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Digital Currency: Financial Evolution

“Crypto.” “Bitcoin.” “Digital currency.” The new age of cryptocurrency is exciting. What originally began as a movement to create a technology that would centralize a global currency has become a buzzword in work meetings, family dinners, and Uber rides. People want to know its potential. Is it an investment? Is it an easy form of supplemental income? The evolution of digital currencies has also been surprising to the finance world. Despite the belief of it being a new, alternative form of investing, it comes with the possibility of immense turmoil far outside only the financial sector. A few examples of problems associated with investing in cryptocurrency are the lack of knowledge on the sector, money laundering opportunities, negative impact on the US dollar as well as foreign currencies, pumping inflation rates which can affect investments for many people, along with many other potential negative externalities. There are ways to avoid negative financial impacts that digital currencies can create. It can be used to positively supplement the current economy structure through federal and state legislation. Being on the forefront of creating regulations for this complex and evolving financial situation can not only substantially minimize long-term problems, but it can allow the U.S. to curate a plan that maximizes the potential for economic growth in an increasingly digitized financial world.



Lack of regulation is a major problem that the U.S. faces when addressing digital currency and cryptocurrency. The SEC and Federal Reserve are expected to pass federal legislation regarding digital currency regulation within the decade. From a state perspective, Nebraska and Illinois are following Wyoming's lead in creating individual state crypto/banking laws as well as adopting blockchain within their financial systems. Illinois is hoping to pass a trust charter bill which will allow businesses and financial institutions to legally provide crypto companies with service. It has not been passed yet, but representatives of the state are hopeful it will be passed by the senate within the next two years. The state has already gained support directly from banks and businesses that specialize in dealing with crypto. Nebraska's new law would create very similar opportunities for financial institutions and businesses to incorporate various digital currencies into their daily business lives (Sozzi 1). It is vital for individual states to move forward with the regulation processes of digital currency; however, Federal regulation and solutions must follow suit in order for there to be economic stability.

How do cryptocurrencies work?

Blockchain Networks

Almost all cryptocurrencies, including the two biggest (Bitcoin and Ethereum), use a digital database known as blockchain. In order to understand blockchain it is important to note that blockchain is simply a database or a place where large amounts of information are stored with the main purpose of being accessed and used by many users. A database that many might be familiar with is one that a company would use in order to keep track of different things such as inventory or clients, but this differs from blockchain in that it is managed by one individual. The key difference between a blockchain database and a database that might be more familiar is the way blockchain stores the information in the database. While normal databases store information in the form of charts or tables, blockchain stores the information in “blocks” which have a certain amount of storage and when filled are chained onto the previous blocks hence the name blockchain. An important part of the block is that when it is filled it creates a timestamp which creates a chronological timeline of data that cannot be changed. Therefore, cryptocurrencies can use blockchain as a ledger of payments. Since each piece of information is stored in a timeline and these timelines are not able to be altered and can be viewed by anyone, cryptocurrencies are able to use blockchain to keep an exact ledger of purchases to prevent people from fraudulently using currencies twice.

Mining

The mining of Bitcoin and the use of a blockchain database entail high levels of synchronicity. For blockchain to function properly, there must be a separate entity/entities that

enter data such as Bitcoin miners. The creator of Bitcoin, who goes by the name of Satoshi Nakamoto, established the process of mining to allow many people to enter ledger information into the blockchain database. Satoshi was successful in his efforts by creating a proof of work concept that uses the process of mining to ensure the ledger is accurate while entering the data into the blockchain database. Without the process of mining, it would be far too accessible for anyone to input fraudulent data. Mining is an essential component of Bitcoin.

The actual process of mining Bitcoin is complicated; in order to make significant profit, the startup costs are high. In order to mine Bitcoin, it takes many high-powered computers that all run an algorithm ensuring data is valid. Although to mine Bitcoin it takes significant computing power there is also an element of luck involved in receiving the Bitcoin that is mined. Once someone can verify a piece of the incoming data and add it to the blockchain their computers also have to figure out the correct answer to a math equation before anyone else trying to verify the same data. Therefore, the conditions to successfully mining Bitcoin is first verifying the data and then being the first person to have the answer to a complex math equation. If both conditions are fulfilled, you have successfully mined Bitcoin and would be rewarded with 6.25 Bitcoins for the effort. This makes the process of Bitcoin mining beneficial for both Bitcoin as it keeps it viable as a currency and for the miner who receives Bitcoin in exchange for their work in verifying the blockchain data. The creation of the process of mining by Satoshi is the main reason that people think that Bitcoin could at some point be a viable currency.

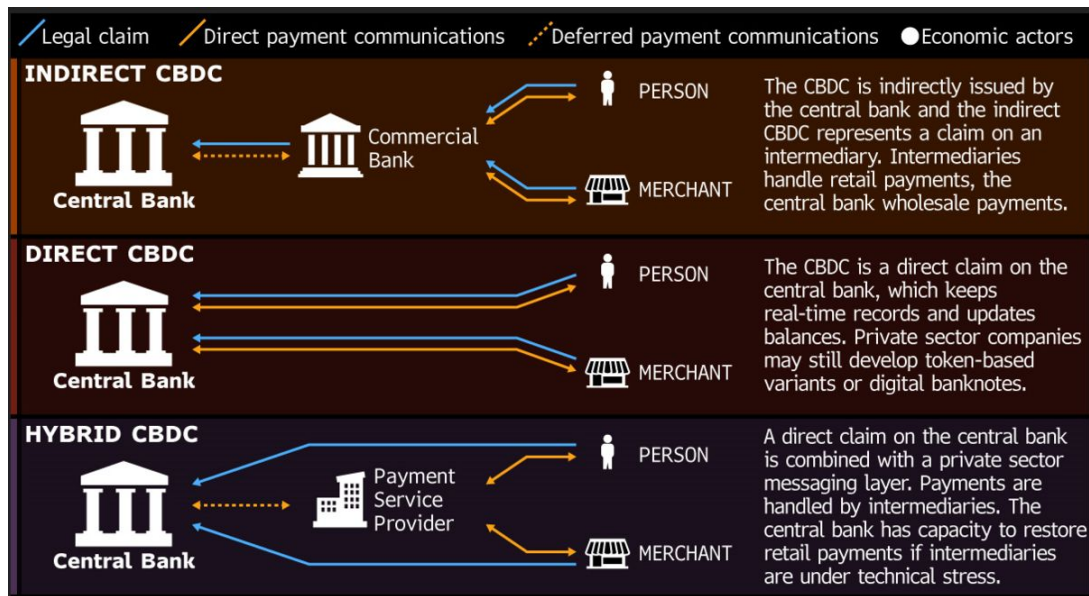
Environmental Impact of Mining

With more emphasis being put on protecting the environment more than ever, it is important to look at how the process of mining cryptocurrencies can impact the environment.

Statistics about mining and energy consumption:

- According to estimates, the Bitcoin network is using as much energy in one year is the entire country of Argentina
- Many Bitcoin miners are located in China which generates most of its energy using coal
- Bitcoin generates 11.5 kilotons of e-waste every year

In March 2021, Tesla began accepting Bitcoin as a form of payment, however, later in the spring halted this acceptance over concerns that mining practices had substantial impacts on global climate change. With an increasing number of individuals, businesses, and governments focused on keeping up with environmental, social, and governance (ESG) standards, mining practices for cryptocurrency need to make strides toward becoming more environmentally friendly if they intend to sustain their popularity without reservations from potential users.



Criminal Activity

Money laundering and other forms of monetary criminal activity are problems that always seem to resurface regardless of regulations. With that being said, the innovation of digital currencies allows these individuals and groups access to a new way to potentially execute these acts. Regulation is a major theme throughout this research, and the lack of it is imperative to how well people can infiltrate this new, digital phenomenon. Although it did not occur in the U.S., British authorities claimed and confiscated approximately \$160 million worth of cryptocurrency after an on-going money laundering investigation. The article from Forbes mentioned, “The singular haul of cryptocurrency is worth more than double the amount of cash the force took out the hands of criminals in the 2020/21 financial year” (Hart 1). This one encounter shows the serious potential of long-term criminal activity using digital and cryptocurrencies if left unregulated.

Much closer to home, it was reported on June 7, 2021, that the U.S. Department of Justice seized \$2.3 million in cryptocurrency. Further information on the incident from the

article, “On or about May 7, Colonial Pipeline was the victim of a highly publicized ransomware attack resulting in the company taking portions of its infrastructure out of operation. Colonial Pipeline reported to the FBI that its computer network was accessed by an organization named DarkSide and that it had received and paid a ransom demand for approximately 75 bitcoins” (DOJ 1). This criminal event highlighted two major issues within many countries’ technological infrastructures. The cybersecurity risk that ransomware attacks pose on governments, companies, and individuals, as well as the accessibility and lack of regulation in regard to digital and cryptocurrencies are problems that need solutions moving forward. Considering regulation and solutions, CNBC stated on June 28, 2021, “Outlawing ransomware payments by itself is not an adequate solution, Mandia said, while alluding to the incident involving Colonial Pipeline last month. The company paid a \$5 million ransom after its IT network was hacked, although U.S. law enforcement was able to recover a chunk of the bitcoin used in that payment” (Singh 1). The complexity of this dilemma will take a variety of solutions and on-going regulation processes. Being able to consistently update stringent laws and regulations to combat ransomware and crypto crime will allow for a more efficient plan when dealing with ever-changing technological crimes such as these.

Future of the Dollar



As many countries and central banks are moving towards adopting monetary policies that include digital currencies, the future of the U.S. dollar and its potential value is unknown. CNBC states, “With the launch of a digital yuan last year, some fear that the edge China has ultimately could undermine the dollar’s status as the world’s reserve currency. Though China said that is not its objective, a Bank of America report notes that issuing digital dollars would let the U.S. currency “remain highly competitive ... relative to other currencies” (Cox 1). From an economic standpoint, any newly implemented currency that is authorized to use to complete and receive payments, can have an effect on the value of current forms of currency. Due to the U.S. dollar being the most widely used currency, it will take a substantial amount of time for the value of the dollar to deteriorate at a pace that could cause worry.

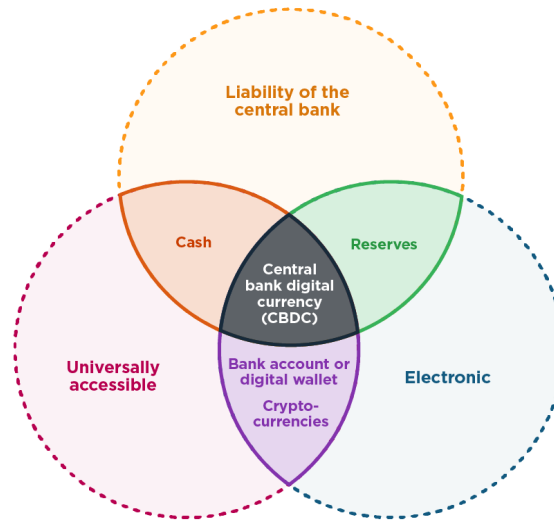
It is important to note that countries such as China are at an advantage when it comes to implementing a national form of digital currency. From a geopolitical perspective, a digital dollar

would significantly benefit the U.S. For example, “They also want to pursue a digital currency to keep up with China, which already is running trials of its digital yuan, so the US doesn’t fall behind its superpower rival in setting the standards for digital transactions. They see taking the dollar digital as key to maintaining its coveted role as the world’s dominant currency for international trade and financial transactions while also preserving the Fed’s control over the money supply and ability to set monetary policy” (Puzzanghera 1). To be able to facilitate international funds at a reasonable level, creating a digital dollar will allow for a seamless transition into the future financial world.

The U.S. has plans to create a federal digital currency. The Fed Reserve is currently working with Massachusetts Institute of Technology (MIT) on establishing the most beneficial as well as efficient digital dollar to supplement the U.S. dollar within the economy. A recent episode of 60 minutes stated, “There are many subtle and difficult policy choices and design choices that you have to make,” Fed Chairman Jerome Powell said in a recent interview with the CBS program “60 Minutes.” “We’re doing all that work,” he said. “We have not made a decision to do this because, again, the question is will this benefit the people that we serve? And we need to answer that question well.” (Cox 1). It takes a great deal of critical thinking and prioritizing of different factors to create the most innovative and effective form of digital currency. However, to protect the future value of the U.S. dollar, it is imperative that one be established sooner rather than later.

How are central bank digital currencies different from other payment methods?

Payment methods by currency attributes



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Source: Morten Bech and Rodney Garratt, "Central bank cryptocurrencies," *BIS Quarterly Review*, September 2017.

Controversy Over Cryptocurrency

The potential effect that cryptocurrency will have over the dollar standard is still a crucial question that individuals, businesses, and governments need to carefully consider going forward. The dollar is and has been the standard for transactions throughout the U.S. and global economies. But here's a potential concept that can show why an unregulated, market-priced cryptocurrency could wreak havoc on a national and global economy. Let's take a car dealership for example. It's selling an SUV for \$60,000. An individual wants to buy the car and let's assume they pay entirely in cash instead of financing the purchase. While the dealership will receive a \$60,000 payment, the only factor affecting the value of that payment is inflation. On average, the U.S. inflation rate is between 1% and 3%. In one day, that \$60,000 will be worth approximately the same as it was when the payment was made. In one week, it will be worth approximately the same. In one month, it will be worth approximately the same. In one year, it will be worth

\$60,600 assuming a 1% rate of inflation. Cryptocurrency is a different beast. Let's assume the same customer from the example, except this time, they are paying using a digital currency that is worth \$60,000 per unit; the customer purchases the \$60,000 car using the digital currency unit. If this unregulated currency is valued by a crypto market, then there is nothing stopping this \$60,000 from being worth \$30,000 tomorrow. If an unregulated cryptocurrency becomes a standard for how businesses generate revenue, then the businesses are potentially relying on a public market to support the money they use to pay wages, expenses, and shareholders. When the value of an asset is determined by a market, it is exposed to volatility. Imagine the potential that an unregulated, volatile cryptocurrency transaction standard can have on the stability of a national economy.

Potential for Higher Inflation Rates

Many people are so eager to dive into using digital currency as one of their sources of payment. The creation of the digital dollar can lead to high inflation. The value of these coins can decrease which will lead to the government to try to create more digital dollars to fill up the gap which is not the way digital coins work. Coins like Bitcoin have a set number of 21 million coins available for owners, this makes it a highly sought out commodity. "The 21 million Bitcoin limit means that at a certain point, there should be less Bitcoins versus the demand for them, meaning that in terms of value, the price per unit should increase as the supply decreases". (Huang via Forbes 2020). With U.S money printing failing to achieve the level of stimulus that they are hoping for, they are looking to turn to digital dollars. With limited coins out for use now, the government must make more coins available due to shortage. This can make it not as valuable in

that case causing inflation. According to the central bank digital currency (CBDC) this will raise the level of inflation. What people don't realize is that saving in digital will be seen as a substitute for saving in dollars, lowering demand for dollars. The current market capitalization of digitalcoin is \$135 billion, which is still quite little when compared to total global cash (\$80 trillion) and equities (\$75 trillion). So far, the wealth effect may be barely 0.1 percent.

Government Proactiveness & Implementation

Being on the forefront of creating a Federal digital dollar, as well as implementing regulations is extremely important in preserving the stability of our current economic and financial systems. Additionally, research has shown that creating a digital currency could potentially supplement our current models in a positive way. For example, if the U.S. were able to quickly create a form of digital currency, it could lead to various benefits for many citizens. Inflation is a current worry for many investors throughout the country, specifically for those who are primarily heavy in bonds/bond fund investments. Implementing a second form of national currency could allow investors and American citizens in general, a safety net when considering inflation. Due to the potential situation being new and without empirical data to support how a second form of currency affects a financial system, it is important to analyze potential outcomes beforehand and with a critical perspective. Even if the physical dollar is linked to the digital dollar, it will provide new doors for investors to explore and earn profits in. The changes in how money will be viewed, as well as how it is used will hopefully be able to effectively deal with fluctuating inflation rates by allowing for different transactions, trades, etc. to be considered with

the diverse array of accounts and portfolios that people will be able to have. From a theoretical, economic perspective, the future of a digital dollar is a very opportunistic innovation.

Slight Counter

There are many benefits of digital currency to individuals, businesses, and the economy. For individuals, there is no middleman, it is more confidential, and easy international exchange. Because cryptocurrency transactions are devoid of middlemen, they are frequently simpler, faster, and need fewer or no additional transaction costs. However, some experts believe that cutting away the middleman has more benefits than just what is mentioned. Cryptocurrency gives people the power to dismantle current societal structures and processes that keep people out of power. To lay the groundwork for a system that is both transparent and secure.

This could also be beneficial for businesses because it makes it easier for business transactions, improves payment processing. It is safe and easy to store, and a faster payment method. Unlike credit card payments, which can take days to clear, cryptocurrency transactions happen nearly instantly. As a result, you'll have instant access to cryptocurrency payments. Sales are also final, which means charges cannot be disputed after they have been made. All of this adds to the financial stability of your company. Cryptocurrency can also increase the global customer base. Offering bitcoin or any coin payment choices may expand your buyer base, as more individuals and businesses exhibit interest in the digital money. Moreover, digital currency is non-governmental, it is worldwide, which implies that your company's global clients could develop, especially if adoption grows. Cryptocurrency also does not have an exchange rate and

fees which makes it perfect for global business. “More than 2,300 US businesses accept bitcoin, according to one estimate from late 2020, and that doesn’t include bitcoin ATMs. An increasing number of companies worldwide are using bitcoin and other digital assets for a host of investment, operational, and transactional purposes" (Delloite). Although, using cryptocurrency comes with challenges it is also beneficial. One of the biggest challenges that business can face is the instability in the coin prices.

Conclusion

Being on the forefront of creating regulations for this very complex financial situation can not only substantially minimize long-term problems, but it can allow the U.S. to curate a plan that maximizes the potential for economic growth in an ever-changing financial world. In order to protect financial stability and minimize criminal activity, it is vital for action to be taken soon. Solutions to the problems that digital currencies create do not lead to any easy solutions, however, there are ways to use these innovations to an advantage. It is going to be exciting to witness how federal governments and central banks throughout the world combat this dilemma. The financial world is dealing with a problem that has never been faced before, so the next coming years are crucial to the further development of digital currencies and economic policies.

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