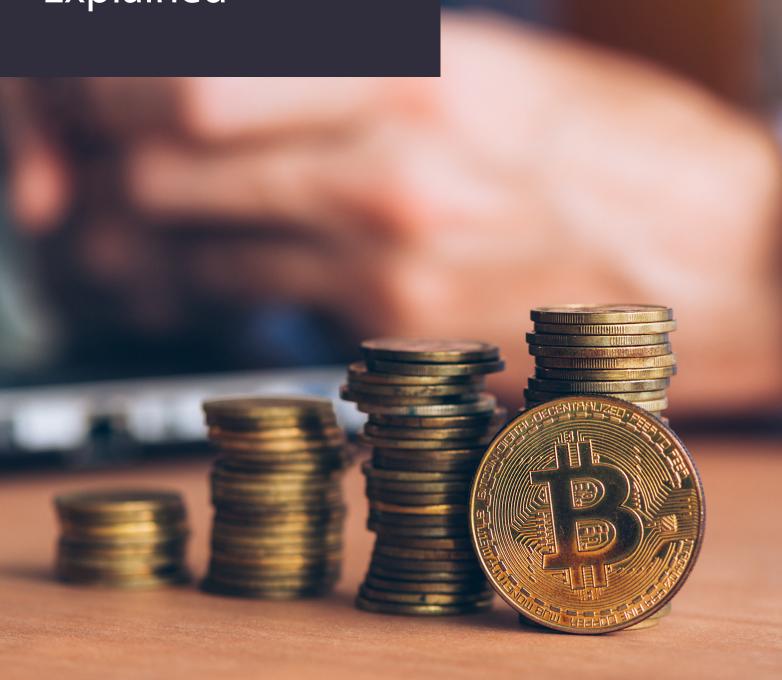# Cryptocurrency and Blockchain Explained

While you may be familiar with terms such as cryptocurrency, bitcoin, blockchain, and mining, you may not have a good understanding of what they are and how they work. This document provides an overview of the technologies and explains how they work and the benefits they offer.

What is Cryptocurrency?

Cryptocurrency is a virtual currency that can be traded for goods and services, much like traditional currency. There are thousands of different cryptocurrencies, and you may be familiar with popular ones such as Bitcoin and Ethereum.

While the U.S. currency is denominated in dollars, units of cryptocurrency are often referred to as coins or tokens. Denominations of U.S. dollars can be broken into cents with two decimal places. For example, a product might cost $1.53. Units of cryptocurrency are more precise and can have up to eight or more decimal places. For example, a product might cost .00458239 bitcoin.

Like there's an exchange rate between the U.S. dollar and a foreign currency such as the euro, there are also exchange rates between fiat or cryptocurrencies. You can exchange your dollars for bitcoin, and then you can exchange your bitcoin for another crypto such as ether, and then exchange your ether for U.S. dollars.

You can use cryptocurrency to buy and sell goods and services, just like traditional currency. However, many features distinguish cryptocurrency from traditional currency.

Traditional currencies are centralized, backed, and managed by a recognized government entity, like the U.S. Federal Reserve. The Federal Reserve controls the supply of currency and, along with the FDIC and state authorities, regulates the banking system in the U.S. This trusted system enables consumers to transfer funds electronically through a debit card, credit card, ACH, wire transfer, or other electronic means. While it's a secure method of transferring funds, it can be expensive, slow, and tracked by the government and other entities.

On the other hand, cryptocurrency is decentralized and not controlled by any single institution or government. Instead, the tracking and validation of transactions are handled by many computers across a network using blockchain technology. As will be explained, when someone makes a cryptocurrency transaction, many independent computers review the transaction, determine if it's a valid transaction, and then record it in a ledger.

Cryptocurrency transactions occur quickly and have no geographic boundaries. For example, someone in the U.S. can instantly send Bitcoin to someone in Europe. There are no banking forms to fill out or multiple intermediaries that might be required with a typical wire transfer through a bank.

The fees charged for a cryptocurrency transaction are typically much lower than traditional banking or credit card fees. Cryptocurrency doesn't have or require the expensive infrastructure that has been built for managing a traditional currency.

Even though the transaction ledger is public, cryptocurrency transactions are fairly anonymous. Each transaction contains the sender and recipient's public keys, but a public key is simply a coded unique identifier. With crypto, your transactions and personal information are not being tracked and sold by credit card companies, credit bureaus, or marketing firms. Additionally, since no personally identifiable information needs to be transmitted across the internet, there's little risk of your identity being stolen.

Finally, cryptocurrency transactions are secure. Because the transaction ledgers are decentralized and stored using blockchain technology, it's nearly impossible for a bad actor to insert illegitimate transactions into the ledger.

So cryptocurrency enables you to transfer money quickly, securely, anonymously, and with little cost.

How Cryptocurrency Works

For a cryptocurrency to work, it needs the use of an extensive network of independent computers known as nodes. Each node maintains a complete ledger of all of the transactions that have been made using the cryptocurrency. So, if Bob sends Julie cryptocurrency, that transaction is stored in the ledger that resides on each node.

The ledger is organized into groups of transactions known as blocks. Each block contains a cryptographic hash of its transactions, which is basically a unique identifier for that block. If the contents of the block were to change, then its hash would also change. The ledger stores the blocks in a particular order, and each block contains the previous block's hash. The result is a ledger of blocks of transactions chained together based on the previous block's hash. This is known as a blockchain, and it's incredibly secure. If a bad actor tried to modify a block in the chain, it would change its hash and invalidate all subsequent blocks in the ledger.

So let's return to what happens when Bob sends Julie some crypto. When a new transaction is made, computers known as miners work to validate it and include it in a new block with other new transactions. This process helps to validate that Bob has enough crypto for the transaction. Once the block of transactions have been validated, the miner sends it to all of the nodes in the network to be added to their ledgers. Each node reviews, validates, and adds the block to its ledger. This process results in each node having a duplicate copy of the ledger. And for their service, miners get paid in new units of cryptocurrency.

Because copies of the ledger are stored on many independent nodes, no one person or party has control over it. This makes it incredibly secure and tamper-proof. Even if a bad actor were to modify the blockchain ledger on a single node, all of the other nodes would have copies of the correct ledger. The collective network of nodes would be able to identify and reject the corrupt ledger quickly.

Practical Application

The easiest way to acquire and use cryptocurrency is through an exchange such as Coinbase or Binance. These services will store your cryptocurrency in a hosted wallet, which means that a third party holds your crypto. You can also store your cryptocurrency in a self-custody wallet on your computer. However, if you use a self-custody wallet, you must be sure to safeguard your password, or you may lose all access to your cryptocurrency.

Once you own cryptocurrency, you can use it to purchase goods and services from sellers that accept crypto. You can also hold the crypto as an investment and trade it for other currencies, including fiat currencies.

Most cryptocurrency is incredibly volatile, and the value is constantly changing. So if you hold cryptocurrency, it's important to closely monitor the exchange rates and value of your holdings.

Finally, like stocks, the gains from the change in value of the cryptocurrency you acquired and sold are taxable as short-term or long-term capital gains. And if you are paid in cryptocurrency for services rendered, the earnings are taxable as income.

Next Steps

Cryptocurrency is still in its infancy, and laws and regulations are working to catch up with the technology. If you would like to discuss cryptocurrency, how you or your business might benefit from its use, or what taxes you might owe, please contact our office to speak with one of our expert advisors.

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