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Bitcoin and Other Opensource Software Protocol Accounting Systems as an Accepted Global Monetary System

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Abstract
Bitcoin, the opensource software protocol accounting system, is a revolutionary metric of finance that has increased in popularly, but more importantly, has increased substantially in value against the Dollar over the previous few years. This paper highlights the fundamentals of valuing Bitcoin by understanding how it is valued as a usable currency and then, helps to guide how it can and is being used as an alternative source of potential equity for global corporate institutions. This paper looks at the challenges faced in maintain and accounting for traditional equity, that is equity backed by the Dollar, and looks at how crypto currency is creating transparency in the financial accounting system. It identifies potential challenges in the use of this new currency against the practices of regulated accounting standards. This research also identifies what future acceptance as an alternative equity might look like with the use of Bitcoin.Cryptocurrency has a significant societal impact now and, in the future, based on the devaluing of the global financial position, the increased availability of communication technologies, and the need for valuing scarcity in a global society. While the technology that embraces Bitcoin and other similar currencies has evolved to create a more understood technology process, the incorporation of these currencies as part of a monetary system is still not understood. Global monetary systems must find a new method of maintaining a financial structure that is universally acceptable but also scarce. Being that we live in an increasingly technological world, digital currency is a natural fit and should be realized as a legal tender.
Questions to consider:
Cryptocurrency is beginning to be adopted as an alternative to the traditional monetary system. With companies like Coinbase, the largest owner of Bitcoin, looking to value their IPO at $75 billion, the investment community is beginning to pay attention (Roberts, 2021). Can cryptocurrency such as Bitcoin be an effective alternative to a traditional monetary system? If so, how can it be used as an asset for companies as a financial alternative?
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1. Introduction

Bitcoin, the most successful medium in the cryptocurrency market, has quickly become revolutionary in its disruption of the traditional monetary systems across the globe (Herrera-Joancomarti, 2015). Designed as a peer-to-peer electronic cash system void of any financial institution involvement, the use of its scheme creates additional financial security over time (Nakamoto, 2008). Bitcoins' value as a monetary alternative has continued to rise within the last thirteen years and with increased financial institution scrutiny on spending, cryptocurrency is being heavily regarded by those within its investment community as the next evolutionary currency throughout global societies.

While cryptocurrencies such as Bitcoin can be used in an unregulated market simultaneously, based on the principles and characteristics of money, these currencies will be a viable alternative to an increasingly volatile global financial system and will, with time, become a universal financial system. The global financial currency systems are outdated, have limited ability to evolve as the characteristics of spending evolve, and have diminishing scarcity. The troubles of the financial system such as recession severity, drastically inflated currencies, and increased government oversight control, will continue to be mired with economic instability. A centralized, public, scarce currency will naturally evolve, limit economic inflation, and give access to timely global trade.

Can Bitcoin adhere to the characteristics of money and become a universal currency that is applicable to evolving the global financial system? The value of Bitcoin as a solution for increasing financial oversight has been naturally introduced since its inception with the decreased use of traditional currency in the consumer market and the improved viability of the internet as a medium of exchange. But to this point in time, Bitcoin has been a stand-alone system without the necessary acknowledgment as a true currency or as a potential asset for investment. By understanding how Bitcoin as a currency fits into the traditional monetary system and by creating viability into the limitations of domestic and global fiscal policy, it will be possible to see how the Bitcoin system has created an unparalleled opportunity for those who adopt it as a currency and a debt alternative.

2. The Evolution of Money

To evaluate any cryptocurrency as a potential alternative to a traditional monetary system, it is important to understand the fundamentals of a currency as a component of economics. Exchangeable currency can be declared a legal tender of exchange by the government of an issuing country (Federal Reserve Bank of St. Louis, 2019). This government involvement is designed to give security to the use of the currency. If someone is paid in U.S. dollars, for example, they naturally expect those dollars to be transferable for goods and services, the foundation of economic function. While there is no guarantee that the money earned will be equally related to the cost of goods and services, it is assumed that the tender is exchangeable. Equally, the currency can be exchanged based on government-regulated rates of exchange for other forms of currency to be a tender of exchange elsewhere. These are all examples of the tangibility of currency.

The characteristics of currency include durability, portability, divisibility, uniformity, and acceptability, also known as the five characteristics of money as a trade technology (Federal Reserve Bank of St. Louis, 2019). A sixth characteristic, one defined in most traditional monetary systems, is a limited supply. This final characteristic is where cryptocurrency is most notably argued. Money as a means of exchange typically only works if the supply of that currency is limited, this is also known as scarcity. In years past, western societies have backed their currency with tangible and scarce resources such as gold. The so-called “gold standard” was designed to ensure that printed money was not arbitrary and could be valued against something limited (Amadeo, 2020). However, with the onset of the Great Depression, the gold standard in the United States was eliminated as a way of creating more financial liquidity within the market. As of 2021, there remains no standard of limitation in the traditional monetary system of the U.S. Now countries print money when they need to create economic support and as a result, inflation occurs (Amadeo, 2020). While this practice continues, the final characteristic of money, limitation, remains unsubstantiated.

Minted money is most notably a debt backed by something scarce. In the modern monetary system, money is only secured by the increase of the debt itself and not the finality of the debt. This makes the system of debt never-ending. In 2020, U.S. debt became 100 percent of its gross domestic product, the first time this had happened since the conclusion of the second world war (Hersch, 2021). The practice of creating debt with no scarcity has become rampant in recent history causing financial crises to have a more significant impact on economies. Bonds are now created at a record pace to secure even greater debt for the future. According to Mish (2020), more than 23 percent of all U.S. currency in circulation was created within the last year in a government effort to eliminate the economic shortfalls brought on by the COVID-19 pandemic. With inflation remaining relatively unchanged, the future consequence of such uncontrolled and yet seemingly regulated debt could be catastrophic.

3. Money as a Trade Technology

Tangible currency is one of the oldest aspects of human civilization. The exchange of a standardized form of currency for a good or service is estimated to be as old as the use of fire in civilization. Cattle, shells, dung, stone, salt, and fish have all had their place in history as a tender of exchange (Nova, 1996). Traditional currency, first emerging as stamped coins, came into existence 2500 years ago in Turkey and China. This was also an important evolution as minted coins were the first to be controlled and centralized by a government which since that time has remained a key component of a modern economy (Sahu, 2020).

Tangible currency has followed the evolution of individual societies but for many years was highly unregulated. The presence of scarcity helped to better solidify the currency as a viable solution. Salt that could only be mined by some skilled individuals, for example, help to maintain this scarce necessity. But when coins could be minted more regularly and by individual groups, government control became a necessary regulating body, a practice that has not been highly reviewed in thousands of years, despite any economic evolutions.

The first recorded financial crisis after the introduction of centralized currency came in Rome during Emperor Tiberius’ reign (Bartlett, 2018). Loans backed by currency had been standard practice in Rome. But as debt mounted, loans increasingly lapsed. This created a severe financial crisis and resulted in the first known government bailout in which Rome minted additional currency with no tangible backing as a means of eliminating debt and stimulating their spending economy.

While economies have changed and evolved, the core component of each is a medium of exchange. This has become critical to the success of humanity. But since the start of government involvement and the centralization of currency, little evolution has been seen in the adaptation of currency. The world’s monetary systems, with little exception, have remained unchanged and therefore unevolved.

3.1 Unregulated Currency

One could argue that currency is invented constantly and done very effectively without oversight or government control. But to understand this, money has to be viewed in its characteristic state, as any medium of exchange with assumed value, and without regulation.

A kindergarten classroom is one of the best examples in our society of the use of free trade, constantly created currency, limited oversight, and economic stability. In this example, trade is done based on a desire to exchange goods or services for economically and monetarily similar goods and services. Milk in exchange for a bag of chips, Legos for dolls, a push on a swing for an extra game of hopscotch. Most importantly, these mediums of exchange are not regulated. The value of one good or service is created by the seller and its value is understood by the buyer. The value of the good can rise or fall based on market conditions. If it rains, the swing set might be off-limits and therefore the "push on the swing" market will falter. But on a nice day with extra recess time, the market swells.

Even the way that we are taught about currency has little to do with control and regulation and more to do with its value in exchange. Modern economics lesson plans such as Kiddynomics (2020) introduce scarcity, wants, and choice based on the exchange of goods only valuable to those of a specific group, in this case, those under the age of five. Some lessons discuss how a toy is equivalent to a certain snack that is valuable only to some buyers and not others. If the chosen currency is popcorn, for example, and a buyer has an allergy, this currency is worthless to that specific buyer. Students are even introduced to scarcity by showing that want does not necessarily mean a desirable outcome (Kaplan, 2012).

3.2 Money as a Division of Labor

With the adoption of the gold standard in the U.S. and other western nations came increased government control over monetary policy. Since that time and even with the removal of the gold standard, the government has had increased control over systems of currency. The so-called "third-party system" has created a strain on the system of currency exchange for labor specifically. Money as an aspect of the division of labor is more closely tied to the workforce and the outcomes of that workforce than it is to the government that regulates the currency.

Individual markets are driven by the scarcity of their resources and even their division of labor. The exchange of money for labor facilitates the increase and diversified production resulting in an expansion of market size (Prigadarshini, 2020). One could assume that more control over the monetary structure would result in diminishing marketability and therefore a limitation in the labor.

3.3 Importance of Scarcity

Scarcity is fundamental for economic security as it helps to create natural wants. Resources of value exist in limited supply meaning that there are never enough resources to meet demand (Lumen, 2020). Even when resources have an abundance and perhaps are seemingly infinite, they are not. Their scarcity creates value. If everyone has equal access to a resource with practically no limitation on the resource, it cannot be classified as scarce and therefore has no transferable value. There are ongoing economic debates as to if there is scarcity in water, for example, based on the ability to regenerate and reuse water in modern society. But even water can be classified as scarce as functional water systems must be supplied to a consumer by another party in some way, and then that service must be paid for.

But is money scarce? During the onset of the great depression, a run on banks became the norm. In that, many customers were unable to receive hard currency to support their original deposits based on the financial market over-extending itself. This resulted in the original catalyst to eliminate the gold standard and give the government the ability to freely print money. Scarcity requires limitation. If no limitation is present in the financial system, then it becomes less scarce and therefore less valuable. But similar to water, a currency must be tendered.

Article 1 of the U.S. Constitution gives Congress the power to borrow money and coin money and set its value but makes it illegal for any non-government entity to print money (U.S. Cont. Art. 1, Sec. 8). Consequently, currency, to some extent, is a scarce resource in that it is not readily available. But more importantly, as a currency is not backed by anything other than intangible debt, it becomes less scarce, and less valuable, with the increase of minted currency.

Scarcity is a critically important economic concept and especially within the monetary system. The printing of money, even with government control, can quickly become unruly, as history has shown. In 2007 the country of Zimbabwe began to print money at an extreme rate to help curb its financial crisis and as of 2020, the nation's inflation was 500 percent, a direct result of the limited scarcity of that currency (Smith, 2020). This has created an unparalleled economic crisis in which the monetary system has all but collapsed. This shows the severity of controlling and undermining scarcity.

4. The End of Money as We Know it

Bitcoin was developed by a programmer or perhaps a team of programmers, often referred to by the name Satoshi Nakamoto, in 2008 as a means of creating a digital commerce stream. A necessary cornerstone of Bitcoin is its scarcity. There is a limited amount of Bitcoin that can ever be entered into the market and the minting process is designed to be unregulated, but yet highly controlled systematically. Bitcoin is a mathematical

economy whose system is open for anyone to access (Nakamoto, 2008). It is that autonomy that naturally creates the necessary oversight of a structured system. As outlined in the original Bitcoin proposal, Nakamoto (2008) establishes that this digital system should be free of government control. However, Nakamoto does acknowledge that this is a trust-based system and that it becomes more powerful as trust in the process develops.

While Bitcoin has remained a system of trade limited to very small segments of society, it is quickly gaining value as a potential medium of exchange. In early February 2021, the car manufacturer Tesla purchased $1.5 billion worth of Bitcoin and announced that it would begin to accept the currency as a form of payment becoming the first major retailer to do so (Sample, 2021). As the currency is only valuable if both the sell and buy economies are supportive of the currency, this major corporate move gives Bitcoin viability in the retail space.

During its first decade of existence, Bitcoin had little tangible value and was used primarily as a medium of exchange for goods and services exclusively between its users. In 2010 the first official exchange of Bitcoin for a good took place in which someone exchanged 10,000 Bitcoins for someone else to purchase a pizza with traditional currency (Moore, 2020). That transaction is now worth the equivalent of more than $45 million. But at the time, 10,000 Bitcoins was close to the financial equivalent of a pizza order.

4.1 Mathematic Economy

The concept of ownership is one of the confusions of Bitcoin but also is what makes it a viable monetary alternative. Whereas traditional currency is tangible and is owned by the holder, Bitcoin exists only to be transferred. So, owning Bitcoin means having the ability to transfer it to someone else (Rykwalder, 2014). Bitcoin is an open-source software protocol in which mathematical calculations are translated into code (Nakamoto, 2008). Being those mathematics is the cornerstone of the Bitcoin economy, this makes its use naturally universal. The truth behind math stands alone and, even when used in varying parts of the world, cannot be challenged if there is an answer to the mathematical problem.

There are two fundamentals present in the mathematics of Bitcoin. The Elliptical Curve Digital Signature Algorithm uses an elliptical curve and a finite field to generate the transactions and, more importantly, the record of transactions in the Bitcoin system (Rykwalder, 2014). The elliptical curve is represented mathematically as $y2 = x3 + ax + b$. This creates a scatter plot in which all transactions are not only present but referenceable. The process can be compared to a banking transaction in which there are records of the exchange. Because Bitcoin is an entity in a public database and because each transaction has its own unique mathematical signature, it can remain present in a transparent structure and can be referenced at any point in time. This not only ensures the transaction is appropriate when completed but also creates a history that can be acknowledged at a later time if necessary.

4.2 Blockchain

Natural verification is critical to Bitcoin having value as a monetary system. This is done in what is referred to as the blockchain. Bitcoins are essentially entities entered into a public database, known as the blockchain. The transactions within this database always balance and the Bitcoins, being that they are never tangible, never leave the database. As defined by Bitcoin's creator, each ownership transfers coins by digitally signing the transaction over to a new owner (Nakamoto, 2008). As these transactions take place in the blockchain, they are reviewed by mathematical standards. These standards are then reviewed by a continual improvement of the software.

Whereas a traditional transaction system is audited by designated reviewers and various members of the financial community, Bitcoin's blockchain is also audited, but by computer systems allocated with code. This continual auditing system is done by reviewing all transactions constantly. In that, the computers that are running these transactions, or better yet their human owners, are incentivized to do so by earning new Bitcoin, this is known as mining. Bitcoins are only released into circulation proportionally and are only done if this systematic auditing is taking place. The equivalent of this would be to only allow the currency to be created as an incentive for independent auditors performing bank audits.

4.3 Scarcity

Bitcoin's system is designed to release only approximately 21 million Bitcoins into eventual circulation and only to release Bitcoins when the oversight transactions are performed by the software code (Canellis, 2021). The creator or creators of Bitcoin knew that scarcity was fundamental. Creating a natural limitation ensured that Bitcoin would be inflation-free. 21 million ended up being a completely arbitrary number, or so it is assumed. Every ten minutes, miners, or those responsible for verification of transactions, complete one block of work which results in an incentive paid of 12.5 Bitcoin (SoFi, 2020). This means that there are 1,800 Bitcoin released each day. But, in accordance with the original software code, this incentive is cut in half every four years. This means that all Bitcoin will not be released until the year 2140.

Controlled scarcity is a renewed economic concept and one that has only loosely existed in recent years.

This can be most notably connected to the U.S. and the gold standard where all dollars were backed by a certain amount of gold. Similarly, financial liquidity is attached to Bitcoin based on its scarcity. The Bitcoin system that has been designed is also revolutionary as its incentivized control and oversight create little if no fraud. It also means that no other Bitcoin can be created by forging the currency. Even if someone were to have the ability to create their own Bitcoin, it only exists in one network transaction meaning that no one else can enter the space. Even gold could not be secured to that extent.

4.4 Valuation Limitations

The value of cryptocurrency is based purely on supply and demand. As demand increases, as it has over the past year, and the supply remains relatively limited, the price of Bitcoin increases. Demand has continued to swell since 2013 when the price per Bitcoin was $123 (Bradbury, 2020). As of February 23, 2021, Bitcoin was worth approximately $49,000 each. This demonstrates the market flexibility of Bitcoin which can be lucrative but also volatile.

While the demand for Bitcoin continues to rise and the supply is estimated to slow, some analysts predict that Bitcoin could be worth hundreds of thousands of dollars, if not more. But as time passes and the supply becomes scarcer, the demand will solely drive price creating a potential plateau.

The most perplexing issue with Bitcoin is in its valuation as a currency. Bitcoin in the United States is valued against the dollar, just as anything of value would be. This means that each Bitcoin has an equivalent dollar amount associated with it and changes based on market shifts. It also means that with limited transaction points for Bitcoin outside of a trading network, the monetary value of the resource can only be created when it is sold for traditional currency. To understand this, it is necessary to look at points of historical financial evolution. At the introduction of the Euro as a new standardized currency in Europe in the 1990s, it was first introduced as a non-tangible accounting system in 1999, very similar to cryptocurrency, and then minted money was introduced in 2002 for regular consumption (EU, 2002). Cash was exchanged based on reasonable rates and the Euro was born. What the shift from varying currencies to the Euro system demonstrates is that value can be created from nothing, but that value comes from a reasonable recognition of another currency.

4.5 Comparison to Traditional Finance

Traditional financial systems rely heavily on third-party oversight. This could be government regulations, banks, or auditors. In this oversight, traditional finance becomes less viable depending on how necessary those third-party providers are within each transaction. An additional limitation is the cost of third-party involvement. The greater the transaction, the more cost for oversight and the more regulatory scrutiny. This naturally devalues the transaction. Those relying on this system also take the trust that the calculations are accurate even though they are not transparent. Being that there is still a great deal of human involvement in the financial transaction means that errors are more present than most consumers are aware of.

Total transparency is the catalyst of trust. An overabundance of caution and no cost to the consumer, such as that of the Bitcoin blockchain, create necessary oversight and security with limited human error based on limited human involvement. Even when errors do occur, the open-source aspect of the blockchain allows for those errors to be corrected.

5. Cryptocurrency as a Monetary Alternative

As a unique system of controlled scarcity and one with trust as a fundamental practice, Bitcoin is a viable option for an overcontrolled and outdated monetary system. Currency throughout history is an evolution of the society that it serves. The present financial system backed by printed currency is simply outdated for our societal evolution. Digital commerce is already at an all-time high. Also, no bank in existence has the tangible liquidity to support the number of deposits on its books. Again, this exists digitally. We live in an economy of credits and debits. Being that Bitcoin as a currency is a system of monetary support to credit and debit, it has become a lucrative alternate system.

According to Stevanovic (2020), 80 percent of banking transactions are done digitally already. This comes as not only a preference for consumers but also a necessity based on the viability of banking technology interfaces. In that, it is less daunting to suggest a switch to a 100 percent online currency. The banking system has become reliant on its presence in the online market. Many large banking institutions have even moved their data storage to the cloud in recent years (Shevlin, 2019). This helps to eliminate the argument that banks are a necessary entity of protection. Many of the top banks in the world today even exist online, without any physical representation. Again, another strong argument for a seamless shift to digital currency.

5.1 Regulation

It is necessary and imperative to protect the financial assets of the world's people. Regulation is critical to any viable currency. The Bitcoin code and its sourcing system have the ability to create money but limit exposure.

The nature of its self-regulating system not only helps to protect transaction identities, but the redundancy of the system ensures that fraud is minimal. These naturally imposed regulations eliminate Bitcoin from being devalued by anyone involved. This financial security is difficult to naturally obtain in any traditional system.

5.2 Accounting

The accounting procedures within the technology of cryptocurrency always balance to a mathematical certainty. Also, unlike monetary systems that are guided by policy changes, the policy of Bitcoin cannot be changed. Anyone involved in the Bitcoin system is locked into the regulations and standards of total oversight. As Bitcoin becomes more widely accepted as a transaction currency and not just a transferable currency, its system oversight becomes more valuable for those involved in mining. So, the more it is used, the safer it becomes. Even when Bitcoin is completely mined there is a system of financial support designed to maintain this systematic oversight (Nakmoto, 2008).

Presently, there are no accepted rules of governance pertaining to the accounting of cryptocurrency. While this presents a challenge and suggests a further area of research, this is not the only new accounting practice which has little to no rules yet to be established. For example, the ways businesses have used and classified funding from pandemic relief funding has not been substantiated in governance standards leaving the accounting industry to develop independent procedures. Similar practices are being done for accounting cryptocurrency. These can and will lead to governance bodies accepting accounting methodology for this monetary system. Further challenges for accounting standards include: asset classification where the question persists as to whether cryptocurrency should be considered cash, mining transactions and the ownership and transference of the currency from inception, and the exchange transaction where assets are transferred and the challenge as to how to address and classify the transactions (Rayborn & Sivitanides, 2015).

Accounting principles are typically developed in practice and therefore smaller transactional accounting can be done based on Bitcoin and other uses. In time, governmental institutions will better understand these practices and be able to develop guidance which can create longevity in this new monetary system.

6. Conclusion and Recommendations for Future Research

While cryptocurrencies such as Bitcoin can be used in an unregulated market without necessary government involvement, based on the very characteristics of money as a support structure in an economy, Bitcoin is a viable alternative to an increasingly frayed and volatile financial system. It is universally applicable, instantaneously available, and driven purely by supply and demand. Most importantly, Bitcoin is finite meaning it is the only form of currency that is truly scarce, an increasingly necessary factor.

As the world evolves and society changes, new thoughts, leadership guidance, and infrastructures must be created. Bitcoin is one solution to an evolutionary need that has been greatly overlooked. It will be a structurally sound component of a great and prosperous future for the world's economy.

An intangible asset, or one that lacks physical substance, is one of the most overlooked and yet critically important areas of business valuation. These assets matter as a means of developing a business strategy. Businesses must explicitly address strategy formulation as part of properly leveraging the intangible assets provided to them. This means that gone are the days of limiting intangible asset value.

In 2021, Elon Musk announced that Tesla Inc. acquired $1.5 billion worth of Bitcoin and is in talks regarding the possibility of opening up the use of this currency alternative as a means of transaction (Ostroff & Elliott, 2021). The highly intangible asset that is cryptocurrency has developed a market that now even companies as prized as Tesla are accessing. But is this intangible asset investment considered a cash holding?

On the subject of Bitcoin and other similar cryptocurrencies as an asset, there are three different avenues of thought. Those who use cryptocurrency as an alternative to traditional currency or debt see it as a viable currency option (Hussey, 2020). The Commodity Futures Trading Commission classifies it as a commodity based on a Federal Court ruling that found that it has a high risk of fraud (CFTC, 2018). Finally, the Internal Revenue Service classifies cryptocurrencies as convertible assets which can operate intangibly as a trading instrument (IRS, 2020).

As the IRS taxes investments in cryptocurrency as an asset, it would be most appropriate to consider the Tesla purchase a cash holding. But this is contradictory to the very foundation of Bitcoin in that it is upheld as an unregulated medium of exchange, which would not be categorized as currency under the classification of an asset.

Elon Musk and Tesla Inc. claim that this intangible asset investment is to help promote a mass acceptance of Bitcoin as a form of standard currency. While it is yet to be seen how this will be categorized on Tesla's balance sheet, the investment creates an opportunity for new asset valuation. Further research should be done to show if this is possible and what impact this has on standard accounting practices.

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