

Bitcoin: A New Internet Currency



Stephen Clayton

Senior Economic Education Specialist

Federal Reserve Bank of Dallas

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What is Bitcoin?

- A **peer-to-peer** internet currency that allows **decentralized** transfers of value between **individuals and businesses**.

Bitcoin vs. bitcoins

- **Bitcoin** is the system
- **bitcoins** are the units



Creating a currency from scratch

- Motivation
 - Distrust of financial institutions
 - Transaction costs
- Primary concerns
 - Transaction security
 - Double spends



Distrust of financial institutions

- Any noncash transaction requires a trusted third-party administrator—commonly a bank or financial service provider.
- The system forces participants to trust financial institutions that are not always trustworthy.

Transaction costs

- Traditional payments are revocable, even on irrevocable services.
- Financial institutions act as an arbitrator between counterparties in disputed claims.
- Arbitration costs are passed on to consumers.

Transaction security

- Two levels of verification
 - Source is legitimate
 - Coins are legitimate
- Public/private key verification ensures the legitimacy

Double spends

- If the money is just digital codes, why not copy and paste to make more money?
 - Timestamps
 - Hashes
 - Block chain

Double spends

- Timestamp
 - Each transaction is packaged and publically recorded in the order it was carried out.
- Hash
 - The time-stamped group of transactions are given a unique algorithmically derived number



Double spends

- Block chain
 - Transactions are recorded in a community-built record of all transactions that acts as a proof-of-work.
 - Computers connected to the network accept the longest chain as accurate.

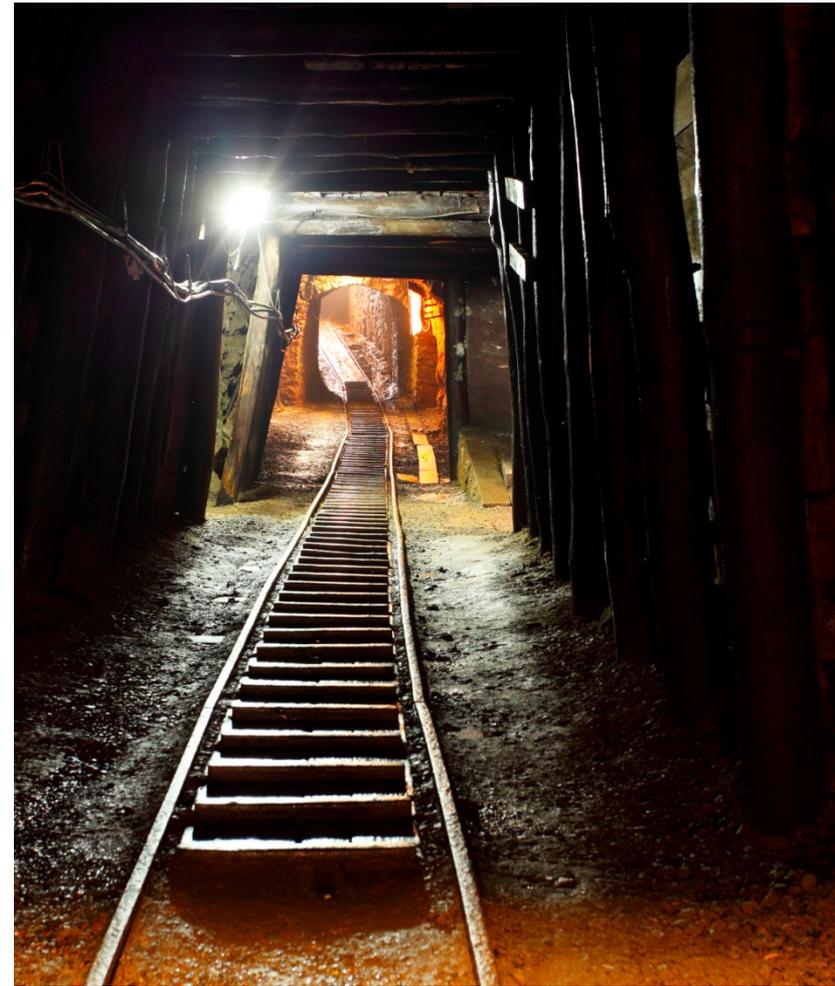


Where do bitcoins come from?

- They're mined, silly.
- High-powered computers solve complicated math problems.
- Each time a problem is solved, the finder is paid a bounty.

Mining bitcoins

- Miners solve complicated algorithms to find a solution called a hash.
- Finding a hash creates a block that is used to process transactions.
- Each new block is added to the block chain.



Mining bitcoins

- Until there are 21 million bitcoins, miners are paid for finding a hash in new coin.
- After 21 million, miners will charge transaction fees for creating a new block.
- The amount paid per hash goes down by half about every 4 years.

Owning bitcoins

- Users create accounts called wallets.
- Wallets are secured using passwords and contain the private keys used for transferring bitcoins.



Spending bitcoins

Seller provides
an address to
the buyer

Buyer enters the
seller's address
and the amount
of the payment
to a transaction
message

Buyer signs the
transaction with
a private key
and announces
the public key
for verification

Buyer
broadcasts the
transaction to
all the Bitcoin
network

Bitcoin security

- Computers accept the longest block chain, which inhibits hacking.
 - Hackers would have to create a longer chain of fraudulent information faster than the combined effort of all other computers.
- Public/private cryptography means individual bitcoins are secured when not being transacted.

Is it money?

- Store of value
- Medium of exchange
- Unit of account



Is it money?

