CHAPTER 22

The Challenges of Cryptocurrencies and the Shariah Paradigm

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Abstract Overreliance on centralized system, that is, the ecosystem built on trust and thus there ought to be a trusted party for the mechanism to work, was seen as the crux that prevented the existence of an effective and true electronic payment system, that is, one that's truly non-reversible. Bitcoin was introduced as an answer to that (Nakamoto, Bitcoin: A Peer-to-Peer Electronic Cash System. *bitcoin.org*, 2008). It gave rise not only to a whole new system of electronic payment akin to the more original mode of trading, it also gave birth to the new world of cryptography. What's interesting is that despite its wider global acceptance, such initial introduction of cryptocurrency raised many issues more than the issues its introduction sought to resolve. The questions raised and issues arise not only from the commercial but also regulatory point of view. As Islamic finance is growing and due to the borderless and nationless nature of cryptocurrencies, it becomes necessary that we also examine it from Shariah view point. Hence, in this chapter, after the general discussion of cryptocurrency and its characteristics, we take for case study the two celebrated cryptocurrencies before we will see how Shariah perceives

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cryptocurrencies and how cryptocurrencies are being regulated. Thereafter, we highlight issues and challenges, and we put forward our recommendations and the way forward for the issues and challenges surrounding the cryptocurrencies.

Keywords Cryptocurrency • Blockchain • Challenges • Regulations • Shariah

Introduction to Cryptocurrency

Literally, cryptocurrency is a term made of two words, that is, crypto and currency. The word crypto is a short form of cryptography that connotes the IT system used as medium for transacting in the virtual world and known for its ability to generate asset and to ensure security of such asset trading. Literally, however, it is the Latinized form of Greek *kryptos* that means hidden or concealed as in a thing that kept secret. As for currency, it refers to certain units generally acceptable as mode of exchange, the value of which is usually preset by the regulator in a given jurisdiction which can be pegged or otherwise to the like of it from other jurisdiction or a basket of select currencies and so on.

As for cryptocurrency, the term will usually give inference to the advance medium of exchange, notably done over the Internet or the virtual world, which supposed to have the characters of currency albeit its existence on the virtual world exclusively. Such understanding has widened the perception of what's included as cryptocurrency. Hence, the inclusion of Libra that despite the use of cryptography technology is not by itself an asset and thus is lacking the characteristic of a 'commodity' which was deemed to be one of the essential characteristics of cryptocurrencies. We will examine that deeper at the later part of this chapter. For the purpose of the discussion in this chapter, let's agree on the simple understanding of cryptocurrency (Rosic, 2018) being "an internet-based medium of exchange which uses cryptographical functions to conduct financial transactions."[1]

[1]We adopted this more general definition to facilitate the points of discussion in the chapter and also to move away from product inspired definition such as "digital asset that is

Cryptocurrency: The Characteristics

Careful analysis of cryptocurrencies reveals the three essentials that qualify an object as cryptocurrency. They are as follows:

(a) It is an asset.
(b) It is medium of exchange
(c) It uses cryptography technology such as blockchain technology.

It is interesting to note that such characteristics of cryptocurrencies bring its notion closer to the concept of 'currency' in Shariah as opposed to the conventional and prevailing market practice with respect to currency. Dirham and dinar being the currency used during the period of the Prophethood and khilaafaat were made of gold and silver, respectively. They were minted to represent the value of the respective precious metal. They were both assets/commodities as well as media of exchange. Most cryptocurrencies, Bitcoin included, squarely fall within the Islamic notion of currency being commodities as well as the media of exchange. And as with the case of most cryptocurrencies including, most notably, Bitcoin, the assets have intrinsic value and have limitation of availability. By intrinsic value means each of the Dinar and Dirham and the Bitcoin are valued based on its value as commodity, not based on certain value or figure dictated by centralized authority which does not represent the true value of such medium of exchange as an asset. By limitation of availability means the supply of each gold and silver as well as Bitcoin has limitation and is not endless.

One celebrated feature of Bitcoin is the decentralized nature of the payment system, the very reason it was invented and introduced in the first place. This feature, however, has been somehow downplayed. It is arguable that to allow this as the determining or crucial part that differentiates cryptocurrencies from others would exclude any claim of any asset backed, as opposed to asset generating, system of electronic payment for being part a cryptocurrency. That will, for example, disqualify Libra and all other electronic payment systems which have an operation backed by non(virtual) asset or fiat money, a system that government of a country or regulator

constructed to function as a medium of exchange, premised on the technology of cryptography, to secure the transactional flow, as well as to control the creation of additional units of the currency" (Chohan, 2017).

most likely adopt if they will introduce 'cryptocurrency' of their own. In brevity, it is highly difficult, if not impossible, not to include any role of a 'trusted' party as a component of electronic payment system that is backed by fiat money. That's the natural consequence of deployment of non-asset and/or non-commodity as the backbone of the system as the absence of intrinsic value necessitates the presence of a 'party' to enable extrinsic value to be conferred.

The similarities and the differences between Bitcoin and Libra are further discussed in the later part of this chapter. Choosing Bitcoin as a case study for this chapter is a no-brainer. As for Libra, its contrast to Bitcoin is one of the reasons for its selection as case study as that helps to highlight several points of discussions this chapter seek to demonstrate. Furthermore, Libra has the potential to be a game changer in the whole sphere and may even shake the traditional banking and payment system outside the virtual world, hence, too dominant an impact to be ignored.[2]

Cryptocurrency: Case Study

Bitcoin and Libra

Generally, people regard Bitcoin as digital money, coin that has cash value but available only in virtual world. It was described as the world's best performing currency as the value of one Bitcoin has increased tremendously since it was released in 2009 to its all-time high of $19,783.06 on 17 December 2017 (Morris, 2017). The price started to plunge in February 2018. On 15 November 2018 Bitcoin's market capitalization fell below the$100 billion mark and its price stood at $5564.70 (Huang, 2018). On 12 October 2019 the value stood at 8318.65 at 02.00 GMT (Coindesk, 2019). As a coin has such high value, it is not uncommon for people to transact in fraction of the coin, usually referred to as millibitcoin (mBTC), microbitcoin (μBTC, sometimes referred to as a *bit*) and satoshi.

On the other hand, until recently Libra was seen as a more promising digital currency. To be backed on Facebook gigantic social network, "the effort, should it succeed, threatens to upend the traditional, lucrative plumbing of e-commerce and would likely be the most mainstream application yet of cryptocurrency" (Andriotis, Hoffman, Rudegeair, &

[2] At least that was the case until its development and progress were halt by the US government indefinitely and Facebook's major partners exited from the project.

Horwitz, 2019). Officially announced on 18 June 2019, the ambitious plan to create an alternative financial system that relies on a cryptocurrency called Libra was expected "to be the most far-reaching attempt by a mainstream company to jump into the world of cryptocurrencies" (Isaac & Popper, 2019). Facebook also introduced Calibra. It's a digital wallet planned for Libra. Through Calibra, Facebook planned to provide financial services that would enable people to access and participate in the Libra network. It was announced that Facebook planned to launch Calibra in 2020, that it would get the support from Mastercard, Visa, Paypal, eBay, Uber, Lift, Spotify and some others, and it would be available in Messenger, Whatsapp and as a standalone application (ALvares, 2019). It was not, however, an easy sailing for Facebook. Since the announcement, it has "ruffled feathers and sparked fears among governments all over the globe" (Telford, 2019) until finally the effort came to a complete halt when the House of Financial Services Committee and other congressional leaders sent a letter to Facebook Founder and Chief Executive asking Facebook, its Chief Operating Officer and the Chief Executive Officer of Calibra to agree to a moratorium on any movement forward on Libra and Calibra reasoning that since "Facebook is already in the hands of over quarter of the world's population, it is imperative that Facebook and its partners immediately cease implementation plans until regulators and Congress have an opportunity to examine these issues [exposure to massive scale of the risks and the lack of clear regulatory protections which could pose systemic risks that endanger U.S. and global financial stability] and take action."[3]

Be that as it may, it is not the political and regulatory issues surrounding Libra that are of interest for the discussion in this chapter. It is selected for the case study as it has similarities and salient contrast to Bitcoin that made the two the best illustrations as to how the regulations and Shariah should afford different approach and treatment to the two.

The Similarities Between Bitcoin and Libra

Both Bitcoin and Libra are referred as cryptocurrency even though that may not necessarily be accurate. Such reference is because both currencies are built on cryptography technology, namely, the blockchain. Both

[3]The full text of the letter available on the website of the US House Committee on Financial Services.

Bitcoin and Libra are (and/or intended to be) medium of exchange. Another similarity between the two is that Bitcoin and Libra blockchain are pseudonymous and allow users to hold one or more addresses that are not linked to their real-world identity (Nakamoto, 2008). And that's about it; the two currencies do not share anything else in common.

The Differences Between Bitcoin and Libra

When we discussed the three characteristics of cryptocurrencies, Bitcoin has all these three essentials. Libra, on the contrary, despite being built on cryptography technology, on blockchain, is more akin to e-cash or digital cash.[4] Here are how Libra differs from Bitcoin and other commodity/asset kinds of cryptocurrencies:

First, it is not per se an asset. Section 2 of Libra Whitepaper states that the reserve is the asset and it requires to be backed by a reserve to give it an "intrinsic" value. That's the very same character fiat money has. Without any reserve, Libra unit has zero value, and hence, it is unlikely that it could be utilized for trading purposes. Bitcoin, on the other hand, is asset. Obviously one cannot turn Bitcoin into building materials or jewellery, but otherwise it is being accepted for trade and as a means of exchange in the manner commodity is albeit it is limited in the virtual realm. As with other commodities, its price increases when the demand does and vice versa.

Second, unlike commodity, Libra units are endless. The unit could be issued when certain parameters are met or based on the discretion of the operator. There will be no issue of scarcity nor will there be any potential of diminishing or limitation of supply. Commodity, on the other hand, is usually grown or mined. Bitcoins, like most metals, are mined. It's a mistake to think that Bitcoin's supply is endless. The protocol for Bitcoin halves the reward for adding the block every 210,000 blocks. That means, once the limit of 21 million Bitcoins reached, there will be no more Bitcoin to mine and record keeping will only be rewarded by transaction fees.

Third, Libra, like fiat money, does not have intrinsic value. Like fiat money which paper or coin represents the value stated on the cash, not the value of the paper or coin itself, the value of Libra unit is based on fiat money used as the underlying. Bitcoin, however, has intrinsic value. Each

[4] For discussion on e-cash from legal and Shariah view point, see El Islamy, 2002.

part of the coin is valued for the fraction it represents just like people do gold and silver.

Fourth, even though Facebook claims that its blockchain technology is decentralized, the fact that Libra unit does not have intrinsic value makes it mandatory that certain mechanism has to be put in place to set the value of the unit something akin to that for fiat money. Bitcoin, on the contrary, decentralized in its true sense. Not only that it was set to be such, it is also because as with any other commodity of similar nature used or could be utilized as medium of exchange, it does not need an authority or a trusted party to conferred its value: it already has one, intrinsically.

Those differences should attract different regulatory treatments and so would the Shariah perception of them. Let us first see how Shariah views them before we see how the regulators from around the globe respond to cryptocurrencies.

Cryptocurrency: Shariah Views

Shariah has given clear guideline of what is lawful and unlawful based on the teachings of the Qur'ān and the Sunnah. It is not at human's pleasure to hold something halal as haram and vice versa (Al Quran 7: 32–33). Being the way of life sanctioned by Allah the One and Only God, Shariah governs all aspects of humans' life including the spiritual and the day-to-day life. However, it differentiates the fundamental approach to the two: with respect to spiritual aspects of life, the believers are not obliged to undertake any obligations unless ordained by Shariah, whereas the fundamental principle that governs other aspects of life is permissible and the believers have the freedom to transact unless there is express prohibition in the Shariah that puts some limitations and/or prohibitions in any particular matter.

There are very limited items which are prohibited by Shariah due to its substance and the prohibition could be extended by way of analogy. Cryptocurrencies are not prohibited items by substance or by way of analogy; thus, they are permissible (*halal*). Can a ruling on a substance which originally is permissible (*halal*) become prohibited (*haram*)? Yes, and that could be due to several factors such as due to the transgression of rules in the manner and/or dilution with prohibited substance that made it impossible to separate the two. With respect to cryptocurrencies, while it is *halal* by substance, can the haram ruling applies due to other reasons or external factor? The answer is yes but that would make prohibited transaction void

without affecting the permissibility nature of cryptocurrencies, for example, if there is element of *riba*, *gharar* or *maysir* in a transaction where a cryptocurrency is used as part of transaction; hence even though the cryptocurrency is halal, the transaction is haram. The permissibility ruling of cryptocurrencies does not change albeit the ruling of the overall transaction.

The basic principle of Islamic contract law is that everything is presumed to be lawful, unless it is definitely prohibited. Hence, as with other new innovations, Bitcoin and Libra are to be presumed halal and remain so unless and until it is proven that they or any components that constitute them are prohibited by or contravenes Shariah injunctions. That especially so because the usage of Bitcoin or Libra in transactions is a matter of transactional nature (*muamalah*) and there is no revelation in a form of Qur'anic verses or hadith or other sources of Shariah that impose an injunction prohibiting it as such.

Now that we have determined the original ruling of cryptocurrencies, we need to ascertain the parameters that will apply in any given transactions using the cryptography. Shariah sets different set of treatments when one is dealing in commercial transaction in a form of trading of commodities and when the gist of the transaction is to trade or transact in currencies or both.

Let's take the following four scenarios as the illustrations for the foregoing discussion:

(a) A trades his sheep for goat from B.
(b) A trades his gold for goat from B.
(c) A trades his class 1 gold for class 2 gold from B.
(d) A trades his gold for silver from B.

To ensure the clarity of understanding the illustrations, it is important to note that goats and sheep are regarded as commodities while golds and silvers, despite being commodities, are also used and recognized as media of exchange.

When a person trades a commodity for another commodity, such as the scenario given in the first illustration above, the most important aspect for such transaction to be valid is the consent of the parties (Al Quran 4: 29). Each of the parties has the freedom and the right to deal in such transaction in any manner both parties agreed, and it is valid even if there is delay in delivering one or both of the commodities to each other and it remains

valid even if there is disparity of pricing in the two. This illustration applies if, and only if, Bitcoin and other asset-regarded kinds of cryptocurrencies are treated as commodities,[5] and despite its use in trade and/or for trading purposes, they do not represent currency and/or media of exchange.

The same concept and ruling are applicable when the exchange or trade involves the trading of commodity for cash or currency as given in the second illustration above. In such arrangement, each of the party has the right to determine how, when and the price of the transaction. Any delay in delivering one or both of the object of trade and fixing the price above or below the cash/currency value is allowed and will not avoid the transaction. In other words, when A trades his gold for goat from B, the transaction is valid and binds both parties even if the trade is not done on spot, or the price paid by instalments, or A is paying more than the market value of similar goat that may be sourced from the market and vice versa. This applies to Bitcoin and/or Libra when they are used as the payment mode for purchases of non-currency such as things or services. In such instance, the value of each item being exchanged, the time and mode of delivery are as per the parties agreed terms. The original ruling here is halal even if the transactions involves price disparity and/or delayed delivery as long as those are accepted and agreed by the parties.

The third illustration, however, involves exchange of two commodities treated as cash/media of exchange. When it comes to such transaction and any similar transactions where the subjects to be exchanged are, despite having the essence of being commodity, regarded as media of exchange, Shariah imposed the following restrictions: the trade has to be "yadanbi-yadin, sawaanbisawain", that is, has to be done on spot basis and for the same quantity. Both restrictions, that the trading has to be on spot basis and for the same objects are applicable when the parties will exchange the same kind of medium of exchange. Hence, in the third illustration, for such trade to be effective and binding, the two restrictions have to be fulfilled and that despite the absence of parity in pricing of the golds due to the difference in quality. It is not allowed to delay delivery of any of the

[5] It is interesting to note that it has been argued that in the USA, cryptocurrencies are commodities within the provisions of SAFT and thus subject to regulation by the CFTC (Concannon et all, 2019). The China government went extreme into stating that Bitcoin cannot be regarded as currency because it is not issued by monetary authority and does not have legal status of being compulsory used and accepted as currency. The US Commodities Futures Trading Commission has also adopted the approach describing Bitcoin as a commodity (Comply Advantage, 2019).

objects of trade, and it is also prohibited to trade the same kind of medium of exchange with a lower quantity; it has to be exactly for the same quantity irrespective of quality. Hence, it is prohibited to trade in the following:

(a) spot exchange of 1 ounce of A class gold with 1.2 ounce of B class gold even if those represent price parity;
(b) spot exchange of US$50 old notes with US$49 new notes;
(c) exchange of 1 ounce of gold for 1 ounce of gold with delay in delivery of one of the items;
(d) future exchange of 1 ounce of gold for 1 ounce of gold;
(e) exchange of US$50 for US$50 with delay in delivery of one of the items; and
(f) future exchange of US$50 for US$50.

As for the fourth illustration, the trade is valid when done on spot basis. This is as instructed in the following hadith of the Prophet PBUH:

> *Gold with gold, silver with silver, burr with burr, sya'ir with sya'ir, tamr with tamr, salt with salt must trade on equal weight and on spot. If trade is between two different kinds then you can trade as you wish provided it has to be spot.* (Narrated by Bukhari and Muslim No. 1587)

If we were to make an analogy between cryptocurrencies with conventional media of exchange, Bitcoin could be regarded as both commodity and medium of exchange, while Libra only fits for the latter. Consequently, the rulings applicable to gold and silver are applicable to Bitcoin and the likes of Bitcoin from among cryptocurrencies duly regarded as assets. Being afforded the same treatment as gold and silver means Bitcoins should be subjected to the same *ribawi* injunctions that require, among others, exchange of the same kind has to be for the same quantity (regardless of quality) and on spot basis. As for exchange with other kinds of *ribawi* commodities, quantity may differ, but it has to be done on spot basis. As for Libra, if it would be introduced in the manner its Whitepaper presents, then it will be equal to fiat money that takes the exclusive form in the virtual world, and thus, the Shariah ruling applicable to fiat money shall apply to Libra accordingly.

The question that remains is whether Bitcoin was intended to be the medium of exchange or would be regarded solely as commodity. If the latter is confirmed, then it will gain the huge potential of Shariah-compliant

trade where the restrictions which are applicable with respect to *ribawi* items are not necessarily applicable. At a glance, that may not seem plausible considering Bitcoin was intended as "electronic payment system based on cryptographic proof instead of trust." If that's the case, irrespective of owner's intent, the restrictions applicable on *ribawi* items are applicable because, by way of analogy, the restrictions apply even when gold or silver are bought as jewellery with the intent to be kept as investment as opposed to its usage as the media of exchange. However, careful reading of Nakamoto's Bitcoin Whitepaper does not infer that Bitcoin is to be regarded as currency the way we understood fiat money (Nakamoto, 2008). It's a medium to affect electronic payment without the need for a trusted party. A payment system requires an object to be exchanged to affect payment. Such object could be fiat money or commodity. Hence, it is plausible that despite the main objective of Bitcoin is to serve as decentralized payment system creation, it could also have been intended to be virtual commodity (Nakamoto, 2008). Such point could be further analysed as an interesting topic for future study. As for the purpose of this chapter, it suffices to deduce that due to its very nature, Bitcoin is to be given the same treatment as gold and silver and Libra is as fiat money. It should be subjected to the same *ribawi* injunctions that require, among others, exchange of the same kind has to be for the same quantity (regardless of quality) and on spot basis. As for exchange with other kinds of *ribawi* commodity, quantity may differ but it has to be done on spot basis. Otherwise, Bitcoin is to be given the same treatment like other halal commodities, an option that is not available for Libra. It is permissible for people to transact and/or trade with it or by using it. The standard Shariah injunctions on sale and/or contracts apply. In any case, we should not use Bitcoin, Libra or any other cryptocurrencies in transactions involving fraud (*gharar*) or for speculative purposes (*maysir*) just like we should not use fiat money or gold to commit fraud or unethical transaction nor should we use it to gamble.[6]

[6] It is interesting to note that Libra Whitepaper reveals that "[t]he assets in the Libra Reserve will be held by a geographically distributed network of custodians with investment-grade credit rating to provide both security and decentralization of the assets. … Interest on the reserve assets will be used to cover the costs of the system, ensure low transaction fees and support further growth and adoption. The rules for allocating interest on the reserve will be set in advance and will be overseen by the Libra Association. Users of Libra do not receive a return from the reserve." That could raise the issue of participation by investors whose mandate is Shariah-compliant and/or select to observe the use of its fund in a manner that

Cryptocurrency: Regulatory Approach

Cryptocurrencies are generally regarded as new kids on the block. Many talk about it, some uses it and even speculates with it, a few avoid it, and we have a large size of population in the world that do not even know what it is and it is not surprising that in developing countries or rural areas people may not even have heard of it. Despite that, many regulators from both developed and developing countries are quickly expressing their stance with respect to cryptocurrencies.

In the USA, as the government and the regulators usually leave online commercial-related activities to be regulated by the concerned industry, one may think that would also be the case with cryptocurrencies. Wrong! On the contrary, regulators jump into regulating this aspect of the previously unregulated virtual world. Some claimed the right to regulate on the argument that it is currency and therefore to be treated the way fiat money do. Some claimed the right to regulate because it is securities. Others extended their authority based on either the movement of asset or security, or with respect to prevention of money laundering. The disparate approaches taken by different agencies within the USA have led to confusion on the part of blockchain companies about the jurisdiction and regulatory regimes to which their products and services will be subject (Weinstein, Cohn, & Chelsea Parker, 2019). Some existing regulation were invoked to regulate cryptocurrency; yet, some state government chose to issue regulation to afford exemptions and the like in order to facilitate development and promotion of cryptocurrencies and/or encourage players to choose such state as the base for the new business and/or startups due to the more friendly regulatory regime. Consequently, as noted in Comply Advantage (Comply Advantage, 2019),

> [i]t's hard to find a consistent legal approach to cryptocurrencies in the United States. Laws governing exchanges vary by state, and federal authorities actually differ in their definition of the term 'cryptocurrency'. … the IRS … regards cryptocurrencies as property and has issued tax guidance accordingly. the Securities and Exchange Commission (SEC) has indicated that it considers cryptocurrencies to be securities.

does not contradict Shariah. Such deployment of reserve may also attract the view that will prohibit the system as an entirety on the basis of the obligation to prevent the accomplishment of what's prohibited by Shariah (*SaddDzara'i*).

The good news is that the Justice Department is coordinating with SEC and CFTC over future cryptocurrency regulations to ensure effective consumer protection and more streamlined regulatory oversight and there are other initiatives undertaken by the Federal Authorities to better regulate cryptocurrencies.

The UK regulator, on the other hand, had not extended its authority upon cryptocurrencies. The transfer, purchase and sale of cryptocurrencies fall outside the regulatory remit of FCA. Consequently, any such investor won't have access to the Financial Ombudsman Service or the Financial Services Compensation Scheme if something goes wrong (FCA, 2019). Slowly, but surely, the UK government looked into the aspects of cryptocurrencies. In August 2014, the UK government announced a major programme of works looking into the benefits and risks associated with digital currencies and the underlying technology, with a particular focus on the question of regulation. In November 2014, the government published a call for information to gather views and evidence on those questions. On 31 July 2019, the FCA issues its finalized policy statement on cryptocurrencies.

China, however, has an interesting approach. Acknowledging the importance to lead in the area of new technology, in June 2018, China Banking and Insurance Regulatory Commission issued a working paper, which stated that "the sovereign cryptocurrency shall be deemed as a legitimate digital currency issued by the PBOC", which "has value as a fiat currency and can be used as a medium of exchange... while the non-sovereign cryptocurrency shall not be regarded as 'currency'; it's merely a digital symbol programmed and issued by market participants with agreed protocols. It is essentially similar to a kind of commodity that can be circulated" (Gong & Yu, 2019). China does not recognize Bitcoin as a fiat currency. It is instead being treated as a kind of virtual commodity. The People's Bank of China, the primary regulatory body policing cryptocurrencies in China, has issued the Joint Notice on the risks Associated with Bitcoin in 2013 that defined the nature of Bitcoin:

Bitcoin has four major features including. (1) no centralized issuer, (2) limited issuance volume, (3) no geographical boundaries, and (40 anonymity. Despite being call 'currency', Bitcoin is not a currency in nature because it is not issued by monetary authorities and does not possess the legal status of being compulsorily used and accepted. Judging from its nature, Bitcoin should be regarded as a specific virtual commodity; it does

not have the same legal status as a fiat currency, and it cannot and should not be circulated in market as fiat currency. (PBOC Circular, 2013)

It is interesting to note how the government of China went into a great length trying to elaborate and differentiate between sovereign cryptocurrency and the non-sovereign cryptocurrency, that Bitcoin cannot be treated as currency because it is not sovereign, that Bitcoin does not have the characteristic applicable to currency and so on and so forth while it is clear that the true reason for curbing Bitcoin and any other non-sovereign cryptocurrencies is about asserting authority and retaining the power to issue fiat money digitally and otherwise.

In Indonesia, Bank Indonesia, the Indonesia's Central Bank, on 13 January 2018 released a statement that warns all parties not to sell, buy or trade virtual currency. The press release states (BI, 2018):

> Bank Indonesia affirms that virtual currencies, including bitcoin, are not recognized as legitimate instrument of payment, therefore not allowed to be used for payment in Indonesia. This is in line with Act No. 7/2011 on The Currency which states that currency shall be money of which issued by the Republic of Indonesia and every transaction that has the purpose of payment, or other obligations which need to be fulfilled with money, or other financial transactions conducted within the territory of the Republic of Indonesia, has to be fulfilled with Rupiah.

BI cited Bank Indonesia Regulation No. 18/40/PBI/2016 on Implementation of Payment Transaction Processing and Bank Indonesia Regulation No. 19/12/PBI/2017 on Implementation of Financial Technology as the basis to forbid all payment system operators and financial technology operators in Indonesia to process transactions using virtual currency. The reasons given were because BI viewed that "[o] Ownership of virtual currency is highly risky and loaded with speculations, considering there is no authority responsible, no official administrator, no underlying assets to base the virtual currency price, and that the trade value is highly volatile" (BI, 2018).

Cryptocurrency: Issues and Challenges

Now that we have seen how Shariah perceives cryptocurrencies and how the regulators react to the market and the industry, it becomes apparent that Shariah being the rules that was established more than 1400 ago

remains relevant and could address the legality aspect of the cryptocurrencies, and yet the newly introduced man-made law has mixed reaction and poses uncertainty to a large extent. The latter poses one of the biggest issues faced by most regulators across the globe. While many felt and correctly so thought that this area should be regulated, the real question is to what extent? Too heavy regulation will deter development of advance technology and could also cause high expense which was initially one of the reasons for the cryptocurrencies to be developed and the players wish to avoid. Proper assessment should be undertaken too before any decision enforced or policy introduced so as not to kill a player who might have invested heavily for the offerings. The risk is not imaginary, but it's real, and Facebook is an example where it looks like its cryptocurrency initiative might have collapsed before it could see the light of day.

Yet, the steep reaction was for reasons. "Global privacy regulators, central bankers and finance ministers have voiced concerns" (Schulze & Choudhury, 2019), and no doubt sudden growth of this niche industry will also increase potential abuse and/or fraud by the so-called players. Other issues related to cryptocurrencies vary from the lack of Shariah pronouncement of "halal" status that may deter its usage by some potential investors, to the issue of traceability that unlike cash, the use of internet makes it possible to track the transaction and hence potentially raises the issue of privacy and/or data privacy to public acceptance and awareness.

If we were to divide the major issues and challenges surrounding cryptocurrencies and the industry, they are of three prongs: (1) issues and challenges faced by the regulators, (2) issues and challenges faced by the players and (3) issues and challenges faced by the public.

The issues and challenges posed and/or faced by the regulators mainly because cryptocurrencies are yet to be fully understood by most regulators. Understanding the system itself is one thing, trying to regulate its unique aspects considering that it is borderless, nationless, the issue of traceability, are quite another. Often among the regulators themselves, it becomes unclear who should regulate and what would be the best approach to adopt when a situation falls within the authority of multiple regulators. Which of the regulators' claims should prevail when a transaction involves parties from different continents and the wallets and/or other parts of the facilities are elsewhere, in other countries miles away from the parties. If there is an alleged breach of law, how to determine and where an offender should be tried and so on and so forth. The list can go on and yet the answers are not necessarily as easy or straightforward. It perhaps calls for

the sovereigns to sit together, have experts highlighting to them the risks and aspects that need to be governed and have the rules embedded transparently and clearly in a form that have wider coverage, in a form of treaty, for example.

As for the players, it is not uncommon that players in a given jurisdiction face the potential of being exposed and be subjected to overlapped and multiple regulations in a country where they are and elsewhere. That's usually coupled with the uncertainty in terms of the applicable rules: whether the traditional ones are applicable to cryptocurrencies and/or on anything that relates to it too. Those uncertainties consequently put them in the unclear position in terms of customers' rights and protection. They may also be subjected to multiple regulators and/or law from another jurisdiction which they are not aware of. A transaction may have tax obligation or trigger certain other obligations and/or even attract potential law enforcement action in a country where the players may not have set their foot in. Those are among the issues and challenges cryptocurrencies players have to face in addition to technical issues and challenges they may face in relation to the use of the system. Those could not be solved by each country, and/or authority continues to pass regulations in areas each of them claims to fall within its authority to regulate, nor can heavy regulation address the issue. At the stage where authorities and/or law enforcement agencies have yet to fully understand the extent they should regulate, perhaps the best way to do is to ensure all players are made aware of the terms and conditions that they must mutually agree among themselves, including those terms which reconcile differences that otherwise present in a transaction. Furthermore, the authorities and law enforcement agencies should agree on the terms that allow for handling of a case and/or enforcement to be done in the best manner seen in a case to case basis. That as opposed to simply asserting authority and forcing enforceability each time each of them sees fit so as to potentially pose the risks of multiple sanctions on a single action being unfairly imposed.

The effort, however, should not stop there. Enacting regulation that aims to provide clarity and certainty to players and/or setting rules to allow adult players to make well-informed decisions is as important as setting mechanism to ensure availability of protection and its conferment. Terms for deterrence must be made clear and known too to discourage foul players from abusing and/or misusing the system and/or breaching the agreed-upon procedure and/or to cause repercussion to other players.

Last but not least, efforts should be made to educate the public about cryptocurrencies, the advantages they have to offer and the risks they pose and to create awareness too. Both are still lacking but needed because ignorance could be misused and systemic crime could be prevented.

Recommendation and Way Forward

The basic principle is that a thing which is not forbidden is deemed lawful. That's based on the maxim "lawfulness is a recognised principle in all things." In other words, everything is presumed to be lawful, unless it is specifically prohibited by law.[7] Despite the lawful ruling of cryptocurrencies from Shariah view point, the issues and challenges we mentioned earlier will continue until and unless the regulators, the players and the public are prepared to better understand cryptocurrencies, the system and the objectives they aim to serve. The regulators need to play its role too. It must strive to introduce regulations which are transparent, fit for the purpose and create robust environment which result in the balance between the need for proper regulations and for the growth of the industry. Creating public awareness is important, but there is also a need to create standards that confer protection on their rights while ensuring interoperability and protect end users too. It is important to strike the right balance and maintain the focus on the regulatory objectives. The latter should always constitute the basis of any regulation. Although it is inevitable for one to wonder how can we regulate a technology designed to be decentralized through a centralized institution?

As the technology develops in one hand, the law makers including through judiciary continues to shape the take of technology. In the USA, in *Securities and Exchange Commission v. W. J. Howey Co.*, 328 U.S. 293 (1946), for example, the Howey test has been applied to cryptocurrencies. Consequently, intrinsic value in the USA becomes less relevant, whereas in Shariah it could make a whole lot difference in deciding proper treatment. Speculation (its presence or absence) is less important too, whereas in Shariah it is prohibited.

[7] This dictum is based on the Qur'ānic verse 2:29 and further 31:20. This is expressly stated in the hadith read as follows: "Wherever Allah has declared lawful in His book is lawful, and wherever He has declared unlawful is unlawful, and wherever He has remained silent are forgiven. Then accept those bounties of Allah because Allah does not forget anything. Then the Prophet (PBUH) recited the verse (of Surah Maryam): Your Lord never forgets anything."

The way forward could be projected from the current state. Libra, unlike Bitcoin, is not an asset. It won't and can't be regarded as commodity. It is proposed to be used as a medium of exchange over blockchain technology; however, it does not have intrinsic value, and the value is based on fiat money used as the underlying, hence making Libra closer, in terms of nature, to e-cash or digital cash than cryptocurrency for the lack of the character of being an asset. It is akin to e-cash one would have talked about 20 years ago except it will be based on basket of currency and run by a group of self-declared "regulator" as opposed to a central bank and it will run on the technology so advance and unheard of two decades ago. Despite the highly enthusiastic start, the way forward is bleak and the road ahead is rough for Facebook to launch Libra, and if at all that will happen, the most likely scenario of Libra will be a continuous tug of war game with the regulators from across the globe. Facebook should have known that "currency" is the sovereigns' holy grail and any attempt to create new system that would subordinate the existing one will always be met with resistance.

Unlike Libra, Bitcoin was a new kid on the block with a humble start. Except for his pseudonym, we don't even know the very individual who created it. It sparked excitement, obviously, as most new things do when they have just received the limelight. Nakamoto had made brilliant move by putting much emphasis on these, among others, that unlike fiat money, Bitcoin has intrinsic value, that it is a commodity and it is decentralized—away from every aspect the sovereigns and/or financial regulators would traditionally claim as their exclusive authority.

Today, more than a decade after Nakamoto implemented and released the Bitcoin software as open-source code, Bitcoin continues to "excite" the virtual realm and stays at the top of the rank of cryptocurrencies despite the "rollercoaster" ride it's experienced most notably in 2018 (Chance, 2018). This and the years to come stand as evidence on a salient feature of Bitcoin which Nakamoto intended the most out of its introduction, albeit it's mostly belittled by many when they discussed on cryptocurrencies, that is, the decentralized aspect of the system; that payment system, most notably one offered in virtual world, could be offered without the presence of a trusted person. It also proves that when there are more honest players manning the system, it can stand alone and it can serve the market and the industry needs for such payment system with all features there were thought could only be done top down, through the

order of the sovereign down to its subjects or by being regulated by the authority or agency that has been conferred with the authority over currency.

Nomayo (2019) illustrates the adoption of Bitcoin across the globe through that image and others and his paper. Nakamoto did not emphasize on the distribution in his paper. Perhaps he did not expect the impact Bitcoin would have at the time of writing; or perhaps it was intentionally omitted because such discussion will highlight the impact Bitcoin could have should the manner of its distribution had been carefully planned, strategized and implemented rather than being left to the market as it is.

Be that as it may, Nakamoto and his Bitcoin should have inspired many more techno geniuses to come up with independent systems to populate the virtual world. It's doable; it could surpass the border limitation we have in real world and the restrictions we know in traditional market. If it is a completely new technology that one proposed to introduce, he or she could consider some element of convergence between the virtual and real world to be the bridge until people are comfortable with the new technology. When anything bad happens in the real world such as war, natural disasters and any other force majeure that can cause physical and complete destruction, one would feel a bit relief to know that some or perhaps significant amount of his wealth stays safe in the virtual world and is accessible from any part of the globe for as long as he or she has the access to the internet (and his/her password).

Now that all has been said, there is only one thing which I would like to put as a challenge to the techno geniuses—at the moment, what remains in virtual world remains there. One's wealth stays exclusively in the virtual world untouched when he dies and no one else knows his password. Even the court sanction given as a proof of eligibility to inheritance won't provide the heirs with access to his wealth in the virtual realm. He would have shared his password had he known his time has come but how many of us would know such time. Even worse, he could still be alive, but he simply forgot his password. It is a very simple issue but it is most annoying too. So let me end this chapter by noting that the emergence between the virtual and reality hasn't yet materialized so as to have the former equally reflected in the latter and with that I welcome anyone who can prove that the emergence can be done.

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