Regulation of Cryptocurrencies: Evidence from Asia and the Pacific

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Abstract

This paper reviews the key features of cryptocurrencies and their underlying technology, blockchain. It becomes clear that cryptocurrencies do not fulfill the three functions of money, at least for the moment, but should instead be understood as high-risk, high-profitability securities. While there are great opportunities such as increased remittances, their potential disruption of economic activity, and particularly of monetary policy is mind-blowing. Under this premise, and keeping in mind hackers’ heists suffered by cryptocurrency exchanges, it is important to regulate cryptocurrencies. Four core questions countries should decide on are: whether they consider cryptocurrencies’ legal tender, whether they allow cryptocurrency exchanges to operate (and if so, how); whether Initial Coin Offerings (ICOs) should be allowed (and if so, how); and whether they allow mining. Several policy options are presented, both from a theoretical perspective, and as they have been implemented by countries in Asia-Pacific. While countries such as China have decided to be restrictive, others such as Japan have chosen to regulate to let the sector thrive. Such diversity may be understandable, given that is such a novel technology that still poorly understood – especially its evolution. This diversity of standards offers great room for regulatory arbitrage, and highlights a great need for global coordination on cryptocurrency regulation and supervision.

Keywords: cryptocurrencies, blockchain, bitcoin, regulation.

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I. Introduction: What are cryptocurrencies?

Several definitions have been given for cryptocurrencies or crypto assets. Broadly, they can be considered as digital assets that depend on encryption to secure their generation and transfer. They usually have the following characteristics: (1) they are based on a decentralized system or network – as opposed to having a central authority such as a central bank; (2) through a peer-to-peer architecture, it is the system itself which oversees the ownership and amount of cryptocurrency units; (3) the system defines whether new cryptocurrency units can be created – if so, the system defines the necessary conditions and ownership; (4) the ownership of cryptocurrency units can be proven exclusively cryptographically; (5) the system allows the ownership of cryptocurrency units to change – if the current ownership of these units can be verified; and (6) if two different transactions to change the ownership of the same cryptographic unit are made at the same time, the system will only perform one of them.

Transactions of cryptocurrencies are recorded in a public distributed ledger called “blockchain”, in which “blocks” of new information can be continuously added (Schueffel, 2017). The blockchain is a database shared across different locations between various participants, with entries that must be confirmed and encrypted by a previously authorized group (in a “permissioned” ledger), or by any user in the network in a “unpermissioned” ledger of users (Meola, 2017). In an unpermissioned ledger, all the users in the network have a copy of it and all the changes made in the database are reflected in all users’ copies within minutes, maintaining its accuracy and integrity (United Kingdom’s Government Office for Science, 2016). All the blocks have a timestamp and are “chained” to the previous block using cryptography. This means that once a new block is added to the chain, it cannot be undone or falsified.

As a public distributed ledger, a key advantage of the blockchain is that it enables trust, rendering unnecessary the employment of a third party or neutral authority to confirm the transaction. This is revolutionary because, until the blockchain was created, transactions needed to be verified by a neutral authority to assure the legitimacy of that transaction, usually an institution such as the central bank or a credit card company. As digital information can be duplicated, the neutral authority played a vital role to avoid the so called “double-spending” risk, i.e. the potential of the same money being spent more than once (Ryan, 2017). Now, blockchain allows the network itself to be the neutral authority, allowing people to transact without an intermediary.

The uniqueness and security of cryptocurrencies’ network also relies on its timestamping process, of which there are two types: Proof-of-Work (POW) combines the cost of verifying a transaction and a monetary reward for doing it. Transactions in the blockchain are made using public-key cryptography, assigning each user one public key (which could be roughly compared to a bank account number) and a private key (which can relate to a password). To transfer cryptocurrency units from one user to another, one message is created, called “transaction”, and this message is added to the blockchain. To verify the authenticity of this message, i.e. to verify that the “signature” (private key) of the sender corresponds to the “bank account number” (public key),

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1 United Nations ESCAP (2017) provides useful key concepts. For other examples, digital currencies have been defined as “a type of currency that is non-physical (i.e. no banknotes and coins exist thereof) and which can only be transmitted via electronic means” (Schueffel, 2017). The IMF typically refers to them as crypto assets (IMF, 2018). It has also been noted that digital currencies are assets that “typically have some monetary characteristics (such as being used as a means of payment), but are not typically issued in or connected to a sovereign currency, are not a liability of any entity and are not backed by any authority” (BIS, 2015). The term “virtual currency” is largely interchangeable, but there is a fine distinction: it refers to “a digital representation of value, not issued by a central bank, credit institution or e-money institution, which, in some circumstances, can be used as an alternative to money” (European Central Bank, 2015).
users called “miners” perform computer hardware mathematical calculations (bitcoin.org, 2017).

The mining process, although costly because it requires copious amounts of electrical power, rewards the users with newly-created cryptocurrency units. Consequently, those users compete amongst themselves to provide the faster POW and record these transactions in a new block. On average, it takes about ten minutes to create a new block and add it to the chain to confirm the transaction. The transactions, once they are verified and recorded in the blockchain, cannot be undone or falsified, and are transparent to everyone in the network.

Proof of Stake (POS), is a second way to achieve consensus and timestamp the transactions. The POS algorithm addresses the issue of the amount of electric power needed in a POW scheme. In this algorithm, the creator of a new block is chosen in a deterministic way, depending on his/her wealth, also defined as ‘stake’. This means that the user is limited to mine a percentage that is correspondent to the user’s share of ownership.

Apart from mining, the other option to acquire cryptocurrency units is an exchange market. Much the same as a stock market, the cryptocurrency exchange market is a virtual place to trade tokens for fiat money, tangible goods, gold or tokens of other cryptocurrencies. Selling or buying tokens requires a “wallet”, which is a software that stores relevant information (such as private keys) rather than the tokens themselves. There are different types of wallets, the four main types being: (1) desktop wallets; (2) mobile wallets, which operate in smartphone apps; (3) hard wallets, which save the private keys in an offline hardware device (such as an USB) and (4) online wallets, which sometimes can also operate as an exchange. Their security may differ based on their characteristics, e.g. online wallets are vulnerable to hackers while offline wallets are not.

Cryptocurrencies are launched (i.e. born) in Initial Coin Offerings (ICO). Akin to an Initial Public Offering (IPO) in which investors acquire shares of a company, the ICO sells the crypto tokens of the digital currency. However, investing in an ICO is not equal to owning a share in a company: the investor merely hopes that the value of the coin will increase so there can be a return to the investment. Thus, ICOs can be perceived either as an innovation to the traditional venture-funding model, or as unregulated securities that have a high potential of fraud. In 2017, 525 ICO projects raised over US$6.5 billion, surpassing the total amount raised in 2016 (US$ 100 million) (Crown, 2018).

II. Bitcoin

The first cryptocurrency was Bitcoin, invented in 2009 by Satoshi Nakamoto.2 Besides Bitcoin, as of June 2018 there are approximately 1,600 cryptocurrencies, with a total market capitalization of $272,301,416,947 (Coin Market Cap, 2018). Bitcoin is the most famous of them, due to its rally at the end of 2017: its value peaked at close to 20,000 USD (figure 1). It is also the most used, as it accounts for 45% of all transactions with cryptocurrencies.

The five most traded cryptocurrencies as of 30th March 2018 were Bitcoin, Ethereum, Ripple, Bitcoin Cash and Litecoin3 Combined they accounted for almost 75% of the market capitalization. Each cryptocurrency has its own token and different capabilities contingent upon their purpose,

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2 This name is an alias; the real identity behind it is unknown.

3 Bitcoin Cash is different from Bitcoin. The reason is that “Bitcoin wanted to make a tiny change to have a longer block. This was impossible. They had to form a new blockchain called Bitcoin Cash. Now we have two cryptocurrencies. Two communities You cannot divide a community each time you want to make an improvement.” (Micali, 2018).
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although most of them share the same underlying blockchain technology and a validation process to secure transactions. There are some distinct elements, though, e.g. Ethereum, the second biggest cryptocurrency after Bitcoin, switched from a POW to a POS validation process. Ripple, the third most-traded coin, does not use miners to create new coins, using only tokens that are created and distributed by developers.

Figure 1. Bitcoin price in US Dollars

Experts tend to be rather pessimistic about Bitcoin’s future: it has been noted that Bitcoin will cease to exist or continue, at most, as an investment where value can be stored (Micali, 2018). Three features are key to ensure cryptocurrencies’ success (Ibid): scalability (to be able to make thousands of transactions per second), decentralization, and security. One limitation of the Bitcoin is that most of the tokens are controlled by three miners, which questions the system’s decentralization. The main disadvantage of Bitcoin, however, is its scalability: a maximum of 9 transactions per second can be performed, which seriously hampers its adaptation as a medium of exchange at large scale (Ibid). This feature cannot be changed: traditionally, once a cryptocurrency was created its system remains as it is. This is changing, though, as the most recent cryptocurrencies are learning from past lessons. For example, Algorand is a system with tokens named “Algo”, which builds in flexibility and future changes to the structure of the system (Ibid).

III. Differences between cryptocurrencies and money

Considerable debates have taken place about whether cryptocurrencies are just a speculative asset or alternative currency. Although crypto-enthusiasts have praised it as a currency and “the future of money”, monetary authorities and scholars do not define it as such (European Central Bank 2015); (Glaser, Zimmermann, Haferkorn, Weber and Siering 2014). Such judgment is made on the traditional criteria which must be fulfilled to be money: medium of exchange, store of value and unit of account.

Admittedly, cryptocurrencies may serve as a medium of exchange, despite the small acceptance and usage among the public. However, evidence suggests that the majority of Bitcoin’s transactions are for speculative purposes, rather than as a medium of exchange (Yermack, 2013; 2014). Further support is that negative news about possible regulation by central banks, functionality or infrastructure of Bitcoin’s network, losses or security issues, have no influence on
the price. Users do not use it for trade: it has been estimated that one third of bitcoins are held by investors that only receive bitcoins and never send to others (Baur’s, 2015).

Cryptocurrencies’ volatility undermines their ability to be used as a store of value, as people could lose their assets’ worth in a short period of time). For example, the annualized volatility of Bitcoin surpassed 100% in October 2017 (BitMEX, 2017), while the annualized volatility of the British Pound, Euro, Japanese Yen and Swiss Franc was 7.5%, 6.9%, 7.6% and 6.5%, respectively (RatesFX, 2017). Gold, a common refuge asset to store value, had a volatility index of 11.6% in November 2017 (World Gold Council, 2017).

Such extreme volatility also leads to problems for using cryptocurrencies as a unit of account: as their value may vary considerably in just a few days, it is a challenge to both customers and retailers to recalculate the price of goods and services expressed in it.

In some cases, an additional practical inconvenience to express the price of goods and services in cryptocurrencies might be their denomination, i.e. the relatively high value of one token for daily-use goods. The Bitcoin Protocol determines that one bitcoin can be divided in 8 decimal places (bitcoin.org, 2017), and it is not unusual that the price of a product is expressed with four or five decimals.

Based on these criteria cryptocurrencies are not money, but it could be easy to confuse them with electronic money (e-money) and mobile money, so it is useful to spell out the differences. Regulated by the central bank (Rotman Parker, 2014), electronic money is an electronic alternative to cash, monetary value stored electronically on a technical device that can be used to make payments, not necessarily involving bank accounts (European Central Bank, 2017; Firpo, 2009).

In turn, mobile money refers to financial services that can be accessed through a smartphone, the most noteworthy example being M-PESA. Three leading applications of mobile money are (1) mobile money transfer, a way to electronically transfer money from one person to another, domestic and cross-borders; (2) mobile payments, person-to-business payments made through a smartphone, and (3) mobile banking, the connection between a mobile phone and a personal or business bank account, allowing the customers to perform transactions such as deposits, bill payment and withdrawals (Firpo, 2009).

IV. Benefits of cryptocurrencies

This section presents four positive characteristics of cryptocurrencies, which include: more secure transactions, lower fees, promotion of financial inclusion and financial innovation.

As noted earlier, a public ledger that relies on the network to verify the transactions (as opposed to a third party) is more efficient and secure – and the transactions cannot be undone, which promotes trust.

Second, the absence of a third party made possible that transactions performed within the network are cheaper than in traditional payments’ systems. In addition, transactions are also processed

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4 Bitcoin’s value against to US dollar increased 122% in 2016 and 925% from January to November 2017

5 Compared to sovereign currencies, cryptocurrencies’ volatility is relative because there is no monetary authority committed to maintain the value of the currency.

much faster than traditional payment systems. Thus, small business owners could benefit from accepting cryptocurrencies because they offer a possibility to lower the transaction costs of doing business, particularly when dealing with foreign currencies, transaction fees and exchange rates.

Furthermore, cryptocurrencies are a more efficient way to send remittances, which can increase the volume of money sent and has potential benefits for poverty reduction and/or alleviation. In 2016, personal transfers and compensation of employees accounted for more than US$ 530 billion worldwide, and cutting the price of remittances by 5 per cent could save up to US$ 16 billion/year.

The cost of sending money can be severely slashed by using cryptocurrencies. The cost of transferring remittances accounted for 7.2 per cent of the amount sent in 2017Q3 (World Bank, 2017). Although it decreased from 7.3 per cent in 2017Q2, it is still far from the target of 3 per cent defined by the Sustainable Development Goals.

As of September 2017, the average fee banks charged for transferring money is 11 per cent, while money transfer operators (MTO) charged 6.14 per cent, post offices 6.56 per cent and mobile operators 3.10 per cent (World Bank, 2017). Transactions in the Bitcoin network are usually charged between 0.7 and 3.3 USD per transaction. Average transaction fees of the four most-traded cryptocurrencies apart from Bitcoin are also low: US$ 0.193 in Ethereum, US$ 0.132 in Litecoin, US$ 0.0015 in Ripple, and US$ 0.035 in Bitcoin Cash (Bitinfocharts, 2018). The reason why the cost of sending money is much lower is that fees are not related to the amount sent, but to the number of bytes used in the transaction (bitcoin.org, 2017).

Lower costs involve that cryptocurrencies can also promote financial inclusion. It has been estimated that 64 per cent of adults in developing countries do not have access to banking systems and basic finance services (Ardic, Heimann and Mylenko, 2011), while 2 billion adults worldwide remain unbanked and are excluded from the formal financial system (World Bank, 2014). The main reason for this exclusion is that it is costly for formal providers to offer banking services to ‘cover the last mile’. Given projections that by the year of 2020, 70 per cent of the world population will have a smartphone (Ericsson Mobility Report, 2015), cryptocurrencies are an opportunity to provide people in developing countries access to financial services. Furthermore, the negative effects of such macroeconomic issues such as unstable currencies or frozen capital markets can be eased by the usage of cryptocurrencies. For example, Argentinians and Venezuelans recently turned to bitcoins to store the value of their currencies eroded by inflation and paralyzed by strict capital controls (Popper, 2015).

Finally, blockchain technology is considered a multi-purpose technology which can stimulate innovation in other areas (Muhleisen, 2018). The tokens are packets of data and it is possible for programmers and developers to create systems that transfer not only currencies, but any other information as well (Brito and Castillo, 2013). Examples abound: some features built in the Bitcoin protocol include ways to settle disputes, micropayments, assurance contracts and smart property (Brito and Castillo, 2013); cryptocurrencies’ networks can also be used as a notary service to store documents (Kirk, 2013); Ethereum allows developers to create and run any program in any language, on a single decentralized platform, while Ripple allows users to transfer values in any cryptocurrency on a protected network. Thus, cryptocurrencies and blockchain

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7 The SDGs have a target of 3 per cent for the Global Average to be reached by 2030 World Bank, "Remittance Prices Worldwide," (2017). Furthermore, the SDGs have committed to “ensuring that in all corridors remittances can be transferred for 5 per cent or less” (Ibid).
8 Fees are paid in Bitcoin (BTC). At the current rate, between 0.0001 and 0.0005 BTC.
9 “Smart property is a concept to control ownership of an item through agreements made in the Bitcoin block chain. Smart property allows people to exchange ownership of a good or service once a condition is met using cryptography” Brito, Jerry, and Andrea Castillo, "Bitcoin: A primer for policy makers," (2013).
technology are just a foundation on top of which many other innovations and functionalities can still be built.

V. Disadvantages of cryptocurrencies

Cryptocurrencies also present challenges. This section discusses the main ones: volatility and their broader use, scalability, high electricity requirements, anonymity, security concerns, and the unclear role of central banks and monetary policy.

First, as cryptocurrency tokens have no intrinsic value, their value is determined by users’ expectations of it, which can be very volatile: expectations can change greatly in a short period of time with great risk of losses (BIS, 2015). While acknowledging that volatility is a problem to be a store of value or unit of account, it has also been argued that it may not affect the role of medium of exchange, because the low transactions fees are more important to the customers than the exchange rate in the future (Brito and Castillo, 2013).

A related issue is that cryptocurrencies may not suitable for all kinds of payment, which affects their scalability: Bitcoin’s transactions may be instantaneous, but the average confirmation time is one hour for six blocks confirmation\(^\text{10}\), making it incompatible to many types of common payments (Segendorf, 2014). Other cryptocurrencies such as Litecoin and Ripple have lower confirmation time (2.5 minutes/block on average for Litecoin and almost instantly for Ripple), they are still not widely used. These features are directly linked to scalability, which may be a problem if the number of transactions per second are considered, comparing them to major payment systems such as VISA and PayPal. VISA has the potential to handle over 24,000 transactions per second (tps) (VISA, 2010) and PayPal handled 193 tps on average (Altcointoday.com, 2017). In contrast, common cryptocurrency networks can perform much less, 9 tps by Bitcoin or 20 tps by Ethereum (Altcointoday.com, 2017) although there are reports that Ripple (50,000 tps) recently surpassed VISA’s transaction speed (Robledo, 2018). In general, though, the underlying structure of cryptocurrencies needs to be massively scaled to compete with traditional payments systems.

A third challenge is that mining cryptocurrencies require copious amounts of electrical power, which in developing countries may not have an adequate supply. If electricity is not adequately priced, this extra demand may induce negative environmental externalities and complicate efforts to expand the grid to areas where the poor still don’t have access.

There are also concerns about cryptocurrencies’ anonymity. For instance, an add-on cryptographic extension was developed to the Bitcoin protocol that allows completely anonymous transactions (Miers, Garman, Green and Rubin, 2013). This is considered to attract those interested or engaged in financing illegal activities, which could play a role in the public’s widespread acceptance.

Security risks are one of the main concerns, at least for consumers. Although the blockchain technology was designed to be resilient to cyberattacks and hacking, a potential point of failure lies on the security of the wallet applications and exchanges. Users must use encryption to protect their wallets from having their tokens stolen, and be careful not to unwittingly delete or misplace their coins.

\(^{10}\) Although for payments less than US$ 1000 one confirmation is enough, it is often suggested for bigger amounts to wait for six confirmations to secure that the transaction has been added to the blockchain.
Exchanges are vulnerable to security breaches as well. The first and most famous case was the attack on the Mt. Gox exchange. By 2013, Mt. Gox was the leading exchange for Bitcoin and other cryptocurrencies, handling alone approximately 70 per cent of all transactions worldwide (Frunza, 2015). After a series of distributed denial-of-service (DDoS) attacks in April 2013, Mt. Gox unexpectedly shut down and filed for bankruptcy in February 2014, announcing that 850,000 bitcoins were missing and likely stolen (Brito and Castillo, 2013). So far, the situation remains unresolved (Popper, 2016). A similar attack occurred with the Coincheck wallet and exchange service in January 2018, when $530 million worth of NEM coins were stolen due to security flaws. The latest attack, in June 2018, was when Korean crypto exchange coinrail lost over USD 40 Million in tokens due to a hack (Russell, 2018).

Last but not least, further development of virtual currencies that use public distributed ledgers raises questions about the role of central banks and the possible implications for financial stability. For example, tackling inflation through conventional monetary policy is impossible due to the absence of an interest rate. Hence, if all money in circulation was cryptocurrency, the only way to tackle inflation would be through the amount of money itself. The lack of an interest rate may not be an unsolvable problem in the future, however, as the design rules of cryptocurrencies may cater for it.

The substitution of banknotes by digital currencies could lead to a decline in central banks’ non-interest paying liabilities, which would reduce their balance sheets and entail less seigniorage. An option to address this might be issuing their own digital currency, and there have been allegations that some countries were planning to launch their own cryptocurrency. For example, countries such as Norway, Sweden or Switzerland are exploring the development of digital currencies (Daily Hodl, 2018). However, based on the definitions used, doing so would force them to give up conventional monetary policy due to the decentralization of the system – if the cryptocurrency is centralized, it would be equivalent to e-money (which is another option, but it would not be a cryptocurrency). In countries such as Norway, cash is already rarely used. Should cryptocurrencies be massively adopted, it seems too early to know how monetary policy would be implemented, if at all.

As money is created in the process of granting credit, the very functioning of the financial system in the future would be unclear: blockchain technology enables peer-to-peer transactions so they don’t have to go through the ‘traditional’ financial system. While this has already started somewhat in the form of, notably, crowdfunding, a wide use of digital currencies would pose a greater challenge to the intermediation role played by actors in the financial system, especially in the role banks play as redirecting savings towards deposits. Thus, decentralization would change the basic framework of payments and clearing on which financial market infrastructures rely. Large payment systems, securities settlement or central securities depositories would all likely be impacted by disintermediation.

These effects will depend on the extent to which cryptocurrencies replace traditional money. For instance, if the pace of replacing cash is slow (plausible in the short term if many cryptocurrencies keep appearing), the shrinkage in central banks’ balance sheets and reduction of seigniorage revenues would be limited. Regardless, policy makers should adapt the monetary aggregates’ monitoring to include digital currencies.
VI. Cryptocurrencies’ Regulation in selected countries of Asia-Pacific

After the 2017 rise in cryptocurrencies and Initial Coin Offerings (ICO), and the several hacks of digital currency exchanges early 2018, regulating cryptocurrencies has become a priority. In March 2018, at the G-20 meeting in Buenos Aires’, Argentina’s central bank governor asked that group of countries to provide “specific recommendations on what to do” (Rooney, 2018).

Broadly, the main three questions regulators must tackle are: whether they are legal; whether should cryptocurrency exchanges operate (and if so, how); and whether ICOs should be allowed (and if so, how). The panorama is very fragmented, the reason being that it is a disruptive, quickly-changing technology. Some countries such as Japan consider them legal tender since April 2018, while most others (e.g. China, United States of America, the Republic of Korea) do not. For most countries, cryptocurrency exchanges are legal (the main exception is China), although there is a clear tendency to have them register with the financial markets supervisory authority – or equivalent. Similarly, ICOs have been declared illegal in China, while countries such as Singapore or Switzerland have a reputation for being ‘friendly’ to cryptocurrencies (Switzerland’s Financial Markets’ Supervisory Authority has prepared clear guidelines for ICOs).

The diverse picture highlights the importance of coordination: given that cryptocurrencies are not limited to any national jurisdiction, coordinated approaches can greatly enhance the effectiveness of regulation (BIS, 2015) – but of course, regulation should be decided first. Five categories of action have been identified at national level (table 1):

Table 1. Policy Options for Cryptocurrencies (from more to less permissive)

<table>
<thead>
<tr>
<th>Policy options</th>
<th>Actions</th>
<th>Country examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information/moral suasion</td>
<td>1. Public warnings</td>
<td>Most of the countries have issued some sort of orientation regarding cryptocurrencies</td>
</tr>
<tr>
<td></td>
<td>2. Research papers</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Investor/buyer information</td>
<td></td>
</tr>
<tr>
<td>Regulation of specific entities</td>
<td>1. Regulate digital currency administrators: record-keeping, reporting, Anti-Money Laundering/Combating the Financing of Terrorism (AML/TF).</td>
<td>1. United States</td>
</tr>
<tr>
<td></td>
<td>3. Consumer protection measures (payment guarantee, redeemability etc.).</td>
<td></td>
</tr>
<tr>
<td>Interpretation of existing regulations</td>
<td>Apply regulation based on “interpretation” of how existing framework (e.g. tax law treatment) may be applied to digital currencies or digital currency intermediaries</td>
<td>United States</td>
</tr>
</tbody>
</table>
In Asia and the Pacific, two broad approaches have been pursued. At one extreme, China has become progressively more restrictive, while Japan has adopted a more liberal approach and regulated exchanges. Next, a snapshot on regulation is given for some of the region’s countries:

**Australia.** In late 2017, the Australian government has a position that differs from the one stated in 2015, when a “hands off” approach was adopted. In August 2017, following the money laundering scandal surrounding the Commonwealth Bank of Australia, a stricter anti money-laundering and cryptocurrencies related law was added to the Anti-Money Laundering and Counter-Terrorism Financing Act 2006, to include the regulation of digital exchanges. This meant stricter identification requirements and registration in the newly created Digital Currency Exchange Register. In a similar proactive approach, the Australian Taxation Office (ATO) is exploring ways in which cryptocurrencies may be classified. So far, cryptocurrencies are defined as property and is an asset for capital gains tax (CGT) purposes. Different classifications, such as personal use, investment, crypto-mining, trading, business transactions or conducting an exchange involve different taxations. The new anti-money laundering laws is effective since 3 April 2018.

**Bangladesh.** Late 2017, the Central Bank of Bangladesh issued a circular banning Bitcoin and other cryptocurrencies in the country. The notice states that transactions made with cryptocurrencies are a violation of Foreign Exchange Regulation Act, 1947, Anti-Terrorism Act 2009 and Money Laundering Prevention Act, 2012 and users can face financial and legal consequences (Mowla, 2017). As of February 2018, officials from Bangladesh Financial Intelligence Unit (BFIU) began to locate cryptocurrencies’ users (Mowla, 2018).

**China:** After the People’s Bank of China issued guidelines concerning ICOs on September 2017, several cryptocurrency exchanges in the country announced that they would close their operations. Although the document didn’t specifically target cryptocurrencies, the National Internet Finance Association of China (NIFA) released a note regarding the risks associated with cryptocurrency

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**Regulation of cryptocurrencies: evidence from Asia and the Pacific**

<table>
<thead>
<tr>
<th>Broader regulation</th>
<th>Dedicate regulation covering all three aspects: consumer protection, prudential/organizational rules for stakeholders, and specific operating rules as payment systems.</th>
</tr>
</thead>
</table>
| Authorities might seek to apply the same regulatory obligations that cover traditional payment methods and its intermediaries to cryptocurrencies and its network | **Prohibition**  
Authorities could ban, partially or totally, the use of cryptocurrencies. This may imply a ban on financial activities relating to cryptocurrencies such as exchanges, or cryptocurrency acceptance by retailers.  
1. Ban (or cap) retail Bitcoin transactions.  
2. Ban digital currency acceptance by retailers.  
5. Ban Bitcoin transactions between banks.  

| 3. China, Belgium | 5. China, Mexico |
trading, saying it lacks “legal basis” to operate in the country, shortly before the announcement that exchanges would be shut down. Following the halt on cryptocurrency trading, Chinese regulators reduced power for bitcoin miners, claiming that they take advantage of lower electricity costs and cause normal consumption to be affected (Maddison, 2018). Those miners are estimated to be responsible for three quarters of the global supply of bitcoins (Ibid). For the moment, authorities aim to block access to homegrown and offshore platforms that enable centralized cryptocurrency trading, while also targeting companies and individuals that provide market-making, settlement and clearing services for centralized trading. The measures are consistent with the efforts to minimize the risks in financial markets being taken by the Chinese government.

**Hong Kong, China.** The Securities and Futures Commission (SFC) issued a second statement warning about the potential risks in dealing with ICOs and cryptocurrency exchanges. The entity contacted seven cryptocurrency exchanges based in or with connections to Hong Kong, and seven ICO issuers. For the exchanges a warning was issued, alerting they should not trade cryptocurrencies which are defined as securities in the Securities and Futures Ordinance (SFO) without a license. Most of the exchanges either confirmed that they do not trade those specific cryptocurrencies, or committed to take rectification measures, such as removing the cryptocurrencies from their platforms. Further action may be taken by the SFC if exchanges fail to comply. As for the ICO issuers, most of them confirmed compliance to the regulations defined by the SFC, or immediately halted the offering of new coins. By late March 2018, the ICO issuer Black Cell Technology Limited ceased its ICO under the allegation that it constitutes a Collective Investment Scheme (Securities and Futures Commission, 2018). If the cryptocurrency exchange or the ICO issuer do not provide services for cryptocurrencies that are “securities” or “future contracts”, or if they have no ties with Hong Kong, the SFC may have no jurisdiction. However, the SFC is open to refer to the Police if there is suspicion of fraud (Securities and Futures Commission, 2018).

**India.** Although it was stated by the Finance Minister that the government “does not consider crypto-currencies legal tender or coin”, its trade was not yet banned. Moreover, India's Central Board of Direct Tax (CBDT) sent more than 100,000 notices in February 2018 to people that had invested in cryptocurrencies and had not declared it in their income tax returns. According to the Blockchain and Cryptocurrency Committee (BACC) of the Internet and Mobile Association of India, exchanges plan to develop a database of users to record transactions in real time, and to make the information about each buyer and seller traceable by the user’s Permanent Account Number (PAN) or Aadhaar ID. Additionally, details such as the individual amount of crypto funds owned by each user and their buying patterns would also be available and managed by the central repository. The Indian government plans to regulate cryptocurrencies by the end of 2018.

**Indonesia.** In October 2017, the Central Bank of Indonesia issued a statement reaffirming that cryptocurrencies are not a legitimate means of payment, and therefore are not to be used for payment in Indonesia. It explicitly forbade all payment system operators (namely principal, switching operator, clearing operator, final settlement operator, issuer, acquirer, payment gateway operator, electronic wallet operator, money transfer operator) and fintech operators, both bank and non-bank institutions, to process transactions in cryptocurrencies and advertise against buying.

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11 According to the SFC, a CIS has four elements: (a) it must involve an arrangement in respect of property; (b) participants do not have day-to-day control over the management of the property even if they have the right to be consulted or to give directions about the management of the property; (c) the property is managed as a whole by or on behalf of the person operating the arrangements, and/or the contributions of the participants and the profits or income from which payments are made to them are pooled; and (d) the purpose of the arrangement is for participants to participate in or receive profits, income or other returns from the acquisition or management of the property.
selling and trading cryptocurrencies (Bank Indonesia, 2018). Indonesian exchanges BitBayar and TokoBitcoin declared they would halt their operations shortly after the announcement.

**Islamic Republic of Iran.** The Central Bank of Iran stated that it has never recognized cryptocurrencies as an official form of currency, and it conducts no transactions in them. It has also stated that cryptocurrencies are highly volatile, and that users may lose their financial assets if they invest in such schemes. The Central Bank of Iran is also cooperating with other institutions to control and prevent cryptocurrencies within the boundaries of the Islamic Republic (Iran Front Page, 2018).

**Japan.** Japanese authorities began to discuss the regulatory issues of cryptocurrencies following the 2014 collapse of the exchange Mt Gox. The Payment Services Act brought exchanges under anti money laundering rules, in addition to Know-Your-Costumer rules, taking effect in April 1st, 2017. Japan’s Financial Services Agency (JFSA) recognized bitcoin as a legal tender and stipulated capital requirements for exchanges, in addition to yearly audits, as well as operational and cybersecurity stipulations. In a document released in November 2017, in which the JFSA’s released its annual strategic directions and priorities, the regulators stressed that cross-sectoral review of regulations will be made to better accommodate changes in technology. Service providers of cryptocurrency exchanges will be put under scrutiny to ensure that they are provided with appropriate business systems (such as proper risk management tools), while at the same time ICOs are monitored very closely. The heist at Coincheck by the end of January 2018, another Japanese exchange, called for even closer oversight by JFSA. Following the theft $530 million worth of NEM coins, investigations were conducted, which noted security flaws in the exchange’s system. This lead to further investigations in several cryptocurrencies exchanges. Coincheck issued a statement stating that the cosumers will be reimbursed at a rate of US$0.81 for each coin stolen, a total payout of US$ 420 million, although no detailed plan for the reimbursement was released.

**Kazakhstan.** The National Bank of Kazakhstan aims to curb cryptocurrency trading and mining within its borders, as an effort to prohibit the exchange of Kazakhstan’s national currency into cryptocurrencies, as stated by the Chairman of Kazakhstan’s National Bank in late March 2018 (Sputnik, 2018). For the moment, though, it does not appear that a regulatory framework is being developed (De, 2018).

**Kyrgyzstan.** Bitcoin and other cryptocurrencies were banned in Kyrgyzstan in 2014. However, an announcement made by the Prime Minister during the economic forum “The digital agenda in the era of globalization” in February 2018 stated that the country will implement a cryptocurrency-based payment method for all the projects that receive government funding (Tassev, 2018). The “Taza Koom” initiative aims to bring digital transformation to the country and build a more open and transparent state. As stated by the Prime Minister, using cryptocurrencies will help reduce corruption, optimize government spending and increase budget receipts (Dushabaev, 2018).

**Malaysia.** Malaysian authorities have recently issued statements on ICOs and cryptocurrencies. Bank Negara Malaysia (BNM) and the Securities Commission Malaysia (SCM) said that offering digital tokens in exchange for either cryptocurrencies or any form of payment, launching of an ICO and incidental activities may trigger regulatory enforcement under the Malaysian securities’ laws. It was also stated that ICO issuers need formal approval from BNM or SCM to undertake regulated activities such as fundraising, fund management, dealing in capital market products, deposit taking, FX administration (Bank Negara Malaysia, 2018). BNM also toughened regulations on cryptocurrency exchanges, ordering compliance with the anti-money laundering rules already imposed on other financial companies (Bank Negara Malaysia, 2018).
Philippines. On January 2017, the monetary authority of Philippines recognized the legitimacy of cryptocurrencies (addressed as VC, virtual currencies) by approving a Circular regulating transactions and governing operations and reporting obligations. The circular states that (a) VC exchanges must obtain a Certificate of Registration (COR) to operate as a remittance and transfer company and comply with the requirements of such category; (b) payouts of more than PhP 500,000 (US$9,750) or its foreign currency equivalent, in any single transaction with customers or counterparties, must only be made via check payment or direct to bank deposit accounts; (c) VC exchanges are required to adopt risk management and security control measures and maintain an internal control system; (d) VC exchanges must pay registration and annual services fees; and (e) VC exchanges must comply with notification and reporting requirements. Were those requirements violated, (i.e. unsubmitted, erroneous or delayed reports), sanctions ranging from monetary penalties, fines, cancelation of registration and enforcement actions are applicable (Bangko Sentral ng Pilipinas, 2017). The Philippines’ Securities and Exchange Commission plans to issue an ICO regulatory framework by the end of 2018.

Republic of Korea. Given the country’s significant embracement of cryptocurrencies in the past, it was initially thought to be the refuge from regulatory crackdowns in China in late 2017. Following the country’s ban on ICOs late September 2017, there was some public backlash which led to claims that the decision to shut down cryptocurrency exchanges is not final. The fragmented views, uncertainty on future actions for the online cryptocurrency market and their potential negative outcomes have been cited as the main reasons for the market sell-off known as “Red Tuesday”, in which 49 out of the top 50 coins experienced a significant price drop. Prices were also affected in late January when the Financial Services Commission (FSC) released guidelines to curb speculation in cryptocurrency trading, adopting new measures that (a) only allows cryptocurrency trading through real-name bank accounts linked to cryptocurrency exchanges; (b) prohibit persons under 18 and foreigners from opening new bank accounts linked to cryptocurrency exchanges to deposit their money for cryptocurrency trading; (c) impose enhanced due diligence in relation to cryptocurrency exchange transactions; (d) identify the types of cryptocurrency transactions that will require submission of a suspicious transaction report; (e) require banks to refuse to offer accounts to cryptocurrency exchanges if they do not provide their users’ identification information, and (f) require financial institutions to strengthen their internal controls related to cryptocurrencies and to share information about cryptocurrency exchanges with each other. According to the FSC, those measures are aimed to minimize the side effects of using cryptocurrencies, such as tax evasion and money laundering. As for March 2018, Korean policy makers are planning to lift the ban on ICOs and allowing companies to raise funds through this mechanism, if certain requirements are met (Tan, 2018).

Russian Federation. At first, the position proposed by the Russian Federation was to allow only “qualified investors” to deal with cryptocurrencies. By the end of March 2018, the “On digital financial assets” bill was filed. It defines the legality of widespread financial assets, currently created and/or issued using digital financial technologies. The law also covers “distributed ledger of digital transactions” and creates “conditions for attracting investments by Russian legal entities and individual entrepreneurs through issuing tokens”, which are defined as a “type of digital financial asset” (The State Duma Committee on the Financial Market 2018). Crypto-mining is defined in the bill as an activity which creates tokens or validate transactions in exchange for cryptocurrency. If the miner exceeds the energy consumption limits established by the Government for three months in a row, the activity is labeled as an entrepreneurial activity. A sequence of actions necessary to issue ICOs is also mentioned in the explanatory note, stating that the release of tokens must be carried out in the basis of a public offer, and that the person or company responsible for the offering must disclose specific information to identify the issuer.
Individuals who are not qualified investors have a limited number of tokens to purchase – an early report suggests 50,000 rubles (US$850). A week after the law was passed, amendment N424632-7 was filed. In the new version, cryptocurrencies are referred as “digital money” and it is stressed that a definition of cryptocurrencies and other related “digital” are needed to ensure the legal rights of the participants. The new draft also states that there is no obligatory acceptance of digital money for payments, deposits, transfer and as a unit of account. Digital money can, however, be used as a means of payment when it is technically possible and in cases established by law.

**Singapore.** The Monetary Authority of Singapore (MAS) has been relatively lax regarding cryptocurrency regulation, only issuing a warning in December 2017 during the apex of bitcoin and other cryptocurrencies prices, warning about its volatile nature and risks associated with speculation (Monetary Authority of Singapore 2017). It has, however, issued guidelines for ICOs, stating that if the token is being used as a capital market product it must comply with the applicable securities laws (Monetary Authority of Singapore, 2017). The MAS also stated that if the token does not fall under the categorization of a capital product, it will be subject to regulatory scrutiny for the purposes of Anti Money Laundering and Counter Finance Terrorism. A second round of public consultations on a proposed New Payments Framework is ongoing. The proposed bill will address issues such as money laundering and terrorism financing risks, relating to the dealing or exchange of virtual currencies and regulatory rules for intermediaries, including requirements to conduct customer due diligence, monitor transactions, perform screening, report suspicious transactions and keep adequate records.

**Taiwan, Province of China.** Taiwanese regulators are taking a “wait and see” approach when it comes to regulating cryptocurrencies and ICOs. A statement released by the Financial Supervisory Commission (FSC) late 2017 reassured the issues in trading cryptocurrencies, especially price volatility. It also defined that whether ICOs are to be regulated by the securities act depends on specific circumstances of each case. For the moment, there are no plans to either issue a digital currency or enforce tougher regulation.

**Thailand.** In February 2018, the Bank of Thailand ordered financial institutions not to engage in activities with cryptocurrencies or ICOs before new regulation comes into effect. Banks are prohibited to trade or invest in cryptocurrencies and create platforms for trading or exchange. Advising clients in cryptocurrency trading or investing is forbidden, and clients are not allowed to use their credit card to buy cryptocurrencies (Bank of Thailand, 2018).

**Uzbekistan.** A draft law to regulate cryptocurrencies is expected to be released in 1 September 2018, as a joint effort of the Central Bank of The Republic of Uzbekistan, the Finance Ministry, the Ministry of Economy and the Ministry of Information Technologies and Communications. Also, a center for innovation on blockchain is planned to open June 2018: the Center for Distributed Ledger Technologies aims to increase the potential of blockchain to make potentially outdated processes more efficient (Tassev, 2018).

**VII. Conclusion**

On the timing and magnitude of putting in place any regulatory measure, authorities always face a dilemma. On the one hand, introducing a heavy regulatory framework at an early stage can hinder innovation. On the other, the cost of not having regulation may rise quickly if necessary measures are not implemented. This dilemma is more accentuated in a situation of new, rapidly-changing technologies, because adapting ‘traditional’ models from other sectors is complicated,
and because predicting the evolution of that technology is difficult. Hence, regulators and policymakers must keep a close eye on the evolution of cryptocurrencies and ICOs. Based on the policies implemented by countries, some aspects to consider may be the following.

First, from the assessment of cryptocurrencies, they are not money (but high risk – high profit investments products), so their trading and investing needs to be regulated.

Second, linkages to other areas policy should be kept in mind, such as monetary policy or fiscal policy – including tax collection. For example, cryptocurrencies don’t work without a token, and tokens need to be traded to fiat currency (and vice-versa) in exchanges. Thus, it must be clarified whether any possible profit in fiat terms will be taxable or not, and whether the investor is subject to capital gain laws. In this regard, application of traditional security trading schemes should be easy. In fact, this may even provide an opportunity to introduce reforms and change other taxation rules of the financial sector, e.g. increase the tax on capital gains. Once the flow of fiat currency to cryptocurrency is established through an exchange, ensuring that taxes are paid will be easier.

Third, it is primordial to combat illicit behavior. To do so, the activities of cryptocurrency trading, interactions with domestic currency and interactions with foreign currencies and their limitations must be carefully defined. Know-your-customer identification requirements and anti-money laundering laws should be enforced by regulators to encourage transparency and minimize anonymity. To protect exchanges from downturns or crashes, regulators could also consider introducing a required reserve ratio in exchanges – just like central banks apply micro and macro prudential measures.

Similarly, regulators must ensure that exchanges have a risk management system, minimum requirements that protect against phishing, hacking and cyber related attacks. These requirements can be scaled against the size of the exchange, e.g. value of the exchange, number of daily transactions or the number of users. Ensuring that the public does not lose their savings is of paramount importance.

A regulatory framework for Initial Coin Offerings (ICO) is also needed. Generally, in Asia-Pacific ICOs are not subject to binding regulation, because international coordination would be required for that: ICO issuers can easily embark on regulatory arbitrage and go issue tokens in a different country (online there are no borders). A related concern is how to define ICOs. Depending on how they are structured, the ICOs can have similarities to Initial Public Offerings (IPOs), private placement of securities, crowdfunding or even collective investment schemes. Public consultations on ICOs are important to assess whether ICOs fall within the current regulatory framework or if new regulations are needed, as well as warn about potential risks.

The international community must allocate to cryptocurrencies, and especially blockchain, the great importance they have. Efforts to reach international agreement on basic ideas is necessary and urgent, as some of these elements may shape the future of finance, monetary policy and possibly, other sectors and policy areas as well.
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