

April 21, 2022 04:00 AM GMT

## Cryptocurrency | Global

## Buying a Coffee with Crypto

It is becoming easier to pay for everyday items with cryptocurrency through debit cards, payment apps and other tech. High Bitcoin transaction costs can be eliminated with a scaling solution called the Lightning Network. A recent announcement may allow most large retailers in the US to accept crypto. So can bitcoin become a widely used currency?

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**Make it easy and they will come.** Today few people use bitcoin or other cryptocurrencies to pay for everyday goods. There are two main logistical hurdles: transaction costs are high, and the merchants selling goods don't accept cryptocurrency as a medium of payment. That is now changing. At the [Bitcoin 2022 conference](#), the payments company Strike announced a partnership with NCR and Blackhawk, which could mean that a large number of physical stores, restaurants and cafes in the US will be able to accept bitcoin payments in the near future. The press headlines focused on Strike's partnership with online merchant Shopify now also accepting bitcoin payments, but we think the other partnerships affecting physical stores are a much more significant milestone in the story and evolution of bitcoin usage as a medium of payment. Of course, these companies will need to convince consumers to give up their bitcoin for goods and services too.

**Aren't transaction costs too high?** The average fee to transact bitcoin on the underlying blockchain is around \$1.50, which may sound low, but that fee is highly variable and dependent on demand. For example, the average fee was as high as \$60 in April 2021 when bitcoin was trading above \$60k. If you want to buy a \$5 coffee, paying a 30% fee just doesn't make sense. This is where alternative scaling solutions come in, which reduce some of the computational load for the underlying Bitcoin blockchain system by sending only some transactions to be checked by the [miners](#). The fee to send a bitcoin transaction using the [Lightning Network](#) is close to zero, making it much more practical for small payments that would otherwise be made using a debit card. Strike's proposed payment system is utilising the Lightning Network.

**Do shops accept bitcoin?** Rising consumer interest in the crypto markets has mainly been related to the exponential asset gains. As crypto is considered a digital currency for the internet, [some online retailers](#) have been accepting bitcoin and other cryptos for several years, but the list has remained limited so far. [Only 8 out of the top 500](#) online retailers accept bitcoin today.

We think that physical store acceptance of crypto is more important to monitor, as over 85% of sales in the US occur in stores rather than online. In our

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investigations, however, many stores that are widely reported in the press to accept crypto do not do so today, as they were initially part of trials that ended. Starbucks is one of the largest retailers that does accept crypto in its stores, after teaming up with Bakkt last year to offer crypto payment top-ups through its app. Through Flexa and Gemini Pay the following US retailers allow direct crypto payments: Barnes & Noble, Baskin-Robbins, Bed Bath & Beyond, Nordstrom and Office Depot and The Coffee Bean & Tea Leaf. A third of their transaction volumes recently have been using bitcoin, 25% in Ether and 12% in Dogecoin.

**What tech do stores need?** In the store, there are three main elements that crypto companies are working on to facilitate consumer payments:

- 1) the card, mobile app or gift card used by the consumer;
- 2) the payment terminal; and
- 3) the back end payment processing infrastructure.

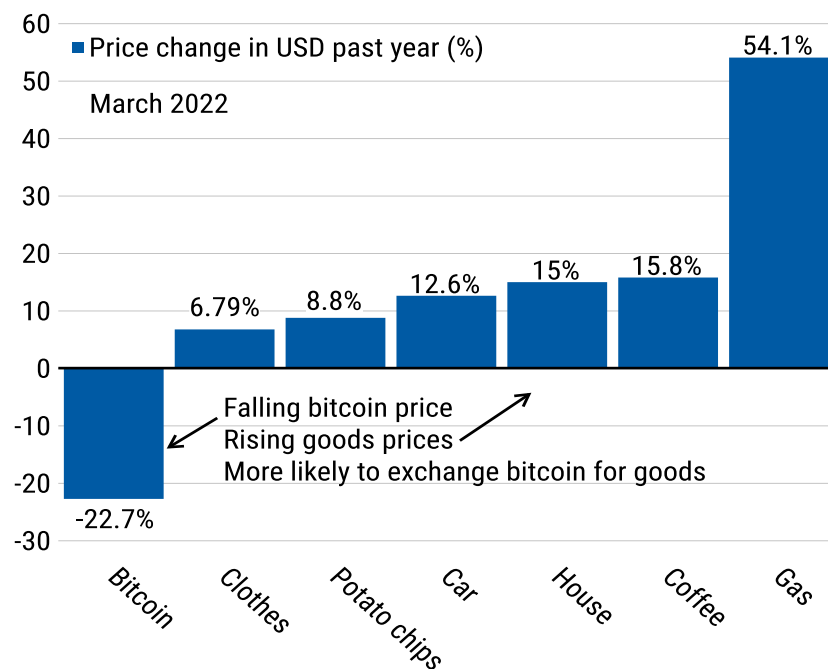
Strike works with mobile payment apps, where users may soon be able to go to a payment terminal using NCR software and [scan a QR code](#) on their phone to pay. [One in six point of sale \(POS\) devices globally use software](#) provided by NCR, so this announcement is significant even if only a small proportion of retail shops choose to add the crypto functionality.

Strike will allow consumers and merchants to pay and receive in both bitcoin and US dollars. The payment processing and settlement will be handled by Strike through the Lightning Network (see [Exhibit 5](#) inside for details). In essence, Strike is directly competing with [Visa Direct](#), which offers real time settlement. The main difference for merchants will be charged a much lower transaction fee, while the benefit for the consumer is that they can, if they want, host their bitcoin on a private, secure network, allowing an element of privacy associated with their transaction. There are advantages and disadvantages with using crypto for payments in this way, which we will explore in future reports.

**Why give up bitcoin when its price is going up?** When consumers exchange US dollars for a good, they value the good more than they value the US dollar they are giving up. Using bitcoin as a currency should work in the same way:

consumers who exchange bitcoin for a good or service expect the value of that good to go up relative to holding onto their bitcoin. This is what we have seen on the past year. [Exhibit 1](#) shows that bitcoin's price fell over 20%, while goods prices rose in US dollar terms, such as gas rising as much as 40% and coffee rising by 12%. In the past year, therefore, it has been better for consumers to give up bitcoin for goods, as US dollar purchasing power fell. In contrast, in 2019, these same goods prices were stable or down, while bitcoin rose by almost 80% – it was better to hold onto bitcoin than exchange for goods. In a crypto bull market, using bitcoin as a currency for goods may be considered a high hurdle to overcome.

**Exhibit 1:** Consumers are going to be more willing to give up crypto for goods if bitcoin prices are falling in USD terms, as goods prices rise



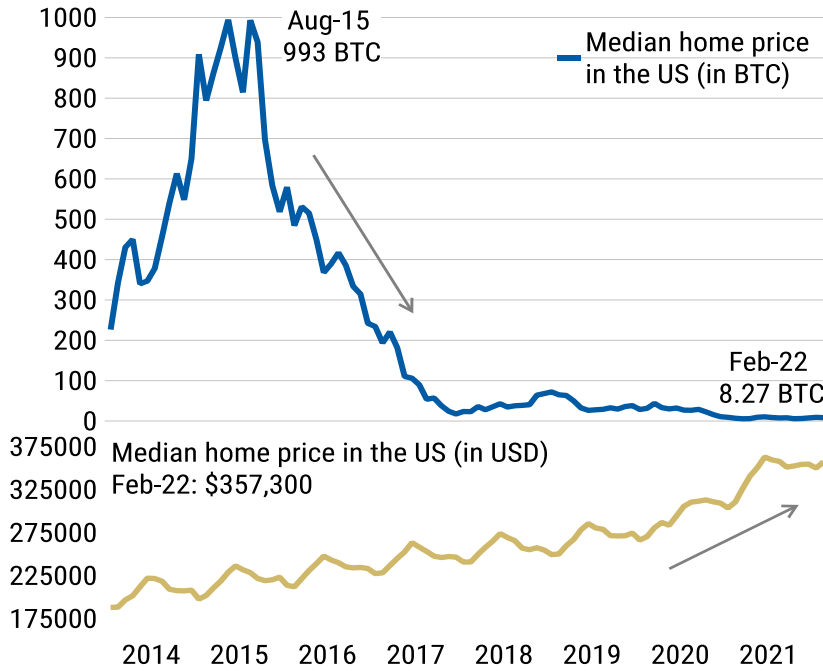
Source: Macrobond, Morgan Stanley Research

**So far we have not seen many sellers pricing goods in bitcoin.** Websites that list goods, services or real estate available to buy using cryptocurrency are still typically pricing the goods in US dollars or other fiat currencies and allowing the buyer to pay an equivalent value in crypto. Today that is mostly because bitcoin's price remains relatively volatile. Strike's proposal will allow merchants to receive US dollars, exchanged at the point of the transaction, meaning the merchant is not obliged to hold or manage bitcoin on their balance sheet and can stay away from the volatility.

It is this rapidly changing purchasing power of bitcoin or other cryptos that may entice or discourage consumers from exchanging crypto for goods and services. For example, in 2021, the median home price in the US rose by 15% when priced in US dollars but fell 28% when priced in bitcoin. The defined and slowing money supply growth of bitcoin versus the rising and theoretically unlimited money supply of the US dollar has affected their relative purchasing power. [Exhibit 2](#) shows that the most dramatic change in purchasing power of bitcoin can be seen over 2015-2017, when the median home price fell from 993 BTC to 17 BTC.

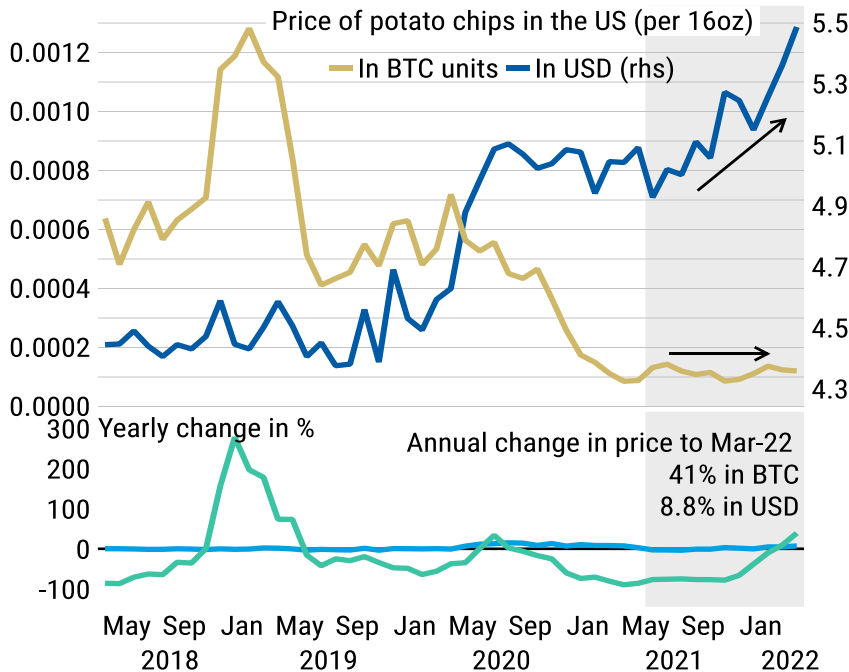
**Inflation and bitcoin.** The US Bureau of Labor Statistics publishes monthly prices of various goods in US dollars – a set of statistics many have been watching closely as inflation has been rising. In the year to March 2022, the price of potato chips in US dollars rose 8.8%, while the price of potato chips in bitcoin rose 41% ([Exhibit 3](#)). This historical volatility of goods priced in bitcoin has been a deterrent to the use of bitcoin as a currency (alongside a number of other logistical reasons). However, could the growing ability of merchants to accept crypto, via [crypto cards](#) or through current payment terminals, eventually lead to a fall in crypto volatility?

**Exhibit 2:** US homes priced in bitcoin vs homes priced in US dollars



Source: Macrobond, Morgan Stanley Research

**Exhibit 3:** Price of potato chips in US dollars and priced in bitcoin – bitcoin prices are more volatile but bitcoin has gained purchasing power for most of the time since 2019



Source: Macrobond, Morgan Stanley Research

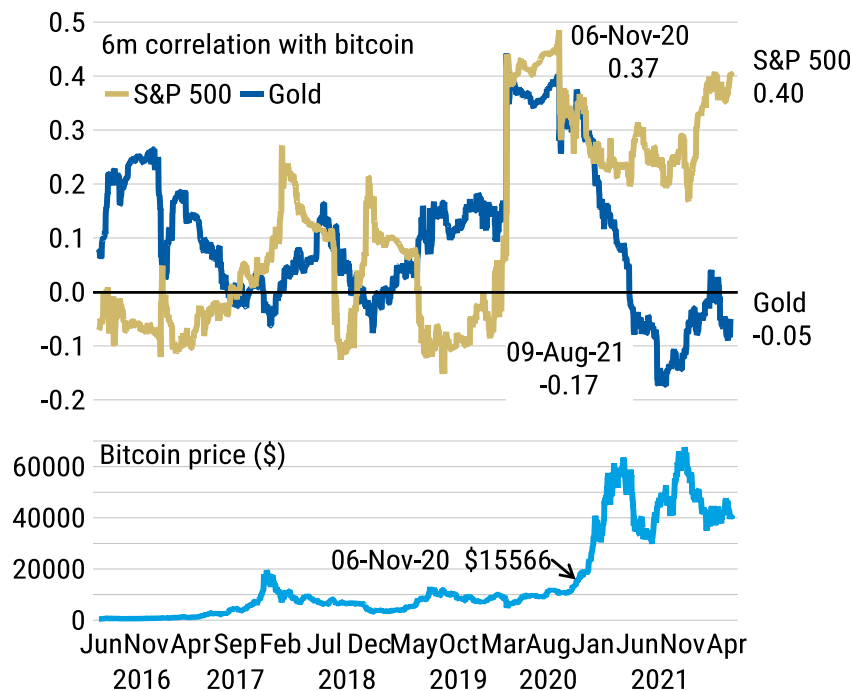
**Isn't paying with bitcoin a taxable event?** The US considers cryptocurrency as property for tax purposes, so users will have to pay tax if they dispose of bitcoin at a profit, creating a hurdle for consumers to use their bitcoin (or other cryptos) for payments. This is why we think the first step towards mass adoption of crypto as a means of payment will be through stablecoins, where their value is

typically held stable versus the US dollar. Some senators have proposed the [Virtual Currency Tax Fairness Act](#), which would exempt personal transactions from tax where the gains are less than \$200, but this proposal may come under considerable scrutiny as it would directly imply that crypto is a legitimate competitor currency to the US dollar.

**Who is involved?** There are a growing list of cryptocurrency companies offering crypto payment services, and many have teamed up with exchanges or traditional financial companies. We list a few examples here in a variety of service categories. Strike, BitPay and Gemini Pay with Flexa are focused on retail merchants. Bakkt has been offering crypto rewards for service providers such as hotels. FIS' Worldpay will offer its merchants the ability to settle payments in USDC, the USD stablecoin. According to [i2c](#), there are over 5 million crypto cards issued, some of which we list in [Exhibit 9](#) – many are attached to the Visa and Mastercard networks, so are widely accepted, and some offer crypto rewards. Last year Visa allowed Crypto.com to send USDC to Visa to settle a portion of its obligations for its crypto card. Few traditional banks are currently involved in crypto [as we showed here](#), but many crypto companies offer bank-like services.

**Into the metaverse.** A last thought on crypto for payments. Crypto is already used as currency in the digital asset world – you mostly need ETH to purchase an NFT or the platform's crypto to buy [digital land](#). As more brands move to advertise in the metaverse, there may be an increasing need to accept a variety of payment methods, including crypto. For example, luxury clothing brand Philipp Plein, which recently purchased digital land, started accepting 20 cryptocurrencies in its online and physical stores in August 2021, [saying](#) “we now take \$100,000 in crypto every day”. Their large crypto transaction payment volume seems like an outlier today but may not be in coming years. A [recent Visa study](#) found that 24% of small businesses in 9 different countries plan to start accepting crypto payments this year.

**Exhibit 4:** Bitcoin's correlation with equity indices has remained high



Source: Macrobond, Morgan Stanley Research

**Bitcoin's correlation with equities to stay high.** This report is about the long-term transition towards payments and settlements using digital and cryptocurrencies instead of fiat currencies like the US dollar. Most market participants focus on the short-term price action, which is still highly related to global risk appetite. The correlation between bitcoin and equity indices has remained high (Exhibit 4) as both were driven by central bank stimulus, which is slowly being taken away. Crypto trading volumes are around half of the peak in November 2021, while NFT and Metaverse land prices and sales have remained low versus the respective peaks earlier in the year and late last year. As an example, an NFT of the first Tweet on Twitter was sold for \$2.9 million last year, but this week only received a bid at auction at less than 0.01% of that value. The speculative and leveraged market is affected by rising US interest rates and less stimulus. These are the times to pay attention to technological developments rather than hour-to-hour price action.



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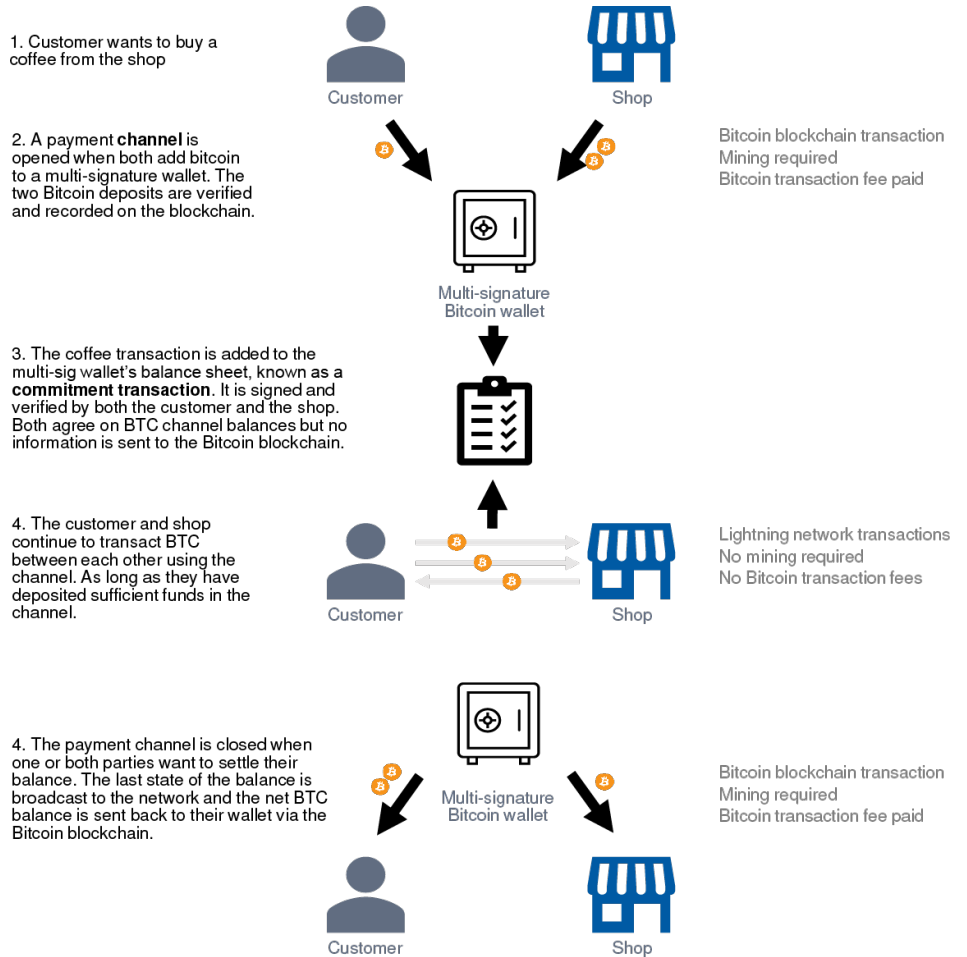
## The Bitcoin Lightning Network

A problem with using Bitcoin for payments on a mass scale is that there is a limit to the number of transactions that can be approved every second (see [Exhibit 2 here](#)). The limitation stems from the amount of information that can be checked and stored in every block. So why not just increase the amount of information per block? That was [hotly debated in the early years of Bitcoin](#) and even led to a divide within the Bitcoin development community.

Today, it has become evident that scaling solutions that take some of the computational burden away from the main Bitcoin blockchain are required for bitcoin to be used more widely as a means of payment. It isn't just Bitcoin that has issues that limit its ability to scale. A large number of cryptocurrency companies and projects are developing approaches to allow Ethereum's blockchain to also scale.

The Lightning Network is the most popular Bitcoin scaling approach and was [first described in 2015](#). [Exhibit 5](#) is a simplified diagram of how the Lightning Network operates. In summary, a relatively high fee is only paid when a user opens up a Lightning Network channel and when they close it, as the Bitcoin miner is required to approve the transactions. In between as many transactions as wanted can be sent with negligible cost. Note that the Lightning Network is now being applied to other cryptocurrencies too – including stablecoins.

**Exhibit 5: Payments using the Bitcoin Lightning Network**



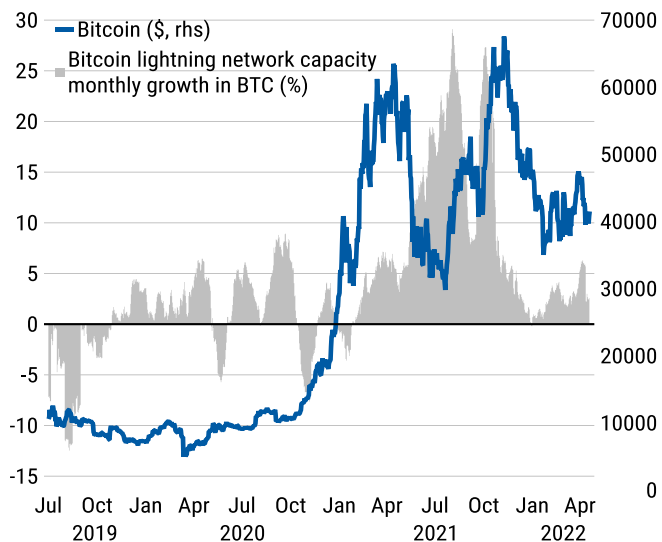
Source: Bitcoin Lightning Network (2016), Morgan Stanley Research

Here we don't show what happens if a customer wants to send bitcoin to someone they don't have an open payment channel with. That is possible as the network will find the fastest way of connecting the two parties through all the other payment channels open on the network. The system, according to its creators, is considered to be trustless as the transaction will not occur if one participant in the chain doesn't pass on the bitcoin to get to the final recipient.

Bitpay, Robinhood and others have recently announced plans to integrate the Lightning Network with their applications. It will reduce fees dramatically for users but may lead to elements of centralisation. As users need to open up a payment channel with another party, most likely they will open up with a crypto company or payment processor, such as the creators of these apps. These then act as the intermediary in the Lightning Network.

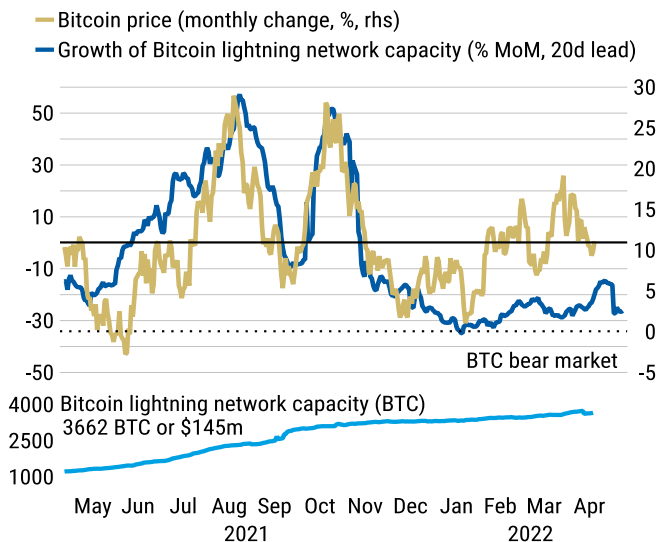


**Exhibit 6:** Bitcoin Lightning Network recent growth rate



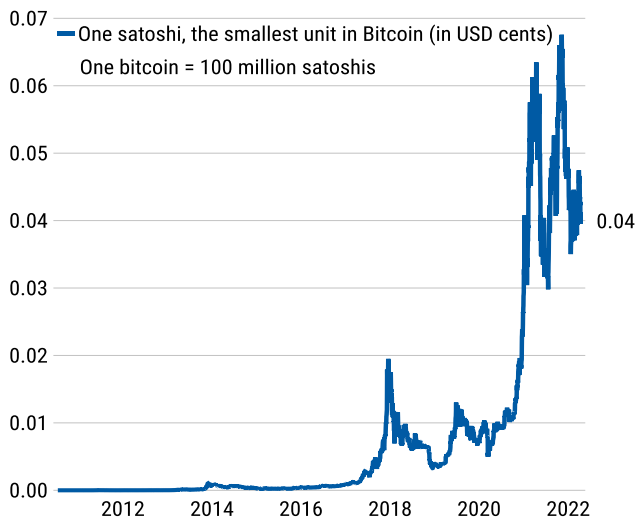
Source: Bitcoin Visuals, Morgan Stanley Research

**Exhibit 7:** Bitcoin Lightning Network tends to track prior bitcoin price changes



Source: Bitcoin Visuals, Morgan Stanley Research

**Exhibit 8:** The smallest unit of bitcoin that can be transacted is worth 0.04 US cents



Source: Macrobond, Morgan Stanley Research

# Cryptocurrency cards

**Exhibit 9: Example cryptocurrency debit and credit cards**

Issuing Company	Date launched	Related crypto	Cryptos offered/supported	Mode of Payments to Customers	Extra info	Interest rate	Charges	Reward
<b>Visa debit card</b>								
Crypto.com	18-Mar-21	CRO	Supports 90 cryptos	Crypto wallet	No maximum number of transactions per month	8% CRO rewards on card spending	No cost	1) 10% on Airbnb and Expedia purchases. 2) 100% rebate for subscriptions including Amazon Prime, Netflix and Spotify Earn either 1% back in BTC or 4% back in XLM whenever a purchase is made
Coinbase	04-Apr-19		BTC, ETH, LTC, BCH, BAT, REP, ZRX or XLM	Crypto wallet, must have a Coinbase account	Daily spending limit of \$2,500 and a daily \$1,000 ATM withdrawal limit	Earn up to 4% back in rewards	Cryptocurrency liquidation fee of nearly 2.5% and a 2% international transaction fee	
Wirex	09-Mar-21	WRX	Crypto to fiat (GBP, EUR & USD)	Crypto wallet, Only in WRX	Need to pay £29.99 per month to unlock the highest cashback rates. Allows you to store, transfer, and exchange between crypto and fiat	2% to 8% back in X-Points for purchases	To earn 2% is free, 4% will cost \$10 a month or \$102 annually. To earn 8% back cardholders will need to pay \$30 monthly or \$306 annually	Cryptoback™ rewards pay back up to 8% in X-Points on all spending, online and offline
Swipe	02-Aug-20	SXP	Supports 7 cryptos	Swipe Wallet	Solid integration with Apple Pay, Samsung Pay and Google Pay	1-5% Cryptoback	2% fee for this service, unless you're a State card holder, in which case the fee is waived. There is also a \$25 to \$50 cost for acquiring the card in the first place	4 different cards with different corresponding rewards
Shakepay	03-Mar-22		BTC, ETH, Zcash and all Gemini coins	2% back in Bitcoin	Shakepay exchange only supports bitcoin and ether	1% offered as the base cashback rewards rate	No Charges	1-3% cashback rewards denominated in cryptocurrency
Monolith	28-Jun-18		ETH, DAI, MATIC, TKN, USDC, USDT	Ethereum (ETH) contract wallet	Can be added to PayPal, Curve, and Google Pay.	No Cashback on Purchase	Up to 2% fee to load up the Monolith Card.	No cashback on your purchases
Plutus	06-Mar-18	PLU	ETH, PLU	Plutus Wallet	Free trading fees with membership	3% cashback on purchases made with the Plutus Card	1.75% trading fees for start plan	3% cashback, Plutus Perks
Unbanked (formerly Blockcard)	12-Jan-22	TERN	Supports 13 cryptos	Funds deposited to Blockcard are converted to TERN	TERN must be staked in order to gain access to the best cashback rewards tiers	(1-6)% rewards in TERN	Monthly fee if the card is not used for at least \$750 in purchases. High TERN-to-USD exchange rates	No Rewards
TenX		TenX	BTC, ETH, LTC, PAY	Funds deposited to Blockcard are converted to TenX	The issuing bank for the TenX Visa card faced solvency issues in 2020	No Cashback on Purchase	The issuing bank for the TenX Visa card faced solvency issues in 2020	No Rewards
Binance	13-Jul-20	BNB	Supports 30 cryptos	Funds deposited to Blockcard are converted to BNB	Cardholders must have a balance of 600 Binance Coins (BNB) and receive their cashback reward in BNB	8% cashback	Up to a 0.9% transaction fee for transactions and ATM withdrawals	No Rewards
CoinZoom	18-Mar-20		Supports 52 cryptos	CoinZoom Wallet	Offers instant transfer of Crypto to US dollars	1-5% back in Crypto on every purchase.	One-time \$10 fee for most cards	Required ZOOM Holdings to earn Rewards. 1-5% back in ZOOM, the native token based on the card held
<b>Mastercard debit card</b>								
Nexo	12-Apr-20	NEXO	Supports 17 cryptos	Crypto wallet	Can only be used by borrowers on the Nexo platform	2% cashback on all purchases	The interest rates on crypto and fiat currencies range from 6% to 12%, depending on distributions and assets	2% cashback on all purchases
Bitpay	06-Jun-20		BTC, ETH, BCH, DOGE, SHIB, LTC, XRP, DAI, USDC, BUSD, WBTC, USDP, GUSD	ACH credit, cryptocurrency, direct deposit	No proprietary token	No Cashback on Purchase	Card costs \$10	No Rewards
Uphold	05-Mar-20		Supports 50 cryptos + fiat + gold, silver, platinum, palladium	Uphold Wallet	No need to convert cryptocurrency to fiat currency before using the card	2% cashback available to users	Zero commissions but fees are hidden in the exchange rates	No Rewards
Club Swan	18-Apr-21		BTC, ETH, LTC, BCH, USDT, BAT, PAX, USDC, EOS	Crypto wallet	Largest coverage amongst any card provider, with over 180+ countries.	40% on your travel, shopping, and experiences.	\$129 joining fee	Discounts on travel, cash rewards
Voyager	Not launched Yet	VGX	Only supports company's own VGX and USDC	VGX Wallet	Lets you swap USD to USDC at a 1:1 value with no additional fees	9% in USDC if hold \$100 USDC balance	Not launched yet	Not launched yet
<b>Visa credit card</b>								
BlockFi	23-Sep-21		BTC, ETH, LTC, PAXG, USDC, USDT, GUSD, and PAX	Bank account	Cardholders can also enjoy an upgraded 2% rewards structure when they spend more than \$50,000 each year	Earn 1.5% back in crypto on every single purchase.	14.99% - 24.99% (variable)	Earn 3.5% crypto rewards on all purchases in the first 90 days of card ownership, up to \$100 in crypto
Upgrade	21-Jul-21		Only supports company's own currency NYDIG	Bank transfer and US dollar	This crypto card combines features of credit cards and personal loans	Earn unlimited 1.5% in Bitcoin on all purchases	No prepayment penalty, late fees, or penalty APR (8.99% - 29.99%)	No Rewards
Crypterium	27-Jun-19		Supports 10 + cryptocurrencies	Crypterium Wallet	Can send crypto to practically any bank account in the world	No Cashback on Purchase	N/A	No Rewards
<b>MasterCard credit card</b>								
Gemini	25-Sep-21		Supports 70 cryptocurrencies	Crypto wallet	Fees on transactions range from 0.5% to about 4%, depending on your specific card.	1%-3% back in crypto on every single purchase	12.99% - 23.99% (Variable)	3% back on dining (up to \$6,000 spent, then 1%) 2% back on groceries 1% back on all purchases
SoFi	10-03-21		Supports 30 cryptocurrencies	Bank transfer	Cell Phone Protection (insurance coverage up to \$1000)	Earn 2% unlimited cash back when you redeem it	Charge \$10 or 5% of each balance transfer and \$10 or 5% of each cash advance	No Rewards

Source: Company websites, Morgan Stanley Research



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(as of March 31, 2022)

The Stock Ratings described below apply to Morgan Stanley's Fundamental Equity Research and do not apply to Debt Research produced by the Firm. For disclosure purposes only (in accordance with FINRA requirements), we include the category headings of Buy, Hold, and Sell alongside our ratings of Overweight, Equal-weight, Not-Rated and Underweight. Morgan Stanley does not assign ratings of Buy, Hold or Sell to the stocks we cover. Overweight, Equal-weight, Not-Rated and Underweight are not the equivalent of buy, hold, and sell but represent recommended relative weightings (see definitions below). To satisfy regulatory requirements, we correspond Overweight, our most positive stock rating, with a buy recommendation; we correspond Equal-weight and Not-Rated to hold and Underweight to sell recommendations, respectively.

STOCK RATING CATEGORY	COVERAGE UNIVERSE		INVESTMENT BANKING CLIENTS (IBC)			OTHER MATERIAL INVESTMENT SERVICES CLIENTS (MISC)	
	COUNT	% OF TOTAL	COUNT	% OF TOTAL IBC	% OF RATING CATEGORY	COUNT	% OF TOTAL OTHER MSC
<b>Overweight/Buy</b>	<b>1438</b>	<b>41%</b>	<b>366</b>	<b>45%</b>	<b>25%</b>	<b>630</b>	<b>41%</b>
<b>Equal-weight/Hold</b>	<b>1539</b>	<b>44%</b>	<b>365</b>	<b>45%</b>	<b>24%</b>	<b>712</b>	<b>46%</b>
<b>Not-Rated/Hold</b>	<b>0</b>	<b>0%</b>	<b>0</b>	<b>0%</b>	<b>0%</b>	<b>0</b>	<b>0%</b>
<b>Underweight/Sell</b>	<b>552</b>	<b>16%</b>	<b>87</b>	<b>11%</b>	<b>16%</b>	<b>207</b>	<b>13%</b>
<b>TOTAL</b>	<b>3,529</b>		<b>818</b>			<b>1549</b>	

Data include common stock and ADRs currently assigned ratings. Investment Banking Clients are companies from whom Morgan Stanley received investment banking compensation in the last 12 months. Due to rounding off of decimals, the percentages provided in the "% of total" column may not add up to exactly 100 percent.

### Analyst Stock Ratings

Overweight (O or Over) - The stock's total return is expected to exceed the total return of the relevant country MSCI Index or the average total return of the analyst's industry (or industry team's) coverage universe, on a risk-adjusted basis over the next 12-18 months.

Equal-weight (E or Equal) - The stock's total return is expected to be in line with the total return of the relevant country MSCI Index or the average total return of the analyst's industry (or industry team's) coverage universe, on a risk-adjusted basis over the next 12-18 months.

Not-Rated (NR) - Currently the analyst does not have adequate conviction about the stock's total return relative to the relevant country MSCI Index or the average total return of the analyst's industry (or industry team's) coverage universe, on a risk-adjusted basis, over the next 12-18 months.

Underweight (U or Under) - The stock's total return is expected to be below the total return of the relevant country MSCI Index or the average total return of the analyst's industry (or industry team's) coverage universe, on a risk-adjusted basis, over the next 12-18 months.

Unless otherwise specified, the time frame for price targets included in Morgan Stanley Research is 12 to 18 months.

### Analyst Industry Views

Attractive (A): The analyst expects the performance of his or her industry coverage universe over the next 12-18 months to be attractive vs. the relevant broad market benchmark, as indicated below.

In-Line (I): The analyst expects the performance of his or her industry coverage universe over the next 12-18 months to be in line with the relevant broad market benchmark, as indicated below.

Cautious (C): The analyst views the performance of his or her industry coverage universe over the next 12-18 months with caution vs. the relevant broad market benchmark, as indicated below.

Benchmarks for each region are as follows: North America - S&P 500; Latin America - relevant MSCI country index or MSCI Latin America Index; Europe - MSCI Europe; Japan - TOPIX; Asia - relevant MSCI country index or MSCI sub-regional index or MSCI AC Asia Pacific ex Japan Index.

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