Does Shariah Recognize Cryptocurrencies as Valid Currencies?

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Abstract

Undoubtedly, the emergence of cryptocurrencies and their relative successful performance recently has imposed upon Shariah scholars the challenge of addressing related Shariah issues and providing Muslims with clear answers as to whether or not they can deal with, or invest in, these currencies. The challenge, however, is in demystifying these currencies and understanding their technicalities and economic implications, because no Shariah rule can be issued about something before having a complete and thorough understanding of its nature. Hence, it is necessary to first study the technicalities of these currencies in order to address their various Shariah issues. Cryptocurrencies involve various Shariah matters, including the very permissibility of their issuance in view of the fact that they are not backed by real valuable assets or supervised by governments or financial authorities, such that people dealing with them are vulnerable to possible fraud and manipulative fluctuations in their values. Other Shariah issues also include trading in them and whether or not they are considered as interest-bearing (*ribawi*) commodities such that the injunctions pertaining to interest (*riba*) may apply to them, as they apply to conventional currencies. In addition, they have potentially negative implications for the market, such as their use in money laundering, drugs trafficking and other illegal dealings. This paper treats these Shariah aspects of cryptocurrencies, and it is hoped that this study will provide solid ground for future research to build on its findings.

Introduction

The term cryptocurrency is a term used to describe a digital asset designed principally to function similarly to a regular currency - as a medium of exchange, unit of account and store of value - using encryption techniques to secure the transactions and to control the creation of additional units of the currency. Cryptocurrency generally operates independently of a central bank, central authority or government. There are hundreds types of cryptocurrencies although the most famous of which is Bitcoin, which came into existence in 2009.

Currencies are treated with the upmost importance in the Shariah. This is evident by the strict rules pertaining to their transactions, more so than any other asset. This is because Islam deems currency as the most important component of the economy, and the preservation and development of economy is one of the primary objectives of the Shariah.[1]

Similar to any economic system, Islamic economics recognises the following three economic functions of currencies:

- Means of exchange: with currency one may exchange asset and services.
- Store of value: the currency holds its value for future purchases of assets and services.

Unit of account: the currency measures the value of any economic item; i.e. goods, services, assets, liabilities, income and expenses.

To maintain and protect these three functions of currencies, the Shariah governs them by several rules so that they remain safe from the manipulation of human greed. One of the most dangerous factors that may affect currencies is excessive trading, especially by means of derivatives when used for speculation. Excessive trading inevitably impacts their value and purchasing power, thereby impairing the first two functions of a currency, namely being a means of exchange and a store of value. When currencies are traded through options contracts, which simply require owning the margin to enter the options market, the enormous number of contracts executed on a currency will inevitably impact its purchasing power and possibly cause huge depreciation or appreciation of its market value. The 1997 Asian financial crisis provides a stark example, as the value of the

[1] The primary objectives of the Shariah are five: preservation and promotion of the religion, life, lineage, intellect and wealth.

currencies of certain Asian countries drastically depreciated after they were subject to excessive speculation. To prevent speculation on currencies, the Shariah commands that when a currency is sold against the same or another currency the transaction has to be effected on the spot, without any delay. This rule aims to prevent speculation since speculation involves future contracts, and future contracts on currencies are forbidden in Islam. The same rule applies to all assets that are basic and vital to the economy and human use and consumption, such as staple grains, oil and metals. No rule would protect these basic and necessary commodities from price manipulation like invalidating their future sales, especially when used for speculative purposes. Shariah text that pertains to this rule, such as: "[Sell] gold for gold, silver for silver, wheat for wheat, barley for barley, dates for dates, salt for salt hand to hand equal to equal"[2], may have been perplexing fourteen centuries ago, since no one would sell such assets on future basis since such a sale would serve no purpose at that time. However, reading them in the present time enables us to appreciate the wisdom behind this Shariah rule, as if this rule and its likes were in fact meant for our time; a time when people attempt to create enrichment opportunities for themselves out of the thin air in order to make profit, even if they come at the expense of the economy or the public interests.

In addition to impairing the first two economic functions of currencies, excessive trading causes high volatility in their values. A currency whose value is highly volatile will never be suitable as a unit of account to measure against which the value of other assets. Thus, excessive trading impairs the third function of money. Again, the Shariah protects this economic function of money by simply forbidding future sales of currencies. Interest also causes currency value volatility and depreciation, yet ironically, economists often quote interest as a tool to control the value of the currency, thereby making interest a cure to the very disease that it contributes to creating.

Are gold and silver the only valid forms of money in Islam?

In the past, gold and silver were the primary if not the only currencies in the world. This subsequently changed when other currencies emerged alongside gold and silver, and when eventually gold and silver were taken out of circulation for a variety of reasons. The primary reason

[2] This is an authenticated Hadith verified by Muslim in his Sahih: 3/1211, Hadith No. 1587, Dar Ehia' al-Turath al-'Arabi, 1990, Beirut.

for their replacement was to introduce a currency that would reflect the diverse resources and assets of the issuing country without limiting them to gold or silver. Economic strength of a country would not be measured by how large its reserves of gold or silver are, but by other economic resources, such as its industrial and agricultural output. [3] Thus, a country's currency would embody the various economic resources of that country from which it derives its value and strength from these resources. The question, however, is whether the Shariah accepts such a departure from gold and silver in currency?

In fact, from its inception, Islam recognized the then existing currencies and allowed people to deal in them.[4] The dominant currencies in Arabia at the time were either Persian or Roman and were gold and silver.[5] At a later stage the Muslim state began to issue its own gold (dinar) and silver (dirham) currencies.[6] The Shariah rules of currencies were then formulated on the assumption that currencies were gold and silver, and some Shariah texts came to state that the exchange of gold and silver should be subject to certain rules in order to avoid *riba*. The most famous text in this regard is the aforementioned Hadith narrated by Ubada Bin Al-Samit in which the Prophet, peace be upon him, is reported to have said "Gold for gold, silver for silver … hand to hand, equal to equal…". This Hadith states clearly that when gold is sold for gold, or sliver is sold for silver, it is necessary to observe two rules in order to avoid *riba*: i) equality in amount and ii) spot delivery of the two counter values. The Hadith goes on to mention that if gold is sold for silver, then equality in amount will no longer be required, while spot delivery remains a must.

When Muslim jurists attempted to rationalize and understand the effective cause (*'illa*) for gold and silver in particular being subject to these rules, they concluded that gold and silver are simply currencies, as if they were suggesting that currencies in general, regardless of their nature, would have to be subject to these rules. However, at that time they could not envisage any other commodity would replace gold and silver as currency, and they noticed that the cooper/iron

[3] Evans, Charles W. (2015) , "Bitcoin in Islamic Banking and Finance " p5, Journal of Islamic Banking and Finance, Vol. 3(1).

[4] Muedinai, Fait, (2018). "The Compatibility of Cryptocurrencies and Islamic Finance" p2, EJIF – European Journal of Islamic Finance, No 10.

[5] Abozaid, Abdulazeem, (2004). "Fiqh Al-Riba" p.325, Al-Risalah, Beirut.

[6] Abozaid, Abdulazeem, (2016). "The Impact of Currencies Value Depreciation on Debt Repayment", p.200, Al-Tajdid Journal, International Islamic University Malaysia, volume 20, No 40.

currency (*fulūs*), which were used as complementary to gold and silver, were excluded from the *Riba* rules due to their trivial value. They also observed that gold and silver could take forms other than currencies, like being jewelry, but yet they would fall under the generality of the Hadith.[7] Therefore, when the *Fiqh* schools attempted to define the effective cause (*'illa*) for the occurrence of *riba* in gold and silver, some of them rationalised in a way that would seem to suggest that the *'illa* is because of their nature as metals, not because they were the currency in circulation, such that any currency that could be in circulation would share the same rules. However, in the actual fact, they rationalised in this way only in order to include in these *riba* rules all the possible forms of gold and silver, due to the generality of the Hadith, and to exclude *fulūs*. Hence, they said the *'illa* for gold or silver is because they are "*'asl al-athmān*", which literarily means 'the origin' or 'the essence of prices', and includes any forms of gold and silver, since their metal is still the essence of prices, and excludes *fulūs* since such currencies do not constitute the essence of prices, but rather are complimentary prices.[8] The intention of the jurists was not to exclude other possible currencies from the *riba* rules but only to include all forms of gold and silver and exclude complementary trivial currencies, such as *fulūs*. This is evident from the numerous *fiqh* texts that allude to the applicability of *riba* rules to all currencies, as will be discussed in the next section.

Thus, the classical Muslim jurists did not envisage that new currencies would come and replace gold and silver, and therefore some of them, such as the *Mālikis* and *Shāfi'īs*, expressed the *'illa* for *riba* in gold and silver in a way that would exclude *riba* from anything that was not gold or silver. However, interestingly enough, some scholars from both schools clarified that this position was held based on the prevalent circumstances at the time, that if in the future circumstances would change, and other currencies would assume the status of gold and silver as the primary currencies, then the same *riba* rules would be applicable to them (i.e. gold and silver would continue to bear these rules and the new currencies would assume the same rules). Al-Nawawi, the renowned Shāfi'ī scholar from the seventh century (A.H.), states: "This 'illa (asl al-athmān) is useable, not static,

[7] Abozaid, A, (2004). "Fiqh Al-Riba" p.332, Al-Risalah, Beirut.
[8] Abozaid, A, (2016). "The Impact of Currencies Value Depreciation on Debt Repayment", p.207, Al-Tajdid Journal, International Islamic University Malaysia, volume 20, No 40.

because something could exist and share the meaning that exists [in gold and silver] and would therefore have the same rules applied to it".[9]

From the Māliki school Imam Malik says: "Even if people started making currencies from animals' hide I would deem selling them on a deferred basis as prohibited, and subject them to riba rules".[10] On the other hand, while the Hanafis do not relate the *'illa* in gold and silver to prices or currencies they believe that their use as currencies is fundamental in this regard. This is evident in their discussion of *fulūs* as they ruled it as a currency subject to *riba* based on analogy to gold and silver.[11] However, Muslim scholars of the past had always believed that gold and silver, given their unique features and relative scarcity, would always remain the best embodiment of money. Al-Maqrizi from the fifteenth century enthusiastically and rather subjectively says: "The money that is considered by the Shariah is gold and silver only, and what is beyond that is not worth being money".[12]

Therefore, we can conclude by saying that the Shariah does not limit the concept of money (currency) to gold and silver, but rather recognizes as currency whatever people use as currency, and the Shariah then governs this currency with certain rules - notably the *riba* rules - in order to protect its economic functions and ensure fairness in dealings and transactions.[13] Thus, in principle the Shariah does not object to issuing and dealing in new currencies regardless of their nature, including digital and cryptocurrencies.

Cryptocurrencies and Shariah Policy

It is no secret that since the introduction of fiat paper money, the countries with strong economic, political and military powers have found ways, using the power of their currencies, to somehow control the economies of the so-called 'developing' countries. The United States nowadays has a powerful control on the world economies and politics by different means including its dollar, which originates from its political power before anything else.

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[9] Al-Nawawi (undted), "Al-Majmouh", 9/491, Irshad Publisher, Jaddah.
[10] Malik Bin Anas, "Al-Muduwana", (undated), 8/396, Dar Sadir, Beirut.
[11] Abozaid, A, (2004). "Fiqh Al-Riba" p.333, Al-Risalah, Beirut.
[12] Al-Maqrizi, (2011). "Ighathat al-Umma bi Kashf al-Ghumma", p.71, Al-Manarah Al-Azhariyah Publisher, Cairo.
[13] Abozaid, A, (2004). "Fiqh Al-Riba" p.334, Al-Risalah, Beirut

A wide spectrum of Muslims believes that using the fiat money, especially when pegging it to other currencies like the dollar or the euro, is just another manifestation of the western hegemony over the economies of the Muslim countries, and therefore seek to reinstate gold and silver as money like they used to be during the golden era of the Muslim state. Hence, there have been some attempts recently by some Muslim countries, like Malaysia and Libya, to introduce gold or silver-based currency to ultimately substitute and replace the paper money.

Due to the aforementioned and the other known shortcomings of fiat money, such as being exposed to excessive fluctuation in their purchasing power, it is expected that the people of these affected counties will welcome introducing a new currency that would help to liberate the affected counties from the political and economic hegemony of the world super powers. In this context, if reinstating gold and silver as currency is not feasible in our present time, then even a digital currency backed by precious metal and given an Islamic character will receive acceptance by both Muslim economists and Shariah scholars.

However, when it comes to digital currency or cryptocurrency, the challenge is whether it can gain people's trust, and this may not be feasible if it is not controlled and regulated by a trustworthy authority. This is because people justifiably are suspicious of any currency introduced digitally or electronically given the possibility of fraud. In fact, the relative success of a cryptocurrency such as Bitcoin does not challenge this argument since its relative success relates to speculative trading rather than being used as real currency, as will be discussed later in the paper.

Characteristics of a Valid Cryptocurrency

From the Holders' perspective:

What matters to holders of a currency is its wide acceptability and preservation of its value and purchasing power. This naturally requires that the currency should be backed by some real assets, be recognised by law as legal tender, and controlled by a trustworthy authority. It is noteworthy in this regard to distinguish between people who accept a currency for its perceived economic functions and those who accept it as a trading instrument. If the latter, people do not care much for the aforementioned features of currency, just like they do not care in stock trading about the market value of the stock being equal or close to its book value. This is because they do not hold the stock for long-term investment but for speculative and quick trading. And in this regard it can be said that most of stocks are traded far beyond their book value and without consideration for their average return. Therefore, acceptance of a cryptocurrency as a trading tool is completely different to accepting it as currency. The more volatile a currency, the more desirable it is for speculators but less desirable for normal users, due to its incapability to properly perform its economic functions.

From the Shariah perspective:

From Shariah perspective, there are general conditions for a valid currency, such that whatever currency meets these conditions can be deemed as valid currency and thus, acquires the known Shariah characteristics pertaining to currencies. The following conditions are intended to preserve the established economic functions that money is supposed to perform, and comply with the general Shariah norms of fairness and removal of harm.[14]

Conditions of a Valid Currency:

1. **Protection of its Value**

If the currency does not have intrinsic value, i.e. it does not have a value of its own in isolation from the value legally assigned to it by the issuing authorities, then its technical value has to be safeguarded by virtue of certain rules and regulations. As discussed earlier, the Shariah does not object to people departing from the intrinsically valuable money to a new form of money whose value is only technical, like a legal tender, as long as the issuing party is capable of safeguarding its value or has the authority to do so. Understandably, this condition is meant to protect the economy as well as the individual rights of the people dealing with fiat currency from the impacts of a possible manipulation, fraud or unexpected loss of value. In fact, protection of wealth is one of the major Shariah objectives and therefore, measures have to be taken to protect wealth, especially the most important constituent of wealth, namely money.[15]

[14] Removal of harm is one of the primary Shariah principles, and it is considered one of the major Fiqh maxims.
[15] Abozaid, Abdulazee, (June 2016). “Critical Review of the Tools of Ijtihad Used in Islamic Finance”, p.82, Journal of Islamic Economic Studies, The Islamic Research and Training Institute (IRTI), Volume 24, No. 1.

2. Wide Acceptability

Wide acceptability ensures that the currency will effectively play its perceived role as a means of exchange, a value-storing unit and a unit of account.[16]

The acceptability of a currency does not necessarily need to exceed the boundaries of the territory where it is in circulation, as it is enough to be accepted within its territory in order to be deemed as a valid currency within this territory. Hence, all local currencies of countries are valid currencies, since they are widely accepted therein even if they are not commonly accepted outside.

3. Relative Stability of its Value

The economic functions of a currency will not be sufficiently performed if the currency value is highly volatile. If the currency unit I hold today buys me one loaf of bread today but half a loaf tomorrow and two loafs the day after, then it would no longer function as store of value and unit of account; it loses its capacity to measure the values of other assets and it also loses its preference amongst people as a store of value. If this happens, then people may desist from accepting it or be reluctant to deal in it, causing the primary function of currency as being a means of exchange to cease.[17] However, if the described economic functions of a currency are only temporarily or exceptionally impaired or suspended due to war or some natural calamity then this does not disqualify the currency from being basically valid. But if the exception becomes the norm, and the currency changes drastically in value, then this could disqualify the currency from being a valid currency from a Shariah perspective. This does not apply to a currency that is backed by valuable assets or is recognised by the authorities of the country of its circulation as a legal tender. This submission is based again on the Shariah notion of a valid currency as one that discharges its economic functions, while a highly volatile currency, which is typically technical and not real, fails to properly discharge these functions. Ibn Al-Qayyim beautifully expresses this fact in the fourteenth century by saying: "Dirhams and dinars are the price of commodities, and the price is the standard unit of account for measuring the value of assets, so it has to be stable in terms of its value, for if

[16] Meera, Ahmad Kameel, (April 2018). "Cryptocurrencies from Islamic Perspective: The Case of Bitcoin", Bulletin of Monetary Economics and Banking, p480, Volume 20, Number 4.

[17] Ibid.

its value is volatile then it will not function as a standard unit of account".[18] Al-Maqrizi also refers to this fact says by saying: "there will be no variation in prices if commodities' values are measured against Dinar and Dirham".[19]

Shariah Rules for Dealing in Cryptocurrency

If the aforementioned conditions for the valid currency are fulfilled, then dealing in a new currency, regardless of its nature being digital or otherwise, is subject to the same Shariah rules of a regular currency. While *fiqh* books mention these rules in the context of gold and silver, these rules have been outlined by the Shariah for currencies in general, as discussed earlier, the Shariah never limits the concept of money to particular assets. The rules are:

1. When exchanged with another currency, the transaction must be on a spot basis without delay in payment of one or both counter values. This Shariah rule is meant to prevent speculation.

2. Based on the previous rule, no forward or future contracts are allowed on digital currencies when sold against other digital currencies or against regular currencies.

3. If lent, it must be with no increment. Similarly, if sold for the same digital currency there must be equality in the amounts exchanged, in addition to spot payment of both values.

These rules are still applicable to a digital currency backed by gold or silver, or by other valid currencies even if the aforementioned conditions - protection of value, wide acceptability and relative stability of value - are not fulfilled. This is because the digital currency would then represent these underlying assets and as such, be subject to the same Shariah rules of these assets, as only the exchange of gold, silver and money in general are subject to the above Shariah rules. Accordingly, the above rules are applicable to cryptocurrency upon the fulfilment of one of the following two conditions:

[18] Ibn Al-Qayyim, (1991). "*I'lām al-Muwaqqe'īn*", 2/394, Dar al-Kutub al-Elmiyya, Beriut.
[19] Al-Maqrizi, (2011). "*Ighāthat al-Ummah bi Kashf al-Ghummah"*, p.73, Al-Manarah Al-Azhariyah Publisher, Cairo.

- The digital currency meets the Shariah criteria of valid currency so it can be deemed as money.
- The digital currency is backed specifically by gold, silver, other currencies or a combination of those.

Does Bitcoin fit the Shariah standards of a valid currency?

Despite the existence of numerous cryptocurrencies, Bitcoin, which emerged in 2009, has dominated the market and become the most popular and the most well-known cryptocurrency. According to the Economist, Bitcoins have three useful qualities of a currency: they are "hard to earn, limited in supply and easy to verify".[20] The table below[21] shows the popularity of Bitcoin compared to other cryptocurrencies.

Popularity of Bitcoin compared to other cryptocurrencies

All Coins Tokens USD Next 100 → View All

#	Name	Market Cap	Price	Volume (24h)	Circulating Supply	Change (24h)	Price Graph (7d)
1	Bitcoin	$168,154,093,718	$9,968.97	$8,730,850,000	16,867,750 BTC	1.59%	
2	Ethereum	$90,192,327,234	$923.67	$2,820,220,000	97,645,829 ETH	-1.96%	
3	Ripple	$43,746,495,009	$1.12	$953,742,000	39,009,215,838 XRP *	-2.66%	
4	Bitcoin Cash	$25,298,478,708	$1,490.77	$806,826,000	16,970,075 BCH	8.72%	
5	Litecoin	$11,846,564,674	$214.46	$1,461,520,000	55,238,783 LTC	-8.46%	
6	Cardano	$10,292,528,462	$0.396980	$247,800,000	25,927,070,538 ADA *	-2.59%	
7	Stellar	$8,282,089,669	$0.449197	$82,134,000	18,437,544,483 XLM *	-2.30%	

Like other cryptocurrencies, Bitcoin has been created to assume the same functions of a regular currency. However, in order to determine whether or not Bitcoin is acceptable and can be recognized as a valid currency from a Shariah perspective, Bitcoin should fulfil the aforementioned three Shariah conditions, which function as Shariah standards of a valid currency. The following

[20] "The magic of mining", (13 January 2015). The Economist.
[21] Source: investing.com

discussion will explore the applicability of these standards to Bitcoin in order to determine its validity as currency from a Shariah perspective.

1. Wide Acceptability

The legal status of Bitcoin and other cryptocurrencies varies substantially from one country to another and is still undefined or is subject to change. While some countries have explicitly allowed its use and trade, others have banned or restricted it. Qatar, for example, is among the countries that have categorically banned all sorts of dealing in Bitcoin. The list includes Algeria, Morocco, Russian, Taiwan, Thailand, Bolivia and India. Other countries, like China and Australia, have imposed restrictions on its use, such as accepting Bitcoin as a private virtual currency but not as a public currency. Australian banks have also been reported to have closed down bank accounts of operators of businesses trading in Bitcoin.[22] Furthermore, some countries do not recognize Bitcoin as a currency although they do recognize it as a taxable asset. For example, to the Australian taxation office "Bitcoin is neither money nor Australian or foreign currency. Rather, it is property and is an asset for capital gains tax (CGT) purposes. Other cryptocurrencies that have the same characteristics as Bitcoin will also be assets for CGT purposes and will be treated similarly for tax purposes".[23]

However, Bitcoin is legal in many countries including the United States, Canada and the United Kingdom. The European Union has not passed any legislation regarding the status of Bitcoin as a currency. However, the legal status of Bitcoin is changing, and most governments are concerned about their lack of control over Bitcoin and how to tax it.[24]

On the individual level, Bitcoin is gaining intermittent popularity. According to a research by Cambridge University, the number of cryptocurrencies users in 2013 was between 300,000 and 1.3 million users, and have significantly increased since then. As of 2017, the estimated number of cryptocurrency users is between 2.9 million and 5.8 million, most of whom use Bitcoin.[25] To

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[22] "ACCC investigating why banks are closing bitcoin companies' accounts", (11 Feb. 2016). Financial Review; Eric Lam, (15 Dec 2017). "What the World's Central Banks Are Saying About Bitcoin", Bloomberg.com

[23] https://www.ato.gov.au/General/Gen/Tax-treatment-of-crypto-currencies-in-Australia.

[24] Chohan, Usman, (2017). "Assessing the Differences in Bitcoin & Other Cryptocurrency Legality Across National Jurisdictions", Information Systems & Economics eJournal, Social Science Research Network (SSRN) p. 3.

[25] Hileman, Garrick; Rauchs, Michel, (2017). "Global Cryptocurrency Benchmarking Study" Cambridge University.

facilitate the use of Bitcoin, exchange houses exist to exchange Bitcoin with any other conventional currencies, in addition to thousands of ATM machines that exchange Bitcoin and cash in many countries around the world. However, the relatively large number of Bitcoin users does not necessarily constitute its acceptability as currency as it is not demanded to be used like a conventional currency, i.e. as a means of exchange, store of value or unit of account. Rather, Bitcoin has been mostly demanded for speculative investment purposes as people aim to make money through trading Bitcoins and have very minimal interest in using it to perform the functions of a currency.

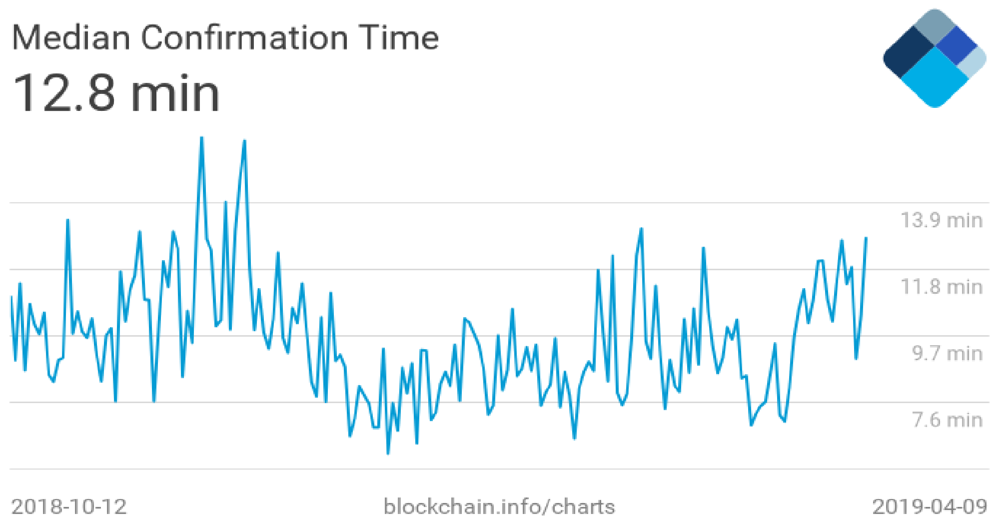
This view has been confirmed by a number of leading practitioners. For example, the Bank of Japan chief, Haruhiko Kuroda, commented on Bitcoin in December 2017, saying: "if it's a question of whether it's functioning like currencies as a form of payment or means of settlement, I don't think it is. [Bitcoin] is being traded for investing or for speculation". [26]Australia's central bank governor, Philip Lowe, said: "The current fascination with these currencies feels more like a speculative mania than it has to do with their use as an efficient and convenient form of electronic payment". [27]Similarly, the Bank of France Governor, Francois Villeroy de Galhau, described Bitcoin in January 2018 as a "purely speculative asset…we need to be clear: Bitcoin is in no way a currency". [28]

Moreover, despite being useable for making online payments, Bitcoin is still not a favoured means of payment among online retailers. In 2017 Bitcoin's acceptance among major online retailers dropped from five out of the top 500 online merchants in 2016 to three in 2017. Reasons for this drop include high transaction fees,[29] long transaction time and a rise in value making consumers unwilling to spend it.[30] Therefore, due to the limited acceptability of Bitcoin as a direct means of exchange, it can be said that it has functioned as store of value asset more than as a means of exchange, and this is conditioned on its ability to hold its value, which in turn depends on market

[26] Eric Lam, (15 Dec 2017). "What the World's Central Banks Are Saying About Bitcoin", Bloomberg.com
[27] Ibid.
[28] Ibid.
[29] This excludes the interchange fee, because, while merchants accepting credit cards are typically charged 2–3% as interchange fees, merchants accepting bitcoins often pay fees from 0% to 2%. Wingfield, Nick, (30 October 2013). "Bitcoin Pursues the Mainstream", The New York Times.
[30] Katz Lily, (2017). "Bitcoin Acceptance Among Retailers Is Low and Getting Lower", Bloomberg.

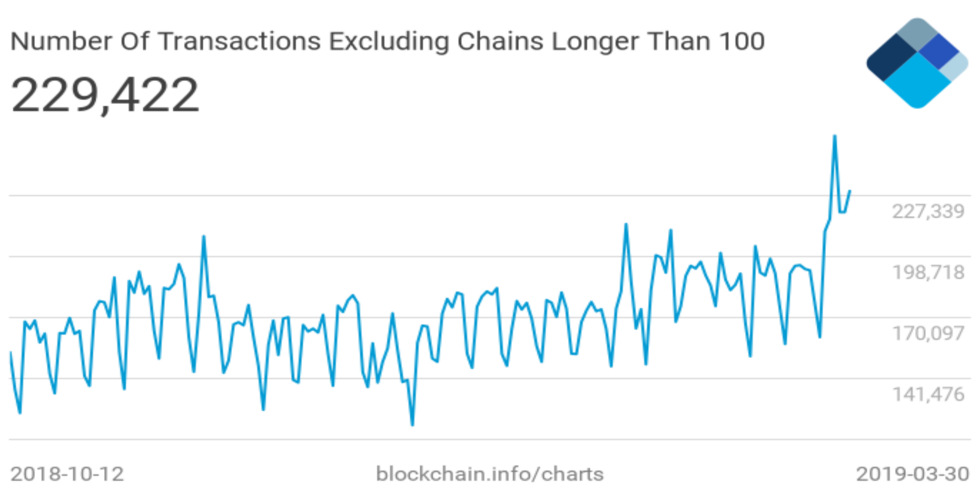
participants sharing a demand for it. The diagram below shows the median confirmation time needed to complete one transaction online since inception.

Median Confirmation Time



The chart below shows the number of Bitcoin transactions per day. The sharp volatility of transactions indicates that Bitcoin is used as a trading instrument and for reasons other than as a real currency, because if it is used as a real currency the number of daily transactions would not be that volatile, especially in the last couple of years.

Number of Bitcoin transaction per day



Prior to 2015, Bitcoin's popularity depended on its ability to be used to purchase illegal goods rather than for investment. Researchers at the University of Kentucky in 2014 found "robust evidence that computer programming enthusiasts and illegal activity drive interest in Bitcoin, and find limited or no support for investment motives".[31]

In fact, the acceptability and the potential illegal use of Bitcoin on the one hand, and its volatile value on the other, have been interrelated. *Business Insider*, an American financial and business news website, reported in January 2015 that drug dealers were losing profits due to being unable to convert Bitcoin revenue to cash after the price declined, and it also reported that if drug dealers decided to sell reserves to stay in business this could bring down the Bitcoin price even further.[32]

The potential of Bitcoin for illegal use is also one of the contributors to its popularity. Several reports describe Bitcoin as a haven for criminals and drug dealers. According to a report by *Business Insider*, "Even small-time dealers are embracing currencies like Bitcoin, Litecoin and Ethereum as a way of banking drug money without getting caught … the warning given by officers shows that the increased public profile of cryptocurrency — particularly Bitcoin — means that even relatively unsophisticated criminals are embracing it". According to the same report "Brothels were using currency exchanges to bank profits … while organised gangs are spending cryptocurrency on the dark web to purchase guns. The inherent privacy of Bitcoin — which is anonymous and very difficult to trace — means that it is "open to exploitation" by criminals". [33] Hence, Australia's central bank governor, Philip Lowe, criticised cryptocurrencies as more likely to appeal to criminals than consumers. [34]

Moreover, people may resort to purchasing Bitcoins, or some other cryptocurrencies, for other reasons. According to Timothy (2013), some Argentinians bought Bitcoins to protect their savings deposits against high inflation or against the possibility that the government could confiscate their

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[31] Matthew Graham Wilson & Aaron Yelowitz, (November 2014). "Characteristics of Bitcoin Users: An Analysis of Google Search Data". Social Science Research Network. Working Papers Series.
[32] Business Insider, (16 January 2015). "Deep Web Drug Dealers Are Freaking Out About the Bitcoin Crash".
[33] Business Insider, (Dec. 2017). "Drug Dealers Laundering their Money at Bitcoin ATMs".
[34] Eric Lam, (15 Dec 2017). "What the World's Central Banks Are Saying About Bitcoin", Bloomberg.com

savings accounts.[35] In Cyprus, and during the 2012–2013 Cypriot financial crisis, purchases of Bitcoins rose due to fears that savings accounts would be confiscated or taxed.[36]

In conclusion, it can be said that dealing in Bitcoin has been driven by reasons other than the use of a regular currency and hence, it is not within the boundaries of the acceptability needed to obtain the necessary Shariah recognition.

2. Protection of Value

Since Bitcoin does not have intrinsic value nor is it backed by any assets or has value guaranteed by authorities, it involves high risk such that its holders have no sort of protection whatsoever with regard to its value. Bitcoin's value stems from its recognition as a valuable asset. However, there is no guarantee that it will hold its value since Bitcoin's acceptability is limited and restricted and its value has been subject to excessive fluctuations, as discussed earlier.

The very realism of Bitcoin has been questioned as some economists have voiced concerns that Bitcoin could be a Ponzi scheme, but reports by official institutions excluded this possibility. A report by the World Bank in 2014 concluded that Bitcoin was not a deliberate Ponzi scheme.[37] The Swiss Federal Council, after examining some concerns that Bitcoin might be a pyramid scheme, concluded that "Since in the case of Bitcoin the typical promises of profits are lacking, it cannot be assumed that Bitcoin is a pyramid scheme."[38]

Being real and not a pyramid scheme is not enough from a Shariah perspective. The coin has to either possess intrinsic value, be backed by real assets or has value guaranteed by a higher authority. This is not the case with Bitcoin, as even its originators or miners cannot guarantee its value. Furthermore, Bitcoin has some serious issues related to the ability to keep it safe from theft or possible manipulation by its miners as shown in the following discussion.

Is Bitcoin safe to keep?

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[35] Lee, Timothy, (21 August 2013). "Five surprising facts about Bitcoin". The Washington Post.
[36] Salyer, Kirsten, (20 March 2013). "Fleeing the Euro for Bitcoins". Bloomberg L.P
[37] Kaushik Basu, (July 2014). "Ponzis: The Science and Mystique of a Class of Financial Frauds". Worldbank.org
[38] Federal Council - Switzerland, (25 June 2014). Swiss Confederation.

We need to first understand the concept of blockchain which is the technology underlying Bitcoin. The blockchain is a distributed public ledger technology that records all the transactions of Bitcoins by grouping them in blocks, verifying them securely using cryptography and then linking them to previous blocks in a chain. This process proves that certain work is done against those transactions and is known as “Proof of Work” (PoW). The first one who validates a block is rewarded with fractions of Bitcoin for the work that was performed and this is what is known as mining. As Bitcoins are mined electronically, and since Bitcoins are not tied to real-world entities but rather to Bitcoin addresses, the owners cannot be identified.

The blockchain records Bitcoin transactions without any trusted central authority but rather through a consensus of all “nodes” or computer entities connected to the blockchain validating that transactions of a block.[39] In the blockchain, Bitcoins are registered to Bitcoin addresses which are created through picking a random valid private key to be assigned to the Bitcoin address. Disclosing this address will not compromise the safety of the Bitcoin, but disclosing or losing the private key is the real problem. To spend the Bitcoin, the owner must know the corresponding private key and digitally sign the transaction. The network verifies the signature using the public key.[40] If the private key is lost, the Bitcoin network will not recognise any other evidence of ownership, and the coins are effectively lost. In 2013 one user claimed to have lost 7,500 Bitcoins, worth $7.5 million at the time, when he unintentionally discarded the hard drive in which his private key was saved.[41]

Besides losing the private key, Bitcoin can be subject to hacking and manipulation. In January 2018 someone in Tokyo hacked into the digital wallet of Japanese cryptocurrency exchange and pulled off one of the biggest heists in history.[42] Some reports describe what has become known as

[39] For more information on the way bitcoins are recorded in the blockchain see "The great chain of being sure about things". The Economist. 31 October 2015.
[40] Andreas M. Antonopoulos (April 2014). “Mastering Bitcoin. Unlocking Digital Crypto-Currencies”. O'Reilly Media.
[41] "Man Throws Away 7,500 Bitcoins, Now Worth $7.5 Million", (29 November, 2013). CBS DC.
[42] It worth noting that experts are attempting to combat hacking using a technique called ‘hard fork’, which is based on splitting the blockchain to complicate the hacking process. For example, Bitcoin has been split and as a result new Bitcoin emerged, which meant free money to holders: Bitcoin Private on 28 Feb 2018, Bitcoin Gold 24 October 2017, and Bitcoin Cash on 1st August 2017. Although, this did not stop the recent hacking in Japan. See report on Reuters.com issued on January 28, 2018. See also: Alyssa Hertig;

the possible 51% attack, which means having more than 51% of network resources dominating the blockchain network. This enables fake transactions or double spending to be validated.[43] According to Investopedia, the online resource for financial terminology, the 51% attack would allow attackers to prevent new transactions from gaining confirmations by halting payments between some or all users. Attackers would also be able to reverse transactions that were completed, which means they could spend a coin twice. This would potentially undermine the entire cryptocurrency system, giving bad agents control over Bitcoin and other cryptocurrencies globally. [44] Although experts believe that controlling more than 50% of Bitcoin network resources is unlikely they acknowledge that it is not an impossible scenario. [45]

Who issues the Bitcoin, and how it can be subject to manipulation?

In order to acquire transparency and maintain transparency, the issuance process of Bitcoin was designed to be decentralized, so that no central authority can monopolise its mining. [46] Furthermore, when Bitcoin's inventor Satoshi Nakamoto (the name used by the unknown person(s) who invented Bitcoin) invented Bitcoin, he set a monetary policy system that there would be a limit of only 21 million Bitcoins in circulation.[47] The policy also set the rate at which the Bitcoins can be generated, which is to have the rate drop by half every four years until all are in circulation, and the Bitcoins latest number is released approximately every ten minutes. The chart below shows the number of Bitcoins in circulation since inception.

Blockchain Forks Are All the Rage, But Can They Ever Be Safe? Oct 19, 2017, published on www.coindesk.com.

[43] See report by David Dawkins "The HACK that could break bitcoin - '51% attack' concerns mainstream 'banking bunnies' published by Sunday Express on Feb. 9, 2018.

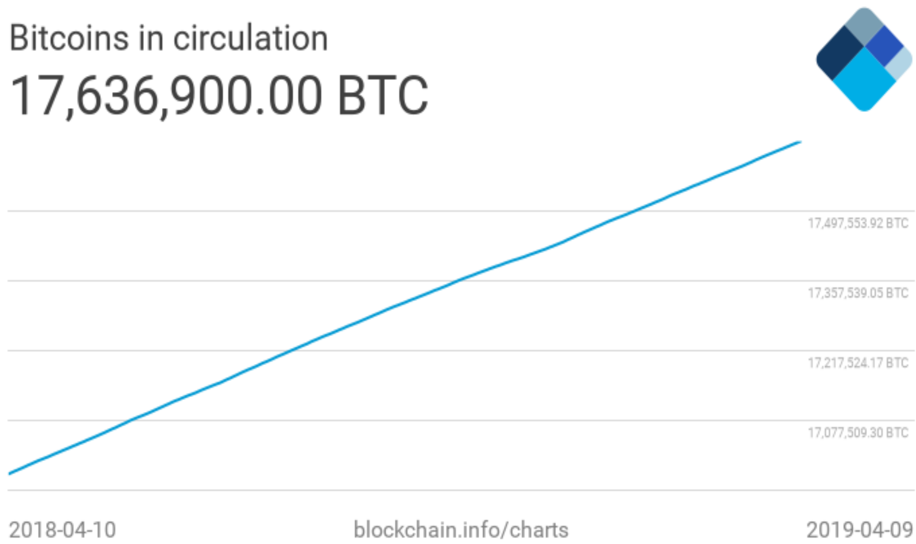
[44] https://www.investopedia.com/terms/1/51-attack.asp

[45] See report by David Dawkins "The HACK that could break bitcoin - '51% attack' concerns mainstream 'banking bunnies' published by Sunday Express on Feb. 9, 2018.

[46] Muedinai, Fait, (2018). "The Compatibility of Cryptocurrencies and Islamic Finance" p6, EJIF – European Journal of Islamic Finance, No 10.

[47] Meera, Ahmad Kameel, (April 2018). "Cryptocurrencies from Islamic Perspective: The Case of Bitcoin", Bulletin of Monetary Economics and Banking, p.486, Volume 20, Number 4.

Bitcoin in Circulation



Despite the above, research indicates that there exists a trend towards centralisation of Bitcoin mining by miners joining large mining pools in order to minimise variation in their earnings.[48] It was found that only six mining pools controlled 75% of overall Bitcoin hashing power. Besides, one mining pool (Ghash.io) could in 2014 obtain 51% of the hashing power, which raised significant controversies about the very safety of the network.[49]

Generating Bitcoin is open to anyone who has the necessary technical capability and resources. It is not theoretically centralised, but it is practically so to some extent. Either way, neither miners nor authorities have the capacity to control the monetary value of the Bitcoin. While some may consider this an advantage, it is in fact a matter of concern from a Shariah perspective, because since Bitcoin has no intrinsic value, it should be supervised and controlled by some monetary authorities to ensure security as well as relative stability of its value. If no one can guarantee that, or if Bitcoin is not designed to be in principle supervised or controlled by any authority, then Bitcoin lacks a basic feature of a valid currency from a Shariah perspective. Technically, it can be

[48] Gervais, Arthur; et al, (10 October 2016). "Is Bitcoin a Decentralized Currency?". InfoQ & IEEE Computer Society.

[49] Wilhelm, Alex, (5 December 2017). "Popular Bitcoin Mining Pool Promises to Restrict its Compute Power to Prevent Feared '51%' Fiasco". *TechCrunch.com.;* Gervais, Arthur; et al, (10 October 2016). "Is Bitcoin a Decentralized Currency?". InfoQ & IEEE Computer Society.

also said that Bitcoin has the potential to totally lose its value causing tremendous loss to its holders.

If Bitcoin value so far has mainly been derived from excessive speculative trading rather than from its use or recognition as a currency, then quick-wealth seekers may desist from trading in within a single day and turn to more novel trading instruments to capitalise on the opportunity of quick wealth making, especially given that modern technology has lifted all boundaries for engineering gambling-like investments, and Bitcoin would be considered then as nothing but a trigger. Mark T. Williams, an economist and finance expert, raised some concerns in his testimony about Bitcoin, including a lack of consumer protection, being a high-risk virtual commodity, having an artificially inflated price, being subject to extreme hoarding, and with high potential for market manipulation and fraud.[50]

3. **Stability of Value**

Bitcoin's value has been very volatile, especially in 2017, ranging from about $1000 to $20000, and in December 2017 when it doubled in value and subsequently lost around 50% of its value.

Prior to this, and according to articles quoted by Wikipedia, "the price of Bitcoins has gone through various cycles of appreciation and depreciation referred to by some as bubbles and busts. In 2011, the value of one Bitcoin rapidly rose from about US$0.30 to US$32 before returning to US$2. In the latter half of 2012 and during the 2012–13 Cypriot financial crisis, the Bitcoin price began to rise, reaching a high of US$266 on 10 April 2013, before crashing to around US$50. On 29 November 2013, the cost of one Bitcoin rose to a peak of US$1,242. In 2014, the price fell sharply, and as of April remained depressed at little more than half 2013 prices. As of August 2014 it was under US$600".[51]

Nobel Memorial Prize laureate Robert Shiller said that Bitcoin "exhibited many of the characteristics of a speculative bubble".[52] In fact, speculation in Bitcoin has been compared to the tulip mania of seventeenth-century Holland. Nout Wellink, a former president of the Dutch Central Bank,

[50] Testimony of Mark T. Williams, (January 29, 2014). The New York State Department of Financial Services: Hearing on Virtual Currencies.
[51] https://en.wikipedia.org/wiki/Bitcoin.
[52] Shiller, Robert, (1 March 2014). "In Search of a Stable Electronic Currency". New York Times.

remarked "This is worse than the tulip mania, At least then you got a tulip, now you get nothing*".*[53] According to Mark T. Williams, as of 2014, Bitcoin's volatility was seven times greater than gold, eight times greater than the S&P 500, and 18 times greater than the US dollar.[54] According to Bloomberg, "The European Central Bank has repeatedly warned about the dangers of investing in digital currencies. ECB President Mario Draghi said in February the blockchain was 'quite promising' and the bank is 'very interested' in the technology. Draghi doesn't consider Bitcoin a currency however as it's too volatile. Vice President Vitor Constancio said in September that Bitcoin isn't a currency, but a 'tulip' -- alluding to the 17th-century bubble in the Netherlands".[55]

The diagram below depicts the sharp volatility of Bitcoin market value since inception to date - especially from 2017 onward.

Bitcoin Market Price

In conclusion, given the facts above, it can be said that Bitcoin, since its inception, has not enjoined the necessary stability of value in a currency that is valid from a Shariah perspective. Stability of

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[53] The Guardian. (4 December 2013).
[54] Williams, Mark T. (21 October 2014). "Virtual Currencies – Bitcoin Risk". World Bank Conference Washington DC. Boston University.
[55] Eric Lam, (Dec.15, 2017). "What the World's Central Banks Are Saying About Bitcoin", Boomberg.com

value is required by the Shariah in order for the currency to properly perform its perceived economic functions as discussed earlier, but Bitcoin fails to satisfy this particular Shariah requirement.

All in all, despite the relative success of Bitcoin on some levels its journey has been full of controversies, and due to its fragility as a currency, its value and popularity have been severely affected by several external events as shown in the table below. This in general should disqualify it from acquiring the status of a true currency.[56]

Conclusion

In conclusion, this paper has shown that both Islamic and conventional economics share the same view with regard to the criteria of a valid currency and its three economic functions. From both perspectives, despite cryptocurrencies being an innovative mode of payment and a trading instrument it does not amount to or qualify as being a currency, simply because it fails to possess the features of a currency - being a means of exchange, a unit of account and a store of value. Although these three features exist in cryptocurrencies to some extent, they are not evident or entrenched therein to the extent that it would qualify these cryptocurrencies becoming valid currencies. It is possible that cryptocurrencies may evolve in the future to successfully attain full status of currencies or even replace the conventional currencies, but this may take some time and require appropriate governance to regulate cryptocurrencies and subject them to scrutiny and control to avoid the high risks currently associated with them. According to Bank of International Settlements, which is considered the central bank for all central banks, “while digital currencies are a revolutionary tool, they remain far too risky to be used as legal tender any time soon”. [57]

With regards to Bitcoin specifically, it has excelled and superseded other cryptocurrencies but most likely as a speculative trading tool more than anything else. However, Bitcoin is still lacking the necessary characteristics of a valid currency in view of the points discussed in this paper.

[56] Grant Spencer, the former acting governor of the Reserve Bank of New Zealand, said: “I think they [cryptocurrencies] are part of the future, but not the sort that we see in Bitcoin.” Eric Lam, (15 Dec 2017). “What the World's Central Banks Are Saying About Bitcoin”, Bloomberg.com

[57] Eric Lam, (15 Dec 2017). “What the World's Central Banks Are Saying About Bitcoin”, Bloomberg.com

Nevertheless, Bitcoin may have the potential to evolve and acquire the features of a valid global currency if the world authorities recognise it unconditionally and subject it to the necessary regulations and controls.

The results of this paper can be summarised as following:

- There is no Shariah objection, in principle, to the creation of a new currency, such as a digital currency, as long as it meets the Shariah conditions of a valid currency, and its trading and dealing are subjected to the same Shariah rules as the regular currency.

- From a Shariah perspective, a currency whose value is technical and not intrinsic has to be properly backed by real valuable assets or be supervised by a trustworthy financial authority in order to protect people from fraud.

- A careful study of Bitcoin reveals that it fails to satisfy the Shariah standards of a valid currency, due to instability in its value, limited acceptability and a lack of sufficient protection.

- The recent popularity and success of Bitcoin is due to speculative trading rather than its genuine use as a currency. Most of those who buy it are speculators aiming to make a quick profit from quick trading without taking the risk of holding it for long time. To them Bitcoin is an investment chance that availed itself rather than a currency to be treated and used as such.

- The vulnerability of the cryptocurrencies to possible hacking and digital monopoly is a significant concern from a Shariah perspective, especially given that the average user has limited knowledge about hacking and cyber-attacks. Indeed, we know little about the safety of our data on our computers, and the trend has been that hackers will hack or create a bug and then computer scientists come up with some solutions. However, from the time of hacking until the emergence of the counter procedure many cryptocurrencies can be stolen or lost.

- Despite the Shariah objection to the dominance of certain fiat-money currencies over the world economies, this fiat money remains in final analysis better than a cryptocurrency such as Bitcoin, due to the possible economic harms caused by the latter.

- Finally, efforts should be made to break the hegemony of the US Dollar, not through introducing more controversial currencies like Bitcoin, but rather through reinstating the currencies that have intrinsic value like gold and silver, so that no super power can impose its fiat money on others.

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