



Cryptocurrency

A tool of Economic Empowerment or a Regulatory Nightmare?

Introduction

The year 2020 has been a significant one for cryptocurrencies. In the face of global economic uncertainties brought by closing of businesses and people not working, cryptocurrencies have proved to be remarkably resilient, empowering people on the one hand and creating regulatory challenges on the other.

For instance, the advent of cryptocurrency in a country like Nigeria has provided an alternative for the local currency, which is subject to frequent hyperinflations thus affecting purchasing power at the ground level. Evidently, a Nigerian cryptocurrency investor, Tola Fadugbagbe, credits cryptocurrency for lifting him out of poverty. At the same time, about 6,500 km away in Pakistan, the use of digital currencies, including bitcoin, for international terror financing has been on the rise as authorities move to crack down on illegal methods of money transfer.

This conundrum of letting the cryptocurrencies flow freely or to regulate these entities would decide the fate of crypto economy in the post pandemic world. Before we delve into this dilemma deeper, it becomes important to understand what exactly are cryptocurrencies? How can they act as a tool of economic empowerment? What are the challenges that regulation of cryptocurrency poses and how can we overcome them to better realize their potential? Also, the advent of cryptocurrencies has created several questions for the future in social, political, and even environmental realms. In this edition, we will try to answer these questions.

What is a cryptocurrency and how does it work as money?

The journey of what we understand and use as money has changed over the years from the barter system to cryptocurrencies. But can we call cryptocurrencies money? What exactly is money?







The definition of money is centered on the following functions that money serves-

- Unit of Account:** Due to its use as a medium of exchange for both buying and selling and its use to assign prices to all kinds of other goods and services, money can be used to keep track of the money gained or lost across multiple transactions.
 - When acting as a medium of exchange, money is expressed in the form of currency** that can vary from physical form like cash to virtual or digital form like e-wallets.
- Store of Value:** Because money's usefulness as a medium of exchange in transactions is inherently future-oriented, it provides a means to store value obtained through current production or trade for use in the future in the form of other goods and services.
- Standard of Deferred Payment:** Money can be used to transfer value for exchange use at different times between people through the tools of credit and debt.

Any entity which serves these functions can be understood to be functioning as money. These include cheques, bills of exchange, digital wallets, and cryptocurrencies. Money can be further sub-divided into **legal tender (Fiat money)** or **non-legal tender money** depending on whether or not it is recognized by the law of the land.

A cryptocurrency is a digital or virtual currency that is secured by cryptography (a process of converting ordinary plain text into unintelligible text and vice-versa so that only those for whom it is intended can read and process it). The genesis of cryptocurrencies can be traced back to the Global Financial Crisis of 2008. The crisis highlighted the weaknesses of the monetary system and created skepticism over central bank's monopoly over issuance of currency. As a result, cryptocurrency was envisaged as an idea to break this monopoly and empower all sections of economic participants.

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Bitcoin??
 2009
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Plastic Money
 1950
- 
Bank Notes
 1700
- 
Minted Coins
 600 B.C.
- 
Cowry Shells
 3000 B.C.
- 
Barter System
 Forever Ago

Physical		Electronic		
Potential substitutes for physical money Physical tokens (beads, shells) Privately issued notes (eg "money" issued by certain local authorities)	Money in a traditional sense (denominated in a sovereign currency)			Potential substitutes for non-physical money E-Money (broad sense) Legally recognised E-money (e-money in a narrow sense) Digital Currencies Centrally issued Decentralised or automatic issuance
	Central Bank Money	Commercial Bank Money		
	Cash (notes and coins)	Central bank deposits		

But how does cryptocurrency work? Who issues it? How does it get distributed? Who keeps track of the accounts and transactions?

Generation: Cryptocurrencies generally operate on a decentralized system which records transactions in a **distributed ledger** called a **blockchain**.

Miners of these currencies run complex computer rigs to solve complicated puzzles to confirm groups of transactions called blocks; upon success, these blocks are added to the blockchain record and the miners are rewarded with a small number of cryptocurrencies.

Distribution: After these currencies are issued, they can be traded on cryptocurrency exchanges or exchanged on a peer-to-peer basis. In regions, where it has been accepted as a payment mechanism, the currency changes hands based on economic transactions.

Maintenance of Records: Blockchain serves as a distributed ledger for maintenance of records. Every transaction in this chain is immutable and is subject to approval of a large section of participants in the chain.

Pondering Ahead

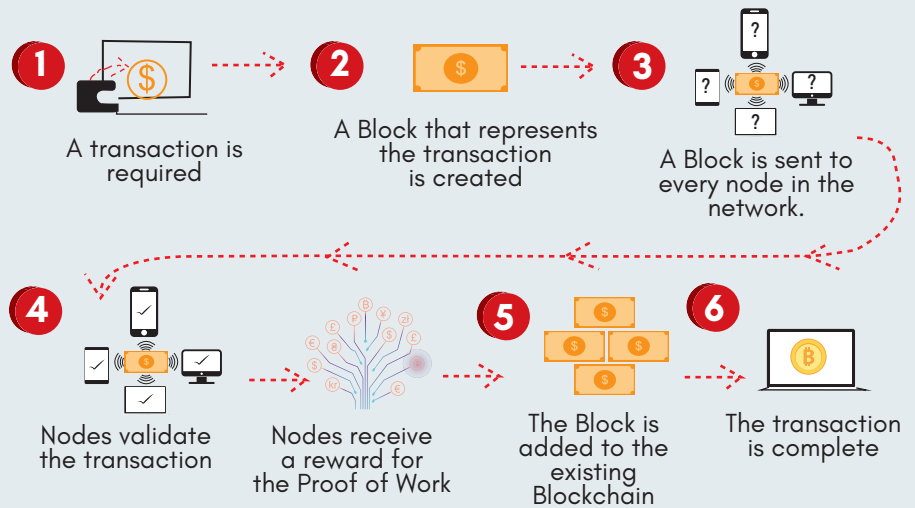
Will cryptocurrencies emerge as a new form of legal tender money? - Exploring the case of El Salvador.

In 2021, El Salvador became the first country to adopt Bitcoin as a legal tender. El Salvador does not have its own currency in practice and currently US dollar serves as the transaction currency. The primary reason for this step was to build a bitcoin mining hub around the country's geothermal potential.

Can other countries follow suit?

Making Bitcoin a legal tender implies surrendering the monetary control of currency. Such a possibility can be explored by countries with weak monetary control or countries which are going through a currency crisis. But economically stronger, nations like US, Japan ect. would not be inclined to move in this direction.

HOW BLOCKCHAIN WORKS

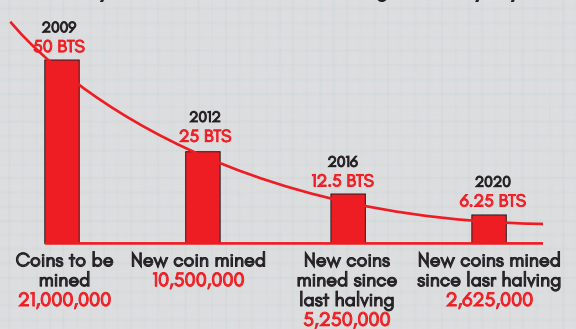


Pondering Ahead

Can cryptocurrencies like Bitcoin have an unlimited supply as they are not controlled by a Central Bank?

The algorithm governing the cryptocurrencies ensure that their supply is regulated. For example, the Blockchain algorithm governing Bitcoin limits the total number of bitcoins at 21 million. To ensure this, the algorithm reduces the reward by half for Bitcoin miners every 4 years.

Miners' Rewards for successfully completing 1 block halve every 210,000 blocks or an average of every 4 years



Some cryptocurrencies which have become a part of the financial system



The bitcoin network is an electronic payment



Ethereum is known as a "smart contract platform"

system based on cryptographic proof instead of trust, allowing any two willing parties to transact directly with each other without the need for a trusted third party.

where participants can program the transfer of value from one address to another when certain conditions are met without the need for an external contract executioner.



Its payment network, RippleNet, offers connections to hundreds of financial institutions around the world via a single application programming interface (API) and makes moving money faster, cheaper, and more reliable.



The Tezos blockchain represents the ledger of a cryptocurrency, tez. Tezos is used for payments, to represent complex financial contracts, to represent financial assets from stocks to gold and real estate, and even to power applications such as voting.








Litecoin is a decentralized cryptocurrency system that offers instant and low-cost payments to anyone in the world.



Celo is a mobile-first blockchain platform, built to provide six billion global smartphone subscribers easy access to digital banking and payment services.

How are cryptocurrencies a tool of economic empowerment?

The primary strength of cryptocurrencies is that they are **internally decentralized and entirely voluntary**, i.e., transactions are controlled by participants themselves without any central authority and joining or leaving such a system is in complete control of the participant. Such a system translates to following-

-  **Eliminating the middleman:** Blockchain technology used for crypto assets is a digital medium that enables the management, storage, and transferring of value without the oversight of a middleman that could benefit from the ecosystem. As a result,
 -  The **transaction costs are significantly lowered** as banks and other financial players are not involved. This has encouraged several African countries like Nigeria, South Sudan etc. to adopt Bitcoin as the primary mode of sending remittances.
 -  The **transactions are faster** as the crypto asset system is based on a real-time connected worldwide network.
-  **Effectively serving the functions of money:** Cryptocurrencies by virtue of being digital and being operated on a distributed ledger has following advantages over traditional money-
 -  As a medium of exchange, **cryptocurrencies can be transacted over long distances and potentially be more divisible without a large transaction cost.** These properties make crypto



assets especially attractive for micro payments in the new sharing and service-based digital economy.

🔸 **Increased transparency and reduced leakages in the financial system** as the system recording the transactions is open to all the participants.

🏆 **Enhancing security of the payment systems:** The design of blockchain is such that the crypto assets can be transferred but cannot be duplicated. Also, these transactions are protected through cryptographic encryption.

🔸 As digital payments and transactions grow so does the associated cyberthreat. For example, global fraud losses are expected to rise to \$35.67 billion in the next 5 years alone. In this context, safeguarding the financial sector from cyberthreats becomes extremely important.

🏆 **An enabler of financial inclusion:** Cryptocurrencies have the potential to overcome current impediments in accessing finance-

🔸 **Infrastructure:** Globally, a large section of people is beyond the access of the current banking infrastructure. Cryptocurrencies like Celo have the potential to overcome this hurdle via its mobile based blockchain system.

🔸 **Discrimination:** In many regions and sectors, access to finance is subject to discrimination based on caste, race, gender among others. Cryptocurrency can overcome this as identity of users remains anonymous in the transactions. For instance, cryptocurrency is being associated with **Black Economic Empowerment** (an integration programme launched by the South African government to reconcile South Africans and redress the inequalities of Apartheid).

🏆 **Empowering businesses by complementing the technological revolution:** Emerging technologies like Artificial Intelligence, Machine Learning, Big Data especially in the FinTech industry would require a complementary payment solution.

🔸 For instance, Smart Contracts enabled by cryptocurrencies like Ethereum would significantly hasten the business activity by making contracts self-executing, credible, irrevocable, and transparent.

In essence, because of the decentralized way that blockchain-based payment systems work, they empower people with the **4S's of payments, namely how they spend, save, send, and secure their money.** But the same decentralized nature of this entity creates challenges for the economy.

What are the regulatory challenges that may arise with increased use of cryptocurrencies?

The use of cryptocurrency would shift the control of flow of money away from the central authorities. This will have an impact on the functions that central authorities execute.


🏆 **Controlling the Macroeconomic variables:** When a large part of the domestic financial system operates with an alternate currency, monetary policy for the local currency becomes disconnected from the local economy. This would affect the ability of monetary authorities regarding inflation control, providing stimulus etc.


Pondering Ahead


Can cryptocurrencies be useful outside the economic discourse?


Cryptocurrencies and the associated technology are in essence a type of collective platform. This characteristic enables its use in several areas. Following are some of its examples-


 The UNICEF Crypto Fund, which is part of the UNICEF Innovation Fund, is a **pooled fund of bitcoin and ether** that makes early-stage investments in start-ups working on open-source solutions.


 The World Food Programme (WFP) is using cryptocurrency networks to expand refugees' choices in how they access and spend their cash assistance.

 Rally provides a platform for creators to launch and manage their own cryptocurrencies to power new forms of community and fan engagement.


 Dollarization in some developing economies (such as adoption of US dollar as currency by Ecuador) provides an analogy.


 **Checking the misuse of technology in criminal activities:** There have been apprehensions that the anonymous nature of transactions would encourage use of cryptocurrencies for illegal activities like money laundering and terrorist financing.


 According to United Nations report, criminals laundered US\$2.8 billion through crypto exchanges in 2019.


 **Controlling tax evasion and avoidance:** Anonymity offered by the cryptocurrency ecosystem makes it difficult for tax authorities to trace transactions to individuals and verify their tax liabilities.




 For instance, the US Treasury Department estimates a potential tax gap of \$7 billion over the coming decade.


 **Managing cybersecurity issues:** The cryptocurrency platforms are susceptible to hackers and malicious users. This can lead to issues like manipulation of the system, trading of fake cryptocurrencies and other fraudulent activities.

 **Ensuring that advent of digital currency does not create a new divide:** Lack of awareness regarding the technology and limited internet penetration can create a financial divide in the form of cryptocurrency haves and have-nots.

 For instance, cryptocurrency has been envisaged as a tool of financial inclusion but as of now, majority of cryptocurrency in circulation globally is possessed by the financially affluent sections.

 **Weaponization of cryptocurrency in the context of geopolitics:** As flow of cryptocurrencies cannot be controlled by the monetary authority, it can be used by countries as a tool of economic manipulation in other countries.



 For instance, several researchers argue that acceptance of a China-backed cryptocurrency could significantly push global-trade in China's favor.

In addition to these, the system of cryptocurrencies create several systemic challenges like **fragmentation of the market** (globally, there are more than 600 major cryptocurrencies in vogue), **high volatility** of the market price of these entities and most importantly **lack of trust leading to low degree of acceptance** for cryptocurrencies.

Pondering Ahead

Is cryptocurrency mining a threat to climate change?

Several environmentalists have raised concerns about the energy consumption of cryptocurrency mining, which may cause increased carbon emissions and climate change.

The cryptocurrency advocates have argued that miners generally seek energy surplus regions and thus their contribution in the overall picture is insignificant.

Contrary to this argument, 65% of bitcoin miners are located in China, a country that generates most of its energy from coal. While it would be difficult to put an exact figure on the extent of emissions by miners, research suggests that even in the best-case scenarios, **mining is a major factor in carbon dioxide emissions.**

Pondering Ahead

Will the advent of cryptocurrency influence the world order?

The current international world order is heavily tilted towards United States (US). One of the primary reasons for this scenario is the global acceptance for the US dollar as a medium of exchange.

The advent of cryptocurrencies can potentially change this scenario. For instance, several countries like El Salvador have started moving from US dollar as pseudo currency to Bitcoin.

In addition to these, creation of state-sponsored cryptocurrencies like China's eCNY (Digital Yuan) would drastically **alter the global currency-exchange mechanisms and hence the geo-economic world order.**

Pondering Ahead

Is Indian Government against cryptocurrency and what regulatory options does it have?

In the last few years, the Reserve Bank of India (RBI) and Indian Government have **notified the potential financial, operational, legal and security risks related to cryptocurrencies** on multiple occasions.

● In 2017, the Ministry of Finance issued a statement which **clarified that virtual currencies are not legal tender** and do not have any regulatory permission or protection in India.

● In the 2018-19 budget speech, the Finance Minister announced that the **government will take all measures to eliminate their use in financing illegitimate activities** or as a part of payment system.

In April 2018, **RBI notified that entities regulated by it should not deal in virtual currencies** or provide services for facilitating any person or entity in dealing with or settling virtual currencies.

These developments were succeeded by a draft Bill namely Banning of Cryptocurrency & Regulation of Official Digital Currency Bill, 2019. The Bill proposed an absolute ban on private cryptocurrencies on one hand, and on the other proposed establishing a 'digital rupee' instead.

Later, the Supreme Court struck down the 2018 RBI circular banning all the regulated entities from using cryptocurrencies in Internet and Mobile Association of India v. Reserve Bank of India case. This judgement was based on the 'principle of proportionality' i.e., even though the RBI is empowered to regulate the financial sector, its act of banning the use of cryptocurrencies is not proportional to the alleged 'mischief' or harm caused to the RBI regulated entities.

As a result, the Cryptocurrency and Regulation of Official Digital Currency Bill, 2021 is envisaged to regulate the sector. The content of the Bill is not available yet, but taking a cue from other countries, a mix of following regulatory options can be explored-

Main Options	Types of actions/Country examples
Information/ Moral Suasion	<ul style="list-style-type: none"> 📌 Public warnings 📌 Investor/buyer information 📌 Research papers <p>Most countries have issued these types of warnings, research or information notes.</p>
Specific Stakeholder Regulation	<ul style="list-style-type: none"> 📌 Regulation of digital currency administrators (record-keeping, reporting, AML/TF). Example: United States. 📌 Regulation of digital currency exchangers (record-keeping, reporting, prudential measures, AML/TF). Examples: United States, France, Canada, Singapore, Sweden. 📌 Consumer protection measures (payment guarantee, redeemability etc).
Interpretation of existing regulations	<ul style="list-style-type: none"> 📌 Application of regulation based on "interpretation" of how existing framework (eg tax law treatment) may be applied to digital currencies or digital currency intermediaries. Example: United States.
Overall regulation	<ul style="list-style-type: none"> 📌 Dedicated regulation, covering all three aspects (consumer protection, prudential/organisational rules for stakeholders, and specific operating rules as payment systems).
Prohibition	<ul style="list-style-type: none"> 📌 Ban (or amount cap) on retail Bitcoin transactions. 📌 Ban on digital currency acceptance by retailers. 📌 Ban on digital currency-based financial instruments. Examples: China, Belgium. 📌 Ban on digital currency exchangers. 📌 Ban on Bitcoin transactions between banks. Examples: China, Mexico.

How can a balance be created between regulatory challenges and potential benefits of cryptocurrencies?

A balance between the two can be created when we move away from asking 'should we allow cryptocurrencies?' and move towards 'how can central banks capitalize on this opportunity?' This approach involves:

Mastering the regulatory sandbox: The idea of a digitally generated currency is new in the regulatory parlance. Thus, the approach towards its regulation should be to evolve rapidly and fix problems along the way.

Several experiments can be created to understand facets of cryptocurrencies like public-private partnership, areas of effective operation, and payment mechanisms.

Exploring the idea of Central Bank Digital Currencies (CBDCs): It may be technologically and administratively challenging for central banks to create and circulate state sponsored CBDCs. But it provides several advantages like-

It can help enable precise interventions in the macroeconomy. For example, the government prefers credit extension to specific sectors rather than interest rate cuts as its prime tool to manage demand, as has also been evident during the COVID-19 pandemic.

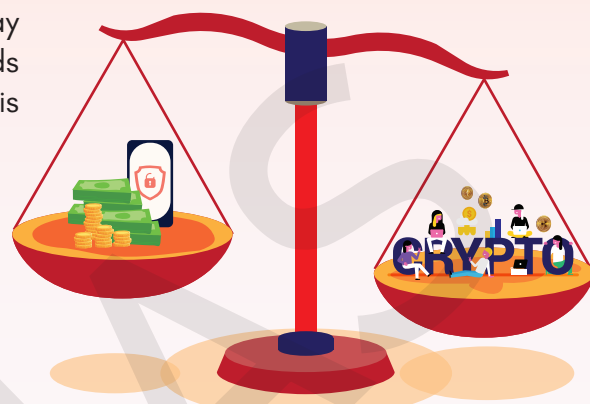
It can help improve the affordability and speed of the payment systems. For instance, budgetary allocations pass several nodes before reaching expending authority. This process would be hastened if money gets automatically allocated to the expending authority based on a CBDC-based smart contract.

Preparing the ecosystem for adoption of digital finance: Adoption of cryptocurrencies in the form of CBDCs or something else would necessitate preparing the ecosystem in following areas-

Improving financial literacy across all stakeholders i.e., citizens, regulators, businesses etc. to ensure smooth adoption and create a level-playing field for all.

Increasing digital penetration by creating better digital infrastructure and improving the affordability of digital means. This will ensure wider adoption and help realize the goal of financial inclusion.

Strengthening the cybersecurity architecture is essential to create a secure payment architecture and for maintaining the trust of economic participants in the system.



Pondering Ahead

Can India become a tech powerhouse for innovation with adoption of a pro-crypto policy?

A forward-looking crypto policy can have a significant impact on improving our overall financial infrastructure, help safeguard national security, deter financial frauds, strengthen our monetary policy, attract international capital, create more job opportunities, and retain our tech talent to accelerate technological development.

But realizing this potential would require significant preparation. This includes creating digital infrastructure, improving financial literacy, and developing human-resource capability in the sector.

Given the success that the nation has seen in the past three decades vis-à-vis ITES-based solutions, the idea is worth exploring.

Involving private sector to encourage innovation:

The private sector can offer innovative products and services that support the authorities' efforts to foster more resilient, inclusive, and innovative payments. In turn, central banks and financial policymakers should take care not to crowd out private firms, but to design CBDCs or regulation in a way that spurs competition.

Evolving a monetary policy for the digital age:

The digital age here consists of multiple currencies operating in an ecosystem. This includes private cryptocurrencies, CBDCs and innovations like "Stable" coins (they are pegged to existing fiat currencies or mimic their macroeconomic behavior).

- The money supply in the economy would now be able to move from traditional channels as well as digital channels. As a result, the central bank here would have to slowly redesign liquidity transmission frameworks like repo operations for taking these flows into account.

Maintaining international collaboration for financial stability: There must be international consensus on the classification of digital currencies so that there can be consistent and effective cross-border regulation. For instance, discussions through international forums such as Financial Stability Board (FSB) could serve as consensus creation frameworks.

- In addition, cooperation among regulators, such as through supervisory colleges, could reduce gaps and unevenness caused by the cross-border usage of these currencies.

Pondering Ahead

Are global institutions against cryptocurrency?

The **International Monetary Fund (IMF)** believes that **cryptocurrencies do not pose a challenge** to global banks and fiat money as they are currently too volatile, too risky and too energy intensive.

On the other hand, **World Trade Organization (WTO)** has not responded to the idea and the growth of cryptocurrency explicitly and the **World Bank (WB)** has rejected a request from El Salvador to help with the implementation of Bitcoin as legal tender. Contrary to both these stances, **United Nations (UN)** has embraced the cryptocurrency system via UN Crypto Stamps and the UNICEF Cryptocurrency Fund.

Thus, it can be said that the **global stance on cryptocurrency is still evolving.**

Pondering Ahead

Are non-fungible tokens (NFTs) a type of cryptocurrency or are they something else?

"Non-fungible" largely means that it is unique and can't be replaced with something else. For example, a bitcoin is fungible – trade one for another bitcoin, and you'll have the same thing. But a one-of-a-kind trading card, however, is non-fungible.

NFTs go beyond the idea of cryptocurrency i.e., serving as an alternate medium of exchange. NFTs enable generation and trading of all digital entities from paintings to famous tweets. For example, an individual created a digital art and the same can be bought for 0.6979 Ethereum (see infographic). But, here the winning bidder will not receive the painting but get a unique digital token known as an NFT.

Where Bitcoin was hailed as the digital answer to currency, NFTs are now being touted as the **digital answer to collectables** to create a digital certificate of ownership that can be bought and sold.



REDEMPTION

@tanzer

Current bid: 0.6979 ETH | Ending in: 04h 14m 57s

Conclusion

The cryptocurrency system and the associated blockchain technology have been touted to be as revolutionary as the internet in 20th century. The idea behind this revolution is economic empowerment of the individual by limiting the role played by the financial intermediaries. But removing the intermediary makes the controlling authority faceless, which is not only hard to understand but even harder to trust.

Can we have the best of both worlds i.e., Empowerment created through cryptocurrencies and sense of security provided by the regulatory authority? The answer lies in creation of CBDCs and molding the monetary authority to support this innovation.

Narayana Kocherlakota - one of the world's leading monetary theorists- argued in a paper that "money is memory", it acts as a publicly available and freely accessible device that records who owes what to whom. With cryptocurrencies, we have an opportunity to make our collective economic memory clearer, sharper, and more functional.

Related Terminologies

Mining	Cryptocurrency mining is the process by which new coins are entered into circulation, but it is also a critical component of the maintenance and development of the blockchain ledger. It is performed using very sophisticated computers that solve extremely complex computational math problems.
Distributed Ledger	A distributed ledger is a database that is consensually shared and synchronized across multiple sites, institutions, or geographies, accessible by multiple people.
Node	A node is a computer connected to other computers which follows rules and shares information.
Proof-of-work	Proof of work (PoW) describes a system that requires a feasible amount of effort in order to deter frivolous or malicious uses of computing power, such as sending spam emails or launching denial of service attacks. It forms the basis of many cryptocurrencies, allowing for secure, decentralized consensus.
AML/TF	Anti-money laundering/Terror Financing.
Altcoins	Any cryptocurrency coins not named Bitcoin.
Public Key	A public key is a string of characters used to purchase cryptocurrency. If a content creator, for example, wants to receive cryptocurrency instead of fiat for his or her content, they can list their public key. Fans can easily send cryptocurrency using the content creator's public key.
Private Key	It is a string of numbers and letters that allows a user to access their cryptocurrency and to protect a user from theft and unauthorized access to funds.
Hash	Hashing is the process of converting a given key into another value. A hash function is used to generate the new value according to a mathematical algorithm. A cryptographic hash function is used for security purposes and constitutes the backbone of crypto security.
51% attack	A theoretical attack where if an entity gains 51% of the hashing power, they can perform double-spends and other malicious activities. Ultimately, such an attack would likely cause the end of a cryptocurrency.
Utility coin	A cryptocurrency that can be used for other purposes aside from transactions. For example, Binance Coin can be used on the Binance exchange to get a discount when purchasing other coins.
Regulatory Sandbox	A regulatory sandbox is a framework set up by a regulator that allows FinTech startups and other innovators to conduct live experiments in a controlled environment under a regulator's supervision.

TOPIC AT A GLANCE

Definition of cryptocurrency and its working methodology

A cryptocurrency is a digital or virtual currency that is secured by cryptography. As a currency, it satisfies all major functions of money i.e., acting as a unit of account, store of value and a standard for deferred payment. Its system works on following lines-

- ◆ **Generation:** They get generated through a mining process in a decentralized and distributed ledger system called Blockchain.
- ◆ **Distribution:** They can be traded on cryptocurrency exchanges or exchanged on a peer-to-peer basis.
- ◆ **Maintenance:** Blockchain serves as a distributed ledger for maintenance of records. Every transaction in this chain is immutable and is subject to approval of a large section of participants in the chain.

Looking ahead

- ◆ In 2021, El Salvador became the first country to adopt Bitcoin as a legal tender, but the same cannot be expected from economically stronger countries like India, US and Japan etc.

Cryptocurrencies as a tool of economic empowerment

- ◆ **Eliminating the middleman**, resulting in significantly lowered transaction costs and increased pace of transactions.
- ◆ **Effectively serving the functions of money** as they can be transacted over long distances and reduce leakages by increasing transparency.
- ◆ **Enhancing security of the payment systems** by enabling cryptographic encryption to protect against cyberthreats.
- ◆ **Being an enabler of financial inclusion** by overcoming the issues related banking infrastructure and discrimination regarding access to finance.
- ◆ **Empowering businesses by complementing the technological revolution** by creating tools like Smart Contracts among others.

Looking ahead

- ◆ The cryptocurrencies have been **showcasing high potential for use outside economic discourse** i.e., in social spheres like platform for artists.

Regulatory challenges in their adoption

- ◆ **Controlling the macroeconomic variables** like money supply, inflation etc. with advent of an alternate currency.
- ◆ **Checking the misuse of technology in criminal activities** like money laundering and terrorist financing.
- ◆ **Controlling tax evasion and avoidance** as there is no central oversight.
- ◆ **Managing cybersecurity issues** which could be susceptible to hackers and malicious users.
- ◆ **Ensuring that advent of digital currency does not create a new divide** due to limited financial inclusion and technological access.
- ◆ **Weaponization of cryptocurrency** in the context of geopolitics.

Looking ahead

- ◆ Cryptocurrency mining could become a **major factor in carbon dioxide emissions**.
- ◆ Cryptocurrencies could **alter the global currency-exchange mechanisms and hence the geo-economic world order**.

Balancing regulatory challenges and potential benefits of cryptocurrencies

- ◆ **Mastering the regulatory sandbox** by adopting a regulatory approach which evolves rapidly and fixes problems along the way.
- ◆ **Exploring the idea of Central Bank Digital Currencies (CBDCs)** to enable precise interventions in the macroeconomy and help increase the efficiency of the payment system.
- ◆ **Preparing the ecosystem for adoption of digital finance** by improving financial literacy, increasing digital penetration, and strengthening cybersecurity ecosystem.
- ◆ **Involving private sector to encourage innovation** through supportive policies and encouraging competition.
- ◆ **Evolving a monetary policy for the digital age** by redesigning traditional mechanisms and experimenting with financial elements like 'Stablecoins' among others.
- ◆ **Maintaining international collaboration for financial stability** through international forums like Financial Stability Board (FSB).

Looking ahead

- ◆ Given the success that the nation has seen in the past three decades vis-à-vis ITeS-based solutions, **India can become a tech powerhouse for innovation with adoption of a pro-crypto policy**.
- ◆ **Non-fungible tokens (NFTs)** are emerging as an idea which is going beyond cryptocurrencies by creating a parallel to physical ownership in the digital world.