11. Markets such as Turkey and Indonesia even have total bans on making digital payments using crypto. In addition, crypto's appeal as an appreciative asset has led several developed markets such as the U.S. and EU to develop restrictive tax policies, with implications on capital taxation and VAT. Given most cryptocurrencies operate in decentralized ecosystems, there is also a lack of regulatory clarity on the role of financial intermediaries and banks in enabling the infrastructure and network rules for widespread merchant adoption. Banks and financial intermediaries play a critical role in enabling merchants and consumers with the necessary infrastructure and rulebooks to hold, pay and settle in crypto. As such, without clear regulatory guidelines, merchants have stayed away from making crypto mainstream in everyday commerce.

Regulatory uncertainty continues to deter global merchants from embracing crypto payments. They are happy to wait until clarity emerges.

Card Scheme

Common Regulatory Restrictions



TAXATION

As an asset, profits may be subject to profit tax

The definition is blurred between asset & currency, giving lieu to variable VAT-applicability.



MINING RESTRICTIONS

Mining is mainly happening in a limited number of countries due to technical requirements. China is one such hub.



BANKING RESTRICTIONS

Banks are frequently banned from holding or trading crypto due to risks associated with the virtual currencies not being issued by a recognized legal entity.



TOTAL BANS

A handful of countries have a total ban on holding, trading, transacting or paying with cryptocurrencies.



PAYMENT BANS

Due to risks associated with volatility, guarantees and traceability, a handful of countries have banned crypto as a means of payment (but allow for trading and speculation).



AML REQUIREMENTS

AML laws are still nascent on cryptocurrencies and only a handful of countries have legislation requirements applying specifically to cryptocurrency exchanges.

Sources
Flagship analysis

Figure 11: Common Regulatory Restrictions

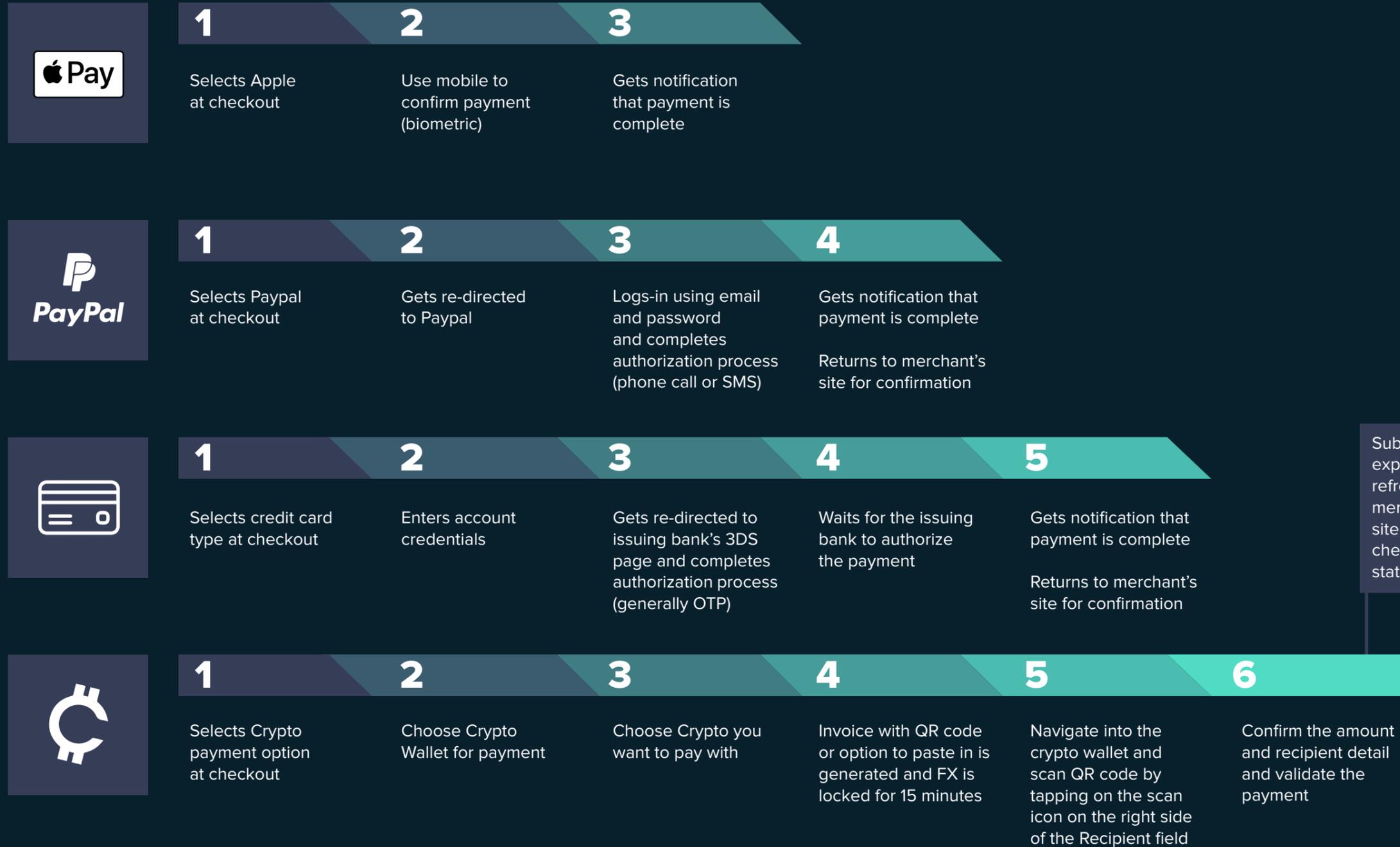
2. Poor UX compared to traditional payment

methods: As we illustrate in figure 12, the current consumer user experience for making crypto payments is somewhat sluggish compared to best-in-class online payment methods (e.g., vaulted cards, mobile wallets). Crypto transactions typically involve more steps and can require several minutes for the transaction to verify.



Consumers often have to wait several minutes for the network to process their transaction. There are products and services that work around that but as long as that issue persists adoption will lag.

Traditional PSP



Sub-optimal user experience: manual refreshment of merchant checkout site is required to check the payment status

Sources
Flagship analysis

Figure 12: Checkout UX Comparison

3. End-to-end crypto payments infrastructure still developing: The typical crypto payments operating model deviates from the standard 4-corner cards payment model, requiring new payment infrastructure and intermediaries. Fortunately, we see a rapidly emerging set of crypto-centric PSPs, as well as mainstream PSPs such as Nuvei that are buying or building crypto capabilities. Merchant acceptance will clearly benefit when each cryptocurrency or wallet is simply a turnkey payment method within the broader basket of PSP services. Today's niche crypto PSPs often lack the full, value-adding acceptance service (i.e., pre-integrated software, robust developer tools, risk management tools, educational materials for compliance, etc.). Recent initiatives from Visa and Mastercard to define the scheme and network rules are steps in the right direction towards broader PSP support for crypto.

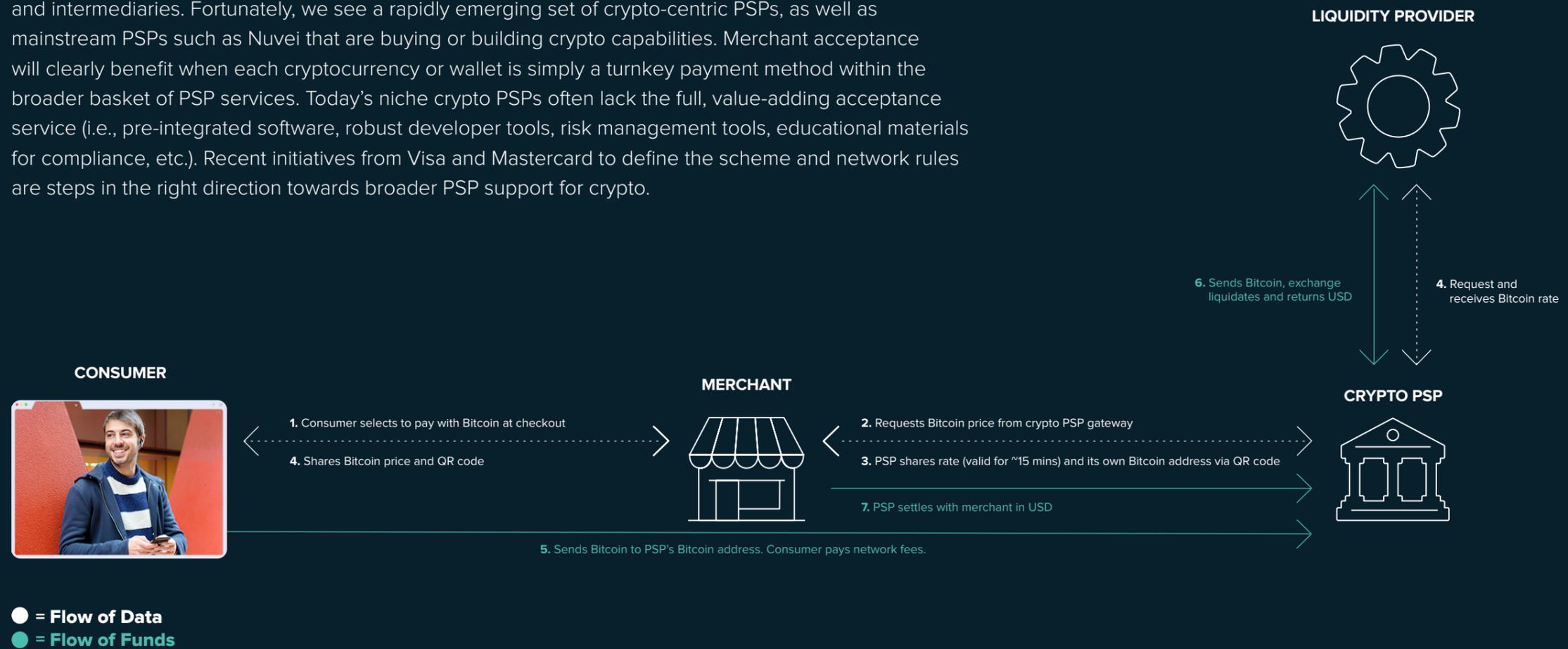


Figure 13: Crypto Payments Acceptance Example

4. Crypto wallets and crypto PSPs are rapidly emerging, expanding, and improving to encourage mainstreaming of crypto payments:

Cryptocurrencies, in their native form, are not naturally built for mass-market consumers and merchants to exchange. End-user enablement must come from wallets (for consumers) and PSPs (for merchants). Wallets and merchant payment propositions continue to emerge and to improve, which will help to enable mainstream adoption. Wallets are emerging from exchanges (Coinbase, Binance), as specialized start-ups (Trezor, Metamask), and by extension of mainstream wallets (Square Cash App, PayPal). User-friendly, and trusted wallets are critical for providing mass-market consumers the comfort to both hold and transact in crypto. PSPs, including Nuvei, are also rapidly expanding to technically enable a broad array of transactions on-ramping and off-ramping crypto from/into exchanges, wallets, and traditional merchants. PSPs help to enable easy merchant acceptance of cryptocurrencies (across currencies, exchanges, and wallets) while providing flexibility to settle in fiat (along with other sources of value creation).

5. AML and privacy concerns: Most cryptocurrencies reside on a public blockchain where sensitive merchant data and transaction information can be exposed to fraudsters and cyber-criminals. Crypto is operating on relatively new technical stacks, supporting massively growing pools of wealth. It is not surprising therefore, that exchanges, wallets, and other crypto platforms are targeted by hackers and that hackers are discovering vulnerabilities. Incidences of cybercrime and account takeover fraud (from crypto-based wallets) are too common and continue to discourage the merchant community. Merchants and PSPs also typically struggle to trace back the original source of funds and have insufficient capabilities to manage AML and KYC compliance which is fundamentally driven by conventions as dictated by fiat currency authorities and banking regulators. During our research, several merchants highlighted the **inability to manage AML risks as major hurdle today** and felt the PSPs and the fintech community had an important role to play in proving greater confidence and compliance capabilities.



Future adoption waves and development scenarios

SECTION 3

Adoption drivers

We believe that adoption of crypto payments in mainstream C2B commerce will happen, it is simply a matter of when, how, and why. Broader acceptance will take time, given the number of barriers and dependencies and the natural pace of change in mainstream commerce. The mainstreaming of crypto payments will not be an avalanche moment. Rather, we see crypto payments being pushed by a series of waves that drive adoption. Figure 14 lists and describes these waves of influence and adoption.

We See Several 'Waves' Which are Likely to Positively Influence Adoption

1	REGULATORY CLARITY	The regulatory environment is likely to tighten up, creating room for wider participation from banks and financial institutions in crypto
2	CENTRAL BANK DIGITAL CURRENCIES	Central banks will continue to speed up their existing research and launch pilots. China is likely to continue to dominate. In the long run, CBDCs will displace private cryptocurrencies and become the norm
3	STABLECOINS MATURE	Stablecoins have been designed to remedy flaws of cryptocurrencies as truly internet native payments protocols, payment use cases expanding
4	NFT - BREAKOUT USE CASES	NFTs are first example of a consumer experience built on crypto technology driving new eCommerce markets
5	TRADITIONAL PAYMENT PLAYERS	Card schemes (Visa, Mastercard) continue to expand ability to execute transactions using cryptos as funding sources, serves as catalyst for participation of traditional PSPs
6	INTERNET GIANTS	Internet giants are well positioned to take the lead on developing integrated crypto propositions
7	EMERGING MARKETS	Crypto is appealing in markets where unbanked represent a large part of the population, particularly in B2C commerce and remittance use cases

Figure 14: Waves Likely to Positively Influence Adoption

As with all waves, we expect crypto payments to grow via ebb and flow, two steps forward for every step backward. For example, the current steps backward related to increased regulation and security attacks are necessary ebbs to allow more free-flowing growth years from now.

The crypto industry moves in waves, increasing in amplitude and decreasing in time. We're currently experiencing a bull market but still only have hundreds of millions of crypto users. We need to reach billions of crypto users before it gains prominence in C2B.

Nimrod Lehavi

 **simplex** Founder and CEO
a nuvei company

Wave 1: Regulatory clarity and tightening up of global regulations

We view regulatory clarity as perhaps the most significant disruption wave that will ultimately help to drive mainstream crypto acceptance. As we explained previously, regulatory uncertainty around cryptocurrencies is a major barrier to corporate adoption today. Lack of regulatory clarity has created a “holding pattern” in which potential adopters postpone decision making and ecosystem participation.

As illustrated in figure 15, we already see several markets where developments are well underway to create an inclusive regulatory environment for crypto acceptance. In the near future, we anticipate global regulators tightening the rules around crypto to safeguard the interests of consumers, merchants, and financial intermediaries. This will feel like a step backwards for crypto, but we see this an unavoidable to achieve the clarity needed for medium-term growth acceleration.

Ideally the market will evolve towards regulatory balance, under which there is clarity, but also not wholesale restrictions. Afterall, a completely regulated crypto acceptance market that is forced to use traditional fiat/bank rails ultimately destroys the benefits that digital currencies offer (global money movement that is impinged by domestic, legacy requirements). Regulators generally do not have an incentive to completely kill crypto. Doing so will only serve to disadvantage the regulators’ country given the inevitable pull towards global acceptance of cryptocurrencies. China, for example, is tightening restrictions in some cases, but also working to be on the forefront of CBCDs.



The Global Regulatory Framework for Crypto is Anticipated to Tighten Up



Sources
Flagship analysis

Figure 15: The Global Regulatory Framework for Crypto is Anticipated to Tighten Up

The main barriers today are regulations, they're not very friendly in many places. I can't set up one business model and replicate it globally therefore compliance is a huge hurdle. Regulations need to be clearer and friendlier.

Traditional PSP

Wave 2: CBDCs accelerate crypto acceptance and co-exist with cryptocurrencies

Next generation technologies such as CBDCs are likely to offer eventual endpoints for crypto-based commerce. As illustrated in figure 16 and section 1, several central banks such as China and Sweden are well underway and have recently accelerated their activity towards launching CBDCs.

Powerful governments such as China are now enacting legislation to squash decentralized cryptocurrencies such as Bitcoin while accelerating their own CBDCs. It is easy to see the natural tension

between cryptocurrencies, stablecoins, and CBDCs. However, we (and others) anticipate a future where CBDCs co-exist with both cryptocurrencies and stablecoins along with traditional fiat. While CBDCs are effectively a modernized form of fiat, we see CBDCs as still natively built on blockchain and similar crypto technologies. Thus, we see acceptance of digital fiat currencies (and related infrastructure) as being a catalyst for easier acceptance of cryptocurrencies – CBDCs will build and/or grease the rails for cryptocurrencies.



Figure 16: Central Bank Digital Currencies Status & Examples

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We are one to two years away from major economies launching pilots and three to four years away from full scale launches. Some countries are moving faster than others, China is well advanced while the U.S. is moving slower.

Global PSP

Chinese Digital Yuan CBDC

- In 2020 China became the world's first major economy to pilot a digital currency, development had begun in 2014
- Brands, including Starbucks, McDonald's and Subway, were named by the People's Bank of China (PBOC) as participants in the initial pilot programme, along with Ant Financial, Tencent and 19 local restaurants and retail shops
- The pilot has already reached an advanced level of trialing, with more than 2 billion yuan (~\$300m) having been issued. Over \$6 million worth of digital CNY will be given via lottery to Beijing residents in a third trial of the technology.
- In April 2021, the PBOC and the Hong Kong Monetary Authority began "technical testing" for cross-border use of the digital yuan

Sources

CBDC Tracker, Bank of International Settlements, Riksbank, Flagship analysis

Swedish E-Krona CBDC

- Sweden appears to be second only to China among major economies in the advancement of its CBDC plans
- In April 2019, the Riksbank announced they were studying the introduction of CBDC. The pilot was launched in December 2020 and the implementation review is expected to be completed by November 2022.
- The E-krona is issued by the Riksbank and appears on the Riksbank's balance sheet in the same way as banknotes and coins

Wave 3: Stablecoins to mature and increasingly be adopted in C2B commerce

Stablecoins have been designed to remedy certain challenges of cryptocurrencies, built with internet native payments protocols. Therefore, we expect stablecoins to also be a catalyst for driving crypto payment acceptance. Stablecoins are already widely used for investments today, but not widely used for commerce and payments. Stablecoins function as global, open, interoperable, near real-time, low-cost transacting platform. Their potential to enable fast and efficient small ticket transactions is robust. Visa's recent initiative to settle select stablecoins such as USDC directly on their network is a major step forward towards broader acceptance. Stablecoins can also be expanded to new payment use cases, for example, programmable smart contracts used to facilitate large-ticket escrow payments.

It is worthwhile highlighting that not all stablecoins are created equally and there is increasing regulatory scrutiny on specific stablecoins such as Tether (USDT). As such the risk of prominent stablecoins collapsing due to governance pressure or security attacks remains a concern.

Stablecoins like USDT and USDC are super easy to use. They offer an Apple Pay-like experience with clear benefits for online transactions. For example immediate confirmation, transparent fees, no need for credit card details and no chargeback risk.

Nimrod Lehavi

 **simplex** Founder and CEO
a nuvei company

Wave 4: NFTs to ride the wave of crypto acceptance

In the past six months non-fungible tokens (NFTs) have exploded to the forefront of digital commerce, representing an early example of a truly crypto-native consumer digital commerce use case. An NFT is a unique tokenized digital asset certifying the ownership of an underlying physical or digital good. The technology sits on a secure blockchain that validates the digital ownership of the underlying asset. As illustrated in figure 17, NFT sales have surged rising from less than \$100M in all of 2020 to \$1B in payment volume in August 2021.¹¹

¹¹<https://www.theblockcrypto.com/data/nft-non-fungible-tokens/nft-overview>
Sources: TheBlockCrypto, Flagship analysis

NFT Volumes (in USD millions, 2021)

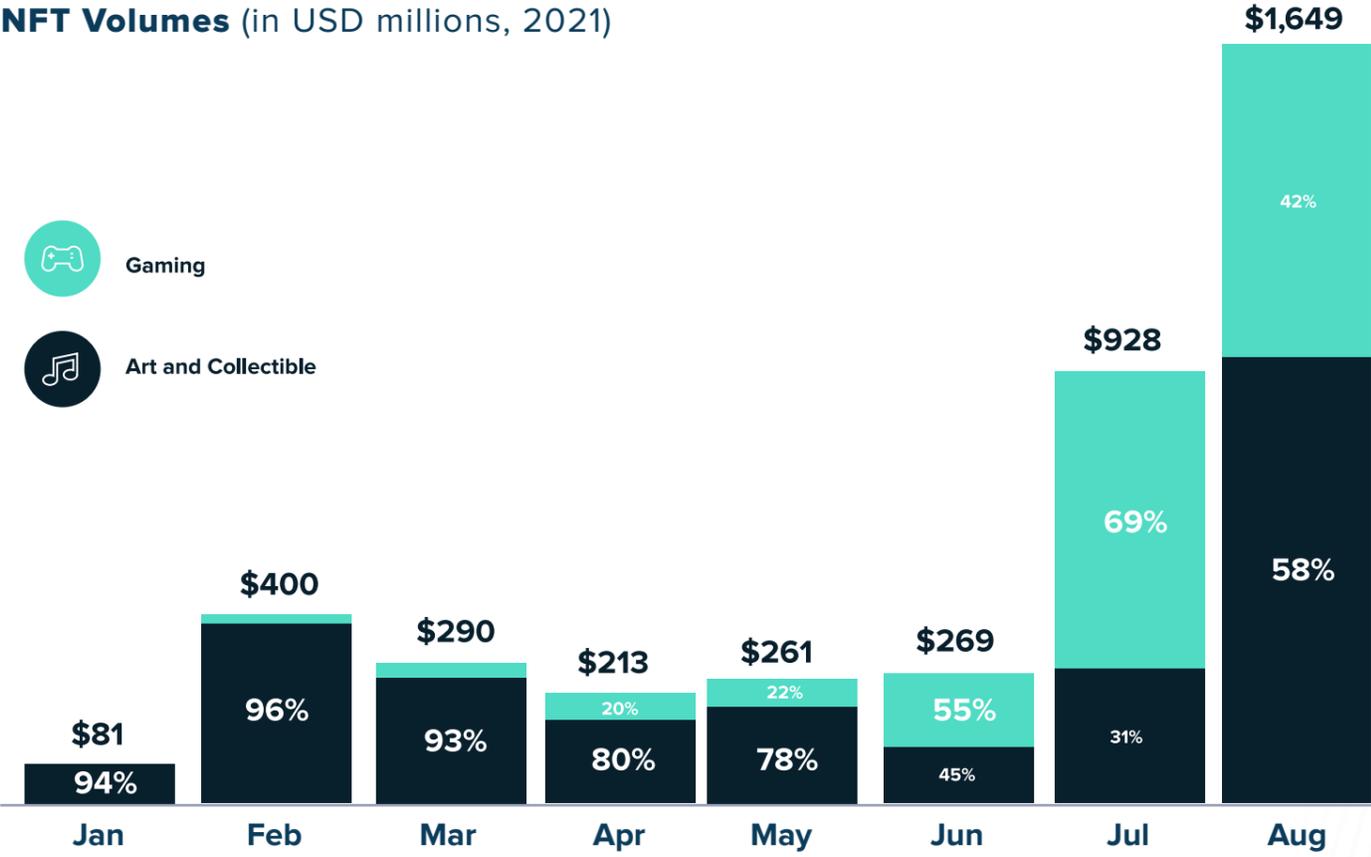


Figure 17: NFT Volumes (in USD millions, 2021)

As illustrated in figure 18, digital art, collectibles, and gaming NFTs have gained initial commercial momentum via user-friendly platforms like NBA Top Shot and Axie Infinity. Beyond these examples, we also see NFTs rapidly invading sports, music, and fashion goods more broadly. Branded NFTs enable businesses to offer customers collectible digital

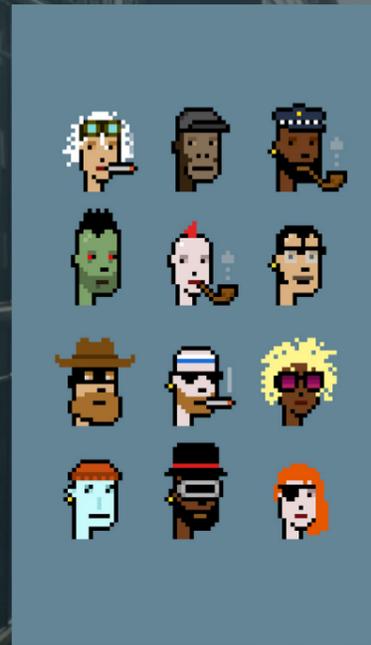
goods that deepen fan engagement, unlock new experiences, and generate new revenue streams. For example, a fan can buy an NFT of their favorite artists album art which can serve as their digital profile photo, provide access to events, online communities as well as a ticket for an upcoming show.

NFTs can be seen as catalysts to introducing crypto payments to newer audiences. For instance, mainstream brands such as Coca-Cola, Asics, Dolce & Gabbana, MLB, and Budweiser have been launching branded NFT products. In the near future, we view NFTs as a new form of commerce that will drive crypto payments adoption.

The Global Regulatory Framework for Crypto is Anticipated To Tighten Up



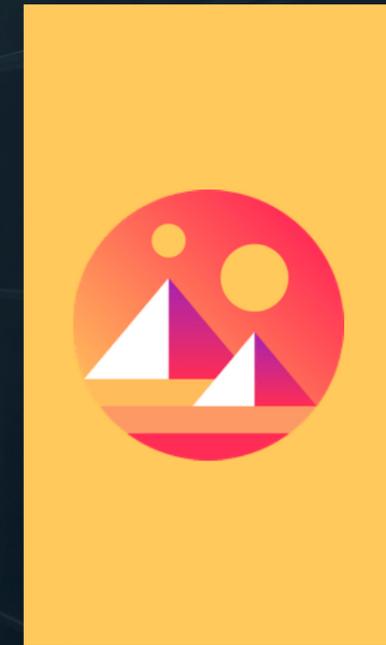
NBA Top Shot
An online forum for trading virtual basketball cards



Crypto Punk
A collection of pixel art images. What began as an early artistic experiment has become a cultural icon for the crypto community.



Axie
A new type of video game, partially owned and operated by its players



Decentraland
A 3D virtual reality platform which allows user to create, explore and trade in the first-ever virtual world owned by its users

Sources
Flagship analysis

Figure 18: Sample NFTs

Digital gaming and ideal ecosystem for NFTs and crypto payments

Digital gaming is an ideal vertical to drive the mainstreaming of crypto and NFT payments. Digital gaming is full of virtual goods and value-stores with still limited transactability (i.e., the credits earned on one game often cannot be used on another game or transferred to other gamers). Blockchain-enabled NFTs are ideally suited to enable broad transactability of these virtual forms of value across vast digital ecosystems. NFTs allow gamers to truly own their digital personas and goods, rather than simply having a limited claim from a publisher. In 2020, gamers spent \$54 billion on in-game content (beyond the purchasing of games themselves). Cryptocurrencies such as Bitcoin are also increasingly being used by game publishers to reward gamers and to enable exchange of value within gaming ecosystems. Gamers are naturally early technology adopters and more likely to be comfortable and to prefer digital currencies.



Market observations by NFT innovators:

NBA Topshop addresses common crypto adoption barriers by hiding the technical blockchain element from the consumer. The consumer does not have to deal with any technical challenges, they know it is an NFT and can easily purchase it with without any further knowledge of crypto world. Unique enables the same NBA Top Shots experience across a variety of use cases.

Alexander Mitrovich
uniQue CEO

Education and knowledge remain the biggest barriers to NFT adoption. The press only covers the crazy things.

Simon Hudson
 **Cheeze, Inc. CEO**

NFTs are a new avenue for artists, creators and publishers, both digital and physical, to connect with their fans in a transparent and mutually beneficial way.

Volen Tsolov
Operations Director at 

Crypto and NFTs are disruptive but it will be at least 5 years until they are fully adopted globally. Expect them to overtake some traditional content distribution methods. Artists will have to embrace this new technology to reengage with fans effectively.

Volen Tsolov

Operations Director at



NFTs are bringing crypto to lots of newcomers from fashion and sports. People with a natural curiosity who wouldn't traditionally hold crypto.

Simon Hudson

 [®] Cheeze, Inc. CEO

NFTs are a digital representation of status. Possible for consumers to purchase sneakers physically and use a linked NFT to dress their avatar on digital gaming platforms.

Simon Hudson

 [®] Cheeze, Inc. CEO

Wave 5: Corporate evangelism from mainstream payment actors

Card Schemes: Visa and Mastercard's recent foray into cryptocurrencies clearly demonstrates their strategic ambition to evolve into providers' rails-agnostic payments and commerce services. As illustrated in figure 19, Visa's recent strategic focus around crypto is particularly worth highlighting, as they have forged strategic partnerships with 50+ crypto exchanges to enable consumers and merchants to transact in crypto, recently crossing \$1billion in spend from crypto-linked programs (first half of 2021)¹². We anticipate the card schemes to continue to further evangelize such developments in crypto payments and eventually evolve towards a provider of multi-rail network connectivity.

¹²Visa

Visa and Mastercard are hedging their bets on crypto and playing all angles. Their crypto related M&A activity has accelerated. Positioning to be the rails that join the crypto and fiat worlds.

Global PSP

Visa: Crypto Strategic Priorities & Selected Activity



Sources
 Visa, Flagship analysis

Figure 19: Visa: Crypto Strategy & Selected Activity

The card schemes, Visa in particular, are investing heavily into ecosystem partnerships and network support for crypto. We work closely with Visa and our crypto processing clients (e.g., wallets) to enable crypto based products and use cases.

Next-gen Card Processor

Traditional PSPs: Leading global payment service providers are also increasingly recognizing the need to innovate to support crypto. Crypto is an emerging merchant vertical for cutting-edge PSPs who support crypto exchanges, merchants (e.g., NFTs) and wallets to enable incoming and outgoing payments. Nuvei, PayPal and Square are on the forefront of merchant enablement having launched crypto acceptance propositions via organic and inorganic means (as illustrated in figure 20). Other mainstream PSPs are leveraging partnerships with specialized crypto PSPs such as CoinFI, MoonPay, BitPay and others to enable baseline crypto acceptance propositions. We expect such partnerships and M&A to intensify further in the coming period as crypto becomes more mainstream in everyday commerce.

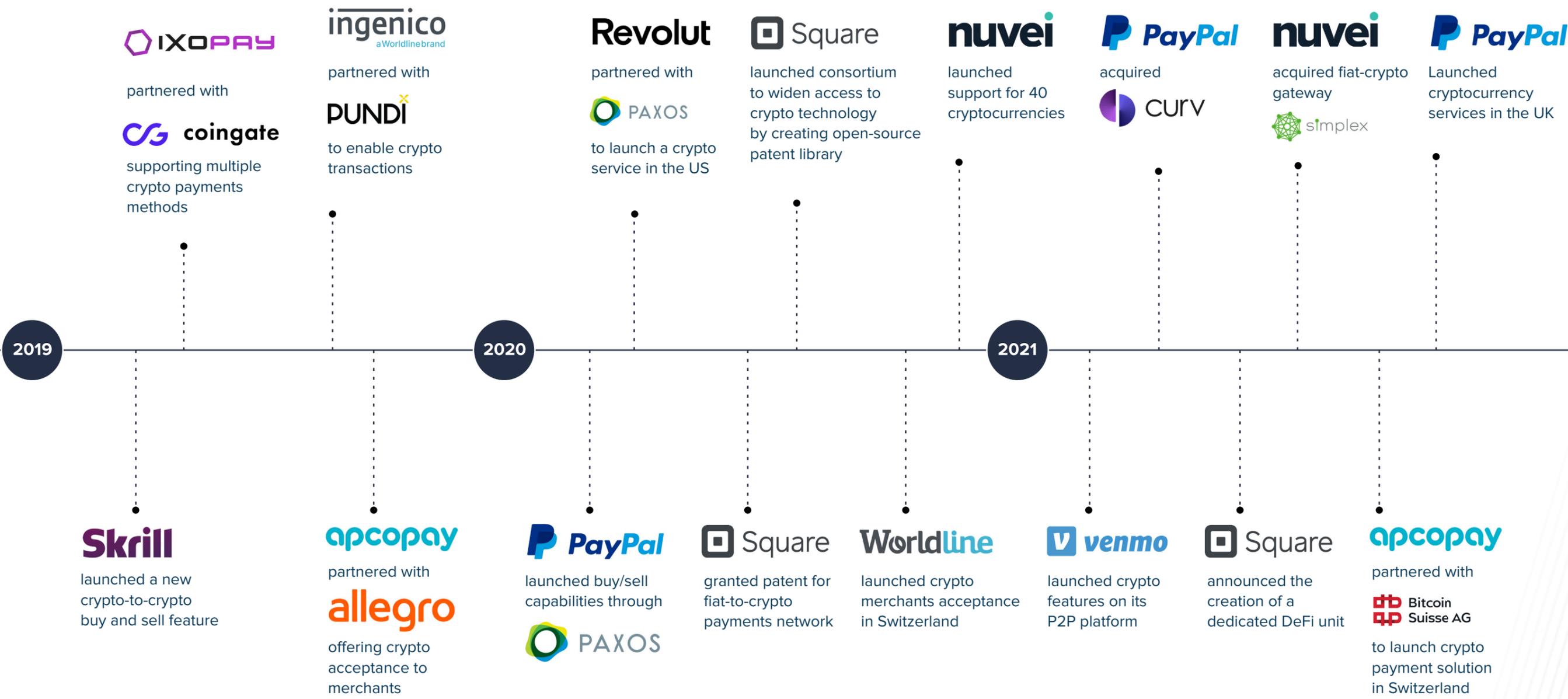


Figure 20: Traditional Payment Processors - Selected Crypto Payment Activity

Financial Platforms/Fintechs: The lines between fintech, crypto, and banking are increasingly blurring as Bitcoin and crypto are incorporated into mainstream fintech and financial products.

¹³ Robinhood Q1 21 results; Square Q3 21 results

Robinhood's entry into the crypto space has contributed US\$87 million or 17% of its Q1 2021 revenue; Bitcoin accounting for 70% of Square's cash app revenue equating to \$3.5 billion in Q3 2021¹³. We

expect mainstream financial institutions to continue to expand access to crypto with natural spillover effects into C2B commerce.

Wave 6: Internet giants well positioned to drive consumer and mass-market merchant adoption

For widespread consumer adoption, perhaps the biggest needle mover towards future acceptance could be moves made by consumer giants such as Facebook, who have the potential to deeply embed support for crypto into their mass consumerization platforms. We already see several such instances, for example Facebook's proposed crypto wallet Novi. Novi is expected to function as an interoperable digital wallet that can enable users to move money domestically and internationally to other users and merchants via Facebook's private stablecoins. Similarly, mass-market merchant giants Square and PayPal have been developing more integrated crypto payment applications. Square has created a

new business unit dedicated to DeFi applications for Bitcoin. This initiative could form a foundation that enables Square's 36 million Cash App users to pay with cryptocurrency at one of its hundreds of thousands merchants (with settlement optionality in U.S. dollars).

We believe that digital giants such as Facebook, PayPal, and Square will play an instrumental role in inspiring the next generation of crypto payment propositions that drive consumer and merchant mass-market adoption. Next to regulatory clarity, we view this wave as having the greatest potential for adoption impact.

Today the number of consumers using crypto payments is low in the millions. Someone needs to take the lead to be a catalyst for the industry.

Global PSP

Wave 7: Appeal of crypto in emerging markets

In emerging markets such as North Africa, parts of LATAM, Middle East, and Southeast Asia, crypto has continued to appeal to large populations of unbanked consumers. Recent research by Chainalysis on cryptocurrency adoption around the globe highlights this with emerging markets accounting for 9 of the top 10 markets, the U.S. being the only exception. In these markets, crypto has

appealed to consumers as a hedge against financial stability, especially due to unstable political regimes. Crypto also caters well to certain specific payment use cases (e.g. streamlined mobile cross-border P2P), providing these markets with the opportunity leapfrog forward from cash. Crypto offers easily accessible (no need for elaborate KYC) and native support for cross-border. Crypto-P2P payments are

also an inexpensive form of remittance relative to traditional cash-based remittance networks. Most recently, consumers in these markets have also rapidly embraced De-Fi (Decentralized finance) providing an ongoing catalyst for growth. We see these developing markets helping to drive crypto C2B payments.

Top 10 Countries in Crypto Adoption



Note: Ranked by metrics including on-chain value received, on-chain retail value received and P2P exchange trade volume

Sources

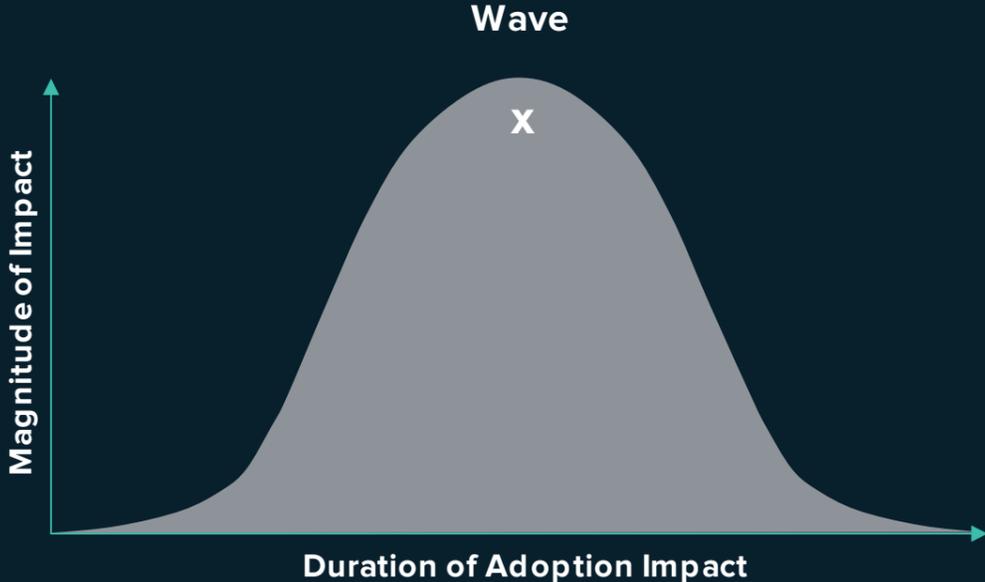
Chainalysis <https://blog.chainalysis.com/reports/2021-global-crypto-adoption-index>

Figure 21: 2021 Crypto Adoption - Top 10 Markets

Future development scenarios

We are optimistic on the future of cryptocurrencies and similar forms of blockchain-based digital currencies as forms of payment for digital C2B commerce. There is no question that mass market acceptance and usage of digital currencies is coming. However, sitting here today, we do not know when and what will ultimately push mass-market acceptance and usage over the tipping point. Rather than having certainty, we see the development of crypto payments as occurring through a series of waves of adoption/ disruption leading to a range of potential scenarios. We discussed these individual waves previously and below we arrange those waves into potential scenarios: one optimistic, and one pessimistic.

Each of our two scenarios (optimistic and pessimistic) are explained below based on the timing and magnitude of impact of our seven waves of adoption/ disruption. They frame the ultimate impact in terms of percentage of digital merchants accepting crypto payments.



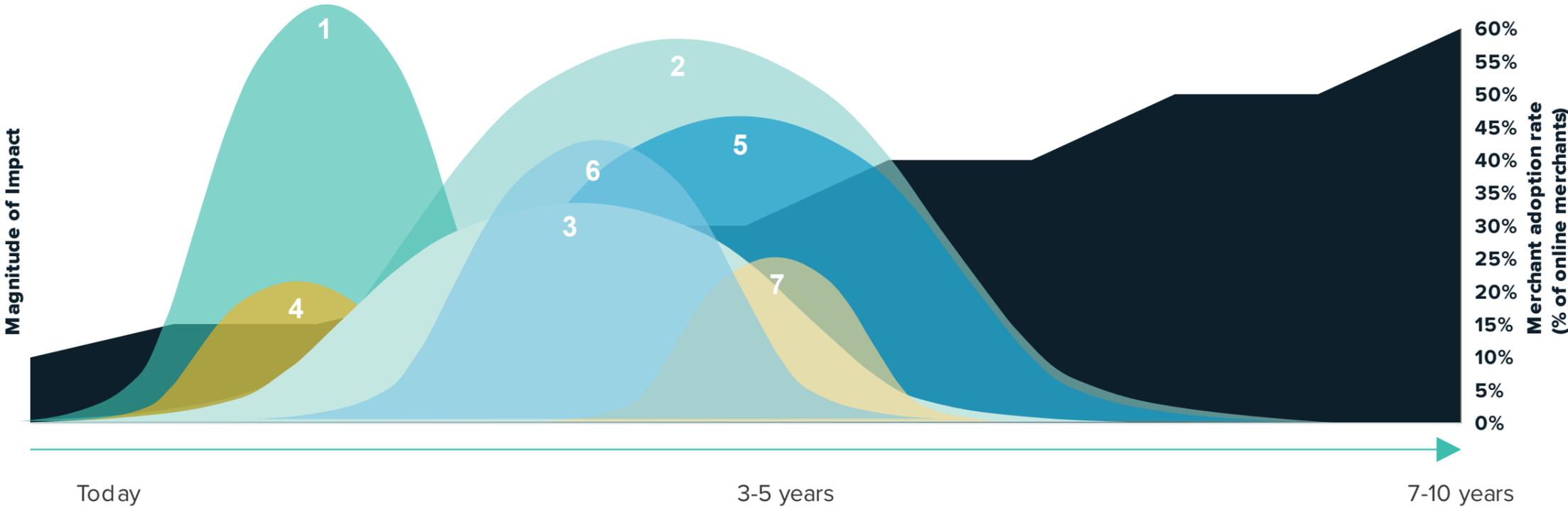
- 1 Regulatory clarify and tightening up of global regulations
- 2 CBDCs to accelerate crypto acceptance and co-exist with cryptocurrencies
- 3 Stablecoins to mature and increasingly be adopted in C2B commerce
- 4 NFTs to ride the wave of crypto acceptance
- 5 Corporate evangelism from traditional payment actors to grow
- 6 Internet giants well positioned to drive consumer adoption
- 7 Appeal of crypto in emerging markets likely to drive consumerization

Figure 22: Adoption/Disruption Waves Drive a Market Development Scenario

Optimistic Scenario: Adoption Waves

Optimistic scenario: “Anticipate broad acceptance of crypto in online merchant acceptance in 5 years timeframe.”

Figure 23: Optimistic Scenario



- 1 Regulatory clarify and tightening up of global regulations
- 2 CBDCs to accelerate crypto acceptance and co-exist with cryptocurrencies
- 3 Stablecoins to mature and increasingly be adopted in C2B commerce
- 4 NFTs to ride the wave of crypto acceptance
- 5 Corporate evangelism from traditional payment actors to grow
- 6 Internet giants well positioned to drive consumer adoption
- 7 Appeal of crypto in emerging markets likely to drive consumerization

Under an optimistic scenario, we anticipate broad acceptance of crypto in online C2B commerce in the next 7+ years. We anticipate a world where crypto payments have penetrated mainstream retail verticals and are widely accepted as a payment method. We envisage this scenario when all the seven adoption waves successfully converge simultaneously, creating a crescendo of push and pull demand, as illustrated in figure 23.

Under this optimistic scenario, we envision regulators working swiftly, sometimes in collaboration with industry actors, to define clear crypto regulatory frameworks for merchants, consumers, and financial intermediaries. This regulatory clarity then thrusts big tech and traditional payment providers into action to accelerate development of crypto propositions. Both traditional cryptocurrencies and stablecoins play an important developmental role in driving merchant acceptance. Next generation technologies such as NFTs also catalyze the market by driving new forms of digital commerce, expanding well beyond art, music, and collectibles.

We also envisage the universe of CBDCs expanding alongside cryptocurrencies, riding similar technology infrastructures for consumers and merchants. As CBDCs grow into prominence, consumers embrace new apps and form factors to store, retrieve and transact in CBDCs (alongside cryptocurrencies). These crypto apps/form factors accelerate usability of digital currencies and interoperability for merchant acceptance. Finally, crypto user demographics expand well beyond today's profile to include vast portions of younger generations.

Mainstream payment networks and payment service providers play the central role in productizing crypto for large and small merchants. This includes: 1) simplifying the now vast array of forms of crypto and digital currencies, 2) commercializing crypto payments, 3) flexibly offering an array of settlement alternatives including fiat, and 4) servicing the challenges and exceptions that inevitably arise from payments complexity.

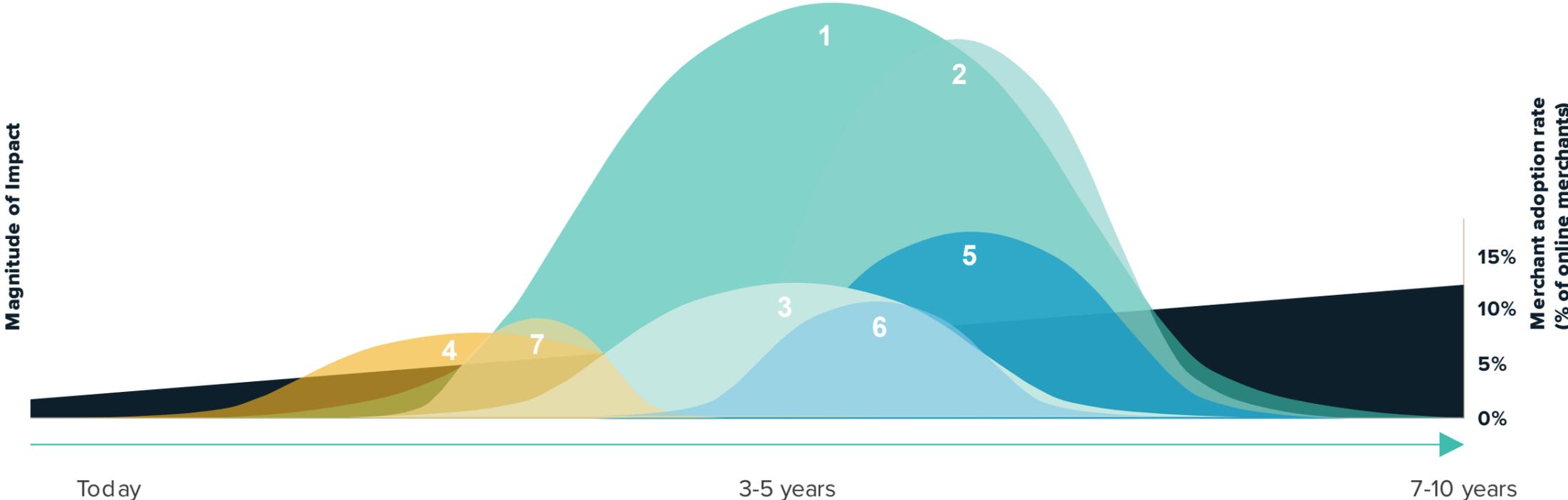
As regulations mature, we expect more companies to begin holding and transacting internally using crypto. For consumers to adopt in greater numbers we need consumer facing features that will seamlessly work e.g., QR codes for offline use cases, crypto linked rewards, and faster authorization timings.

Global PSP

Pessimistic Scenario: Adoption Waves

Pessimistic scenario: “Ongoing roadblocks to broad-based crypto acceptance and usage, notably mainstream merchant adoption, remains sluggish for the next 5-10 years”

Figure 24: Pessimistic Scenario



- 1 Regulatory clarify and tightening up of global regulations
- 2 CBDCs to accelerate crypto acceptance and co-exist with cryptocurrencies
- 3 Stablecoins to mature and increasingly be adopted in C2B commerce
- 4 NFTs to ride the wave of crypto acceptance
- 5 Corporate evangelism from traditional payment actors to grow
- 6 Internet giants well positioned to drive consumer adoption
- 7 Appeal of crypto in emerging markets likely to drive consumerization

Under a pessimistic scenario, we anticipate a challenging journey of ongoing, active resistance from governments, merchants, and consumers preventing mass-market adoption in the coming years.

In this scenario, a restrictive regulatory environment continues to be the single most important factor, driving uncertainty and hampering acceptance and usage adoption. Regulators take approximately 5 years to clarify regulation related to decentralized cryptocurrency networks, focusing instead on promoting their own CBDCs which adhere to legacy compliance frameworks. The lack of regulatory clarity mutes other forces of adoption such as corporate evangelism (from Visa, etc.). Consumer demand continues to grow for niche digital commerce use cases such as NFTs, but mainstream demand pull from mainstream merchants fails to materialize quickly. The slow development of acceptance demand slows the development of crypto payments acceptance infrastructure needed for C2B commerce. While a few big tech players develop specific crypto based propositions, and remain all in, this optimism fails to spread widely. User experiences improve, but not enough to overcome ongoing misconceptions.

Regulatory risks remain high and complex across jurisdictions, both developed and emerging. The lack of regulatory guidance remain the single biggest challenge facing the crypto and blockchain industry.”

Major Ecommerce Merchant

Conclusion

Since the introduction of Bitcoin 12 years ago, cryptocurrencies have been heralded as potential game changers in mainstream digital commerce, including C2B payments. As of today, crypto payments remain small and niche. And while reasons for optimism abound, there remains uncertainty as to how fast crypto payment acceptance and usage will grow, producing a range of both optimistic and pessimistic scenarios. There are many positive waves of disruption/adoption gathering pace that we anticipate ultimately driving more mainstream acceptance and demand. The pace of this adoption will be a function of how these waves coalesce to drive momentum.

We are at an important phase of market development. Governments must fight the urge to stifle cryptocurrencies in favor of legacy safety blankets. But so too, governments must create a regulatory framework which creates a more secure ecosystem that supports mainstream commerce, not just niche, fringe, and black-market commerce. The crypto ecosystem (exchanges, wallets, PSPs) must also innovate into a more secure environment in which hacking and theft are not mainstream problems.

There are many positive waves of disruption/adoption that give rise to optimism. Various forms of digital currencies (stablecoins, CBDCs, and NFTs), each leveraging core blockchain technology all have momentum. Major payment system actors who drive core infrastructure fully support crypto payments. Highly influential big tech actors are crypto evangelists and building crypto firmly into their future with the influence to shift consumer mindsets en masse. And lastly, PSPs are building robust merchant value propositions to easily accept crypto payments.

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Glossary

Term	Definition
Bitcoin	The first cryptocurrency that uses a decentralized ledger system, known as a blockchain to verify transactions via cryptography.
Blockchain	A system of recording digital transactions in an immutable, distributed, decentralized digital ledger consisting of blocks that are linked via cryptographic signature.
Central Bank Digital Currency (CBDC)	A virtual alternative of fiat currency which uses only digital record or digital token of the official currency, and its supply is regulated by its monetary authority.
Cryptocurrency	A form of digital currency created by solving a complex series of cryptographic equations. Once “minted”, the crypto exists on a blockchain and is decentralized, meaning it is not controlled by a singular entity the way all traditional currencies are. (e.g., Bitcoin and Ethereum)
Crypto Payments	Selection of cryptocurrencies that are accepted in online consumer-to-business (C2B) commerce.
Decentralized Finance (DeFi)	Refers to both system and movement towards making financial products available on public decentralized blockchain network. DeFi does not rely on central financial intermediaries such as brokerages, exchanges or banks.
Ethereum	A decentralized, open source blockchain with smart contract functionality
Fiat Currency	A national currency that is not backed by a physical commodity, such as gold or silver. The value of fiat money is derived from public’s faith in the currency issuer, which usually is a country’s government or central bank.
Non-Fungible Token (NFT)	A unit of data stored on a digital ledger, that certifies a digital asset to be unique and therefore not interchangeable. NFTs can also represent real-life assets, such as art, music, in-game items and videos.
Smart Contract	Computer code that executes simple if/then functions.
Stablecoin	A type of digital currency which is either fully or partially collateralized. The underlying collateral could be any class of assets with low volatility, such as fiat currency, precious metal, stock, bonds and even other non-collateralized cryptocurrency.

ABOUT

Nuvei

We are Nuvei (Nasdaq: NVEI) (TSX: NVEI) the global payment technology partner of thriving brands. We provide the intelligence and technology businesses need to succeed locally and globally, through one integration – propelling them further, faster. Uniting payment technology and consulting, we help businesses remove payment barriers, optimize operating costs and increase acceptance rates. Our proprietary platform provides seamless pay-in and payout capabilities, connecting merchants with their customers in over 200 markets worldwide, with local acquiring in 45 markets. With support for over 500 local and alternative payment methods, nearly 150 currencies and 40 cryptocurrencies, merchants can capture every payment opportunity that comes their way. Our purpose is to make our world a local marketplace.

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This whitepaper would not have been possible without the cooperation of the participating interviewees. We are also grateful for the contributions of our Nuvei and Flagship colleagues.