



INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

Nobody Can Control Money: A Blockchain Perspective On Financial Freedom

¹Hemil Virani, ²Manju Sadasivan

¹MCA Student, ²Assistant Professor

School of Science and Computer Studies

CMR University, Bengaluru, India

Abstract: Blockchain technology has revolutionised the financial sector by allowing transactions to occur without governmental intervention. While traditional systems have governments controlling the flow of money through banks and financial institutions, blockchain uses a distributed ledger system that offers people additional security and anonymity. This essay looks at how governments control the financial sector and how blockchain threatens that authority. Blockchain reinforces financial sovereignty in two ways: on the one hand, control; and on the other, concerns about security, regulation, and misuse. Last but not least, this study investigates whether governments can control currency in a blockchain economy.

Index Terms: Blockchain, Financial Autonomy, Decentralized Finance (DeFi), Government Regulation, Digital Currency Control, Privacy, and Security.

I. Introduction

Money has always been a powerful tool for both trade and control. For centuries, governments and central banks have managed national economies by controlling the flow of money through traditional financial institutions. From printing money to setting interest rates, they affect everything from inflation to international trade. However, a technological revolution is currently occurring that challenges this long-standing authority. Blockchain technology enables a decentralized system that does not require central authority approval or oversight of financial transactions. Unlike traditional banking, blockchain allows people to send, receive, and store value without the need for middlemen. It replaces trust in institutions with trust in technology, particularly in an open, impenetrable digital ledger that is updated by a global computer network [1]. Decentralized Finance (DeFi) is a new approach to money management that uses smart contracts and cryptocurrencies like Bitcoin and Ethereum to provide financial services that are not under the control of banks or governments. Proponents argue that this leads to a more open, inclusive, and democratic financial system where individuals own all of their assets and privacy is safeguarded. But the same freedom also presents issues with taxation, regulation, financial stability, and preventing fraud. [2]. As blockchain adoption grows, regulators face a challenge: how to keep an eye on a system designed to avoid scrutiny. Central banks are experimenting with Central Bank Digital Currencies (CBDCs) in an attempt to integrate blockchain benefits while retaining authority. However, critics argue that the lack of centralized accountability could lead to abuse, money laundering, or even economic disruption [3]. Whether governments can truly control money in a blockchain-powered world is the primary question this paper explores. By examining how traditional financial systems function, how blockchain reinterprets control, and what role governments may play in this emerging economy, we hope to ascertain whether financial freedom through decentralization is a pipe dream, a threat, or perhaps both [4].

II. Literature Review

Researchers, economists, and technologists have become more interested in blockchain technology in the last ten years due to its potential to disrupt established financial systems. Decentralization, the idea that transactions can be completed without depending on any centralized power structure, is at the heart of this disruption and is changing how we think about money, trust, and government.

Don and Alex Tapscott (2016), through their *Blockchain Revolution* book, presented the initial concept that blockchain had the potential to redistribute power in finance by allowing individuals to control assets directly. They posit that decentralization does away with middlemen like banks and state institutions and allows transparency and peer-peer interactions to drive the system [5]. A survey by Hanjie Wu et al. (2024), *Blockchain for Finance: A Survey*, reaffirms this stance by emphasizing the advantages of blockchain to lower transaction costs, provide enhanced security, and provide real-time settlement. The study highlights that although blockchain enhances transparency and effectiveness, it presents regulatory issues mainly in aspects related to anti-money laundering (AML) and know-your-customer (KYC) [6]. Central banks have historically controlled interest rates, monetary policy, and reserve requirements in order to control the amount of currency in circulation. Sheard (2023) explains how these tools maintain people's trust in fiat currencies, manage economic cycles, and stabilize inflation in *The Power of Money*. By allowing people to lend, borrow, and trade without the involvement of banks, DeFi platforms challenge this model [7]. Azar (2024) discusses the implications of digital assets for financial sustainability in a working paper published by the Federal Reserve Bank of New York. Without regulation, widespread cryptocurrency use poses a threat to central banks' ability to manage liquidity and inflation, and it has the ability to destabilize economies during severe crises [8]. DeFi is an open financial system that is accessible to anybody with an internet connection, according to Jiang et al. (2023). According to the results of their study, DeFi improves access to financing and reduces the barrier to financial participation in underbanked areas. It comes with worries about volatility and investor protection. In the event of fraud or any conflict, there would be no middleman to turn to [9]. Governments are increasingly using Central Bank Digital Currencies (CBDCs), or blockchain-based national currency versions, to address these problems. According to Hasan et al. (2023), CBDCs offer a compromise: they preserve the stability and authority of central banks while simultaneously utilizing the speed and security of blockchain technology. They caution that careful design of CBDCs is necessary to prevent the centralization of user data and the overreach of surveillance [10]. Researchers like Shin (2022) look at how the adoption of cryptocurrencies reflects broader societal changes outside of the financial sector. Shin describes the relationship between idealism, innovation, and greed that underpins the crypto culture in *The Cryptopians*. Although blockchain can empower users, she notes that if access to digital infrastructure and education is not made universal, it will only exacerbate already-existing disparities [11].

III. Methodology

This study uses a qualitative and conceptual approach to investigate the question: Can governments control money in a world driven by blockchain? It does this by combining policy documents, academic studies, expert opinions, and fictional storytelling.

This paper is organized around comparative analysis and thematic analysis rather than surveys or experiments. The following essential elements are part of the methodology:

1. Literature Search and Secondary Research

In order to understand how blockchain, decentralized finance (DeFi), and central bank digital currencies (CBDCs) work, the study thoroughly examined academic publications, financial reports, books, and online databases (IEEE, arXiv, MDPI, etc.). Relevance, reliability, and recent advancements in the fields of monetary policy and digital finance are taken into consideration when selecting sources.

2. Comparative Analysis

The study compares distributed blockchain-type financial systems, which are driven by peer-to-peer transactions and consensus-building algorithms, with centralized financial systems, which are

governed by governments and central banks. Among the topics covered from both perspectives are money creation and inflation control.

3. Thematic Storytelling

The kingdom of Cryptonia is used as an imagined case study to make complex blockchain concepts more relatable and engaging. The story illustrates the nature of decentralization, the application of blockchain principles, and the challenges that disruption presents to established systems. It simplifies and demythologizes technical terms like cryptography, hashing, consensus, and mining.

4. Case Examples and Real-World Instances

The article is able to make comparisons between current events in the real world, such as the pilot implementation of CBDC by countries like China, India, and the EU, and the increase in the use of DeFi platforms and the adoption of Bitcoin by nations that are going through financial difficulties.

5. Critical Assessment on Policy Responses

The report concludes by examining how institutions and governments are responding to the rise of blockchain, whether through innovation, regulation, or opposition. Concerns about digital inclusion, privacy, financial sovereignty, and striking a balance between innovation and regulation are essential to this. This multifaceted approach allows the paper to present a balanced and thoughtful perspective, combining academic rigor with storytelling and real-world relevance.

IV. How Money Creation and Economic Growth Work

Money is essential for the functioning of any economy. It allows people to buy goods and services, and businesses to grow and generate profits. But how does money creation work, and who controls the flow of money in the economy? The story of money creation begins with the central bank, which plays an important role in maintaining economic stability through monetary policy.

Role of the Central Bank and Monetary Policy

The central bank is the hub of any nation's financial system. By modifying interest rates and reserve requirements, it manages inflation and the amount of money that flows through the economy. In essence, interest rates represent the cost of borrowing money. Interest rate reductions by the central bank make borrowing more affordable, which incentivizes individuals and companies to take out loans for the purchase of homes, vehicles, and other items. This promotes economic expansion.

However, when prices start to rise too quickly (inflation), the central bank may raise interest rates to make borrowing more expensive. Consequently, spending and investment fall, which helps to stabilize prices. By carefully altering interest rates, the central bank can have an impact on the overall health of the economy.

Central banks also use open market operations as a technique. They buy and sell government bonds in order to regulate the money supply. By buying bonds and injecting money into the banking sector, the central bank increases liquidity and prompts the banks to offer more credit. When it sells bonds, it withdraws money from the system, reducing liquidity and slowing the economy if there is an issue with inflation [12].

V. How Money Creation Works

Imagine having ₹1000 when you enter a bank and choose to deposit the full sum into your savings account. Although the bank is happy to take your money, this is where the magic of creating money starts.

The central bank requires banks to retain a certain percentage of deposits as reserves, say 20%. This implies that the bank can lend out the remaining ₹800 after setting aside ₹200. A different person now visits the bank in search of a loan to purchase a phone. They make the purchase with the ₹800 that the bank gives them.

The ₹800 is then deposited into the seller's personal bank account. The bank currently has 800 new deposits. Once more, the reserve rule of the central bank is in effect: ₹160 is loaned out, while 20% of ₹800 (₹160) is set aside. After entering the economy, this ₹640 is spent and then redeposited. With each cycle—

deposit, reserve, loan—more money is created. The comprehensive guide to fractional reserve banking money creation is given in table 1.

Table 1: The comprehensive guide to fractional reserve banking money creation

Round	Total Deposit	Reserve Money (20%)	Loan Amount
1	₹1000	₹200	₹800
2	₹800	₹160	₹640
3	₹640	₹128	₹512
4	₹512	₹102.40	₹409.60
5	₹409.60	₹81.92	₹327.68
6	₹327.68	₹65.54	₹262.14
7	₹262.14	₹52.43	₹209.71
8	₹209.71	₹41.94	₹167.77
9	₹167.77	₹33.55	₹134.22
10	₹134.22	₹26.84	₹107.37
Total	4953.12	990.62	3962.50

In the end, this process generates about ₹4953.12 in the economy from your initial ₹1000 deposit. The economy's loans account for about ₹3962.50, while the bank holds about ₹990.62 in reserve money.

The multiplier effect is at work here. Economic growth is fueled by the ripple effect of money being deposited, loaned, spent, and then deposited again. However, this process is closely monitored by the central bank.

Controlling Money Supply Through Reserve Requirements

The central bank can raise the reserve requirement if inflation begins to creep up due to an excess of money in circulation. For instance, banks will have less money to lend if the reserve rate rises from 20% to 30%, which would slow down the cycle and decrease the amount of money in circulation.

The central bank may, however, reduce the reserve requirement to 10% if the economy slows down, which would enable banks to make larger loans and spur economic expansion. Because of this, the central bank has strong control over how money moves throughout the economy.

How Money Printing Works

Printing money is another way that governments can control the money supply. But how do they figure out how much money to print? Governments use taxes as a tool to control inflation and raise funds. Higher taxes have the opposite effect on consumer spending as lower taxes can spur economic growth. The government printing too much money without increasing the production of goods and services can lead to inflation, where too much money chases too few goods.

Central banks must carefully balance the amount of money they print and the amount they remove from circulation in order to maintain economic stability [13].

VI. International Money and the Role of the US Dollar

Money serves as a unit of account on the international scene, which means that prices are quoted in a standard unit that varies by nation: dollars and cents in the US, yen in Japan, euros in Europe, and pounds in the UK.

However, the issue of disparate currencies affects international trade. The US dollar has long dominated international trade in terms of currency. The United States pledged to back every dollar with gold following World War II. At a set rate, nations could convert their dollars into gold. The US dollar became the reserve currency of the world as a result.

This system evolved over time, but the US dollar continues to be the foundation of international trade. Since US dollars are stable and widely accepted, many nations have sizable reserves of them. Because of this, the US has a big say in the world financial system [14].

VII. The Power of Centralization

Consider a big bank that has locations all over the nation. Even though thousands of workers are employed at various branches, the central bank's headquarters, where regulations are set, is where the true power is. Interest rates, lending guidelines, and the amount of cash that each branch should hold are all set by the central bank. In order to encourage more people to borrow and invest, all branches must modify their loan rates in accordance with any decisions made by the central bank to lower interest rates.

In the same way, consider a well-known social media site that is used by millions of people globally. Although users can communicate and post content, the platform's owner is ultimately in control. It chooses what features to add or remove, what types of content are permitted, and how the platform's algorithm should operate. Users will undoubtedly see more videos in their feed whether they like it or not if the company modifies the algorithm to encourage more video content.

Governments operate similarly. A central authority, such as the national government, has the authority to enact and enforce laws in a centralized political system. Any new tax laws enacted by the government will affect all individuals and companies nationwide, regardless of where they are located. Although this guarantees uniformity and control, it also limits the ability of communities and local governments to modify policies to suit their unique requirements.

Since decisions are made from the top down and the system is governed by a single set of rules, centralization fosters consistency and order. But it also means that the system as a whole may suffer if the central authority makes a mistake or does not act promptly.

Decentralization is becoming a viable alternative to redistribute power and lessen dependence on a single authority because the central bank has complete control over the financial system and any failure or poor management could affect it as a whole [15].

VIII. The Strength of Decentralization

Imagine a financial system where no single bank or government controls the flow of money. Instead, every transaction is verified and recorded by a network of computers spread across the world. This is how blockchain works — a decentralized system where power is shared among participants rather than concentrated in one place. For example, when you make a payment using cryptocurrency, the transaction is not processed by a central bank. Instead, it's validated by multiple nodes (computers) in the blockchain network. These nodes work together to confirm the transaction's legitimacy through a consensus mechanism. Once confirmed, the transaction is added to a permanent ledger that everyone in the network can see — but no single party can alter it without the approval of the majority. An illustration of how fractional reserve banking can create money is depicted in fig 1.

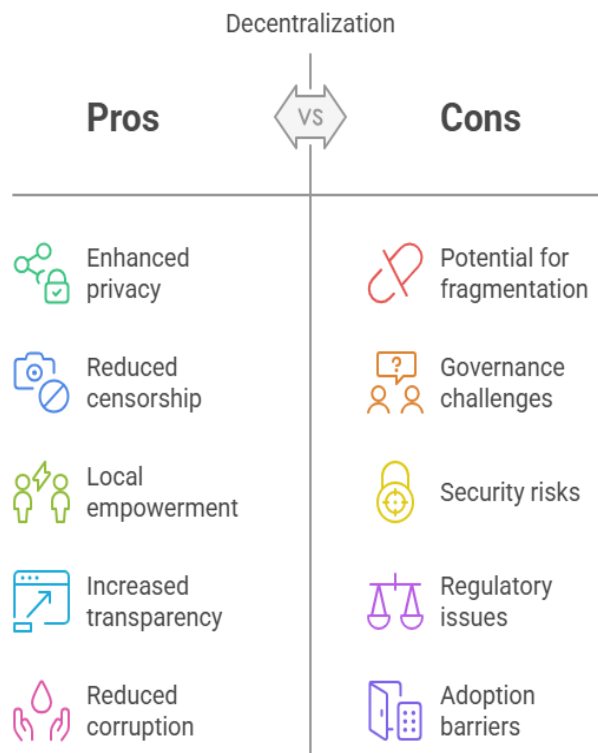


Fig 1: An illustration of how fractional reserve banking can create money

Interaction platforms are also subject to decentralization. Certain messaging apps use decentralized servers, meaning that user data is not under the control of a single business. This lowers the possibility of censorship or data breaches by giving users more control over their communication and privacy.

Since control is shared rather than held by one party, decentralization improves security and transparency. Decentralized financial systems divide power among participants, in contrast to centralized ones, where governments or central banks control the money supply and impose regulations. This improves privacy, lowers the chance of corruption, and provides users more authority over their financial information and choices. The conventional centralized banking model is being challenged by blockchain technology, which is gaining popularity. This raises significant concerns regarding financial stability, regulation, and the future of money.

People can manage their own finances with a decentralized platform like blockchain, which gives them complete control over financial transactions and less dependence on a central authority [16].

IX. The Story of Blockchain

People exchanged valuable coins known as Bitcoins in the virtual kingdom of Cryptonia. The economy of Cryptonia operated on a magical system called Blockchain, a decentralized network in which no single ruler held power, in contrast to other kingdoms where a central authority regulated the flow of money. Figure 2 illustrates how the public and private keys are used in bitcoin transactions.

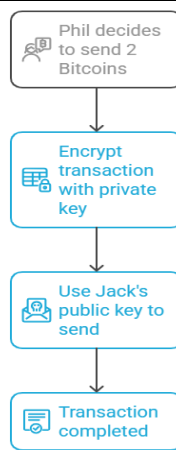


Fig 2: The public and private keys used in bitcoin transactions

Every transaction in Cryptonia was entered into a unique, secure ledger known as the Public Ledger, which was accessible to all members of the kingdom. Three crucial items were kept in each of the blocks that made up the ledger::

1. **Data** – The specifics of the transaction, such as the sender and recipient of the coin and the amount traded.
2. **Hash** – A special magical code that served as a unique identifier for the block and its contents.
3. **Previous Block's Hash** – This is the hash of the block that came before it, which formed a safe chain connecting all of the blocks.

Phil sent Jack two Bitcoins one day. Phil encrypted the transaction details using his private key, a magical password that only he knew, to ensure that no one could tamper with the transaction. He then sent the coins using Jack's public key, which is equivalent to an address that is visible to all.

The transaction had to be verified by the kingdom's expert wizards, called miners, before Jack could get the coins. In a process known as Proof of Work, the miners fought to solve a challenging magical puzzle. The transaction was verified by the first miner to solve the puzzle, and the new block was appended to the blockchain. The successful miner received some Bitcoins as payment.

Everyone in the kingdom immediately received the updated ledger after the block was added. Every citizen had a copy, making it nearly impossible for anyone to cheat or alter the transaction without altering every single copy!

Cryptonia was safe and reliable because of its decentralized system. The people themselves upheld the system, guaranteeing equity and openness for all, and there was no king or other authority in charge of the coins [17].

X. The Tale of Blockchain Security

In the magical kingdom of Cryptonia, the security of their precious Bitcoin trades was unmatched. The kingdom's strength lay in its magical book — the **Public Ledger** — where all transactions were recorded and protected by powerful spells of encryption and consensus.

One day, a mischievous hacker named Zane tried to trick the system. He wanted to change a past transaction where 2 Bitcoins were sent to his rival, Max, into 4 Bitcoins instead. But the magical defenses of Cryptonia's blockchain made this nearly impossible.

First, the ledger was not held by just one person — **every citizen in Cryptonia had a copy**. To change the record, Zane would need to alter **every single copy** of the ledger held across the kingdom, which was practically impossible.

Next, Zane faced another problem — **encryption**. The ledger's data was secured with a powerful magical code called **SHA-256**. Even if Zane tried to modify a transaction, he would have to crack the encryption — a task so complex it would take more than a lifetime of effort.

But the biggest challenge of all was the **consensus spell**. For a change to succeed, Zane would need to convince more than **51% of the kingdom's wizards** (miners) to accept the change. Since the wizards competed fairly and were rewarded for keeping the system honest, convincing them to betray the kingdom was almost impossible.

To make matters worse for Zane, each block of the ledger was linked to the previous one through a **unique magical hash**. If he changed one block, the magical connection between the blocks would break, alerting the entire kingdom to his trickery.

Cryptonia's blockchain had several layers of magical security:

- **Immutability** – Once a block was added, it became permanent.
- **Transparency** – Every citizen could see the transactions, ensuring honesty.
- **Decentralization** – No single ruler controlled the system, making it resistant to attacks.
- **Smart Contracts** – Special spells that automatically completed trades when certain conditions were met, adding extra protection.

Zane quickly discovered that Cryptonia's blockchain was secured by invincible magic. No matter how smart he was, cheating was impossible due to the system's consensus, encryption, and linking spells. The populace of Cryptonia trusted their magical blockchain for all of their transactions and trades, and the kingdom remained safe [18].

XI. Applying Blockchain as a Self-Controlled Currency

The creation of a government's own cryptography-based national currency is one of the many possible applications for blockchain technology. Governments would be able to use this coin in a safe and open setting while maintaining internal control over all financial transactions. The government would essentially eliminate the possibility of public misuse or intrusions by unauthorized authorities or systems by using blockchain technology and cryptography to create a currency free from fraudulent transactions. All transactions would logically lessen the effects of outside forces on the economy, and a national list and directing system would fall under the purview of the national sovereignty of the government.

It would take time for this system to be implemented. In order to avoid making the same mistakes, it would be necessary to evaluate the benefits and drawbacks of using them from other governments. After laying the foundation, the government would gradually roll out digital currency, granting citizens, companies, and possibly financial institutions limited access. This would promote system stability and trust. In the end, this operation would build public confidence in the implementation of a safe digital economy, which would eventually result in a more secure and efficient national digital economy [19].

Real-World Government

India – Digital Rupee

India's RBI launched the digital rupee (₹) in late 2022 via permissioned blockchain tech. It began with controlled pilot programs:

- Wholesale (₹-W) for interbank settlements starting Nov 1, 2022
- Retail (₹-R) for consumers in closed user groups starting Dec 1, 2022 across select cities, offering both P2P and merchant payments using QR codes

Over many months, being integrated fully with UPI and working with many banks and fintechs allowed it to scale user experience to approximately 1 million transactions per day by December 2023. The adoption was staged to ensure security, interoperability, and trust [20]. Various countries Central Bank Digital Currency (CBDC) is given in table 2.

Table 2: Countries' CBDC launches [21]

Country/Region	Coin Name	Launch/Pilot Year	Purpose & Use Case
Marshall Islands	SOV	2018	National cryptocurrency, legal tender
Tunisia	e-Dinar	2015	Mobile payments using blockchain
Senegal (WAEMU)	e-CFA	2016	Digital CFA franc for mobile wallets
Bahamas	Sand Dollar	2020	Retail CBDC for nationwide financial inclusion
Nigeria	eNaira	2021	Retail CBDC for domestic payments
China	Digital Yuan	2020	Retail and limited cross-border usage
Russia	Digital Ruble	2023	CBDC alongside traditional cash and deposits
Ghana	e-Cedi	2021–22 (pilot)	Blockchain-based inclusion for underserved groups
Sweden	e-Krona	2021 (pilot)	Digital backup for cash in a cashless economy

XII. Use Cases

a) National Control Over Monetary Behavior

By introducing a blockchain-based National coin, the government can control how and where money can flow. Blockchain allows for complete traceability, allowing the government to:

- Stop illegal activities (e.g., black money, terrorism funding)
- Monitor how citizens and businesses spend money.
- Apply rules such as spend limits, expiration, or location-based constraints [22].

b) Compatibility with Future Tech (Metaverse & Web3)

New digital ecosystems such as the metaverse, Web3, and decentralized applications (dApps) are all Blockchain-based. In the future, when interactions take place in virtual worlds (for example, buying virtual land or racing cars) the currency for participation will be Blockchain-based only.

Why it matters:

- There will be no traditional cash or banking systems allowed in fully virtual spaces.
- A government-controlled Blockchain coin allows a country to be involved in future global tech economies without losing sovereignty [23].

c) Eliminating Fake Currency

Counterfeit cash (forged money) can hurt an economy. With Blockchain:

- Every coin is digitally unique, traceable.
- Cannot be copied or changed, due to its cryptographic security.
- Allows computerized verification, history of wallet and transaction history [24].

d) Automatic Tax Collection

With blockchain-based national currency:

- Smart contracts can auto-deduct taxes at the time of transaction
- Government can instantly receive GST/VAT or income tax

Example:

Future CBDCs may implement programmable tax deductions, like a 10% tax auto-collected at the time of sale [25].

XIII. Discussion

A paradigm shift in the management, accessibility, and utilization of money has been brought about by the development of blockchain technology. At its core, blockchain challenges the traditional belief that centralized organizations like banks and governments must control money. Rather than relying on laws and regulations, it offers an alternative model in which users share control and it is based on code. One key takeaway from our analysis is that while blockchain empowers people, it also challenges established systems of economic and regulatory control. Decentralization makes it more difficult for a government to impose monetary policies, increase taxes, or combat financial crimes, even though it offers transparency, autonomy, and privacy. A blockchain-based system does not allow for the simple reversal of an invalid transaction or the freezing of assets used in criminal activity, which are commonplace in traditional finance. This disruption is aptly demonstrated by the hypothetical situation involving Cryptonia. The people in this world hold the power, not the banks. Every transaction is permanent, open, and verified by a global network. Although this system prevents corruption and poor central management, the issue still remains: what would happen if there was a crisis and the government intervened to stabilize the economy? Governments are not evading these questions. They are trying to meet in the middle — taking the transparency and speed of blockchain and combining it with the oversight and control that you find in traditional finance. But these digital currencies are very different from decentralized cryptocurrencies: CBDCs can be based on blockchain, but are centrally issued, controlled and regulated. The trick is to balance decentralization and control and find the sweet spot in the middle. Too much regulation and blockchain risks losing the very things that make it desirable — privacy, liberty, and decentralization. Too little regulation and there will be instability, fraud and inequality.

There is an added level of complexity in the form of digital accessibility. Not everyone possesses the tools, education, or access to the internet necessary to engage in decentralized finance. Are vulnerable demographics left behind if blockchain-based systems become standard? This constant tension reveals that the future of money is not so much a technical matter as it is an intensely political one. Who decides what money does and how? Who makes sure there's fairness, security, and access? They're questions blockchain makes us ask — and ones governments, developers, and people need to answer together.

XIV. Conclusion

Blockchain technology is the first step toward a financial revolution where individuals will be able to manage, hold, and transfer money without the help of banks or governments. The long-standing power structures that governed the global financial system have been upended by the decentralized revolution. Blockchain is an effective substitute for centralized control because of its distributed ledgers, peer-to-peer transactions, and cryptographic security. It reinterprets who owns money, how it moves through the economy, and what it means to believe. Yet this freedom comes with a price. Governments are facing more and more challenges as blockchain technology advances, including controlling anonymous transactions, maintaining the stability of financial markets, and upholding the law in a setting designed to avoid centralized authority. Yes, blockchain strengthens protection and transparency, but if it is not strictly regulated, it may also create opportunities for abuse. In an effort to counteract this disruption, central banks are experimenting with Central Bank Digital Currencies (CBDCs), which combine the benefits of blockchain technology with the structure and supervision of traditional systems. A broader movement to

modernize financial infrastructure without compromising order and regulatory presence is reflected in this convergence. Ultimately, neither governments nor blockchain technology alone will determine the direction of money in the future. More likely, it will depend on our ability to strike a balance between decentralization and governance, freedom and justice, and innovation and responsibility. The argument put forth in this paper is that, if properly applied, blockchain technology will reduce the ability of governments to fully control money while paving the way for an inclusive, safe, and open financial system. The key is not whether money can be controlled, but *how we choose to shape the systems that manage it — and who we allow to hold that power.*

REFERENCE

- [1] M. Javaid, A. Haleem, R. P. Singh, R. Suman, and S. Khan, “A review of Blockchain Technology applications for financial services,” *BenchCouncil Transactions on Benchmarks, Standards and Evaluations*, vol. 2, no. 3, 2022, Art. no. 100073. [Online].Available: <https://doi.org/10.1016/j.tbench.2022.100073>
- [2] O. Adisa, B. S. Ilugbusi, O. C. Obi, K. F. Awonuga, O. A. Adelekan, O. F. Asuzu, and N. L. Ndubuisi, “Decentralized Finance (DEFI) in the U.S. economy: A review — Assessing the rise, challenges, and implications of blockchain-driven financial systems,” *World Journal of Advanced Research and Reviews*, vol. 21, no. 1, pp. 2313–2328, 2024. [Online].Available: <https://doi.org/10.30574/wjarr.2024.21.1.0321>
- [3] J. Rahman, H. Rahman, N. Islam, T. Tanchangya, M. Ridwan, and M. Ali, “Regulatory landscape of blockchain assets: Analyzing the drivers of NFT and cryptocurrency regulation,” *BenchCouncil Transactions on Benchmarks, Standards and Evaluations*, vol. 5, no. 1, 2025, Art. no. 100214. [Online].Available: <https://doi.org/10.1016/j.tbench.2025.100214>
- [4] J. Tommerdahl, “Understanding the Future of Money: The Struggle Between Government Control and Decentralization,” *Journal of Risk and Financial Management*, vol. 18, no. 2, p. 98, 2025. [Online]. Available: <https://doi.org/10.3390/jrfm18020098>
- [5] A. Tapscott and D. Tapscott, *Blockchain Revolution: How the Technology Behind Bitcoin is Changing Money, Business, and the World*. New York, NY, USA: Penguin Random House, 2016. [Online]. Available: <https://www.scirp.org/reference/referencespapers?referenceid=2566443>
- [6] H. Wu, Q. Yao, Z. Liu, B. Huang, Y. Zhuang, H. Tang, and E. Liu, “Blockchain for Finance: A Survey,” *arXiv preprint*, arXiv:2402.17219, 2024. [Online]. Available: <https://arxiv.org/abs/2402.17219>
- [7] P. Sheard, *The Power of Money*. New York, NY, USA: Wiley, 2023.
- [8] P. Azar, “The Financial Stability Implications of Digital Assets,” *Federal Reserve Bank of New York, Economic Policy Review*, vol. 30, no. 2, 2024. [Online].Available: https://www.newyorkfed.org/medialibrary/media/research/epr/2024/EPR_2024_digital-assets_azar.pdf
- [9] E. Jiang, B. Qin, Q. Wang, Z. Wang, Q. Wu, J. Weng, X. Li, C. Wang, Y. Ding, and Y. Zhang, “Decentralized Finance (DeFi): A Survey,” *arXiv preprint*, arXiv:2308.05282, 2023. [Online]. Available: <https://arxiv.org/abs/2308.05282>
- [10] M. R. H. Shahrukh, M. T. Rahman, and N. Mansoor, “Exploration of Hyperledger Besu in Designing Private Blockchain-based Financial Distribution Systems,” *arXiv preprint*, arXiv:2311.08483, 2023. [Online].Available: <https://arxiv.org/abs/2311.08483>
- [11] L. Shin, *The Cryptopians: Idealism, Greed, Lies, and the Making of the First Big Cryptocurrency Craze*. New York, NY, USA: Public Affairs, 2022. [Online].Available: https://www.google.co.in/books/edition/_/VIYiEAAAQBAJ
- [12] A. Abhilasha, B. A. Talwar, K. M. Kushwaha, and I. Bhattacharyya, “Open Market Operations in India – An Appraisal,” *RBI Bulletin*, Jan. 2023. [Online].Available: https://www.researchgate.net/publication/372165171_Open_Market_Operations_in_India_-_An_Appraisal
- [13] NCERT, *Introductory Macroeconomics: Textbook in Economics for Class XII**. New Delhi, India: National Council of Educational Research and Training, 2024.

- [14] S. Arslanalp, B. J. Eichengreen, and C. Simpson-Bell, *The Stealth Erosion of Dollar Dominance: Active Diversifiers and the Rise of Nontraditional Reserve Currencies*, International Monetary Fund Working Paper No. 2022/058. Washington, DC, USA: IMF, 2022.[Online].Available: <https://www.imf.org/en/Publications/WP/Issues/2022/03/24/The-Stealth-Erosion-of-Dollar-Dominance-Active-Diversifiers-and-the-Rise-of-Nontraditional-515150>
- [15] M. Tommasi and F. Weinschelbaum, *Centralization vs. Decentralization: A Principal-Agent Analysis*, Journal of Public Economic Theory, vol. 9, no. 2, pp. 369–389, Apr. 2007. [Online]. Available: <https://doi.org/10.1111/j.1467-9779.2007.00311.x>
- [16] X. Hui and C. E. Tucker, *Decentralization, Blockchain, Artificial Intelligence (AI): Challenges and Opportunities*, SSRN preprint, 2025. [Online]. Available: <https://ssrn.com/abstract=4601788>
- [17] Hayes, A., *Blockchain Explained: What It Is, How It Works, and How It Can Be Used*, Gemini, 2024. [Online].Available: <https://www.gemini.com/cryptopedia/what-is-blockchain-technology>
- [18] SentinelOne, *Blockchain Security: Principles, Risks and Best Practices*, SentinelOne Cybersecurity Blog, 2024. [Online].Available: <https://www.sentinelone.com/blog/blockchain-security-principles-risks-and-best-practices/>
- [19] A. Niroula, S. Hamal, R. P. Gajurel, A. K. Baral, and S. Adhikari, *Challenges of Central Bank Digital Currency Implementation: A Review of Literature*, Journal of Management Research, vol. 7, no. 1, 2024. [Online].Available: https://www.researchgate.net/publication/387777252_Challenges_of_Central_Bank_Digital_Currency_Implementation_A_Review_of_Literature
- [20] Press Information Bureau, “Reserve Bank of India commences pilot for retail digital rupee (e₹-R) from December 01, 2022,” *Government of India*, Dec.1,2022.[Online].Available: <https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1882883>
- [21] “History of central bank digital currencies by country,” *Wikipedia*, Jul. 5, 2025. [Online]. Available: https://en.wikipedia.org/wiki/History_of_central_bank_digital_currencies_by_country
- [22] L. Freiman, CBDC Governance: Programmability, Privacy and Policies, CIGI Digital Currency Governance Paper.[Online].Available: <https://www.cigionline.org/static/documents/DPH-paper-Freiman.pdf>
- [23] C. T. Nguyen, D. T. Hoang, D. N. Nguyen, and E. Dutkiewicz, “MetaChain: A Novel Blockchain-based Framework for Metaverse Applications,” *arXiv preprint arXiv:2201.00759*, Dec. 2021[Online].Available: <https://arxiv.org/pdf/2201.00759>
- [24] Bank for International Settlements, *Central Bank Digital Currencies: Foundational Principles and Core Features*, BIS Annual Report. [Online]. Available: <https://www.bis.org/publ/arpdf/ar2020e3.htm>
- [25] P. Louvieris, G. Ioannou, and G. White, “Making Tax Smart: Feasibility of Distributed Ledger Technology for building tax compliance functionality to Central Bank Digital Currency,” *Journal of Network and Computer Applications*, accepted Jun. 25, 2024, arXiv:2406.17512. [Online]. Available: <https://arxiv.org/pdf/2406.17512>