

Intro to Bitcoin / Cryptocurrencies

Curriculum Written By James Redelsheimer

Live Webinar: April 14th, 2022



Instructor Bio

James Redelsheimer has been an AP and Regular Economics teacher at Robbinsdale Armstrong High School in Plymouth, Minnesota since 2003. James is a graduate of St. Olaf and received his Master's degree at the University of St. Thomas. He received the 3M Economics Educator Excellence Award from the Minnesota Council on Economic Education, and was named Visa's Practical Money Skills Innovative Educator of the Month.

James enjoys traveling and has been a guest lecturer in the economics department at the Batumi State University in The Republic of Georgia, and has received travel grants and fellowships for study travel to learn about the economies of Japan, China, Turkey, Germany, Korea, among others, and studied economics of the environment in Costa Rica. He currently serves as an AP Economics reader, grading AP Economics exams. He enjoys teaching Economics because it relates to students' everyday lives.



Intro to Bitcoin / Cryptocurrencies





OBJECTIVE

Define “cryptocurrency” and understand why it exists, how it works, and how/why investors are getting exposure to crypto.

Agenda:

1

Birth of cryptocurrency

2

Bitcoin & blockchain technology

3

Current state of crypto

4

Wrap-up + Survey

“Crypto” from **crypt**ography

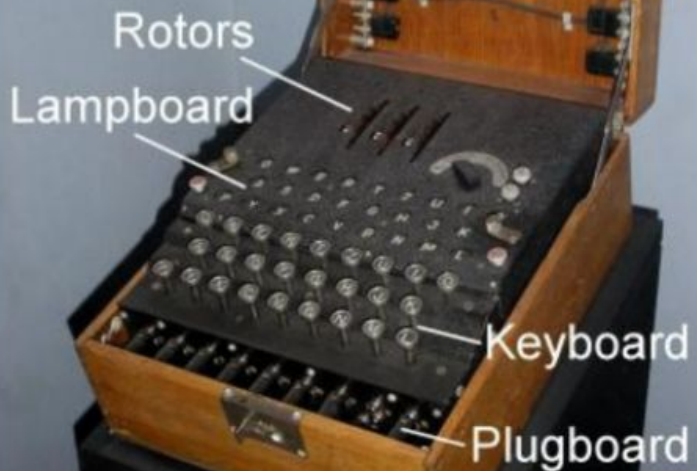
(SECRET/HIDDEN)

(WRITING)



Cryptography is the science of taking data & securing it during transfer or storage by converting it into an uncrackable code (encryption) that only someone with the key can decipher (decryption). It is an essential aspect of modern data security.

ENIGMA
MACHINE:



VOCAB:

CRYPTOGRAPHY

CIPHER

DECIPHER

Bitcoin: 1st form of cryptocurrency

1

Created in 2009

Satoshi Nakamoto is listed as author of the whitepaper in 2008.

[Satoshi's White Paper link](#)

Built upon ideas and writings of cypherpunks.

2

Decentralized

Transactions are carried over a decentralized network called the Bitcoin blockchain. This means that no one person/entity owns or controls it.

3

Blockchain technology*

A system for recording information in a way that makes it nearly impossible to change, hack, or cheat because it's secured by advanced cryptography.

4

Capped at 21 million

Only 21 million bitcoins will ever exist. 2140 is the year predicted when all BTC will be in circulation.

ANNALS OF MONEY DECEMBER 13, 2021 ISSUE

HALF A BILLION IN BITCOIN, LOST IN THE DUMP

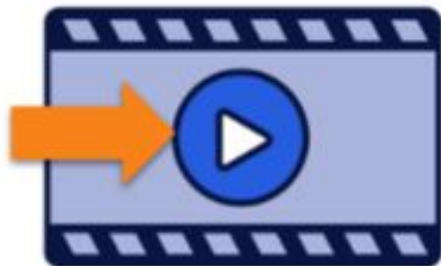
*For years, a Welshman who threw away the key to his
cybercurrency stash has been fighting to excavate the local
landfill.*

By D. T. Max
December 6, 2021



[Link: Half a Billion, Lost in the Dump](#)

Let's start with the basics



What is this mysterious digital currency?
On the next slide, you'll watch a Two Cents video that will help you understand it better.



As you watch, listen carefully for key terms that help to explain Bitcoin. Be prepared to complete a matching pairs exercise after the video.

SHOULD
I BUY
BITCOIN?



El Salvador looks to become the world's first country to adopt bitcoin as legal tender

PUBLISHED SAT, JUN 5 2021:4:56 PM EDT | UPDATED MON, JUN 7 2021:6:37 PM EDT



MacKenzie Sigalos
@KENZIESIGALOS

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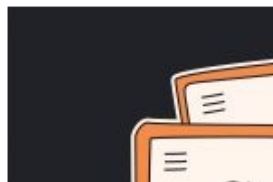
KEY POINTS

- El Salvador President Nayib Bukele plans to introduce legislation that will make it the world's first sovereign nation to adopt bitcoin as legal tender.
- Bukele broadcast his intentions on a video at the Bitcoin 2021 conference in Miami.
- Bukele said the country is partnering with digital wallet company, Strike, to build modern financial infrastructure using bitcoin technology.

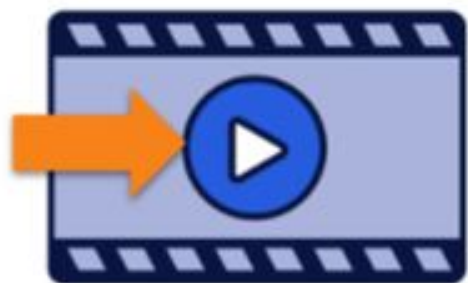


Squawk on the Street

UP NEXT | **TechCheck 11**



Learn more about the blockchain

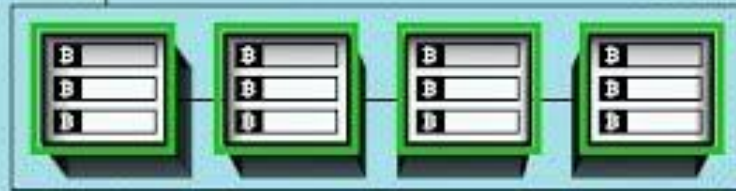


Let's dig in deeper on this concept of the blockchain. As you watch this video, be sure to pay particular attention to the role of the blockchain in regards to digital currencies.



Be prepared for a “fill in the blanks” after the video as a check for understanding.

BLOCKCHAIN



The transaction described in the video began with the consumer logging into their bitcoin **wallet** which they accessed using their **private** key, a unique combination of **letters** and numbers.

Their transaction was shared with everyone in the network and added to a shared list of recent transactions known as a **block**.

Every **10** minutes the newest block of transactions is added on or chained to all the previous blocks...that's how you get a **blockchain**.

To ensure that each block of transactions is verified, a subset of bitcoin's network joins a race to solve a very difficult **math** puzzle.

If they solve it first, their record of the block of transactions becomes the official **record**.

They are rewarded with **bitcoin** for their own and the network gets a new block of the chain.

The mining process will continue until the number of bitcoin in circulation hits **21** million which is expected in **2140**.

Beyonce and Jay-Z Exchange Bitcoin

A Hypothetical Bitcoin Transaction

Using everyone's favorite celebrity couple

1. Beyonce wants to send Jay-Z \$50,000 worth of BTC for his birthday. She asks Jay for his Bitcoin address (also known as a “**public key**”). Jay’s public key is linked to the exchange or crypto wallet he set up.



It looks something like this:

[3D94LKmtQuVG8JFB3F7cB7gWj614yG4CPg](#)

Jay keeps his **private key** in a secure place and does not share it with anyone, *not even with Bey!* He knows his private key is the only way to access and manage his crypto funds.



NOTE: Think of public and private keys like a username and password. One allows you to identify yourself for anyone publicly, while the other one allows you to prove it's really you so that you can unlock access.

Unlike a password though, a private key can never be reset or recovered if lost!

Pros

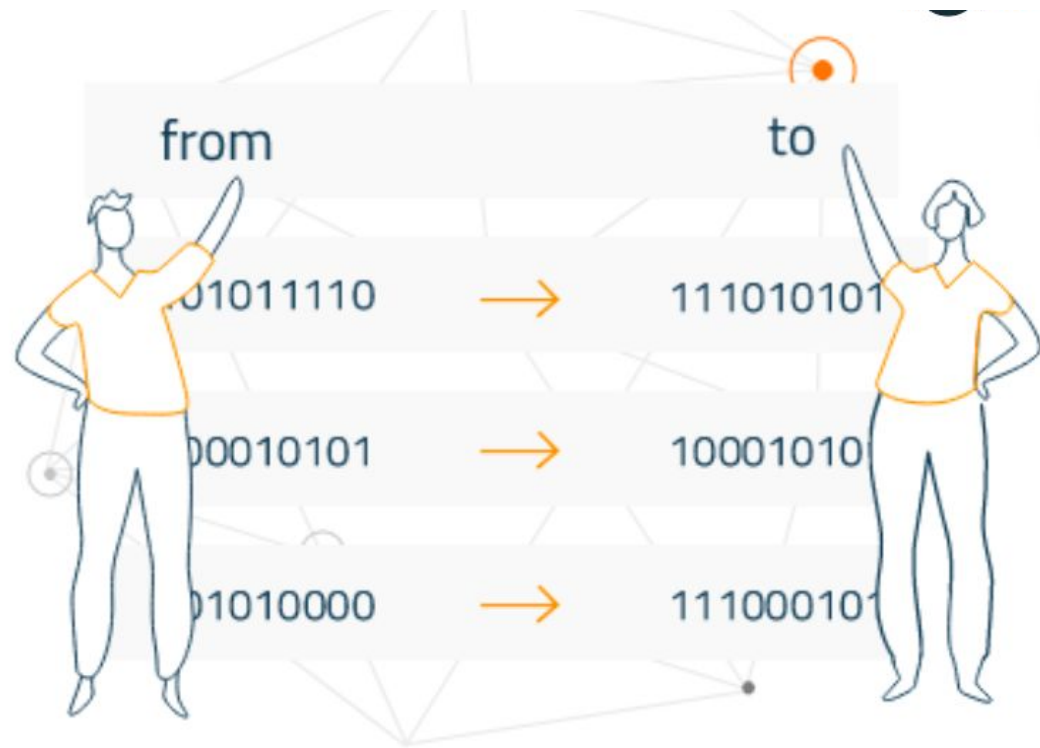
1. Transparency and user anonymity
2. Decentralized: peer to peer
3. Lower fees: Implications for the unbanked
4. Accessibility and liquidity
5. High return potential



1. Transparency and user anonymity

All Bitcoin transactions are public, traceable, and permanently stored in the Bitcoin network. Anyone can see the balance and all transactions of any address on this public ledger.

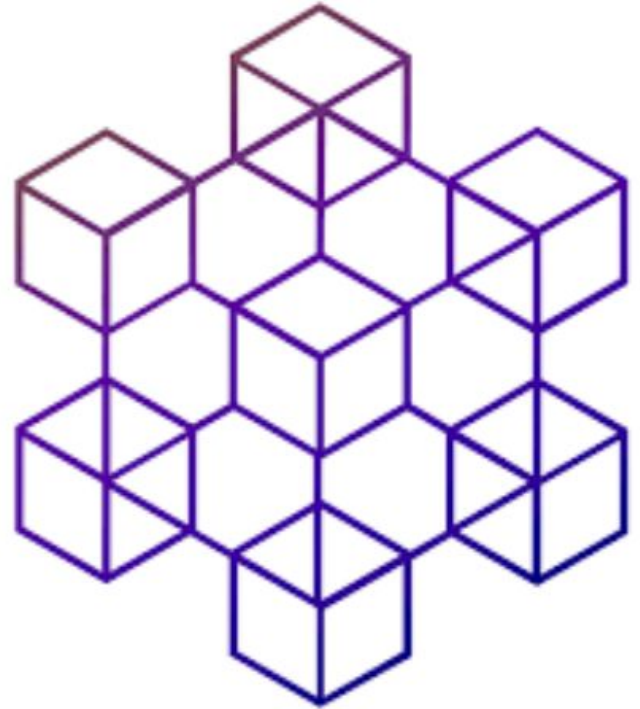
This is an unprecedented level of transparency that most people are not used to dealing with.



2. Decentralized: peer to peer

The blockchain functions in a decentralized way so that no single person or group has control—rather, all users collectively retain control.

Decentralized blockchains are immutable, which means that the data entered is irreversible.



3. Lower fees: Implications for the unbanked

Bitcoin does away with traditional banking fees. No account maintenance fees, minimum balance fees, overdraft charges, returned deposit fees, wire transfer fees, nor foreign transaction fees (among many others).

Bitcoin transactions have no intermediary institutions or government involvement, so the costs of transacting are generally* lower compared to those for bank transfers.



~~Fees~~

4. Accessibility and liquidity

Bitcoin provides global accessibility. It allows any business or individual to securely send and receive payments anywhere at any time, with or without a bank account.

Bitcoin is also highly liquid. Anyone can liquidate a large sum of Bitcoin at any moment in time with minimal discrepancies on most exchanges.



5. High return potential

If you were among the few people lucky enough to know about and believe in Bitcoin back in Dec 2011 and you had invested just \$1, the amount you would have today is \$16,395.84.

That's an ROI of 1,639,583.95%!

\$51,067.10 on 12/7/21

\$3.03 on 12/7/11

Cons

1. Volatility
2. No government regulations
3. Irreversible
4. Limited use and lack of scalability
5. High energy consumption / bad for environment.



1. Volatility

Cryptocurrency is a nascent industry, and as a result it's highly volatile. The price of BTC has moved wildly over the past few years.

At the start of 2021, it was trading below \$30,000 but suddenly started peaking in February and by April it almost doubled.

Later that month, it crashed to where it was in January. Its recovery started in June and by August it had crossed \$50,000. After more ups and downs, it hit an all time high of \$68,521 on 11/5/21.



2. No government regulations

Many crypto enthusiasts believe having no government regulation is a PRO. It sets cryptocurrency apart from the traditional financial sector and banking world. But, this means there's no equivalent to the Federal Deposit Insurance Corporation that would cover losses on your cryptocurrency account.

If your assets are stolen, you're out of luck!

There's no way to determine who is the rightful owner if 2 people have the same private key because Bitcoin addresses don't have conventional forms of ID associated with them like a first or last name, or government ID.



3. Irreversible

Bitcoin is designed in a way that changes how we're used to transacting, particularly with credit cards. Transaction reversibility, aka "chargebacks", is a process that's not possible for Bitcoin transactions because there's no third party interference in the management or deliverance of the funds. The transaction is managed solely between the sender and the recipient.

In situations where you've accidentally sent funds to an incorrect unknown Bitcoin address, it's nearly impossible to recover your funds.



4. Limited use and lack of scalability

Bitcoin has a scalability problem. There's a limited capacity to handle large amounts of transaction data on Bitcoin's blockchain network in a short span of time.

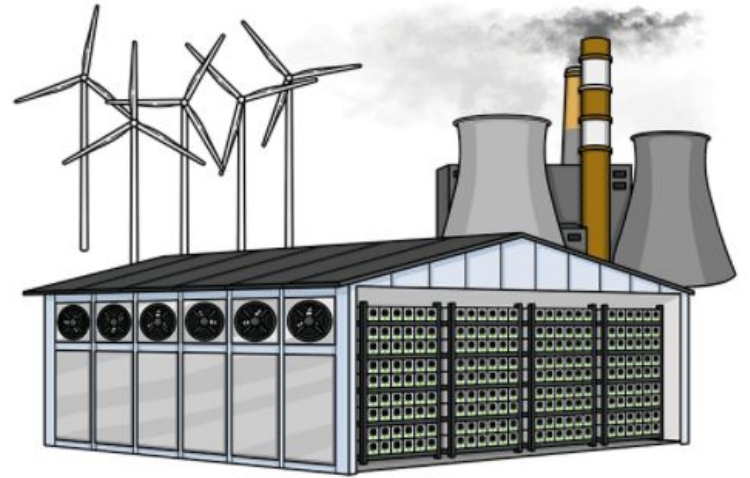
Increasing volume of trades causes a backlog. Miners grant priority to the transactions that offer the highest fees, which gets costly. This limits BTC use because if we all transacted in BTC daily, it would cause massive congestion to the network and fees would spike. This is why many experts now view Bitcoin as a store of value rather than a currency.



5. High energy consumption / bad for environment.

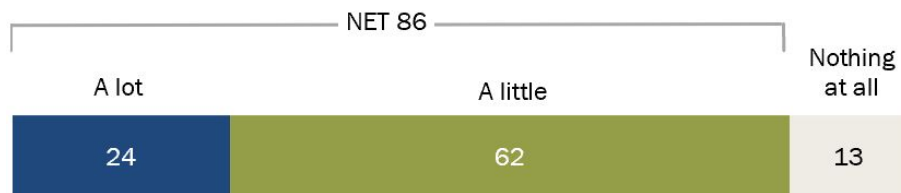
The Bitcoin network uses astonishing amounts of electricity. The process of creating Bitcoin consumes around 91 terawatt-hours of electricity annually, more than is used by Finland, a nation of about 5.5 million!

It requires highly specialized machines, a lot of money, a big space and enough cooling power to keep the constantly running hardware from overheating. That's why mining now happens in giant data centers rather than in people's homes. The energy usage of the Bitcoin network has increased about tenfold in just the past 5 years.



Nearly nine-in-ten Americans say they have heard at least a little about cryptocurrency ...

% of U.S. adults who say they have heard ____, if anything, about cryptocurrency such as Bitcoin or Ether



... and 16% say they have ever invested in, traded or used one themselves

% of U.S. adults who say they themselves ____, ever invested in, traded or used a cryptocurrency such as Bitcoin or Ether



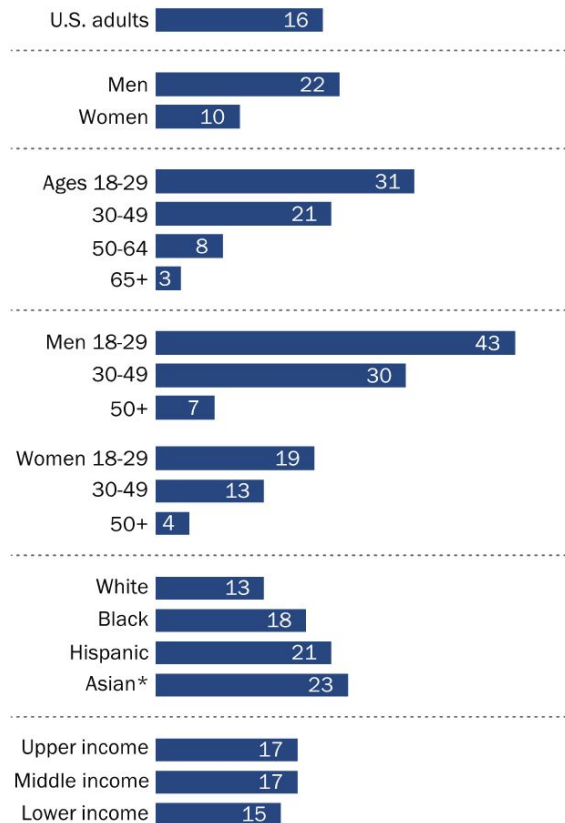
Note: The 14% of U.S. adults who said they had heard nothing at all about cryptocurrency, or gave no answer, did not receive the question about investing in, trading or using a cryptocurrency. Those who did not give an answer are not shown.

Source: Survey of U.S. adults conducted Sept. 13-19, 2021.

PEW RESEARCH CENTER

43% of men ages 18 to 29 say they have invested in, traded or used a cryptocurrency

% of U.S. adults who say they themselves have ever invested in, traded or used a cryptocurrency such as Bitcoin or Ether





apartment in Paris—take a look inside

to save their home from foreclosure

founder a \$400,000 'Shark Tank' deal

NEXT GEN INVESTING

Bitcoin launched 13 years ago this month—here are 8 milestones from the past year

Published Mon, Jan 3 2022 1:07 PM EST • Updated Thu, Jan 6 2022 12:22 PM EST



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