Virtual Currency: Fad or Future?

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Are cryptocurrencies such as Bitcoin the beginnings of a monetary revolution or merely an inflated asset price bubble? Gearóid Gibbs examines the characteristics of this phenomenon, and looks at its long term stability as a form of currency.

Introduction

Digital innovations increasingly challenge the conceptual and practical limits of the traditional financial system. The vast majority of global money transactions now take place in cyberspace. As a result, nearly all currency is digital. While the electronic versions of traditional "fiat" currencies account for the majority of this, there are also newer independent virtual currencies that push the boundaries of what we consider as money. Such e-currencies have experienced exponential growth in recent years and have far reaching practical and policy implications.

An array of virtual currencies has emerged in recent decades. This essay, however, will particularly focus on Bitcoin; a currency, that since its inception in 2009, has seen phenomenal growth and widespread diffusion. The development of such virtual currencies is catalysed by a number of contributing factors. In the first instance, technological progress has produced the systems required to track virtual currencies and financial transfers over the internet (Boyle, 2000). Increasing mistrust towards financial organisations arising from the recent global economic crisis has accelerated the uptake of new monetary alternatives. Similarly, a decline in deference for government and formal institutions has encouraged more to people to put their money out of reach of the authorities. When Bitcoin first appeared it was quickly recognised by the 'anarcho-utopian crowd of techno-libertarians' who are prominent advancers of online innovation (Salmon, 2013).

Development

Developments in digital technologies have challenged the role of central banking in democratic states (Sassower, 2013). Hayek's (1976) prediction of the "de-nationalisation of money" appears to be realised - albeit not by a traditional government backed fiat currency.

An inherent mistrust of institutions sets Bitcoin apart from traditional currencies. The prevailing fiat currencies get their value by way of regulation or law, being underwritten by the state and issued by a monetary authority, which is, in general, a central bank. In contrast, Bitcoin does not have any intrinsic value nor does any formal institution

control it. Bitcoin's fame is due mainly to its status as the "world's first completely decentralised digital currency" (Brito & Castillo, 2013). A pseudonymous programmer under the name "Satoshi Nakamoto" devised the currency. In an online bulletin post Nakamoto (2009) criticised traditional fiat currencies and proclaimed that the new currency was "completely decentralised, with no trusted parties".

> *"The root problem with conventional currency is all the trust that's required to make it work. The central bank must be trusted not to debase the currency, but the history of fiat currencies is full of breaches of that trust. Banks must be trusted to hold our money and transfer it electronically, but they lend it out in waves of credit bubbles with barely a fraction in reserve. We have to trust them with our privacy, trust them not to let identity thieves drain our accounts" (Nakamoto, 2009).*

As such, Bitcoin is based on mistrust. The peer-to-peer network uses sophisticated cryptography to validate and secure online transactions (Cohen, 2013). There is no requirement for a central monetary authority to monitor or verify payments. Nakamoto (2009) contends that "with e-currency based on cryptographic proof, without the need to trust a third party middleman, money can be secure and transactions effortless."

Analogous to scare resources, such as gold, the global supply of Bitcoin has been exogenously predetermined and will never exceed 21 million coins. Like gold, Bitcoins are "mined". The process of mining Bitcoins requires huge amounts of computer power to solve complex mathematical problems. The ultimately fixed supply means the global rate at which new coins can be mined is decreasing. By 2021, assuming Bitcoins remain in circulation, the rate of growth in the supply of the currency will be so low that the money stock could be considered constant (Salmon, 2013).

Implications for the Monetary System

Nakamoto's beliefs are compatible to an extent with those of Milton Friedman. Friedman (1962) questioned the necessity of central banks, in particular the Federal Reserve. He argued that such institutions ought to be replaced by an automated system which would "increase the money supply at a steady, predetermined rate" k, irrespective of business cycles (The Economist, 2011).

> *"Any system which gives so much power and so much discretion to a few men, [so] that mis takes - excusable or not - can have such far reaching effects, is a bad system. It is a bad system to believers in freedom just because it gives a few men such power without any ef fective check by the body politic - this is the key political argument against an independent central bank … To paraphrase Clemenceau: money is much too serious a matter to be left to the Central Bankers" (Friedman, 1962: p.50).*

Bitcoin approximates Friedman's idea, albeit the supply is ultimately fixed at 21 million coins. Why this seemingly arbitrary number was chosen remains unclear. However, the inflexible supply does have certain benefits. No central bank can print millions of new coins, which would have the effect of diluting the value of existing ones (Salmon, 2013). As such, the system should in theory repress inflation. Conversely, given the fixed supply, the cost of mining new Bitcoins rises over time, so that the value of the currency increases relative to the stock of goods and services available in the economy (Stross, 2013). A problem of deflation emerges. Deflation postpones consumption, as prices would be decreasing when considered in Bitcoin terms. Paul Krugman (2011) highlights the "massive deflation" that the Bitcoin economy has experienced. As a result, the currency has been hoarded as opposed to spent. "In effect, real gross Bitcoin product has fallen sharply" (Krugman, 2011).

This development raises major concerns about the long-term sustainability of Bitcoin. Monetary expansion is required alongside economic growth. In a fiat currency system, the central bank can increase supply when required by printing new money. Such an expansion is not possible in the Bitcoin economy. This predicament partially undermines the success of Bitcoin in the long run (Salmon, 2013).

Questions have been raised about the validity of virtual currencies as a form of money. Money is generally credited with acting as a means of payment, while also fulfilling the functions of acting as a unit of account and as a store of value (Pierce & Tysome, 1985). In terms of acting as a medium of exchange, Bitcoin appears similar to fiat currencies. Arguably, anything portable fulfils this function as long as enough agents consent to its use. When one considers the other two functions of money, Bitcoin's limitations become evident. It is considerably less suited to acting as a unit of account and as a stable source of value given its extreme volatility. The crypto currency has been susceptible to major price fluctuations in its short history.

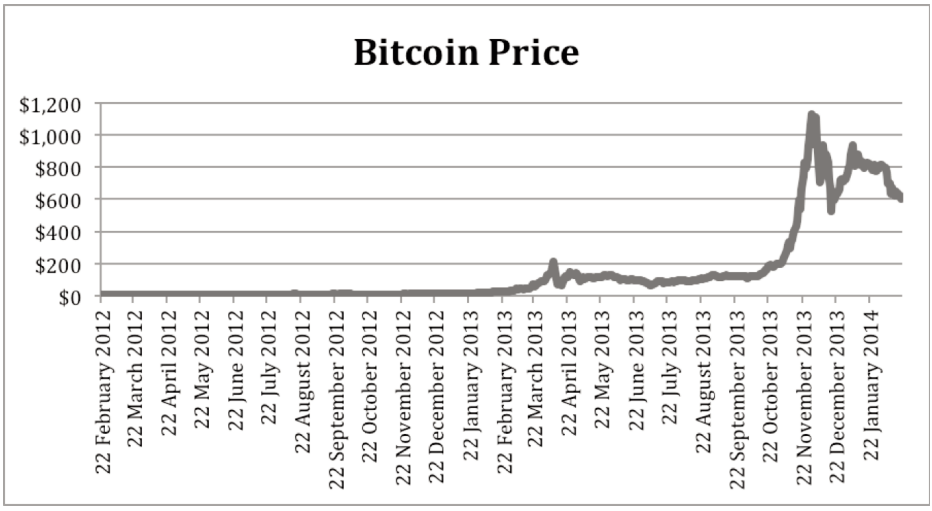
Currency Versus Commodity

A Bitcoin bubble may exist. As with most speculative bubbles, it is likely to be temporary and will inevitably burst. Price fluctuations have been driven by a number of factors over time. Firstly, many people are holding Bitcoin based purely on the hope that their value will increase. A correlation exists between the value of Bitcoin and the level of media coverage it receives (Salmon, 2013). Specific articles have in some cases increased the price tenfold. This sensation is a vicious circle. As the price of Bitcoin rises, press coverage increases, creating a media frenzy that attracts more people in, sending the price even higher.

In mid-2013, following the Cypriot bank collapse and deposit "bail-in" programme, a currency beyond the reach of governments became instantly more appealing to many depositors (Salmon, 2013). Chinese investors storing money offshore drove fur-

ther price surges. China quickly became the world's largest Bitcoin market. Towards the end of 2013, a peak price of $1132.01 was reached (Bitcoin Charts, 2014). In December 2013, following a Chinese government ruling that Bitcoin could not be used as legal currency in China; the value plummeted (Bischof, 2014). The price has recovered to roughly half of its peak value but remains highly volatile.

"Hoarding means that Bitcoin is currently more of a speculative asset than a currency" (The Economist, 2013). Salmon (2013) described Bitcoin as "an uncomfortable combination of commodity and currency." Such a relationship is paradoxical. "The commodity value of Bitcoins is rooted in their currency value, but the more of a commodity they become, the less useful they are as a currency" (Salmon, 2013). Due to the inherent instability of Bitcoin prices, it is difficult to consider it a legitimate medium of exchange. Currencies require some degree of stability. As such, Bitcoin does not really behave like a currency at all. Considering its market value and fluctuating nature, it is more akin to a highly volatile commodity. However, this feature is by design. Bitcoin was ultimately created to be the "most fungible commodity in existence" (Salmon, 2013), in effect, blurring the line between currency and commodity.



Data source: Bitcoin Charts, 2014.

Policy, Regulatory, and Social Concerns

Virtual currencies will have much broader effects on society than other electronic payment systems that use traditional fiat currencies (Boyle, 2000). The continued proliferation of virtual currencies raises a number of salient issues that must be addressed. The attractive characteristics of Bitcoin as a payment mechanism, also allow users to "evade taxes, launder

money, and trade illicit goods" (Brito & Castillo, 2013: p.1). Bitcoin has been linked to illegal drug markets, human trafficking, even assassinations. However, this argument is exaggerated. In reality, Bitcoin makes up a small share of illegal transactions, especially when compared to the US dollar (Urquhart, 2014). Concerns regarding money laundering are legitimate and policy makers and regulators around the world are increasingly turning their attention to virtual currencies.

Further major regulatory concerns exist regarding fraud, virtual currencies as types of ponzi-schemes, and contagion from collapse of other e-currencies. While individual regulatory approaches will likely differ, the results should share some common ground. Boyle (2000: p.53) considered a "loose regulatory framework that protects consumers, protects the banking system and still allows the development of profitable new innovations" as an ideal solution. Regardless, when considering possible regulation options, pragmatism and efficiency should be promoted rather than dogma. One system is unlikely to suit the whole range of virtual currencies that are likely to exist in an economy.

Ambiguity over the exact secureness of the Bitcoin system prevails. The issue does not lie with the integrity of the coins, but rather in keeping the coins in a safe place. It is not clear if there is any simple way for owners to store their coins securely. Using one's personal computer can be dangerous, requires a certain degree of technical competence, and is susceptible to hacking (Grinberg, 2012). The alternative is to use the services of an external party to protect the coins, but this requires trust, something Bitcoins were designed to avoid in the first place (Salmon, 2013). A range of exchanges and virtual wallets exist where people can hold their Bitcoins and initiate transactions. Alarmingly, many of these websites have been hacked, and their respective Bitcoins lost to cyber-thieves.

In this age of ubiquitous technological surveillance and data collection, Bitcoin has been promoted as an anonymous payment mechanism. However, given the peer-to-peer network utilised, the currency's records are open and accessible. All transactions made are available for inspection, albeit the accounts are anonymous and no database of identities exists. As a result, it is theoretically impossible to associate account holders to their account labels. However, as Grinberg (2012) correctly identified, people often unintentionally leave "clues about their identities when negotiating transactions, posting messages and transferring Bitcoins in e-wallets". As such, Bitcoin should not be considered anymore impervious to surveillance than traditional cash payments (Lee, 2011).

Social concerns also exist in that virtual currencies may increase social exclusion, being open only to those individuals who can afford them (Boyle, 2000). In one study of Bitcoin wealth distribution, the Gini coefficient was calculated at 0.87709 (Bitcoinica, 2011). Such data supports the claims that ubiquitous virtual currencies could further deepen global inequality.

On the other hand, it is argued that, given Bitcoin's open-system and negligible transaction costs, the currency could have the potential to improve access to basic financial services for the world's poorest (Brito & Castillo, 2013).

Conclusion

Given the associated problems with Bitcoin, it is unlikely it could replace outright any established fiat currency. For Bitcoin to increase its credibility and gain widespread adoption, the backing of a large, reputable institution or government would appear to be required. However, such a development would go against the very design philosophy that underpins Nakamoto's creation. While Bitcoin in itself may not be the future of monetary systems, it should be used as a foundation to aid successive developments. The basic premise of Bitcoin as being a fast, efficient, peer-to-peer payments system which circumvents trusted third parties, while maintaining low to negligible transaction costs holds much potential. Whether Bitcoin and other e-currencies are an evolution of the financial sphere or a revolutionary new monetary system remains to be seen. Regardless, such monetary experimentation has vast potential and should be encouraged.

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