CRYPTOCURRENCIES

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Contributors

Alison Coleman
A writer and editor working as a senior contributor at *Forbes*, with articles published in *The Guardian* and *Employee Benefits*.

Ruby Hinchliffe
A freelance fintech, charity and climate sector writer, contributing to various trade publications and reporting for *FinTech Futures*.

Alasdair Lane
A journalist covering business, tech, politics and social issues. He has written for publications including *Forbes*, *The Washington Post* and *The Spectator*.

Rich McEachran
A journalist covering technology, startups and innovation. He has written for *The Daily Telegraph*, *The Guardian* and *Professional Engineering*.

Oliver Pickup
An award-winning journalist specialising in technology, business and sport, contributing to a wide range of publications.

Alex Wright
A business journalist writing for international finance trade publications including *Acuity*, *Insurance Times* and *Risk & Insurance*.

raconteur reports

Lead publisher
Alex Gibson

Managing editor
Sarah Vizard

Deputy editor
Francesca Cassidy

Sub-editor
Gerrard Cowan

Head of production
Justyna O'Connell

Design
Pip Burrows
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Jack Woolrich
Sean Wyatt-Livesley

Illustration
Sara Gelfgren
Celina Lucey

Art director
Joanna Bird

Design director
Tim Whitlock

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PRICING

What drives the value of cryptos?

Everyone is talking about cryptocurrencies. But, for those of us on the outside, their value is still something of a mystery

Ruby Hinchliffe

Thanks to Elon Musk and his 57.1 million Twitter followers, the noise around cryptocurrency is louder than it's ever been before. While the Tesla and SpaceX CEO is far from solely responsible for the alternative digital asset's rise to fame, his tweets have played a huge part in catapulting its value to new heights.

Cryptocurrencies are intrinsically volatile. Since 2011, a year after bitcoin gained monetary value, the crypto poster child has fallen victim to its own inflated prices. That year, it went from highs of $32 (about £23) to lows of $2. The scale is different in 2021, but the volatility remains, with the cryptocurrency reaching highs of $64,000 and lows of near $30,000.

Despite bitcoin's fluctuating price, it continues to correct itself at higher values. In June 2020, its price sat at about $9,000. A year later, its value is fluctuating around $35,000. That's an increase of nearly 290% – a notable gain for longer-term investors.

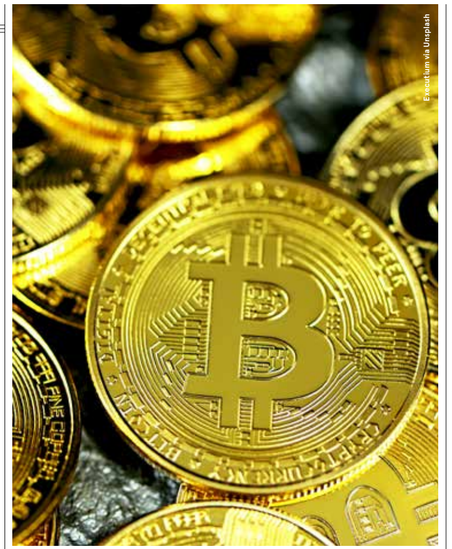
It's easy to conflate bitcoin with crypto, but there are actually about 4,000 such currencies in circulation worldwide – more than the number of fiat (government-issued) currencies in existence. The number of cryptos is likely to continue growing, largely because it is so easy to develop a new coin, which in simple terms is simply a computer code generated by open-source software designed to transact value online.

The way a coin is developed, and for what purpose, has a massive bearing on its value. While there are thousands in existence, the top 20 coins are believed to constitute about 99% of the whole market by volume, according to crypto website CoinDesk.

Much like fiat currencies, the price of cryptocurrencies is heavily swayed by supply and demand. But it's also determined by the cost of their production.

"Look at the use case of a coin," says Edward Cooper, head of crypto at Revolut. He emphasises utility as the most important component in a cryptocurrency's value. "How much technical engineering is going on to update the protocol? What is the calibre of the founding team?"

For bitcoin, that utility is solving the problem of wealth storage, while the world's second-largest cryptocurrency, ethereum, can be used as the foundation for apps. By contrast, dogecoin was created in two hours as a joke and enjoyed a value boost of nearly 20% after 20 December 2020, when Musk tweeted: "One word: doge."



Ernest Ojeh via Unsplash

Dogecoin doesn't pass some of the utility tests, says Cooper. "The value here comes from speculation."

Retail investors should remember that bitcoin is a limited-supply asset, with a 21 million cap written into its source code. This is why it acts as an effective store of value. Not all cryptocurrencies have a cap. Ethereum doesn't, for instance, and neither does dogecoin.

But a cap is not the only way to hedge against inflation. Ethereum has a set number of monetary policies, including a fixed supply and issuance schedule, to keep its value constant. As long as demand outweighs supply, its price will continue increasing. Tether, one of the best-known so-called stablecoins, is pegged to the dollar to anchor its value.

External factors will clearly also influence the value of a cryptocurrency, including the statements of high-profile figures such as Musk. In June 2021, the billionaire drove up the value of cumrocket, an alternative coin for creators of adult content, by nearly 400%. But he also sparked a price dip of 7% in bitcoin after he suggested that he was "breaking up" with it.

Diana Biggs, a former senior HSBC executive who now leads cryptocurrency startup Valour, notes that "cryptocurrencies are still in their infancy" and market caps tend to be relatively small. This contributes to their volatility and makes them susceptible to the influence of individuals. Still, "the more big companies invest, the more individuals will find it hard to move the market", Cooper notes.

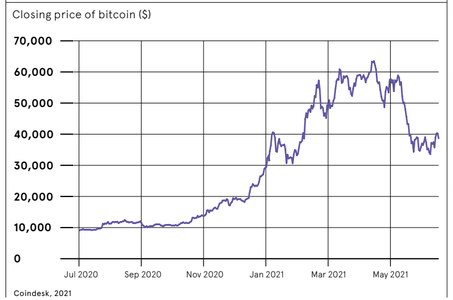
That investment is already happening. A decade ago, bitcoin was deemed a tender of the 'dark web'. Now PayPal's millions of American wallet holders can spend bitcoin just as they would the dollar. And Morgan Stanley has become the first big US bank to begin offering global clients access to bitcoin funds. Support from the establishment is growing – and fast.

Biggs also cites greater government clarity concerning the usage of cryptocurrencies as a key factor in their route to adulthood and, hence, a more predictable value. This month, El Salvador's decision to become the first country to adopt bitcoin as legal tender added 6% to the coin's value. That works both ways, of course. The national ban on cryptocurrency services by Chinese regulators in May sent bitcoin plummeting by nearly 20%.

"To say that Musk is the driver [behind a recent fall in bitcoin's value] probably gives him too much credit," says Yang Li, chief growth officer at crypto account provider Ziglu. "He definitely plays a part, but at the same time you've got the crackdown on bitcoin mining in China, or in the US they're looking at new taxation for crypto profits."

Li is right. Many of Musk's assertions have been compounded by regulatory decisions. The Chinese ban, for example, furthered a week-long decline in bitcoin's value after Tesla declared that it would no longer accept bitcoin transactions for its electric cars. Musk may seem like a crypto market mover, but he's far from alone.

THE VALUE OF BITCOIN HAS BEEN HUGELY VOLATILE OVER THE PAST 12 MONTHS



Coindesk, 2021

BANKING

Crypto goes official

Central banks are getting into the digital currency game. For the crypto sector – and monetary systems more generally – the consequences could be seismic

Alasdair Lane

From bitcoin to ethereum, digital currencies have been heralded as a new dawn for money. They allow for faster, cheaper transfers, promote financial inclusion and offer greater privacy, according to their proponents.

But the promise of anonymity has also made them a favoured financial medium for fraudsters and other criminals. And, beset by explosive volatility, they fall far short of being a viable payment method. But what if that were not the case?

For monetary authorities worldwide, this is the trillion-dollar question. Spurred by the crypto sector's meteoric rise, dozens are looking at creating their own central bank digital currencies (CBDCs) – virtual money that replaces cash with electronic tokens.

Done correctly, this could democratise finance, clamp down on crime and offer far greater efficiency. Yet deep in CBDCs' digital DNA are concerns about state surveillance and individual privacy, as well as the prospect of a cashless society that might not work for all.

For years, central banks had little more than a passing interest in virtual money. This situation changed abruptly in mid-2019 when Facebook stated its intention to launch Libra, a proprietary digital currency that would monetise its sprawling social network.

"After Facebook's announcement, central banks became concerned about monetary sovereignty," explains Ole Moehr, associate director of the GeoEconomics Center at the Atlantic Council, an international think-tank. "They were – and still are – worried that they might lose that sovereignty" if a digital currency such as Diem (Libra's new name) gains popularity among the platform's 2.8 billion users.

Two years on, central banks are scrambling to catch up. The Atlantic Council's GeoEconomics Center, which tracks CBDC development globally, found that 35 monetary authorities were researching virtual currencies in mid-2020. Today, that total has more than doubled. The Bahamas, Cambodia and China are leading the pack. Each nation has a pilot CBDC in circulation and there is speculation about a national roll-out in China next year.

Eager to make up ground, though fundamentally more cautious, western economies are moving ahead with their own CBDC plans. In April, the Bank of England and the Treasury created a task force to examine the potential of a digital pound, snappily named "britcoin" by the chancellor, Rishi Sunak.

Yet, as the case of Facebook's Diem shows, some hefty regulatory roadblocks remain. For instance, G7 central bankers and finance ministers have decided that stablecoins – cryptocurrencies that peg their market value to an outside asset, such as gold or the dollar – carry systemic risks. They reiterated at their meeting in early June that tighter regulations need to be applied before permission to launch can be granted.

The same applies to their own CBDCs: G7 finance ministers concluded at their meeting that all digital currencies must operate "within appropriate privacy frameworks and minimise spill-overs".

This commitment to regulation is the single biggest difference between CBDCs and cryptocurrencies such as bitcoin or ethereum. The two types are likely to share some foundational technology – namely: blockchain, a distributed electronic ledger that enables transactions to be recorded and accessed in real time. But cryptocurrencies are unregulated and decentralised, governed not by a single entity but by a disparate band of online custodians. By definition, a CBDC is controlled by a central body.

The arrival of CBDCs could therefore precipitate the demise of their unregulated forebears, according to some experts.

"CBDCs certainly throw the use case for bitcoin and ethereum as currencies up into the air," says Susannah Streeter, senior investment and markets analyst at fund manager Hargreaves Lansdown. "If there is an alternative system of digital currency that's supported and regulated by central banks, people will migrate over to that system, not least because their money will be guaranteed."

Nerve centre: the European Central Bank's HQ in Frankfurt is where monetary policy for the eurozone is made

Ten pounds, dollars or euros of CBDC would, in other words, always be worth 10 pounds, dollars or euros, backed by the full faith and credit of the government. Cryptocurrencies, on the other hand, are prone to violent swings in value, hampering their ability to serve as a serious payment medium.

Then again, this speculative nature is precisely what appeals to so many crypto enthusiasts. Rather than treating their holdings as a viable currency, most view them as assets, hoping for stratospheric returns, or as hedges against inflation, taking the place of gold. That's unlikely to change, even with central banks in the game.

Perhaps the more pertinent question is whether CBDCs will squash the growth of global stablecoins such as Diem. While they could well coexist in a shared regulated system, certain rivalries are likely to emerge if non-state virtual currencies offer their customers interest, throwing the gauntlet down to CBDCs, which aren't expected to carry financial incentives.

A showdown between a stablecoin and a CBDC would not be a bad thing for consumers – competition drives down costs, after all. But there is one group that will be watching the development of digital money with trepidation: commercial banks.

As CBDCs are a complete replacement for physical money, not simply a representation of it, as is the case with today's electronic cash, the intermediary role of these banks would, in theory, be very limited. With money held directly by the customer (on their phone or other digital device) why involve a potentially costly middleman?

> **If there is an alternative system of digital currency that's supported and regulated by central banks, people will migrate over to that system**

The answer, according to Anthony Culligan, founder and chief engineer at blockchain company SETL, is expertise. "There's still going to have to be somebody who curates us into this digital money world," he says. "The Bank of England is a small place. It's not going to be running a service for 50 million customers. It couldn't do it, because it's not a technology organisation in the same way as commercial banks are."

The cash economy is likely to be less resilient. The disappearance of physical money is already well advanced: only 23% of transactions in the UK relied on cash in 2019, according to trade body UK Finance. That's down from close to 60% in 2009. Contactless payments have proliferated during the pandemic – a trend that CBDCs, being wholly virtual, will almost certainly accelerate. This could disenfranchise poor, rural and elderly communities that rely largely on cash.

It's possible, however, to make quite the opposite argument: that CBDCs will actually advance the cause of financial inclusion. For people estranged from the banking system, there'll be no need to apply for a bank account or cash card to access their money. All they will need is an electronic device.

A shift away from cash could also help authorities to crack down on fraud, because it would be harder for criminals to launder large sums with less physical money in circulation. Similarly, banks will find it easier to keep track of currency movements, with the ownership of every electronic token digitally documented – helpful when dealing with issues such as tax avoidance.

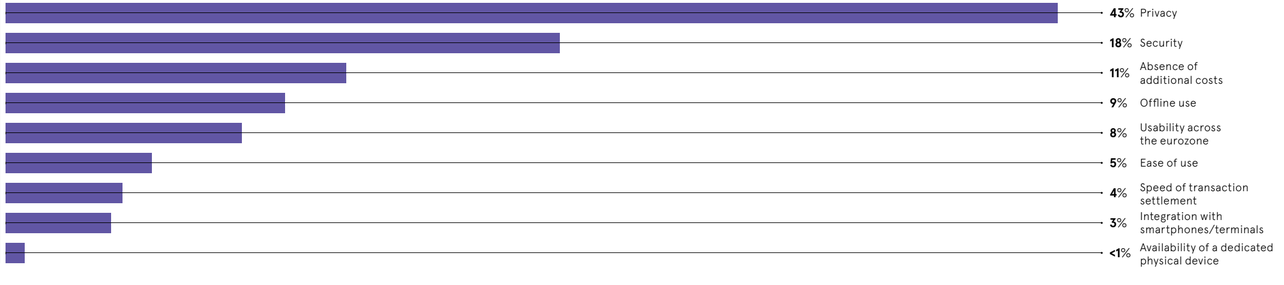
But this sort of surveillance capability has ramifications for civil liberties, analysts argue. One expert with concerns in this area is Sabrina Rochemont, a member of the cashless society working party at the Institute and Faculty of Actuaries.

"Privacy is a major concern," she says. "It is related to trust in both governments and big technology companies. If accounts are held with a payment service provider and the use of a CBDC is free of charge, consumer and transaction data may become the revenue stream for payment businesses. Most of us leave vast trails of data in our daily lives as we seek convenience. Whom do you trust more with your data: a central bank or private businesses?" ●

CONSUMER PREFERENCES FOR A CENTRAL BANK CRYPTOCURRENCY IN THE EU

Eurosystem, 2021

How would you rank, in order of importance, the features that a digital euro should offer?



$1tn

the market value of all the world's cryptocurrencies surpassed the record-breaking $1tn mark in January 2021

Bloomberg, 2021

UTILITY

For long-term crypto gains, look to utility

Cryptocurrencies with utility are a smart investment for the long haul, according to industry experts

Hanson Lu via Shutterstock

Utility is the lifeblood of the crypto ecosystem. Without it, there's only speculation

Rich McEachran

With more than 4,000 cryptocurrencies to choose from, it's hard to know which to invest in. But, while all such coins are prone to price volatility, experts rank one quality above all others: utility.

In the cryptocurrency world, utility refers to digital tokens built on a specific blockchain system (often based on ethereum's ERC-20 standard) that will grant their holders certain rights. For example, filecoin holders are allowed to use its decentralised data storage network. Alternatively, a game development firm could issue utility tokens to fund its next release, which holders could spend on gaming accessories.

"Any cryptocurrency is only as good as its use case," observes Katharine Wooller, MD of crypto wealth-building platform Dacxi in the UK and Ireland.

Many investors buy bitcoin because it's the best-known name in the industry. But, while bitcoin can improve financial inclusion and enable borderless payments, experts consider its use case to be limited. Ethereum is the preferred system for building cryptocurrency projects. Ethereum and many other currencies offer direct utility in various areas, which could boost their value in the long run.

"The most visible cryptocurrencies are those addressing or solving specific problems on a macro level," says Roman Matkovskyy, associate professor in finance and accounting at Rennes School of Business.

The technical jargon can be confusing. But, if you're a non-expert investor, you're probably only interested in buying coins on a cryptocurrency exchange and storing them in a digital wallet. Nonetheless, it's essential to do your homework and spend time researching and analysing a coin's long-term intended use, Wooller warns. A white paper detailing a coin's plans, purpose and technology, published before its initial coin offering, will be freely available online.

But utility is no guarantee of success. There must also be sufficient demand for a coin's ecosystem. On top of the 4,000-plus cryptocurrencies in circulation, there are more than 2,000 'dead' coins that have failed, according to Coinopsy, which tracks cryptocurrencies that have been abandoned by their creators or have no trading volume at all. Most of these dead coins struggled because there simply wasn't enough demand for their ecosystems.

Cryptocurrencies, by their nature, have no underlying value and their prices are influenced by supply and demand. Their potential future growth will depend on how well they address the problems they're attempting to solve and the acceptance of cryptocurrencies in general, Matkovskyy explains. "If we agree on using them, value will be created in the process," he says.

The fact that cryptocurrencies are decentralised and not tied to a bank or government means that they've become a popular hedge against rising inflation and low interest rates for savers, especially since the start of the pandemic. They have far outperformed gold and other assets over the past 12 months. Worryingly, however, there has been a recent surge in demand for so-called meme coins, such as dogecoin and shiba inu. The former rallied by more than 12,000% between the start of January and early May. Retail investors have been pouring money into these cheap alternatives to bitcoin and ethereum in the hope that they will deliver explosive gains.

The problem? Meme coins are largely useless. While still token-based and built on, or connected to, blockchain ledgers, meme coins can't be used for any other purpose and their holders are not granted any specific rights. Dogecoin, for instance, was launched back in 2013 as a joke, while shiba inu, created in August last year, began life as a satirical homage to dogecoin.

While any cryptocurrency investment is risky, these meme coins are not considered a long-term store of value, unlike coins with utility. They may have mass speculation on their side right now, but they are unlikely to survive in the long term, argues Mathieu Hardy, chief development officer at crypto-focused fintech company OSOM.

"Meme coins symbolise the antithesis of utility," Hardy says. Once blockchain networks gain critical mass, he adds, all the speculation "will die down, taking the majority of meme coins with it".

Paddy Osborn, managing director of the London Academy of Trading, says it's clear that cryptocurrencies with utility offer far superior long-term returns to those of coins with no intrinsic value or function.

"The big challenge", Osborn adds, "is to identify these hidden gems within this very complex and fast-moving industry before their price gets too expensive."

So where should investors turn if they are looking for the long-term gains of utility, rather than a quick profit through speculation?

For many experts, ethereum is the top choice. It provides a platform for developers to create apps and run them on a blockchain without the involvement of third parties. The price of ethereum could surpass that of bitcoin in several years' time, some analysts believe. Ethereum is slightly faster, has a higher level of interest from developers and promises more applications.

Osborn highlights three other coins that he considers worth watching. Polkadot is building a network that can support several different blockchains and enable them to work together. Internet Computer is aiming to disrupt the internet space by building a decentralised web platform that runs on a blockchain. And then there's vechain, which helps companies to track their products safely and securely through each stage of the supply chain.

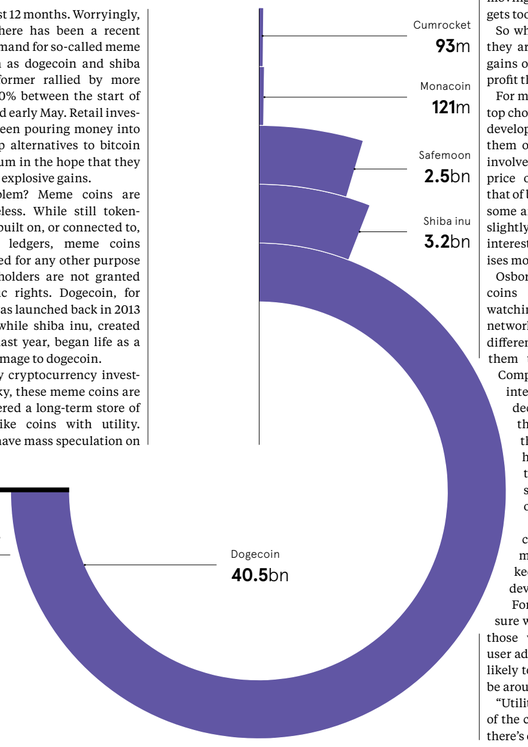
The speed at which cryptocurrencies are being created means that it's important you keep up to date with any new developments, Osborn advises.

For Hardy, it's hard to say for sure which coins will win out. But those with the greatest level of user adoption and functionality are likely to last longer and should still be around after a market crash.

"Utility", he says, "is the lifeblood of the crypto ecosystem. Without it, there's only speculation." ●

MANY MEME COINS HAVE A RELATIVELY LARGE MARKET CAP DESPITE HAVING NO UTILITY, BUT THIS ISN'T EXPECTED TO LAST

Market capitalisation on 17 June 2021 ($)



CoinMarketCap, 2021

Commercial feature

Crypto has always held the key to its future: transparency

As the cryptocurrency market matures, efforts are underway to supplement its transition into the mainstream of asset classes

Cryptocurrencies have been growing in popularity as retail and institutional investors increasingly turn to digital assets seeking new sources of return and a hedge against inflation and other worrisome economic trends.

Throughout the Covid-19 pandemic, interest in cryptocurrencies spiked, driven higher by a combination of factors, including their potential as an alternative investment to gold and the rising popularity among amateur investors. Cryptocurrencies are poised to become a mainstream financial asset class, bringing new ways to conduct financial transactions and more transparent processes.

Institutional adoption of crypto assets has long been seen by many as a necessary step on the path to going mainstream. There is now evidence that this is beginning to take place, with momentum from traditional financial institutions ramping up their exposure and presence within the sector in recent months.

Digital asset investment manager CoinShares reported that the first quarter of 2021 was a record-setting period for crypto investments, with $4.5bn (£3.19bn) in institutional inflows during the period.

At the same time, major banks have ramped up their infrastructure to facilitate increased exposure to crypto assets. In May, Goldman Sachs revived its cryptocurrency trading desk to meet the growing demand from institutional clients, while other firms on both Wall Street and in the City of London responded to the popularity of the emergent asset class.

All this points towards the incremental, wider growth of cryptocurrencies according to The Crypto Maturity Model, a framework for how traditional financial institutions can build cryptocurrency products.

Produced by Chainalysis, a blockchain data platform known for its role in cyber investigations and compliance for government agencies, financial institutions and cryptocurrency businesses, the roadmap outlines how traditional financial players can embrace cryptocurrency products while adhering to global regulatory measures.

From training staff in the nuances of crypto assets to establishing cryptocurrency exchange-traded funds (ETFs) and building facilities to take custodial ownership of clients' assets, the pace of adoption within previously reluctant organisations has accelerated.

As traditional banking takes lessons from crypto assets, the inverse is also true. With the greater incursion of mainstream banking into the crypto market, this new asset class is adopting principles from the established assets, with investors rightly expecting a similar degree of regulatory accountability, transparency and reliability.

Transparency and the advantages of blockchain technologies are key to the surging growth of cryptocurrencies, and an imperative driver of its future. When applied to a system still rooted in legacy, the possibilities are set to be bountiful.

"In the longer term, increasing numbers of assets are likely to be digitised," says Philip Gradwell, chief economist at Chainalysis.

"Already, stablecoins such as USDC are digitising dollars, and crypto exchanges are tokenising stocks. If legacy banks do not get familiar with blockchain technology then they will lose business as assets move to new platforms," he says.

It is no secret that investors are demanding access to cryptocurrencies. On the retail side, the FCA estimates that 2.3 million adults hold crypto assets in the UK. Likewise, institutionally, hedge fund managers expect to hold 7% of assets in crypto within five years, research from fund administrator Intertrust suggests.

But pairing the opportunities of the asset with forward-looking regulation is a hurdle not yet tackled by many governments.

Nevertheless, a post-Brexit regulatory overhaul, as recommended by the Kalifa review of the UK's fintech sector, is on the horizon, presenting legislators with an opportunity to cultivate an environment that supports the proper use and regulation of cryptocurrencies, and to turn the UK into a global hub for the industry.

Such regulation that facilitates the transparent use of cryptocurrencies is set to be beneficial for investors, and already the FCA is wielding its power to support crypto-holders, with pressure placed on the industry to step up efforts to meet anti-money-laundering standards. Existing regulation will only go so far in ensuring the longevity of the asset, and if the asset is to further proliferate, more needs to be done.

In India, a nation whose official stance on crypto has been unclear for some time, bitcoin's anticipated classification as an asset class comes in parallel with new regulations that seek to bolster the positive effect of crypto assets on the nation's economy.

Recently, India's imposing regulation on cryptocurrencies may have stifled the opportunities for its citizens to capitalise on the asset.

Chainalysis research found that bitcoin investment gains in India stood at $241m (£173m) in 2020, significantly below the expected gain owing to the nation's GDP and population.

"Right-sized regulatory oversight and supervision, that which ensures financial integrity without compromising the development and adoption of the ecosystem will encourage economic growth and technological advancement in tandem," said Jesse Spiro, chief of government affairs at Chainalysis.

Meanwhile, US financial authorities are taking steps to have a more active role in market regulation. It is hoped that better federal oversight will reduce risk exposure to investors.

Fundamentally, crypto assets are primed to embrace the growing need for accountability, both from a regulatory stance, as well as from the practical application of the mainstreaming of the asset class.

Blockchain technologies have already instilled an unprecedented discourse of transparency within the financial sector, and that principle cannot be impeded on by regulation.

"Given the transparency crypto assets provide, regulators should seek to apply additional regulation around activity, not the technology itself," says Spiro.

Unlocking opportunity is fundamental to cryptocurrencies and the returns available to investors, but furthering the reach of the asset requires a broad spectrum of industry support

From institutional dollars projecting cryptocurrencies into the mainstream to regulation cementing its longevity, the transition of crypto is dependent on its fundamental tenets - transparency and accountability – and backing those ideas now will go some way in creating more opportunities down the road.

For more information please visit chainalysis.com

Chainalysis

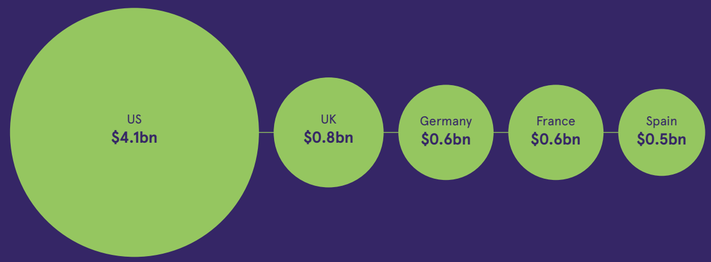
CRYPTOCURRENCY IS A GLOBAL PHENOMENON:

Who benefited the most from the 2020 boom?

Bitcoin generated a **642%** low-to-high return in 2020

The bitcoin price ranged from $4k to $64k to $34k in the last 15 months

2020 Estimated realized bitcoin gains by country



Over **99%** of cryptocurrency transactions are legitimate economic activity

$50bn of gains from bitcoin have been realised on fiat exchanges

chainalysis

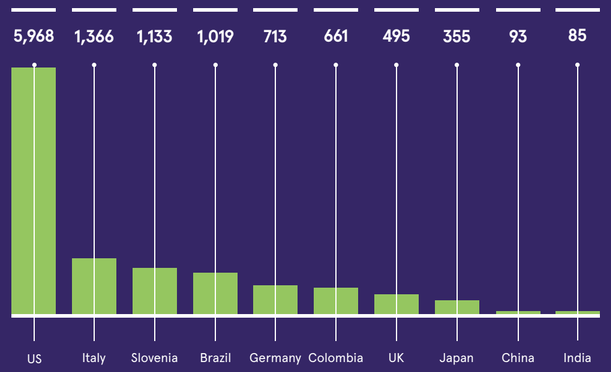
PAYING WITH CRYPTO

While buying and selling cryptocurrencies is becoming increasingly popular, the opportunity to spend them remains limited. This is down to the technology required to make this possible and also the volatility in their value. But a growing number of companies across a range of industries are enabling customers to use crypto to purchase goods and services. And, while the vast majority of businesses are not looking to invest in cryptocurrencies, some are starting to try it out.

BUSINESSES GLOBALLY ACCEPTING CRYPTOCURRENCIES

Statista, 2021

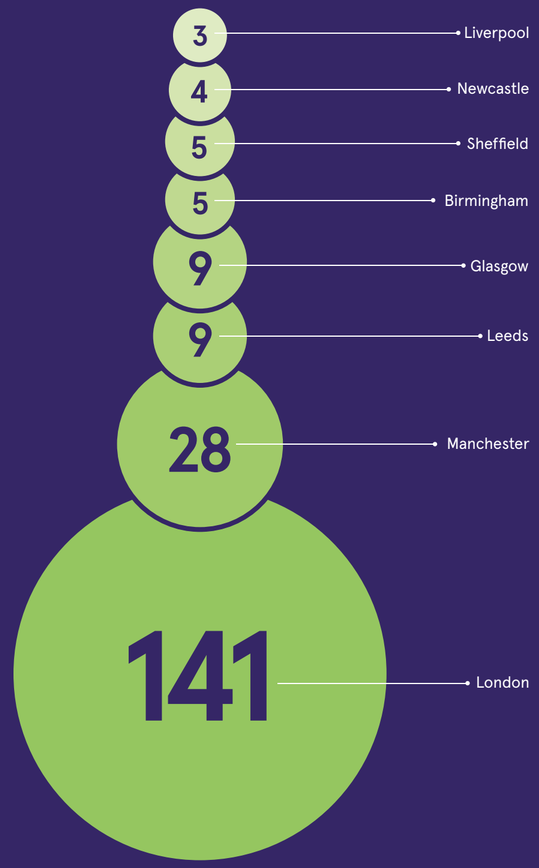
Number of businesses in selected countries that either have a cryptocurrency ATM or accept cryptocurrency as an in-store payment method



UK BUSINESSES ACCEPTING CRYPTOCURRENCIES

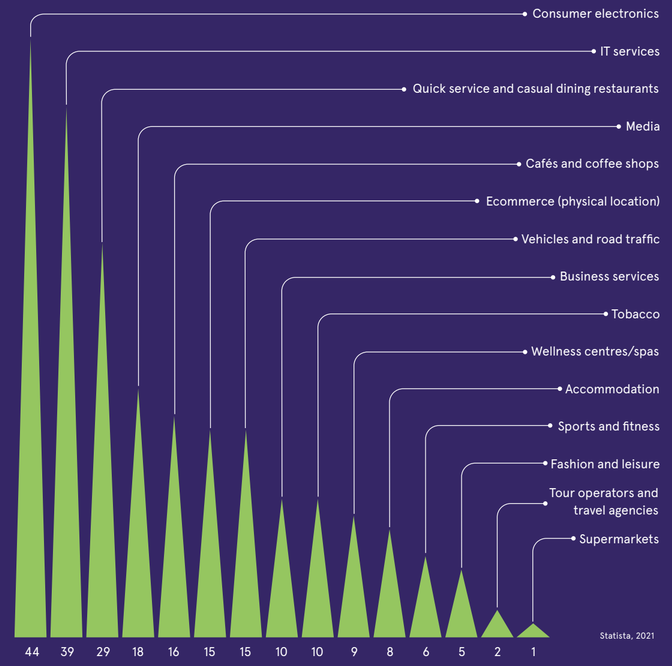
Statista, 2021

Number of businesses in the eight biggest UK cities that either have a cryptocurrency ATM or accept cryptocurrency as an in-store payment method



COMPANIES IN A RANGE OF INDUSTRIES ACCEPTING CRYPTOCURRENCIES

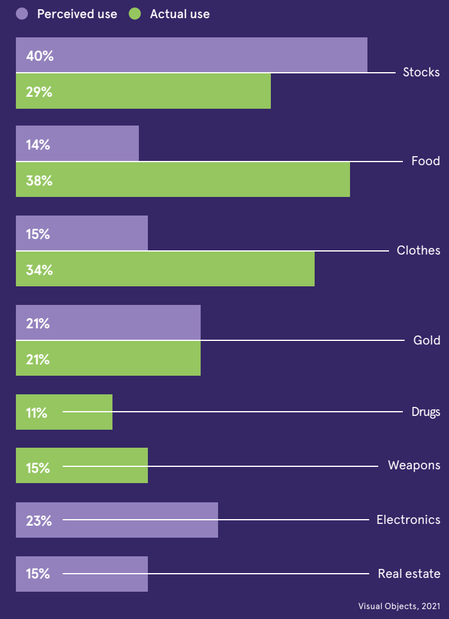
Number of businesses in the UK across selected industries that either have a cryptocurrency ATM or accept cryptocurrency as a payment method



Statista, 2021

WHAT PEOPLE BELIEVE CRYPTOCURRENCY IS USED TO PAY FOR DIFFERS GREATLY FROM WHAT ITS OWNERS SAY THEY USE IT TO PAY FOR

Perception of likely use and actual payment use reported by people familiar with cryptocurrencies



Visual Objects, 2021

4% of Britons have used cryptocurrencies as a payment method

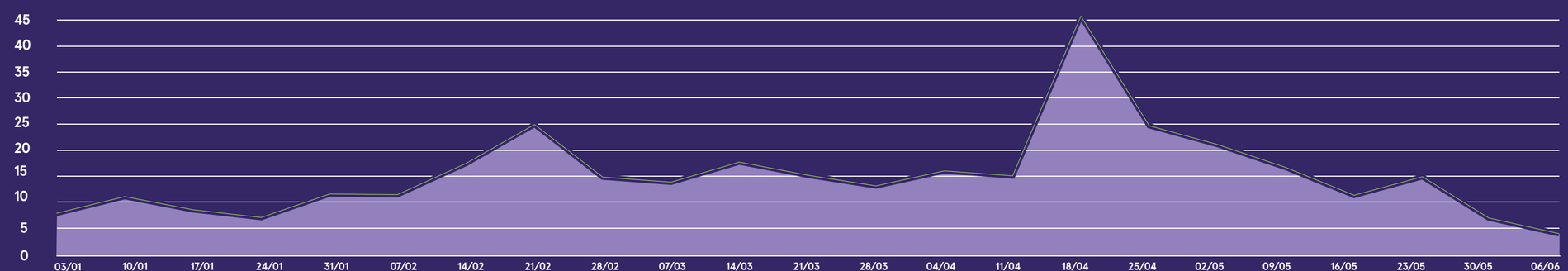
16% of Britons think that cryptocurrencies are the future of online financial transactions

65% of Britons who think that cryptocurrencies are the future of digital payments say they don't really understand how they work

BITCOIN'S AVERAGE TRANSACTION FEE VARIES CONSIDERABLY

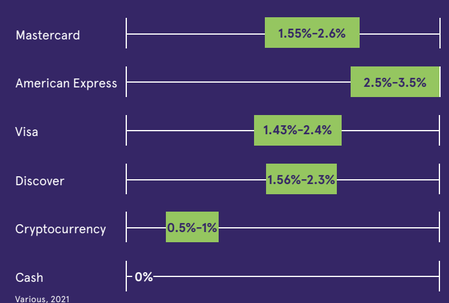
BitInfoCharts, 2021

In $ since the start of 2021



CRYPTOCURRENCIES OFFER LOWER TRANSACTION FEES THAN OTHER PAYMENT METHODS

Charges as a percentage of a transaction

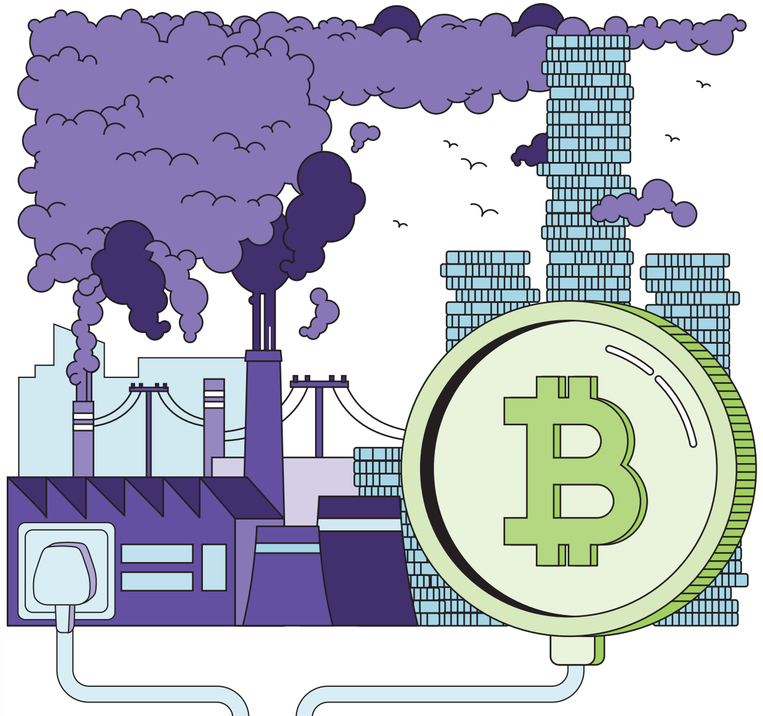


Various, 2021

SUSTAINABILITY

Will bitcoin's energy issues turn off investors?

The crypto's power-hungry nature might worry eco-conscious investors, but there are reasons to believe in a greener future



Oliver Pickup

Cryptocurrency has long had a dirty secret: the energy needed for bitcoin mining.

Crypto evangelists – those who believe that a decentralised financial system is for the greater good – tend to ignore this inconvenient truth. But in May, when Tesla boss Elon Musk decried the environmental effects of the mining that goes into validating bitcoin transactions, the energy issue became a burning topic.

It's a big problem for cryptocurrencies because most investors (77%) are aged under 45, according to a study published earlier this year by Gemini Exchange. These consumers are more eco-conscious than those in older age groups. Indeed, Musk made his damning assessment at the same time as a Pew Research Center study found that 37% of gen Zers and 33% of millennials in the US view climate change as their top personal concern.

Unsurprisingly, some experts are worried that these investors could sour on bitcoin and other energy-draining cryptocurrencies. Bitcoin in particular is a victim of its own success, at least when it comes to environmental concerns. This is down to its so-called proof-of-work protocol: a decentralised consensus mechanism that requires members of the network to expend effort solving an arbitrary mathematical puzzle to ensure that no one can hijack the system.

It's a vicious correlation, because the higher bitcoin's market value – in February it easily became the quickest asset in history to reach $1tn, after only 12 years – the more energy it consumes.

The latest bitcoin bull run, which began at the end of 2020, has sparked a surge in mining, bringing with it increased energy consumption. It's no coincidence that Beijing has cracked down on crypto: the vast majority of bitcoin is mined in China, driving up the demand for energy and making it harder for the country to achieve its target of net zero carbon emissions by 2060.

Bitcoin would rank as the world's 32nd-biggest nation by energy consumption. Between them, bitcoin and ethereum consume more than three-quarters of the electricity used by all cryptocurrencies. Notably, the other three on the list of the five worst offenders – dogecoin, bitcoin cash and litecoin – all use the proof-of-work protocol.

Bitcoin's energy consumption has more than quadrupled since the start of its previous peak in 2017, says Charles Hoskinson, co-founder of ethereum – the second-largest cryptocurrency measured by market capitalisation.

"It's set to get worse, because energy inefficiency is built into its DNA," he argues. As chief executive of global blockchain engineering company IOHK, he's also the driving force behind third-generation cryptocurrency cardano.

According to Hoskinson, bitcoin's carbon footprint will "become exponentially worse because the more its price rises, the more competition there is for the currency" and so the more energy it consumes.

Other, greener consensus mechanisms are gaining in popularity. These include the so-called proof-of-stake blockchains that underpin cryptocurrencies such as cardano, polkadot and algorand, which do not require mining.

Proof of stake uses considerably less energy than proof of work. This is because "network participants are chosen to validate 'blocks' of transactions based on how many coins they hold, rather than the computational processing power they have", according to Hoskinson, who estimates that cardano is about "4 million times" more energy efficient than bitcoin.

Monica Long, general manager of RippleX, which provides open-source code and developer tools to accelerate interoperable blockchain technology, agrees that proof of work is "very energy intensive". But she adds that things are changing rapidly, noting that ethereum will shortly be switching to a proof-of-stake protocol that is expected to reduce the coin's electricity consumption by 99%.

She welcomes both the Bitcoin Mining Council, unveiled by Musk in May to monitor and improve the industry's sustainability, and the Crypto Climate Accord, which is a private-sector collaboration that's focused on making all blockchains carbon-neutral by 2030.

Rhian Lewis is the author of *The Cryptocurrency Revolution: finance in the age of bitcoin, blockchains and tokens*. She says that it's vital to keep things in perspective, noting: "Modern life is by its very nature energy intensive. In the US alone, the energy consumed by inactive household devices left on standby every year would power the entire bitcoin network for 1.9 years."

When people compare the energy that's consumed by a transaction on the Visa network, for instance, with a transaction on the bitcoin network, it is a "false equivalent", Lewis says. "A transaction on Visa needs the entire world banking system to be in place before it can be processed, with all the physical infrastructure of the banks, people travelling between them, physical money being minted and transported and so on. In contrast, bitcoin does all that inherently."

Pavel Matveev, founder and chief executive of Wirex, a crypto payment card, believes bitcoin's energy consumption is the exception in the industry. "Given that there are more than 4,000 cryptocurrencies in existence, there are plenty of environmentally friendly options available and many more on the way," he says.

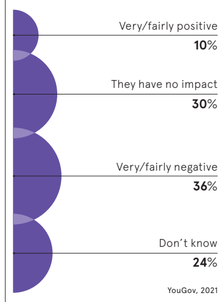
By way of example, Matveev cites nano, a cryptocurrency that doesn't rely on mining, printing or minting. Nano aims to address some of the shortcomings in today's financial systems, limiting fees while providing fast transaction speeds.

Given the introduction of less energy-intensive coins and a move towards using renewable energy for mining, cryptocurrencies could well offer a more environmentally friendly payment system in the medium term, he suggests.

> **Ultimately, digital money offers many great advantages and it's also a step towards a greener future**

MORE THAN A THIRD OF BRITONS BELIEVE THAT CRYPTOCURRENCIES HAVE A NEGATIVE IMPACT ON THE ENVIRONMENT

Percentage of respondents



YouGov, 2021

"Even the less eco-friendly cryptos can still be better than traditional currency for the environment," Matveev argues. "Imagine: goodbye plastic cards, paper receipts and pennies. Ultimately, digital money offers many great advantages and it's also a step towards a greener future overall."

Perhaps Musk's energy truth bomb was what the industry needed to hear to clean up its act – even if, in the long term, the appeal of the original crypto is overtaken by more eco-conscious alternatives.

Andrew Brookes via Gettyimages

FRAUD

As cryptocurrencies surge, so do the scams

The number of investment frauds involving digital assets such as bitcoin has rocketed in recent months. But authorities are striking back with some success

Alex Wright

Fuelled by celebrity endorsements, cryptocurrencies have soared in popularity among investors over the past year. Unfortunately, the fraudsters have noticed this trend.

The number of crypto scams in the UK has more than doubled over the past year. A record 720 cases were identified in January alone, according to Action Fraud, a British reporting centre for cybercrime.

This figure is likely to be the tip of a global iceberg. In the US, for instance, the Federal Trade Commission reports that the number of bogus investment opportunities grew 12 times over between October 2020 and May 2021, causing almost 1,000% more in losses than the total reported during the equivalent period of 2019-20.

Worse still, a report by the Bank for International Settlements in 2018 estimated that a quarter of all initial coin offerings (ICOs) could be fraudulent. It based this finding on information gleaned from newspapers and white papers – and on the percentage of cryptocurrency websites that had been discontinued after their ICOs.

The problem has become so prevalent that the UK's Financial Conduct Authority (FCA) has warned investors buying cryptocurrencies that they should be "prepared to lose all their money". Other finance industry regulators around the world have issued similar caveats.

"There has been an exponential growth in cryptocurrency-related fraud in recent years," says Sam Tate, partner at international law firm RPC and head of its team dealing with white-collar crime. It recently requested data from the FCA under the Freedom of Information Act 2000. This revealed that investigations into unauthorised cryptocurrency ventures had risen from zero in 2016-17 to 52 in 2019-20.

"It's the type of risk that everyone should be worried about, whether they're a small investor or a giant bank," Tate says.

Cryptocurrency fraud has become a global business conducted by perpetrators ranging from state-authorised hackers to international criminal gangs, he adds. "National boundaries aren't respected when it comes to cryptocurrency fraud. This makes it even more difficult to track and tackle the problem."

The classic crypto fraud occurs where investors are targeted by criminals offering the lure of a get-rich-quick scheme that is in reality a Ponzi scam. Using fake websites, mobile apps, emails and social media adverts, they trick investors into handing over their money with the promise of eye-watering returns, which never transpire.

There are several variations on this common scam. They include fake social media accounts, where criminals impersonate celebrities to encourage investors to participate in fraudulent investment schemes. For example, the accounts of high-profile Twitter users – including those of Joe Biden, Barack Obama and Elon Musk – were recently hacked, offering giveaways aimed at duping followers into investing in a fake bitcoin scheme. Other examples include two-for-one scams, which promise investors they can double their money by sending their cryptocurrency to a wallet, from which it is then stolen.

Then there are exchange hacks – where criminals exploit weaknesses on exchange platforms to steal funds – and rug pulls, in which crypto developers list a token, encourage parties to invest and then run off with the tokens and exchange these for a more stable currency. Other popular tactics employed by fraudsters include setting up an exchange to take investors' money, which then can't be withdrawn.

Some even use phishing to take over an investor's wallet before stealing their data and credentials. This could be done through a Sim-swap attack, "where fraudsters trick the customer support staff of cellphone operators into giving them control of someone else's phone number", says Mriganka Pattnaik, CEO and co-founder of blockchain transaction company Merkle Science.

Alternatively, scammers might use fake messages that appear to come from trusted businesses. "The messages will convince users to visit a link that they control and enter their log-in credentials, which are then stolen," Pattnaik says.

In all of these scams, the investor will often never see their money again. And, by the time they realise what has happened, the fraudsters are long gone.

"Like any new asset class with the potential for high returns, there is the risk that fraudsters will try to take advantage of it," says Tony Lewis, a partner in the dispute resolution team at law firm Fieldfisher. "At the same time, cryptocurrency is unregulated, so it's easier than traditional bank accounts and other authorised investment schemes for fraudsters to exploit."

The problem has been exacerbated by the rise in older investors trying to obtain better returns on their capital while interest rates on savings are so low. The number of over-55s buying cryptocurrency tripled between 2019 and 2020, according to the FCA. The elderly and vulnerable are easy prey for old-fashioned telephone scams, too. In total, £113m was lost to cold callers and other criminals promoting fraudulent crypto investments last year alone, according to data seen by the *Investors' Chronicle*.

Even more experienced investors have been stung. Apple co-founder Steve Wozniak lost the equivalent of $70,000 (£50,000) when fraudsters bought seven bitcoins from him using a stolen credit card, which they later cancelled.

Because criminals often operate undetected, law enforcement agencies and financial watchdogs have either been largely powerless to prevent many of these scams or been overwhelmed by the sheer volume of cases. And because courts were operating well below capacity during the pandemic, there is a huge backlog of cases waiting to be processed.

But there have been some successes, notably when the Federal Trade Commission obtained a settlement against a scheme named the Bitcoin Funding Team, recouping almost $500,000 of investors' money. The scheme's promoters had falsely promised that participants could earn large sums by paying cryptocurrency to enrol in a chain referral scheme, but never delivered.

Tate believes that the authorities need to come up with an advertising campaign that warns of the risks associated with cryptocurrencies. A more joined-up approach among regulators to tackling the problem is also required, he adds.

"They need to target the kind of people who are likely to be interested in these types of schemes," Tate says. "The UK's National Crime Agency does a lot of advertising about this subject on social media. But, if there were an internationally recognised kitemark of approval for some of these currencies, it would go a long way to tackling the problem."

Investors can find it difficult to distinguish reputable cryptocurrency providers and schemes from bogus ones, especially given the perception that cryptocurrencies are largely safe, with retailers such as Starbucks and Whole Foods accepting bitcoin payments.

This means that investors must do their due diligence on the product and company they are investing with and where their money will be kept, relying on trusted news sources for their information and using only recognised exchanges that give them full access to their funds.

Investors can also use software such as Chainalysis KYT to analyse and verify transactions, identifying illicit activity, suspicious wallets or connections to the dark web, says Jacob Sever, co-founder and chief procurement officer of Sumsub, a verification specialist. A high risk score highlights unreliable sources that shouldn't be accepted, he adds.

Big companies are doing their bit to counter the scammers. Facebook and Google have both banned bitcoin adverts on their websites, for instance, while NatWest now directs its mobile app users to a warning screen advising them to beware of cryptocurrency scams after it saw a record number between January and March 2021.

Nonetheless, there's still a long way to go in the fight against cryptocurrency fraud. "The key message is that investors should do their homework thoroughly beforehand," Pattnaik says. "The rule of thumb is: if a scheme sounds too good to be true, it probably is."

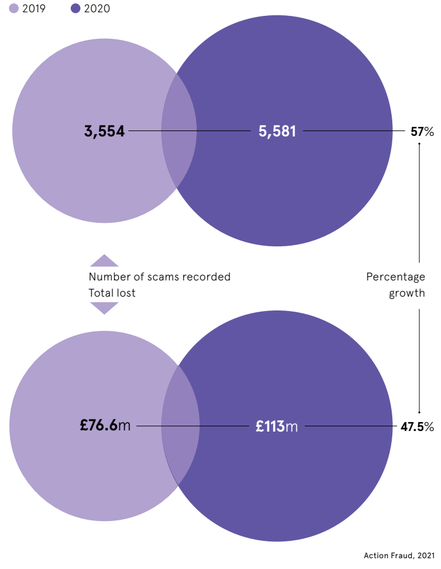
> **720**
>
> cryptocurrency scams in the UK in January 2021 alone, equivalent to 23 a day
>
> Action Fraud, 2019

> **"The rule of thumb is: if a scheme sounds too good to be true, it probably is**

> **"National boundaries aren't respected when it comes to cryptocurrency fraud. This makes it even more difficult to track and tackle the problem**

THE NUMBER AND COST OF SCAMS INVOLVING CRYPTO INVESTMENTS BOTH INCREASED SIGNIFICANTLY LAST YEAR

Data for the 12 months to the end of December 2020



Action Fraud, 2021

Commercial feature

How cryptocurrencies could become a reliable everyday payment method

The price volatility of cryptocurrencies such as bitcoin might make them seem unsuitable for everyday use but newer stablecoins show how blockchain technology could be used for payments in the future

Paper money is going away."

Tesla founder Elon Musk is perhaps more prescient than even his most ardent followers believe. He made the comment in a 2019 podcast, a year before Covid made us all go contactless.

Yet Musk was not talking about the move from cash to card but about cryptocurrencies.

"Crypto is a far better way to transfer value than a piece of paper," he said.

But Musk's vision of this future crypto-world is unlikely to see us all ditch banknotes for bitcoin. In the past year, the value of one bitcoin has fluctuated between US$9,000 and US$62,000. Not great for making traditional payments.

This is where stablecoin comes in.

A stablecoin is a digital token that is transacted over blockchain in the same way as cryptocurrencies but, crucially, backed by a so-called fiat currency, such as the pound Sterling or the US dollar. Notably, the stablecoin model does not require the mining of each token, an energy-intensive process that has seen Musk temper his support for bitcoin.

Tether tokens (USDt), the market-leading stablecoin, is pegged to the US dollar, for example.

This provides a robust method of exchanging value while using a familiar accounting unit.

Much of the enthusiasm for cryptocurrencies – a market worth more than $1.18tn – has focused on the trading opportunity. That same volatility that makes bitcoin less useful for everyday transactions is exactly the sort of volatility that can make you huge gains. Or indeed huge losses.

It is this volatility which has led financial regulators to warn that cryptocurrencies are a bubble waiting to burst.

But perhaps the most exciting use of cryptocurrencies is yet to be realised. The potential for stablecoin to become a payment method for everyday transactions has many vested interests in the cosy and well remunerated world of banks and other financial institutions alarmed.

Tech Daily

Take the credit card industry. In 2019, Visa generated profits of US$12.1bn on revenues of US$23.0bn while Mastercard made profits of US$9.7bn on US$16.9bn. The business of issuing plastic and enabling payments globally is lucrative. They earn from cardholders, through annual fees, interest and other stealthier charges, but also from merchants, such as retail shops and websites, who are charged hefty interchange fees.

They also make money from selling customer data. With increasing concerns around data privacy, many welcome the onset of Web 3.0, where data is shared independent of third parties.

In its 2020 annual report, Mastercard said, "Technological changes, including… cryptocurrency and blockchain technology…could result in new technologies that may be superior to, or render obsolete, the technologies we currently use in our programs and services. Moreover, these changes could result in new and innovative payment methods and products that could place us at a competitive disadvantage and that could reduce the use of our products."

Stablecoins such as tether tokens have the potential to be low-cost forms of payment because the use of blockchain means financial institutions and their eye-watering fees are kept out of the loop. It is little wonder that credit card companies and other financial institutions recognise the existential threat that cryptocurrencies pose.

Developments in cryptocurrencies mean that feeless or very ultralow fee transactions are being enabled, opening up their wider use. Tether tokens, for example, are already increasingly being used for micropayments.

Researchers at Germany's Bielefeld University believe subscription services, like Spotify and Netflix, may embrace the use of such crypto-enabled micropayments to offer access to smaller chunks of content.

It is the young who will usher in this new world.

One recent study of young people in Russia found that more than a quarter believed that, within five years, most stores would accept payments in bitcoin and that, within ten years, cryptocurrencies would be issued by the state and replace cash. In the UK, some 43.6% of millennial investors in a survey for law firm Michelmores said that cryptocurrency was a valid alternative to traditional banking.

If young people have anything to do with it, Elon Musk's prediction about paper money will be proven right and soon.

> **"Perhaps the most exciting use of cryptocurrencies is yet to be realised**

TALENT

The great cryptocurrency jobs boom

Whether they're provided by tiny startups or giant multinationals, the opportunities for crypto talent have never been so good

Alison Coleman

Cryptocurrencies aren't just creating buzz – they're creating jobs.

The technology may still be relatively new, but crypto is one of the world's fastest-growing industries. What's more, it's a huge draw for those who believe that decentralised financial systems can change the world. For them, the evolving sector offers job opportunities on a scale not seen since the emergence of the internet in the mid-1990s.

The surge in demand for crypto talent was fuelled by the growing interest of investment heavyweights such as BlackRock and Goldman Sachs, which in turn sparked new interest from companies in technology and finance. There is a new recognition that blockchain – the technology that underpins cryptocurrencies – is one of the most significant hi-tech developments of this generation.

Banks and other financial institutions are scrambling to open crypto departments to meet their clients' demands, reports Chris Mason, co-founder of private tutoring and research hub InCrypto.UK, noting that "there isn't enough skilled crypto talent to go around. For those who've made the move to understand blockchain and realise that this space will grow at an unprecedented pace, it's very hard to not want to be involved."

Mason says that his company has seen a significant increase in the number of people from the traditional financial world seeking private tuition on cryptocurrencies.

"Many of them are actually 'crypto sceptics' who feel that they have no choice but to get educated on the subject for fear of being left behind," he says.

The cryptocurrency boom has created jobs that span a variety of skills. Most job openings have been for programmers and software developers, with many adverts calling for 'hard skills' in languages such as Java, Python and C/C++.

But there are opportunities for non-techies. With the rapid emergence of decentralised finance, a large number of jobs have opened up for those with a background in legal or regulatory compliance. Companies are also seeking help in areas such as marketing: US crypto exchange Coinbase, for instance, is recruiting editorial talent to build its own media operation.

> **The industry is so new that a hunger for knowledge and an open mind tend to be common traits, over and above a long CV specialising in crypto**

Financial institutions (predominantly investment funds and banks) are the most prolific recruiters. But virtually any organisation looking to expand or build new projects in the crypto space is entering a war for crypto talent.

Although banking and fintech are the conventional industries from which people start a crypto career, many have entered the business after developing a genuine passion for the sector, perhaps as a hobby.

Katharine Wooller is managing director in the UK and Ireland for crypto wealth platform Dacxi – her third blockchain business. Having first purchased cryptocurrency three years ago, she created the Women Who Crypto community, a movement that encourages women to embrace crypto assets as a genuine wealth builder.

When she's recruiting, Wooller says she will prioritise candidates with a genuine interest in crypto, who've been learning and investing in their spare time as a side hustle, over applicants with a traditional banking or IT background.

"The industry is so new that a hunger for knowledge and an open mind tend to be common traits, over and above a long CV specialising in crypto," she says.

For Wooller, the industry's biggest challenges are the rate of growth and the speed of change.

"As with all crypto businesses, we are in the early stages of adoption of the technology globally. Much of my day is about educating retail investors and traditional financial businesses. You can expect, therefore, to spend a lot of time in educator mode," she says.

Although the cryptocurrency market and blockchain technology are intrinsically linked, the latter is being used in a much broader range of applications. This opens up career options for candidates from an increasingly diverse range of backgrounds.

Tamara Haasen made an unconventional journey from political science and law – via studies in corporate governance and emotional intelligence – to become chief of staff at blockchain engineering company IOHK. This highlights the growing intersection between technology and people.

Governance, law and emotional intelligence are becoming core skills in a sector that relies on participation and consensus among thousands of people across the globe, just to have a functioning product, Haasen says.

"The creation of self-governing financial systems that operate ethically without the need for external regulators will require expertise in everything from relationship management to behavioural psychology," she adds.

The future dream blockchain CV is likely to belong to someone with skills in collaboration and people management; an understanding of behavioural psychology; and a passion for democratising financial and social systems. This is what Haasen finds most rewarding about her job: helping blockchain to deliver on its original promise of a people-powered financial and social system that can provide economic identities to the world's 1.7 billion unbanked people.

> **To be successful in the crypto field, you have to want to push boundaries. Don't just accept the status quo**

Ivan Soto-Wright began his career in portfolio construction before founding MoonPay, a provider of cryptocurrency payment solutions. He was driven to do so by his fascination with the evolving sector and its potential to democratise the financial system.

Established in 2018, his team comprises people with a wide range of backgrounds, including in industries such as fintech, ecommerce and software as a service; tech startups; and giants such as Google and Amazon.

"To be successful in the crypto field, you have to want to push the boundaries," Soto-Wright says. "Don't just accept the status quo; imagine what could be and then make the imagined possible."

Cryptocurrency values remain highly volatile: the recent rollercoaster rides of bitcoin and dogecoin serve as cases in point. For some finance professionals, the reputational risk of moving into the world of digital assets is high, yet many are still willing to take the risk.

"The cryptocurrency space has always been volatile, but that is only one facet of it," says Soto-Wright, noting the significant opportunities it offers to democratise finance, provide services to the unbanked and improve financial systems in terms of cost, speed and security.

"These are the factors that are driving so many people to consider a career in this sector," he says. "It really is the future of finance."

ACCORDING TO CRYPTO JOBS LIST, THE WEB'S BIGGEST LISTING SITE FOR CRYPTOCURRENCY AND BLOCKCHAIN JOBS, AS OF JUNE 2021:

1,064

companies were hiring for cryptocurrency jobs worldwide

2,944

different cryptocurrency jobs were listed

$89k

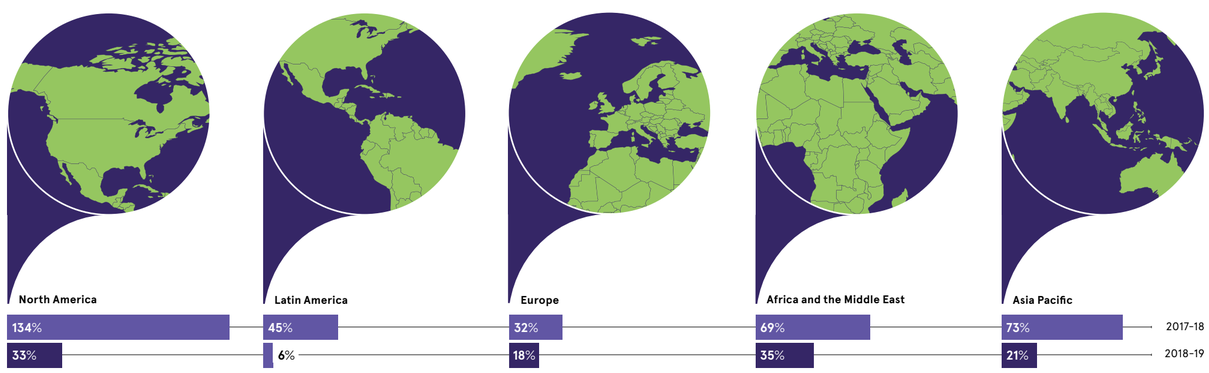
was the average annual salary listed for all blockchain jobs

Crypto Jobs List, 2021

EMPLOYMENT OPPORTUNITIES IN CRYPTOCURRENCY ARE STILL GROWING, BUT THE GROWTH HAS BEEN SLOWING

Cambridge Centre for Alternative Finance, 2020

Industry-level job growth in the crypto industry



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