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CRYPTO

THE **DARK HORSE** IN INDIA'S TECHNOLOGY RACE

POLICY BRIEF
2

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Abstract

Policy decisions on crypto should be made from the perspective of the innovation ecosystem it could trigger, not just based on the fear of speculation and the adverse financial impact it might unleash. It is important to foster skills that support these possibilities, and to ensure that India is not left behind in the imminent paradigm shift towards decentralised technology applications. Evidence from several countries suggest that speedy introduction of well-defined regulations around cryptocurrencies, assets, and tokens in India will reduce uncertainty and balance the risks and opportunities of this emerging technology.

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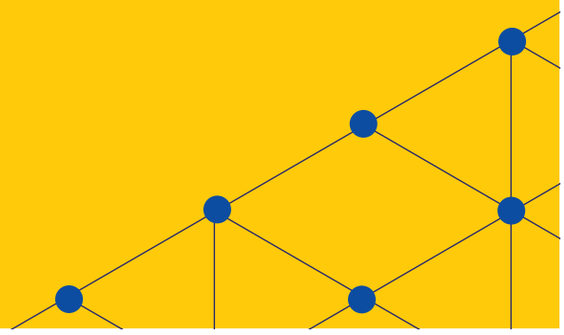


CONTENTS

List of Figures

List of Tables

Crypto: The Dark Horse in India's Technology Race

Crypto: Transformational or tulips?

India has established itself as a hotbed for crypto, a catch-all for all applications of the technology that combine cryptography, blockchains and tokenisation. According to some estimates, there are now over 15 million crypto investors in India, with holdings of about $5.4 billion.[1] The 2021 Geography of Cryptocurrency Report[2] views India as a mature market for crypto, attracting foreign investment, and developing and using innovative applications such as decentralised finance (DeFi). When compared to other Asian markets such as Vietnam, which topped the ranking, India had a much higher share of activity taking place on DeFi platforms with transaction sizes greater than $10 million, categorised as large institutional size transfers. Indian crypto and Web 3.0 start-ups are estimated to have raised over $1 billion in funding in the first half of 2022, and over $500 million in 2021, compared to just about $5.5 million in 2019.[3]

The potential of the crypto ecosystem goes much beyond cryptocurrencies. While initial applications focused only on finance, it has slowly found use in other industries such as gaming, entertainment, healthcare, infrastructure and mobility[4] (see Box 1). Very recently, the New York Supreme Court provided legitimacy to the use of non-fungible tokens (NFTs) to serve a temporary restraining order to a defendant.[5] [6] Governments are also using the technology for maintenance of land records, chit fund operations, digital education certificates, etc.[7] One of India's biggest success stories is that of Polygon. Its scalability and low transaction fee have made it popular in the market for non-fungible tokens (NFTs), gaming and DeFi.[8] Polygon is also working towards building private block chains for enterprises.

The steep rise of cryptocurrencies and other subsets of virtual assets, and the fear of financial instability has sent governments cracking down on crypto, not only in India but across many other countries. Concerns include anonymity of participants, the lack of clarity on whom to hold accountable in cases of fraud or crime, the risk of dollarization, and loss of sovereignty.[9] In its scepticism of virtual assets, the Reserve Bank of India (RBI) has highlighted inconsistencies in treating cryptocurrencies as currencies due to the lack of an issuer (usually a trusted entity like the sovereign), the absence of intrinsic value, and the inability to be treated as an instrument of debt – all critical attributes of traditional currency. It maintains that

Box 1: The world turns to crypto not just in times of peace but also during war

In the ongoing war, Russia and Ukraine both decided to participate in crypto. With forex reserves frozen and cut off from SWIFT, cryptocurrencies were a natural choice for Russia to breathe life into its struggling financial system.7 On the other hand, Ukraine partnered with a Bahamian crypto firm and staking provider to receive donations. In less than twenty hours, the country received $30-100 million in bitcoin, ether and several other cryptocurrencies.

1 https://timesofindia.indiatimes.com/blogs/ voices/the-evolution-of-cryptocurrencies-in-india-and-what-the-future-looks-like/. Accessed July 2022.

2 Chainalysis. 2021. https://go.chainalysis.com/2021-geography-of-crypto.html

3 https://www.forbesindia.com/article/take-one-big-story-of-the-day/crypto-and-web3-startups-in-india-attract-funding-despite-the-broad-selloff-in-digital-assets/77573/1. Accessed July 2022. http://timesofindia.indiatimes.com/articleshow/89734050.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst Accessed July 2022.

4 https://www.cbinsights.com/research/industries-disrupted-blockchain/; https://economictimes.indiatimes.com/opinion/et-commentary/clear-danger-or-lifeboat-reasons-why-india-needs-to-give-cryptos-a-chance/articleshow/92883627.cms . Accessed July 2022.

5 https://cryptonews.com/news/first-time-ever-us-law-firm-airdrops-nft-subpoena-in-exchange-hack-case.htm. Accessed July 2022.

6 https://scroll.in/article/1018732/cryptocurrencies-are-helping-both-russia-and-ukraine-but-can-putin-use-them-to-bypass-sanctions. https://www.outlookindia.com/business/in-russia-ukraine-war-cryptocurrency-has-emerged-as-a-financial-weapon-news-184542. Accessed July 2022.

7 https://inc42.com/buzz/blockchain-this-week-telangana-andra-pradesh-leading-blockchain-wave-blockchain-solving-food-wastage-and-more/. Accessed July 2022.

8 https://www.vanticatrading.com/post/what-is-polygon-matic-use-cases. Accessed July 2022.

9 https://www.indiatoday.in/business/story/cryptocurrencies-dollarisation-indian-economy-sovereign-interest-rbi-officials-parliamentary panel-1949820-2022-05-15. Accessed July 2022.

cryptocurrencies can at best perform the role of a currency within a private and closed environment but not for society as a whole. The recent crash in May 2022 involving various cryptocurrencies, including a number of blue-chip cryptocurrencies and stable coins, served as a reminder of their inherent volatility.[10]

This policy brief explores the regulatory options before India, balancing the transformational impact of the crypto ecosystem with its myriad challenges. It examines the regulatory approach of different countries and the measures undertaken to protect users and the financial system from inherent risks as well as the illicit use of money. It supports the idea of a speedy introduction of the regulated use of crypto as assets, if not also currency, with all necessary safeguards.

The benefits of crypto should be seen through its wider ecosystem

Bitcoin, launched in 2009, was the first decentralised cryptocurrency. Its intent was to allow direct online payments without the need for a centralised intermediary. It became the centre of focus for innovators, traders and businesses. Its success led to the launch of several other crypto currencies. As of June 2022, there were more than 19,000 cryptocurrencies in the marketplace.[11] Besides cryptocurrencies, there are asset-backed tokens, NFTs, and DeFi tokens.

Decentralised management of transactions using blockchain technology, tokens and cryptography create the potential for greater cost-efficiency compared to traditional financial institutions, improved security and guarantee against tampering. This is especially true in the case of back-end clearing for cross-border payments. Smart contracts built on top of the blockchain underlying a cryptocurrency can allow for automated and secure processing of transactions based on agreements formed between parties or based on highly specific conditions, reducing the costs of monitoring and administration. For example, checks and balances that identify and prevent illicit transactions can be built into the system using smart contracts. In other use cases, smart contracts embedded into NFTs allow content producers to better secure property rights and be rewarded for it with a lower cost of doing business. In the future, cryptocurrencies will play a key role in facilitating financial transactions on a decentralised internet (often referred to as Web 3.0) – an idea that has been gaining traction and seeing significant developments.

Table 1: Use cases of crypto and blockchain technology

Use case	Description
Certifications	The Maharashtra government has been piloting the use of blockchain technology to issue educational and caste certificates based on LegitDoc, a platform that is built upon the Ethereum blockchain (Jain, 2022; Times of India, 2021).
Supply chain transparency and traceability - Pharmaceutical industry	Blockchains are being used for better transparency, tracking and tracing supply chains and distribution networks. This improves product quality, enables sustainability and ethical compliance. This use case has attracted the interest of the pharmaceutical industry, especially given the importance of ensuring the safety and integrity of drugs, and to detect counterfeits (Nandan, 2018; Chiacchio et al. 2022).
Land records	Blockchains are popularly deployed to improve reliability and transparency in land registry systems. The Andhra Pradesh and Telangana state governments have already piloted the technology and Haryana is implementing a project in partnership with UNDO (Oprunenco & Akmeemana, 2018; The Hindu, 2018; Williams, 2018).
Chit funds	The Telangana state government has partnered with ChitMonks to pilot a blockchain solution for chit funds, entities that provide savings and credit options to millions, to reduce frauds and improve security, trust, efficiency, and inclusion (Raval, 2021; Government of Telangana, 2022).
Energy sector use cases	The potential for transparent, tamper-proof and secure systems based on blockchain technologies have led to the emergence of peer-to-peer (P2P) energy trading. The Telangana government, in collaboration with IIM-Ahmedabad, has initiated a peer-to-peer platform for trading surplus power (Sur, 2019).

10 https://www.theguardian.com/technology/2022/may/12/stablecoin-tether-breaks-dollar-peg-cryptocurrencies. Accessed July 2022.
11 https://www.schwab.com/learn/story/cryptocurrencies-what-are-they. Accessed July 2022.

Migrant remittances	India received over US$60 billion in international remittances in 2017, the largest in the world (Khullar, 2018; RBI, 2018). The existing systems often pose non-trivial costs on users due to numerous intermediaries. [12] Cryptocurrencies and blockchain based technologies can reduce the cost of international remittances as well as improve traceability, reduce risk of fraud, and delay in transactions.[13] (Campioni-Noack, 2021).
Payments	Distributed ledger technologies are being used to develop payment mechanisms in various settings. The National Payments Corporation of India (NPCI), for example, has developed 'Vajra', a permissioned platform based on distributed ledger technology to enable automated payments (Jaipuria et al., 2020). Various social media platforms and other applications are also integrating crypto tokens and allowing users to send micropayments to each other.

The blockchain technology that underlies cryptocurrencies, assets and tokens also offers the potential to solve important societal challenges across a range of domains. Some notable use cases that deploy this combined technology in the Indian context to achieve governance and business efficiency outcomes are summarised in Table 1.

The table lists some of the use cases that we see today, with the future still to unfold. Like any new technology, the full potential and transformative impact of cryptocurrency and its related technologies cannot be predicted today. Importantly, the current financial market performance of cryptocurrencies should not be used as a way to gauge the value it could bring to society. While it is true that the current hype is inflated, that does not mean that it will not have a transformative impact as a technology – most technologies that are useful today went through a phase of exaggerated fervour, followed by an eventual bust, and finally an established role.[14]

India's ambivalent approach towards crypto

The Reserve Bank of India (RBI) has been sceptical about the growth of crypto products. The ideological cheering of a financial system that bypasses the central bank makes them uncomfortable. RBI's public view suggests that cryptocurrencies can at best perform the role of a currency in a private closed environment and should not become a currency for the larger society.[15] RBI also finds the asset characterisation of cryptocurrencies problematic, given the lack of underlying cash flow that financial assets have, and the inability to pin them as someone's liability. RBI has argued that contrary to claims, the underlying blockchain technology, which has various other applications, can thrive even if cryptocurrencies are banned.[16] In 2018, the RBI issued a circular prohibiting financial institutions and payment system providers from providing services[17] related to virtual currencies but this was eventually declared unconstitutional by the Supreme Court in 2020[18] and subsequently retracted by the RBI. In November 2021, a meeting between the Parliamentary Standing Committee on Finance and stakeholders including the Blockchain and Crypto Assets Council (BACC) concluded that cryptocurrencies should not be banned but regulated.[19] In her budget speech of February 2022, the finance minister imposed a levy of 30 per cent on the transfer of any virtual digital asset and a 1 per cent tax on all crypto transactions. This was alongside and announcement of introducing a Central Bank Digital Currency (CBDC) by March 2023. Neither of these announcements cleared the air on the regulatory position of India on cryptocurrencies. Figure 1 below captures the changing view on crypto in India.

12 The average cost of sending US$200 was estimated at 5.6 per cent in 2018. If weighted by value of inward remittances to India through each corridor, the average cost is smaller, at a little over 3 per cent. The average cost of sending US$500 was 3.3 per cent and weighted cost was just over 2 per cent (RBI, 2018).

13 By traditional means, most transactions take a few days to process, have poor traceability and can cost users non-trivial fees (e.g., post offices and money-transfer operators charged ~6 per cent of the amount remitted; commercial banks charged 4 per cent). Technologies such as prepaid cards have reduced the cost of these transactions but may still not be available on many remittance routes (Khullar, 2018).

14 https://www.washingtonpost.com/opinions/2022/07/05/bitcoin-crypto-not-dead-yet/. Accessed July 2022.

15 https://rbi.org.in/Scripts/BS_SpeechesView.aspx?Id=1196 . Accessed July 2022.

16 https://rbi.org.in/Scripts/BS_SpeechesView.aspx?Id=1196. Accessed July 2022. https://www.orfonline.org/expert-speak/crypto-policy-and-india-the-spectacle-continues/. Accessed July 2022.

17 This includes maintaining accounts, registering, trading, settling, clearing, providing loans against virtual tokens, accepting virtual tokens as collateral, operating accounts for exchanges dealing with virtual tokens, and facilitating transfer of money related to purchase or sale of virtual currencies. https://www.mondaq.com/india/fin-tech/1145012/cryptocurrency-bill-2021-the-road-ahead. Accessed July 2022.

18 In the case of Internet and Mobile Association of India V. Reserve Bank of India. https://www.mondaq.com/india/fin-tech/1145012/cryptocurrency-bill-2021-the-road-ahead. https://www.moneycontrol.com/msite/wazirx-cryptocontrol-articles/the-journey-of-cryptocurrencies-in-india/. Accessed July 2022.

19 https://www.moneycontrol.com/msite/wazirx-cryptocontrol-articles/the-journey-of-cryptocurrencies-in-india/; https://www.hindustantimes.com/india-news/cryptocurrency-cannot-be-stopped-but-must-be-regulated-concludes-parliamentary-standing-committee-101636984162668.html. Accessed July 2022.

Figure 1: Chronology of the Indian Government's Position on Crypto

Countries have chosen to regulate crypto rather than ban it

Many national governments and international bodies have also voiced concerns about the potential misuse of cryptocurrencies. The International Monetary Fund (IMF) has highlighted challenges in determining the valuation of cryptocurrencies, and in identifying, monitoring, and managing risks for both regulators and firms.[20] In 2018, the Financial Stability Board conducted a detailed analysis of the implications of cryptocurrencies and concurred with the RBI's view that crypto assets "lack the key attributes of sovereign currencies and do not serve as a common means of payment, a stable store of value, or a mainstream unit of account". However, it concluded that, based on available information, crypto assets did not pose a material risk to global financial stability. In its 2022 update, it identified several risks and transmission channels that need to be monitored including liquidity mismatch, increasing links between the crypto-assets markets and the regulated financial system, credit and operational risks of stablecoins, the use of leverage in investment strategies, market risks from volatility, operational risks, and the lack of regulatory oversight of the sector. It also echoed concerns related to consumer and investor protection, money laundering and terrorism financing, illegal securities offerings, tax evasion, and capital controls. [21]

While some countries have placed bans on cryptocurrencies and its related services, a complete ban is technically infeasible, given the decentralised and digital nature of cryptocurrencies. For a successful ban, these global and mobile cryptocurrencies and entities

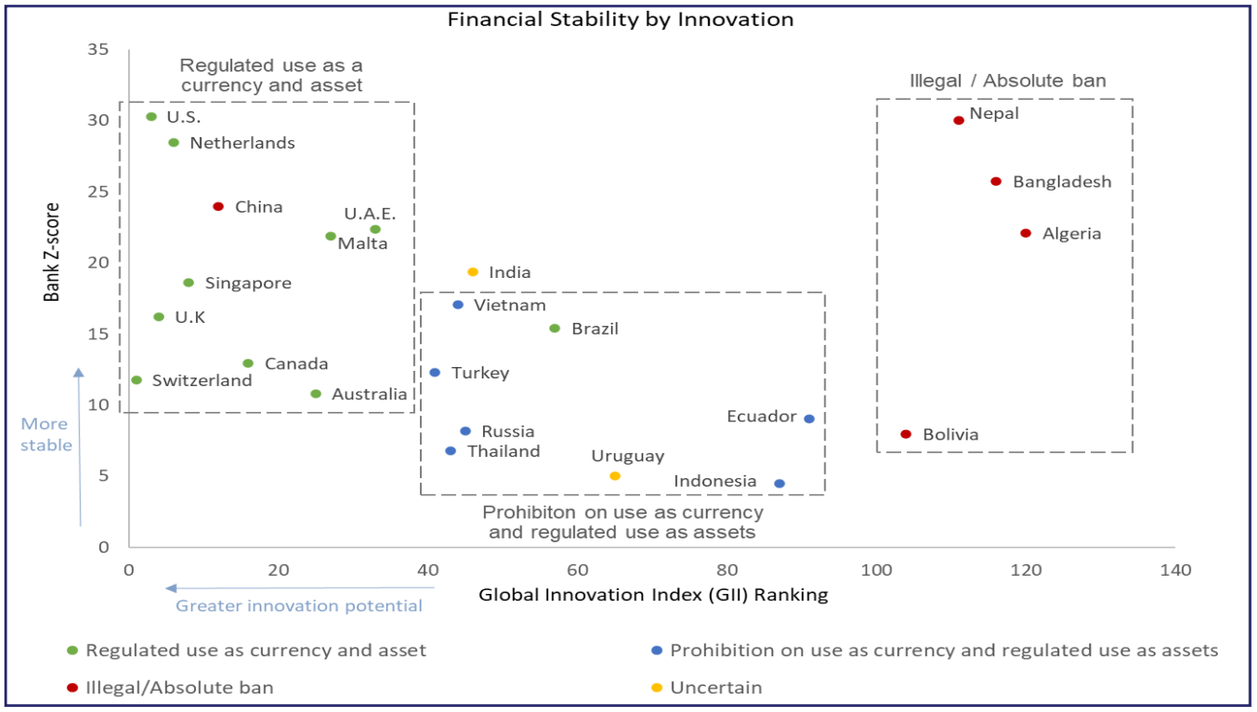
20 Adrian, Tobias, Dong He, and Aditya Narain. 2021; IMF, 2021.
21 FSB (Financial Stability Board). 2018; FSB (Financial Stability Board). 2022.

maintaining them must be deemed illegal in a globally co-ordinated manner. However, leaving cryptocurrencies unregulated is undesirable. The lack of regulatory certainty not only puts participants in the ecosystem at risk but is detrimental to the prospects of long-term committed investments in the industry. Currently, countries are at different stages of regulatory response. We have categorised them into the following:

i. Deemed illegal or banned
ii. Prohibited as a currency but regulated as an asset
iii. Regulated as an asset and a currency
iv. Uncertain regulatory regime

The policy choice countries are making appear correlated to their level of innovation potential and financial sector stability. This is evident in the comparison between countries that prohibit its use as a currency and permit regulated use as an asset and those that allow the regulated use of both (Figure 2). Countries with relatively stable financial markets (denoted by high Bank Z scores) and high innovation potential (ranked high on the GII) have allowed the regulated use of crypto as currency as well as an asset, while countries with relatively poor financial market stability and limited potential to drive innovation (ranked medium on the GII) have allowed its regulated use as commodities or assets. At the other extreme are countries that have banned crypto (Bolivia, Nepal and Algeria), which rank poorly on innovation potential although they have high levels of financial stability. The choice to ban could be attributed to reasons outside this matrix such as poor levels of digital literacy, weak currencies and some history of an economic crisis. China is another exception; it has completely banned all activities related to cryptocurrencies, despite having a relatively stable financial system and high innovation potential. This however, does not seem unusual given China's walled digital garden and its known preference to build and maintain an isolated and indigenous digital ecosystem.

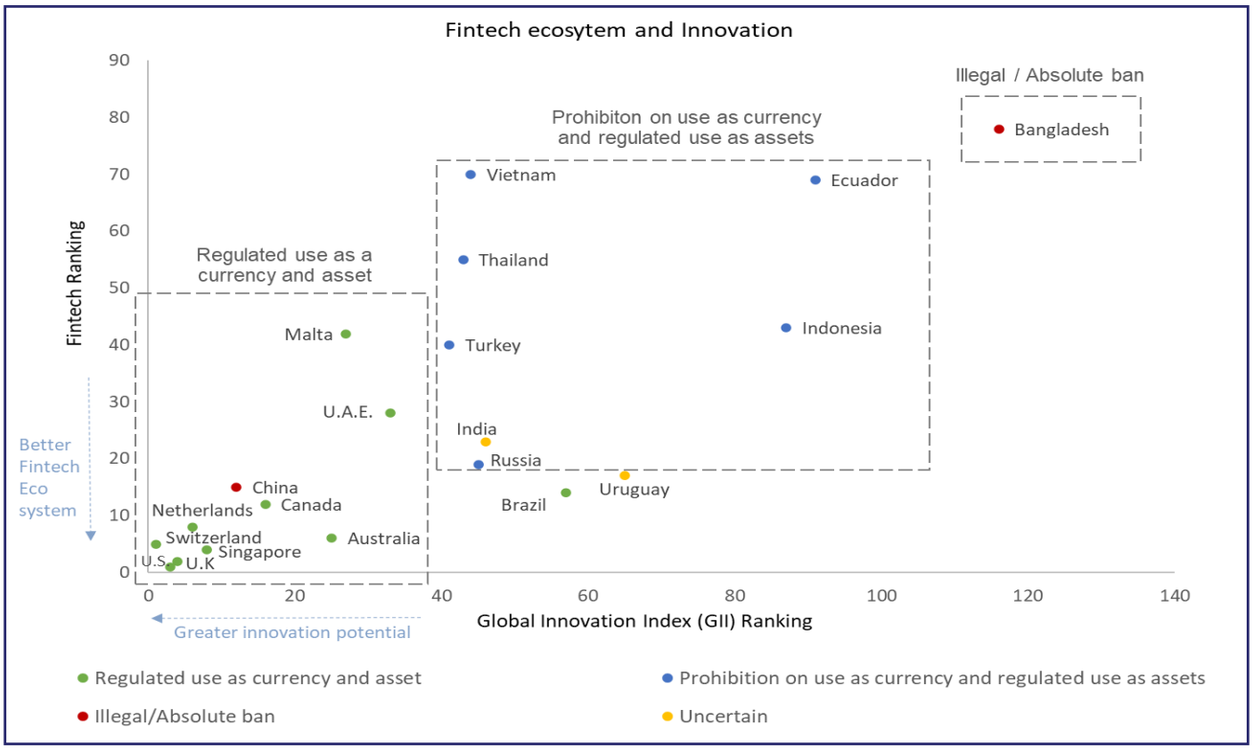
Figure 2: Regulatory Choices for Crypto-Currency and Other Economic Variables



Note: Bank Z-score (2021) captures the probability of default of a country's commercial banking system. It compares the buffer of a country's commercial banking system (capitalisation and returns) with the volatility of those returns. The lower the score, the greater the probability of default. The Global Innovation Index (GII) (2021) ranks countries on the 5 pillars of institutions, human capital & research, infrastructure, market sophistication, business sophistication, knowledge & technology outputs, and creative outputs. The smaller the value, the higher the rank, and thus the greater the potential for and success in innovation. Appendix 1 provides more details on the regulatory environment around cryptocurrencies for each of these countries. Sources: World Bank: Global Financial Development Database, 2021 and WIPO, 2021

The other driving parameter is the status of the fintech ecosystem. Countries with mature fintech ecosystems seem to encourage the use of crypto, perhaps even as a currency (Figure 3). This is driven by the potential of the technology to deliver further innovation in fintech and related sectors.

Figure 3: Regulatory Choices, Fintech Ecosystem and Innovation



Note: Fintech ranking (2021) is based on the quantity and quality of fintech companies in the country's ecosystems, and the business environment of these ecosystems. The smaller the value, the higher the rank, and thus, the more conducive the ecosystem for Fintech. The Global Innovation Index (GII) (2021) ranks countries on the 5 pillars of institutions, human capital & research, infrastructure, market sophistication, business sophistication, knowledge & technology outputs, and creative outputs. The smaller the value, the higher the rank, and thus the greater the potential for and success in innovation. Appendix 1 provides more details on the regulatory environment around cryptocurrencies for each of these countries. Sources: Economist Impact: The Inclusive Internet Index, Findexable, 2021 and WIPO, 2021.

Unlike India, several countries have taken a graded approach to regulating crypto. Countries such as the US, UK, Canada, Australia, and Switzerland have relatively stable financial systems, advanced fintech and innovative ecosystems. These countries also have the advantage of strong currencies that are not likely to be affected by trade in public currencies of other governments. Additionally, digital literacy levels and internet adoption are much above the global average.

Regulations by these countries focus primarily on containing money laundering and terrorism financing risks, cyber security risks, consumer protection and other risks related to market integrity or financial stability. In the US, cryptocurrency exchanges fall under the scope of the Bank Secrecy Act and are required to register with the Financial Crimes Enforcement Network (FinCEN). They are also required to assess and fulfil obligations towards anti-money-laundering and anti-terrorism programmes. With regard to taxation, cryptocurrencies are treated as property and transactions are taxed as capital gains.

Countries with moderate bank Z-score rankings but thriving fintech ecosystems and potential for innovation like Singapore, Switzerland, and the UK have also permitted the regulated use of crypto currencies. Singapore regulates cryptocurrency-based payments as 'digital payment tokens' (DPT) and its associated service providers are required to follow stated compliance measures. The country follows a tiered system for taxation of crypto assets. The government has clearly enunciated its intention to develop digital asset

capabilities through this policy.[22]

Brazil is a good example of a country that ranks relatively low on innovation potential but ranks relatively high on the fintech ecosystem, and has permitted the use of crypto both as currency and as an asset. Russia also has a conducive fintech ecosystem, but its financial stability concerns may have driven the decision to only allow regulated use of cryptos as an asset.[23] On the other hand, countries such as Indonesia and Thailand that score low on financial stability, but moderately on innovation or fintech ecosystem have kept opportunities alive for nurturing the underlying technologies and skill availability in their country by regulating the use of crypto assets but prohibiting the use of crypto as currencies for payments. Other countries that have opted for this include Vietnam and Turkey that have moderate financial stability as well as innovation potential. Only two countries (El Salvador, Central African Republic) have gone as far as recognising private cryptocurrencies as legal tender. [24]

Introducing CBDCs and permitting cryptocurrencies are not mutually exclusive choices

With the increasing use of online transactions, digital means of payment and the pervasive use of private currencies, many countries are planning to issue central bank digital currencies (CBDCs) that are linked to the value of their fiat currency. Cryptocurrencies and CBDCs do not necessarily function as substitutes. For starters, not all CBDCs will be blockchain-based. Those that are will likely be on private/permissioned blockchains while cryptocurrencies operate on public/permissionless blockchains. CBDCs, therefore, will provide lower degrees of decentralisation and anonymity, and would serve only as a currency and not as a speculative asset.[25]

A look at other countries shows that introducing CBDCs and allowing cryptocurrencies are not mutually exclusive choices (Table 2). Many countries that allow the regulated use of cryptocurrencies (either only as an asset, or both as an asset and currency) have initiated the process of developing CBDCs for the purpose of retail, wholesale, or both. An IMF report suggests that CBDCs may help alleviate the risk of dollarization if they satisfy a demand for better payment technologies.[26] India has announced a plan to introduce a digital rupee by 2023 through a gradual and graded approach.

Table 2: Crypto regulation and CBDC status across selected countries

Country	Regulation Category for Crypto	CBDC status	CBDC use-cases
UK	Regulated use as currency and asset	Research	Both
US		Research	Retail
Canada		Development	Both
Australia		Development	Both
Netherlands		Development	Retail
Brazil		Development	Retail
Malta		NA	NA
Singapore		Pilot	Wholesale
Switzerland		Development	Wholesale
U.A.E.		Pilot	Wholesale

22 https://www.mas.gov.sg/news/speeches/2022/mas-approach-to-the-crypto-ecosystem. Accessed July 2022.

23 Reuters. Jan 21, 2022. Russia proposes ban on use and mining of cryptocurrencies. The Times of India. https://economictimes.indiatimes.com/tech/technology/russia-proposes-ban-on-use-and-mining-of-cryptocurrencies/articleshow/89037597.cms. Accessed July 2022

24 Livemint. 28 Apr 2022. This country adopts Bitcoin as legal currency. https://www.livemint.com/market/stock-market-news/this-country-adopts-bitcoin-as-legal-currency-details-here-11651153008675.html. Accessed July 2022.

25 Han, X., Y. Yuan and F.Y. Wang, 2019; Abrol, 2021; Zhang, Tao, and Zhigang Huang, 2022.

26 IMF, 2021.

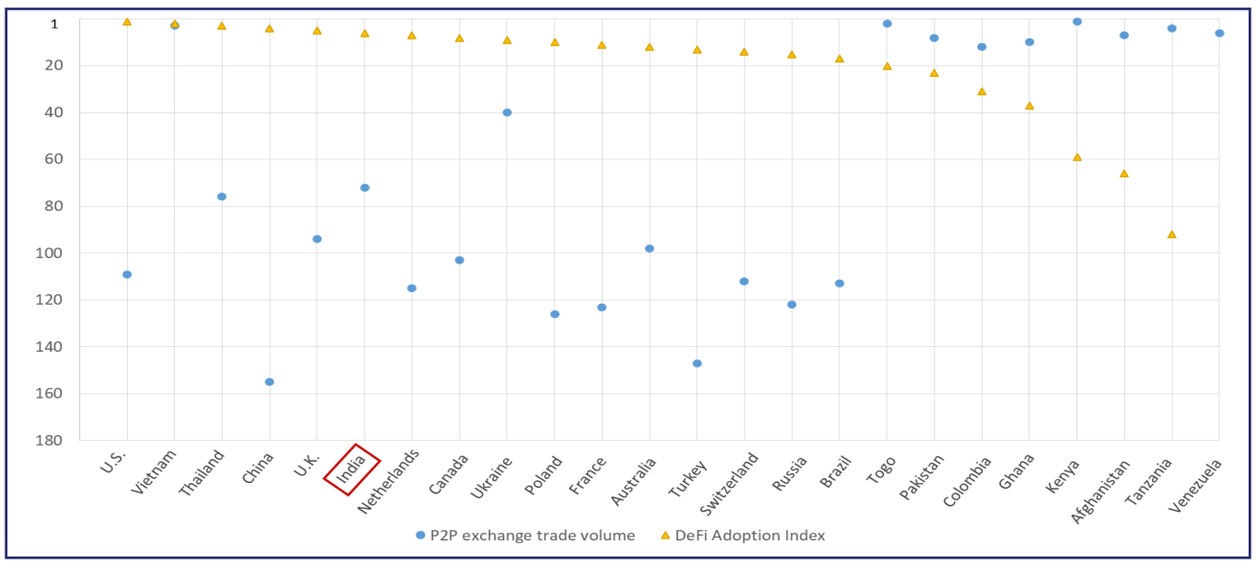
Turkey	Prohibition on use as currency and regulated use as assets	Development	Retail
Indonesia		Research	Both
Vietnam		Research	Undecided
Thailand		Pilot	Both
Russia		Pilot	Retail
Ecuador		Cancelled	
Algeria	Illegal/Absolute ban	NA	NA
Bolivia		NA	NA
Nepal		NA	NA
Bangladesh		NA	NA
India	Uncertain	Development	Both
Uruguay		Inactive	Retail
China		Pilot	Both

Note: CBDC status refers to the following – Research: Established working groups to explore the use cases, impact and feasibility of a CBDC; Development: Initiated technical build and early testing of a CBDC in controlled environments; Pilot: Initiated small-scale testing of a CBDC in the real world with a limited number of participants; Cancelled: CBDC initiative decommissioned, and Inactive. CBDC use cases refer to the following – Retail: The CBDC is available to the general public for all transactions relating to the purchase of goods and services; Wholesale: The CBDC is used by financial institutions for bank-to-bank transactions and settlements.

Regulate to protect, Regulate to innovate

The level of activity and innovation in the crypto industry in India is impressive. India ranks very high in decentralised finance activity when data across countries are normalised for purchasing power parity and level of internet usage, and relatively low in terms of peer-to-peer (P2P) trading (Figure 4). This indicates that engagement in cryptocurrency by individuals is related to individual transactions and savings rather than trading and speculation and high-volume transactions by professional and institutional entities.[27]

Figure 4: Cross-country Ranking by Cryptocurrency Activity



Note: The DeFi Adoption Index measures three aspects: 1) total on-chain cryptocurrency value received by DeFi platforms 2) total retail value (transactions under USD $10,000) received by Defi platforms and 3) individual deposits to Defi platforms per internet user. These components are weighted by PPP per capita to favour countries with greater activity, given the average wealth. Decentralised finance (DeFi) refers to cryptocurrency platforms that can run autonomously without

27 Chainalysis. 2021. https://go.chainalysis.com/2021-geography-of-crypto.html

a central entity and are built on top of blockchains using smart contracts that fulfil financial functions based on specific criteria. The P2P trade volume ranking, which is weighted by PPP per capita and internet users, highlights countries where more residents are putting a larger share of their overall wealth into P2P cryptocurrency transactions. In many of these countries, residents use P2P exchanges to access cryptocurrency since they may not have access to centralised exchanges. This measure provides an idea of cryptocurrency adoption by individuals and use cases related to transactions and individual savings rather than trading and speculation, or high-volume transactions by professional and institutional entities. Both indices are designed to highlight countries with grassroots adoption by individuals, rather than simply those with large values. The countries shown here are the top 15 as per the DeFi Adoption Index, and the top 15 as per the Crypto Adoption Index (composed of P2P exchange trade volume and on-chain value received). Source: Chainalysis, The 2021 Geography of Cryptocurrency Report.

With the analysis of regulatory approach adopted by other countries and given India's financial sector stability, maturity of the fintech ecosystem and potential for innovation, the government should consider the speedy introduction of the regulated use of crypto as assets with necessary safeguards. Since a significant share of the Indian population is still not digitally literate,[28] building awareness and mechanisms for consumer protection must be adopted. The Advertising Standards Council of India has developed self-governing guidelines based on discussions between the government, financial regulators, and industry stakeholders.[29]

Cryptocurrencies, tokens, and assets are essential for public/permissionless blockchains to function. Allowing their regulated use will foster an ecosystem for blockchain based applications and innovations, while keeping concerns of volatility and financial stability in check. Additionally, regulations will reduce uncertainty for investors and start-ups.[30] The recently announced digital finance package and European crypto-assets regulation (MiCA) aims to do just this by bridging gaps in existing EU legislation and ensuring that they do not pose obstacles to the use of new digital financial instruments, while also ensuring that these technologies are regulated, and that operational risks are managed. The guiding principle here was also to support innovation while ensuring some degree of consumer and investor protection.[31]

To summarise, cryptocurrencies can offer various potential benefits as a currency (such as privacy, security, decentralisation, protection from arbitrary manipulation, and efficiency). However, given the various concerns (money laundering, illicit and terrorist activities, accountability, and stability) and geopolitical contexts (governments who would like to retain control of currencies for economic and political reasons), it is unlikely that there will be widespread acceptance of cryptocurrencies as legal tender. While countries have taken various approaches to regulating the use crypto as currencies and assets, there appears to be emerging consensus on the need to cultivate an ecosystem that fosters blockchain technology-based applications and innovations, and the manner in which the approach taken towards cryptocurrencies is intertwined with this.

Today's policy decisions on cryptocurrencies, therefore, should not be made from the limited perspective of speculative activity and its consequential impact on the financial system, but rather from the potential of the innovation ecosystem it could trigger. It is important to foster skills that support these possibilities, and to ensure that India is not left behind in the imminent paradigm shift based on newer technologies and applications. There is already an emerging trend of Web3 Indian start-ups diverting to the UAE amongst regulatory uncertainty in India. This must be reversed as soon as possible.

Public perception and trust (clouded by some of the counterintuitive aspects underlying cryptocurrencies), along with policy makers' risk aversion towards things not well understood, magnify regulatory challenges. In order to enable an evolving crypto ecosystem that fosters innovation and its benefits while minimising risks, there is a need for ongoing and proactive efforts from various

28 According to the report "Internet Adoption in India – ICUBE 2020" by Kantar, only 43% of the population knew how to search or browse the internet and only 20% who had used the internet in the last three months has used it for e-commerce.

29 Nair, Aman and Vipul Kharbanda. 2021. CIS Issue Brief on regulating Crypto-asset advertising in India. The Centre for Internet and Society.

30 Chainalysis. 2021. https://go.chainalysis.com/2021-geography-of-crypto.html

31 Council of the EU. 30 June, 2022. Digital finance: agreement reached on European crypto-assets regulation (MiCA). https://www.consilium.europa.eu/en/press/press-releases/2022/06/30/digital-finance-agreement-reached-on-european-crypto-assets-regulation-mica/. Accessed July 2022

stakeholders, not just government authorities, to address concerns regarding cryptocurrencies. In particular, policy makers have expressed the need for cryptocurrency stakeholders to better address concerns of regulatory agencies and more concretely communicate the positive end-uses and innovations of cryptocurrency and its underlying technologies. Industry stakeholders also need to work towards a governance framework to democratically resolve issues, and to enable both architects and users to discuss and co-ordinate how the technology should evolve.[32]

Some aspects to consider while determining how exactly such an approach should be implemented are whether there is need for differential/tiered treatment for different types of cryptocurrencies and assets, and which entities should be responsible for what aspects of the ecosystem. Detailed analysis is necessary on what types of incentives these decisions create for various stakeholders and how it shapes the market as a whole. There is also need for clarity on the classification of various virtual assets, tokens and currencies, and where they fall within a regulatory framework. This also needs to be an evolving and iterative process given the dynamic nature of the industry. For example, the European crypto-assets regulation (MiCA) takes a differential approach towards non-fungible tokens (NFTs) by excluding them from the scope of the current legislation, laying out an 18-month period over which to prepare a horizontal legislative proposal specific to them if necessary.[33] In order to understand and monitor this evolving ecosystem, there is need to find ways to collect reliable and timely data. Here, the Financial Stability Board (FSB)'s monitoring framework can serve as a starting point.[34]

Final Words

There is an immediate need for a regulatory framework around cryptocurrencies, assets, and tokens to reduce uncertainty for various stakeholders, and pave the way for an ecosystem that enables the potential innovations and positive use cases of these technologies to flourish. Leaving them unregulated also leaves the economy exposed to various risks and concerns. With the analysis and regulatory examples presented in this brief, there is enough evidence for India to make a policy choice that balances the risks and opportunities of this new technology. An iterative sandbox approach can be adopted to ensure that the right balance is achieved, and that the views of all stakeholders are considered, which is particularly important in this context of many unknowns. *All this dark horse needs is a good jockey.*

32 DNI. 2017. Risks and Vulnerabilities of Virtual Currency Cryptocurrency as a Payment Method. Office of the Director of National Intelligence, United States of America. https://www.dni.gov/files/PE/Documents/9---2017-AEP_Risks-and-Vulnerabilities-of-Virtual-Currency.pdf. Accessed July 2022

33 Council of the EU. 30 June, 2022. Digital finance: agreement reached on European crypto-assets regulation (MiCA). https://www.consilium.europa.eu/en/press/press-releases/2022/06/30/digital-finance-agreement-reached-on-european-crypto-assets-regulation-mica/. Accessed July 2022

34 FSB (Financial Stability Board). 2018.

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Appendix 1: Crypto Regulations across Different Countries

Uncertain	
India	There is currently no specific regulation on cryptocurrency in India. The Cryptocurrency and Regulation of Official Digital Currency Bill, 2021, which proposes prohibiting private cryptocurrencies with a few exceptions to promote the underlying technology, has not yet been tabled. The Finance Bill, 2022,[35] introduces taxation on the gains from the transfer of cryptocurrencies, under the ambit of virtual digital assets. In 2018, the Reserve Bank of India issued a circular prohibiting financial institutions and payment system providers from providing services related to virtual currencies,[36] but withdrew it following a Supreme Court ruling in 2020 declaring it unconstitutional.
Uruguay	Uruguay has not yet enacted regulation regarding digital currency. The Central Bank has conducted pilot initiatives to assess the cryptocurrency ecosystem. In 2021, it released a statement defining virtual assets, and clarifying that it is not recognised as legal tender. The statement also asserted that the issuing and trading of virtual assets are not covered by the existing regulations of the Central Bank, and entities involved are not subject to financial user protection provisions.[37]
Regulated use as currency and asset	
Australia	The government of Australia has largely taken a non-interventionist approach to cryptocurrency – no specific legislation has been enacted, but existing laws have been amended to accommodate its use in an evolving landscape. Currently, Australian law legalises the use of cryptocurrency and exchanges, although the former is not treated as "money". In 2018, Australian Transaction Reports and Analysis Centre (AUSTRAC) implemented new laws relating to digital currency exchange providers. As per these regulations, entities providing registrable exchange type services are mandated to verify users, maintain records and comply with reporting obligations pertaining to Anti-Money Laundering and Counter-Terrorism Financing (AML/CTF).[38] Cryptocurrencies are treated as "property' for tax purposes and attract capital gains tax at the same rate as marginal income tax (0-45%), although individual investors are eligible for a discount of 50% on capital gains for crypto assets held for more than 12 months.[39]
Brazil	The Brazil Senate's Economic Affairs Committee has recently passed a bill to regulate the country's crypto market. The bill paves the way for acceptance of crypto as legal tender with a host of new regulations and oversight.[40] The Brazil Securities and Exchange Commission, the securities market authority in Brazil, has approved several crypto ETFs and the government has said that existing AML laws extend to virtual currencies in certain contexts.[41] Currently, cryptos are treated as "assets" and, therefore, subject to capital gains taxes. For gains limited to BRL 30,000 per month, no taxation would be levied. Otherwise, the rates may vary from 15% to 22%.[42]

35 The Finance Bill, 2022. Lok Sabha. https://www.indiabudget.gov.in/doc/Finance_Bill.pdf

36 Prohibition on dealing in Virtual Currencies (VCs). April 6, 2018. Reserve Bank of India. https://rbidocs.rbi.org.in/rdocs/notification/PDFs/NOTI15465B-741A10B0E45E896C62A9C83AB938F.PDF. Accessed July 2022.

37 Josemaría Alvaro Motta Mambretti. 17 November, 2021. The current status of virtual assets regulation in Uruguay. International Bar Association. https://www.ibanet.org/current-status-of-virtual-assets-regulation-in-uruguay. Accessed July 2022.

38 Cryptocurrency in Australia: Regulations & Laws. Comply Advantage. https://complyadvantage.com/insights/crypto-regulations/cryptocurrency-regulations-australia/ . Accessed July 2022.

39 Eivind Sam. June 29, 2022. Guide to Crypto taxes in Australia. Coinpanda. https://coinpanda.io/crypto-taxes-australia-ato/. Accessed July 2022.

40 Eduardo Próspero. Brazil's Senate Committee Approves Bill to Regulate Cryptocurrencies. What Now? NEWSBTC. https://www.newsbtc.com/crypto/brazil-s-senate-committee-approves-bill-to-regulate-cryptocurrencies-what-now/ . Accessed July 2022.

41 Cryptocurrency regulations by country. 1 April, 2022. Thomson Reuters. https://www.thomsonreuters.com/en-us/posts/wp-content/uploads/sites/20/2022/04/Cryptos-Report-Compendium-2022.pdf . Accessed July 2022.

42 Qadir AK. April 23, 2020. Cryptocurrency Regulations in Brazil – Blockchain Innovative Country. CoinPedia. https://coinpedia.org/cryptocurrency-regulation/cryptocurrency-regulations-in-brazil/. Accessed July 2022.

Canada	Cryptocurrencies are legal in Canada although they are not recognised as legal tender and are primarily regulated under securities laws. As per amendments made to the Proceeds of Crime (Money Laundering) and Terrorist Financing Act in 2014, cryptocurrency exchanges are required to register with the Financial Transactions and Reports Analysis Centre of Canada (FinTRAC) and implement compliance programmes, maintain prescribed records, report suspicious and terrorist-financing related property transactions and determine customers who are "politically exposed persons".[43] Cryptocurrency is treated like a commodity by the Canada Revenue Authority (CRA) for purposes of income taxation and the highest applicable rate on capital gains on crypto assets is 33%. [44]
Malta	The government of Malta recognises cryptocurrency as a medium of exchange, unit of account and store of value. There are three legislations pertaining to cryptocurrency regulation in Malta – Malta Digital Innovation Authority Act ("MDIA"), Innovative Technology Arrangements and Services Act ("TAS"), and Virtual Financial Assets Act ("VFAA"). The third of these legislations lays down a framework governing VFA agents, issuers and service providers and AML/CFT compliance requirements.[45] Trade and business in financial and utility tokens is taxed at the rate of 35%. [46]
Netherlands	Cryptocurrencies are legal in Netherlands although they are not recognised as legal tender. Crypto firms are required to register with the Dutch Central National Bank De Nederlandsche N.V. (DNB). In May 2020, the Dutch Implementation Act was amended to extend coverage to cryptocurrency of requirements to implement AML polices consisting of KYC procedures, monitoring transactions, and filing suspicious activity reports to local law enforcement. Cryptos are treated as assets for income tax purposes and the highest possible tax rate is 31%.[47]
Singapore	Crypotocurrencies are regulated in Singapore under the Payment Services Act (2019) passed by the Monetary Authority of Singapore (MAS). The AML/CFT provisions under this Act addresses the risk of financial crimes. A 2020 Guide to Digital Token Offerings laid down regulations surrounding digital tokens and their applicability to securities, collective investments, derivative contracts, etc.[48] The Inland Revenue Authority of Singapore establishes that businesses accepting digital tokens such as bitcoin for remuneration or revenue are subject to normal income tax rules; however, those holding digital payment tokens (DPT) as long-term assets face no capital gains tax. [49]

43 Canada: Canada Passes Law Regulating Virtual Currencies as "Money Service Businesses". July 9, 2014. Library of Congress. https://www.loc.gov/item/global-legal-monitor/2014-07-09/canada-canada-passes-law-regulating-virtual-currencies-as-money-service-businesses/. Accessed July 2022.

44 Pankaj Bansal. February 3, 2022. Countries With Highest And Lowest Cryptocurrency Tax News Patrolling. https://newspatrolling.com/countries-with-highest-and-lowest-cryptocurrency-tax/ . Accessed July 2022.

45 Buttigieg, Christopher et al. October 13, 2019. Paper Summary-Anti-money laundering regulation of crypto assets in Europe's smallest member state. Malta Financial services Authority (MFSA) https://www.mfsa.mt/publication/paper-summary-anti-money-laundering-regulation-of-crypto-assets-in-europes-smallest-member-state/. Accessed July 2022.

46 Blockchain Tax Guidelines. KPMG. https://assets.kpmg/content/dam/kpmg/mt/pdf/2020/11/blockchain-tax-guidelines-in-malta.pdf. Accessed July 2022.

47 Netherlands Cryptocurrency Laws. Freeman Law. https://freemanlaw.com/cryptocurrency/netherlands/. Accessed July 2022.

48 Cryptocurrency regulations by country. 1 April, 2022. Thomson Reuters. https://www.thomsonreuters.com/en-us/posts/wp-content/uploads/sites/20/2022/04/Cryptos-Report-Compendium-2022.pdf. Accessed July 2022.

49 IRAS e-Tax Guide. 17 April, 2020. Inland Revenue Authority Service. https://www.iras.gov.sg/media/docs/default-source/e-tax/etaxguide_cit_income-tax-treatment-of-digital-tokens_091020.pdf?sfvrsn=91dbe1f7_0. Accessed July 2022.

Switzerland	Switzerland is recognised as one of the most crypto-friendly jurisdictions. The licensing requirements for cryptocurrency businesses have been defined by the Swiss Financial Markets regulator, the Swiss Financial Markets Supervisory Authority. FINMA focuses on the economic function and purpose of tokens and, accordingly, such tokens are required to comply with AML/CFT regulations, securities and civil requirements under the Swiss Code of Obligations.[50] In February, 2021, the Act to Adapt Federal Law to Developments in Distributed Ledger Technology (DLT Act) came into force, which provides a legal framework regarding trading of rights through electronic registers, provides rules for the segregation of crypto-based assets in the event of bankruptcy, and adds a new licence category for distributed ledger technologies (DLT) trading systems.[51] Cryptocurrency related activities are exempted from VAT and capital gains of individuals holding these assets are not subject to income taxation. However, those held as part of business assets are subject to capital gains tax.[52]
UAE	UAE is estimated to be the third largest crypto-market in the Middle East. The main regulators in different zones are Dubai Financial Services Authority ("DFSA"), Financial Services Regulatory Authority ("FSRA") and Securities and Commodities Authority ("SCA"). FSRA published its first guidance on Regulation of Crypto Asset Activities in Abu Dhabi Global Markets (ABDM) in 2018. In 2020, The Securities and Commodities Authority (SCA) released a regulatory framework, "The Authority's Chairman of the Board of Directors Decision No. (21/R.M) of 2020 Concerning the Regulation of Crypto Assets." ("Regulation"), which issued regulations relating to the offering, issuance, listing, and trading of crypto assets. The FSRA Guidance (2018) and SCA Decision (2020) also prescribe the AML/requirements. There is no regulation or guidance on the taxation of cryptocurrencies in the UAE. However, since cryptocurrency is not recognised as currency but as an asset, and there is no income tax provision in the country, capital gains tax is not imposed on UAE nationals.[53]
United Kingdom	UK regulations allow residents to trade in cryptocurrencies but the Financial Conduct Authority (FCA) in 2021 banned the sale of crypto-derivatives to retail consumers. Crypto exchanges are required to register with the FCA or apply for an e-licence. There are also mandatory requirements such as KYC, customer due diligence (CDD) checks, enhanced due diligence (EDD) of politically exposed persons (PEPs) for virtual asset service providers, and compliance with the Fifth Money Laundering Directive (5AMLD). As per taxation rules, individuals are liable to pay capital gains tax for gains and losses from activities such as mining, staking, etc., and businesses are liable to pay capital gains tax, corporation tax, income tax, national insurance contributions, stamp duty, and value-added tax.[54]
United States	There are multiple regulators at the federal level. The SEC often views cryptos as securities, the CFTC calls bitcoin a commodity, and the Treasury calls it a currency. Cryptocurrency exchanges are legal in the US and cryptocurrency exchange service providers must register with FinCEN. Virtual currency exchanges are treated as money services businesses (MSBs) and are required to conduct a comprehensive risk assessment of its exposure to money laundering and implement an anti-money-laundering programme. In the US, cryptocurrency is treated as capital gains and taxed accordingly. Short-term capital gain is taxed in the range of 10% to 37% whereas long-term gains are taxed in the range of 0-20%.[55]

50 Cryptocurrency regulations by country. 1 April, 2022. Thomson Reuters. https://www.thomsonreuters.com/en-us/posts/wp-content/uploads/sites/20/2022/04/Cryptos-Report-Compendium-2022.pdf. Accessed July 2022.

51 Switzerland: New Amending Law Adapts Several Acts to Developments in Distributed Ledger Technology. March 3, 2021. Library of Congress. https://www.loc.gov/item/global-legal-monitor/2021-03-03/switzerland-new-amending-law-adapts-several-acts-to-developments-in-distributed-ledger-technology/. Accessed July 2022.

52 Blockchain and cryptocurrency laws and regulations. Switzerland. Global Legal Insights. https://www.globallegalinsights.com/practice-areas/blockchain-laws-and-regulations/switzerland. Accessed July 2022.

53 M. Al Khatem. June 6, 2021. CRYPTO ASSETS AND REGULATORY FRAMEWORK IN UAE: AN OVERVIEW. HHS Lawyers. https://hhslawyers.com/blog/crypto-assets-and-regulatory-framework-in-uae/. Accessed July 2022.

54 United Kingdom Cryptocurrency Laws. Freeman Law. https://freemanlaw.com/cryptocurrency/united-kingdom/. Accessed July 2022.

55 Cryptocurrency Regulation Summary: 2022 Edition. Nasdaq. https://nd.nasdaq.com/rs/303-QKM-463/images/Crypto_Regulatory_Guide_2022_Edition.pdf. Accessed July 2022.

Prohibition on use as currency and regulated use as assets	
Ecuador	In Ecuador, Article 98 of the Organic Code on Monetary and Financial Matters bans the use of cryptocurrency as a payment tool.[56] However, the sale and purchase of cryptocurrencies through internet are not prohibited. Currently, there is little regulation in this area; however, recently, there has been growing interest in establishing a cryptocurrency concurrent with Ecuador's US dollar standardised economy.[57]
Indonesia	Indonesia does not allow cryptocurrencies to be used as a payment instrument but, in 2019, the Indonesian Commodity Futures Trading Regulatory Agency (Bappebti) approved regulation no. 5/2019, which recognises and regulates cryptocurrencies as commodities. The regulations also require cryptocurrencies to comply with risk assessment, anti-money laundering (AML) and combating the financing of terrorism (CFT) regulations.[58]
Thailand	As of April 1, 2022, the Thai government no longer allows cryptocurrencies to be used as payment for goods or services. There is no prohibition to owning or trading cryptocurrencies, although commercial banks have been cautioned against direct involvement in digital assets. Cryptocurrencies are regulated by The Securities and Exchange Commission of Thailand under the Emergency Decree on Digital Asset Businesses B.E. 2561116 issued in 2018. Under the decree, digital asset businesses are required to apply for a licence, monitor for unfair trading practices, and are considered "financial institutions" for AML purposes among others.[59]
Turkey	Turkey's Central Bank has banned the use of cryptocurrency and other digital assets based on DLT for payment of goods and services. A May 2021 decree added cryptocurrency exchanges to a list of institutions that must operate under AML/CFT regulations. The Financial Crimes Investigation Board (MASAK) oversees crypto service providers on AML and compliance issues. The Capital Markets Board (SPK) governs the crypto market, including ICOs and token offerings.[60]
Vietnam	In 2017, the issuance, supply and use of Bitcoin and other cryptos as a means of payment was declared illegal by the State Bank of Vietnam, attracting fines ranging from 150 million VND (€5,600) to 200 million VND (€7,445).[61] In March 2020, the Vietnamese finance ministry reportedly established a Digital Asset Research Group to propose guidelines and regulations on crypto-related activities.[62]
Illegal/Absolute ban	
Algeria	The 2018 Financial Law of Algeria prohibits all uses of cryptocurrencies including purchase, sale, use, and possession of virtual currencies.[63]
Bangladesh	In a 2017 circular, Bangladesh emphasised that the use of cryptocurrencies is not supported by the Foreign Exchange Regulation Act, 1947, and may violate the Money Laundering Prevention Act, 2012. The country, however, is recognising the importance of emerging technologies such as blockchain and released a national strategy for blockchain in 2020.[64]

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63 Thomson Reuters. Cryptocurrency regulations by country. https://www.thomsonreuters.com/en-us/posts/wp-content/uploads/sites/20/2022/04/Cryptos-Report-Compendium-2022.pdf. Accessed July 2022.
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Bolivia	Bolivia banned the use of cryptocurrencies in 2014 in the belief that it would lead to tax evasion and monetary instability.[65]
China	China's Civil Code (2020) recognises cryptocurrency as inheritable property, but the country has banned cryptocurrency exchanges and mining operations. Income earned from the purchase and sale of "virtual currencies" is considered taxable income for individual income tax computed under "property transfer income". However, the stance towards NFTs is still uncertain with no signs yet of banning them. The ban on speculative trading associated with digital tokens, however, puts NFT owners in an uncertain spot.[66]
Egypt	Egypt banned cryptocurrency trading in 2018 under religious decrees. The Central Bank of Egypt cited Article 206 of the Central Bank and Banking System Law promulgated by Law No. 194 of 2020, which prohibits the e-issuance, trading, promotion, platforms, and other activities related to cryptos.[67]
Nepal	Nepal's Central Bank issued a notice in August 2017 stating that "all transactions related to or regarding bitcoins are illegal." Potential penalties can include civil fines of up to three times the transaction amount, and a jail term of up to three years.[68]

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