DOI: 10.54254/2754-1169/158/2025.19697

A Rising New Standard for Currency: Economic Implications of Adopting Bitcoin in Developing Nations

Xinyu Catherine Zhang[1,a,*]

[1]Saint Mark's School, Southborough, Massachusetts, 01772, United States of America
a. xinyuzhang@stmarksschool.org
**corresponding author*

Abstract: Amidst uncertainties of the global economy and new ideals up in the air, new forms of currencies have emerged as a result of globalization. While fiat currency still prevails on the international stage, cryptocurrency has taken advantage to become a vital part of economies. The fact that each of these currencies has its own characteristics, strengths and weaknesses, and is not proportional to economic development has led to a wider debate on the relative benefits of each currency for developing countries. In particular, whether cryptocurrencies can help improve the economic situation in developing countries with their unique advantages. Even though there are limited case studies since cryptocurrency requires some barrier for adoption, theoretical arguments make it sound appealing. Through case studies of El Salvador, Central African Republics, and India with regard to tangible changes brought by cryptocurrency and policy changes, this paper explores how well the theoretical benefits have been implemented in practice. While many intricate factors are reacting to each other with such changes, making the results harder to evaluate with linear measurements, inherent shortcomings in implementations seem to be hindering the benefits of cryptocurrency. Therefore, the results show that the use of cryptocurrency as a legal tender may not lead to an improvement in the economic system and conditions in developing countries due to its high barrier to entry. In order to maximize the benefits of cryptocurrencies, there is a need to improve infrastructure to make cryptocurrencies more accessible.

Keywords: Cryptocurrency, Developing Country, Currency, Economy.

1. Introduction

The monetary systems of developing countries face unique challenges, largely due to limited resources and the fragility of their banking infrastructures. In these countries, access to banking services is often restricted, complicating efforts to participate in broader economic activities. Currency plays a crucial role in how a country's economy responds to external shocks, such as inflation and recession. And the fiat currency has been widely adopted by governments due to its low production cost, convenience, and potential to stimulate job creation and revenue. However, unlike fiat currencies, cryptocurrencies, such as Bitcoin, are more volatile and decentralized [1]. As cryptocurrencies are still evolving, the question was raised as to whether they could be a viable alternative for developing countries to build more stable and prosperous economies. Cryptocurrencies offer promising benefits, including lower remittance costs, greater financial inclusion and the potential to hedge against inflation. However, the immediate impact of cryptocurrencies was

DOI: 10.54254/2754-1169/158/2025.19697

uncertain owing to the lack of mature use cases and supporting infrastructure in many developing countries. Thud, the paper aims to evaluate the extent to which cryptocurrency, or specifically Bitcoin, can have on a developing nation's economic system. By analyzing the regional case study of El Salvador, the Central African Republic, and India, it explores difficulties in regulating cryptocurrency offset the latent benefits brought by Bitcoin to developing countries. However, despite practicability issues, the currency can bring substantial benefits to developing countries' economies by lowering remittance fees, hedging against inflation, providing more global market access with fewer barriers, and attracting investments. Cryptocurrency offers an insight and unique solution to challenges facing the economic systems of many developing countries, which contributes to long-term economic prosperity and stability.

2. The Functions of Money, Fiat Currency, and Cryptocurrencies

The core functions of currency are to serve as a store of value, a medium of exchange, and a unit of account [2]. In comparison to a barter economy, a monetary economy provides a more efficient and equitable means of transaction, with physical currency quantifying commodity values and enhancing market transaction efficiency. In a monetary economy, the money supply affects interest rates, thereby influencing the overall financial environment. Fiat currency, which is not backed by precious metals, underwent a shift in 1971 when the U.S. abandoned the gold standard, leading to changes in the Bretton Woods system. Reasons for abandoning the gold standard include its instability and limitations on fixed exchange rate policies. The value of fiat currency is dependent on the authority and credibility of the government, and its purchasing power relative to other national currencies is an important measure of its value. Strong purchasing power can encourage consumption, promote international trade and local economic growth, and attract foreign capital inflows [3-5].

Cryptocurrency, as a decentralized digital currency, is generated based on cryptographic algorithms. Investors obtain cryptocurrency through "mining", which promotes fair market share distribution and drives up prices [6]. The lack of reliance on a central authority renders cryptocurrency more susceptible to market volatility. As supply nears its limit, scarcity drives prices up, and the emergence of multiple investment platforms has increased market liquidity, further intensifying price fluctuations [7]. Though some cryptocurrencies are relatively stable, the performance of different types varies significantly. In practical application, cryptocurrency depends on digital wallets, such as El Salvador's Chivo wallet. Trading platforms provide channels for buying and selling, often regulated by governments to ensure compliance. However, platforms like FTX have faced bankruptcy due to liquidity issues and poor management, highlighting market instability. Large-scale adoption of Bitcoin requires secure, well-capitalized platforms. There are numerous types of cryptocurrencies, with stablecoins maintaining value by pegging to fiat currencies or commodities. Bitcoin has advantages in terms of security, brand recognition, and a large user base, allowing it to both compete with other cryptocurrencies and support the development of its ecosystem [8,9].

3. The Pros and Cons of Cryptocurrencies

3.1. Advantages and Potential of Cryptocurrencies

Bitcoin as a cryptocurrency shows significant advantages and potential for growth. Fiat currencies can cause economic instability and wealth inequality due to government control, while bitcoin can mitigate inflationary characteristics due to its limited supply [10]. In actual transactions, Bitcoin is viewed more as a "store of value" than a "medium of exchange", and its price is thus affected by supply and demand [11]. Decentralization and cryptographic security provide Bitcoin with protection against manipulation and control. The positive correlation between bitcoin transaction volumes and human development suggests that bitcoin could enhance well-being by increasing financial inclusion.

DOI: 10.54254/2754-1169/158/2025.19697

And its fixed supply (capped at 21 million pieces) gives it anti-inflationary properties, preserving its value even in a recession, making it an effective anti-inflationary tool [12]. Bitcoin's decentralized nature helps to reduce corruption and increase financial transparency; the blockchain is managed by a collective of miners, and transactions lack anonymity and can be rigorously tracked, thus making it more difficult for corrupt activities to occur [13]. Additional transaction data and smart contract capabilities further enhance traceability and boost government transparency. In terms of international remittances, Bitcoin could significantly reduce the cost of sending money. And the implementation of cryptocurrencies for transactions and remittances in sub-Saharan Africa can result in a great reduction in fees, potentially reaching 0.025%. This would facilitate greater financial flows to those in need, as opposed to the 1% to 5% fees that are typically charged for remittance transfers within the traditional banking system [14,15]. Bitcoin, as a borderless currency, allows users to transfer funds using blockchain technology without bank fees. However, it poses a money laundering risk in remittances due to its lack of regulation, which is more likely to raise money laundering issues than the strict reporting requirements of traditional banks.

3.2. Challenges and Risks of Cryptocurrencies

Despite the potential to reshape the global monetary system, cryptocurrencies affect different groups of people in different ways. However, the current economic system faces multiple challenges such as economic rigidity, deflationary pressures, and global trade imbalances, which create complications for the acceptance and development of cryptocurrencies [16]. The volatility of cryptocurrencies and the lack of harmonized regulation is one of their main challenges, limiting their potential as stable currencies. Theoretically, Bitcoin is seen an inflation hedge due to its limited supply. Nevertheless, moderate inflation can sometimes promote economic growth by adjusting the gap between supply and demand, while disorderly inflation can exacerbate poverty and increase economic uncertainty. Thus, the main attraction of cryptocurrencies lies in their potential as a tool for preserving value, especially in countries and regions with unstable economies, low trust in government, or high inflationary pressures. Changes in social acceptance of cryptocurrencies have important implications for the stability of the monetary system. El Salvador is one of the few countries that have adopted Bitcoin as legal tender, while countries such as India and Kenya have attempted to establish cryptocurrency-based financial platforms in their countries by partnering with blockchain companies. This shows that some countries are open to the potential of cryptocurrencies as an alternative monetary system. However, a study of the adoption of Bitcoin in El Salvador found that the limited size of the case does not allow for a direct generalization of the results to all developing countries, and makes it difficult to adequately explain the economic, political, and cultural differences between different countries [17,18]. These factors may lead to significant differences in the acceptance of cryptocurrencies, the effects of their adoption and their impact on the economy in different countries and regions [19].

4. Applications of Bitcoin in Developing Countries: The Case Studies

4.1. El Salvador's Bitcoin Policy and Its Impacts

El Salvador became the first country in the world to adopt Bitcoin as legal tender in 2021, with the goal of increasing financial inclusion, creating jobs, and lowering transaction costs to increase remittance inflows. The government launched the Chivo wallet to provide the population with transaction fee-free digital currency services, but the implementation of related policies and data management is largely government-driven. To attract foreign investment, El Salvador needed to create a competitive business environment, but over-reliance on remittances was not sufficient to sustain economic growth. In this context, the adoption of Bitcoin is considered a prudent option [20].

Theoretically, Bitcoin can attract investment through efficient cross-border transactions and asset tokenization, thereby improving supply and demand and contributing to a healthy overall economic cycle.

Bitcoin's advantage in the remittance process is that it greatly reduces intermediation costs. The use of Bitcoin and other cryptocurrencies significantly reduces the cost of remittances: the average cost of sending money from the United States to El Salvador is 10.2%, while the average cost of a Bitcoin transaction is only $1.50 [21]. This suggests that Bitcoin has great potential to reduce transaction costs. Although El Salvador's economic growth rate reached 11.2% in 2021, subsequent forecasts indicate that the growth rate will drop to between 2.6% and 2.7% [22], a figure that, while not fully reflective of the economy's performance, may be positively correlated with the introduction of Bitcoin. Nonetheless, the practical application of Bitcoin in El Salvador is still limited. According to Alvarez et al, while nearly 68% of potential users are aware of the Chivo wallet, and 78% have attempted to download it, actual usage has declined significantly. The survey showed that about 20% of downloaders did not use the Bitcoin rewards, and many users did not continue to use it after the initial experience [18]. Bitcoin's instability and privacy concerns have triggered a crisis of public trust , and if governments are unable to build effective trust, policy implementation will be limited.

In addition, the government plays a critical role in promoting the use of Bitcoin, including building trust, responding to external shocks, and adapting policies. However, El Salvador still faces many technical challenges, such as transaction processing and identity theft risks [17]. According to a survey by the Universidad Centroamericana, 100 days after the implementation of the Bitcoin law, 34.8% of the population expressed a lack of confidence in Bitcoin, and 56.6% downloaded the Chivo wallet, but 62.9% of the users had not used it or had used it only once [23]. In September 2023, the Spanish newspaper El País states that the outcome of Bitcoin's adoption is not simply success or failure, but something in between [24]. In order to increase the potential benefits of Bitcoin, it is crucial to improve the security and privacy protection of the application. Besides, the U.S. dollar, as the official currency of El Salvador, provides stable purchasing power protection and international influence, which makes it difficult for Bitcoin to completely replace the dollar. Nonetheless, this policy has attracted significant immigration and capital inflows, hence improving the business environment. Despite the challenges, El Salvador's bitcoin policy has not yet been a complete failure, and the government needs to strengthen public trust and democratic participation if it is to promote the long-term development and adoption of bitcoin.

4.2. Central African Republic's Bitcoin Policy and Its Impacts

The Central African Republic became the second country in the world to adopt Bitcoin as legal tender in 2022, a decision that was reversed in March 2024, lasting only 11 months [25]. As a landlocked, mainly agricultural country, the Central African Republic has a weak economy, described as "mineral-rich but desperately poor". The introduction of Bitcoin is seen as an attempt to bring new opportunities, despite the country having an internet penetration rate of only 11.3% [26]. The transparency of this policy has fallen significantly short of expectations. Despite its limited internet infrastructure, the country has the potential to foster cryptocurrency development. In the context of a weak banking system, cryptocurrencies are regarded as an effective tool for storing value, transferring funds and providing financial incentives [27].

However, the evidence demonstrates that the majority of the population has limited knowledge of cryptocurrencies. Also, even among those who possess smartphones, the lack of reliable internet access and a general lack of trust in technology contribute to a reluctance to engage with cryptocurrencies. Edith Yangbogaze, a seller of agricultural products, said she remains reserved about cryptocurrencies due to trust issues. Bitcoin faces three major challenges to its practical application: internet access, lack of knowledge and cybersecurity issues. Unlike El Salvador, which uses Bitcoin

DOI: 10.54254/2754-1169/158/2025.19697

in parallel with the U.S. dollar, the Central African Republic has opted to use Bitcoin as an alternative to the Central African CFA franc, which is shared by five countries and backed by France [28]. The Central African Republic has high hopes for Bitcoin and its blockchain project Sango, which aims to tokenize land and natural resources and manage the country's economy. Nevertheless, the UN has warned that Bitcoin is unlikely to deliver the economic benefits the government expects [29]. The inherent instability of a presidential system of government further complicates the implementation of Bitcoin policies. In the wake of Bitcoin's recent legalization as tender, the Central African Banking Commission (COBAC) promptly informed the government of its prohibition [30]. Due to government instability and other issues, the parliament eventually overturned the Bitcoin policy, causing the project to fail. However, the endeavors to utilize Bitcoin in the Central African Republic demonstrated the potential of Bitcoin. In light of the unfavorable economic conditions currently prevailing in the country, the government is of the opinion that the introduction of Bitcoin can result in a net positive impact on the economy. And obstacles in the form of technical and social factors undermined the effectiveness of this policy. To realize the success of Bitcoin, the government must strengthen the education system, provide Internet infrastructure, and ensure that a viable implementation plan is in place to regulate the market.

4.3. India's Bitcoin Policy and Its Impacts

The Indian government has passed a cryptocurrency bill, although progress on its implementation has stalled. The bill was originally scheduled to be implemented in 2021 with the aim of regulating the fast-growing cryptocurrency industry. The cryptocurrency industry has seen a surge in investments in recent years, especially after 2020 [31]. Pankaj Chaudhary, the Minister of State for Finance, has stated that international cooperation is needed to prevent regulatory arbitrage in the crypto asset space and to gain important information through international cooperation [32]. Currently, there is no centralized body in India to regulate cryptocurrencies as a medium of payment and hence investors are primarily responsible. India has also proposed a tax framework for digital currencies, which lays the foundation for recognizing the legitimacy of cryptocurrencies and helps in market regulation.

The core of the bill is to create a stable structure for official digital currencies issued by the Reserve Bank of India and to ban all private cryptocurrencies (with a few exceptions). If the bill passes, digital currencies will function as add-ons to the Indian rupee, rather than standalone currencies. Despite the challenges India faces in organizing and regulating the cryptocurrency market, this policy shows the potential for India to integrate cryptocurrencies into the traditional economic system in the future. The Indian cryptocurrency market is expected to reach $6.4 billion by 2025. For developing countries, it is crucial to expose the general public to cryptocurrencies. In light of India's considerable population and the constraints of its educational and social benefits, the implementation of educational programs on cryptocurrencies may prove an efficacious strategy for enhancing awareness of their advantages [33]. Should appropriate interventions be implemented, cryptocurrencies may well become an important option in a diversified portfolio in the future. With continued research, open dialogue, and responsible regulation, cryptocurrencies can coexist with traditional financial institutions and contribute to a more robust financial system [34].

4.4. Comparative Analysis of Cryptocurrency Adoption in Developing Countries

The differences among countries significantly influence the outcomes of cryptocurrency adoption. El Salvador and the Central African Republic are among the world's poorest nations, while India is part of the BRICS group. Despite all being developing countries, their levels of development differ greatly. India uses its own currency, whereas El Salvador and the Central African Republic rely on currencies beyond their full control. El Salvador uses the US dollar, and the Central African Republic uses the

DOI: 10.54254/2754-1169/158/2025.19697

Central African CFA franc, both of which are controlled by external entities. The dollar is regulated by the Federal Reserve, while the CFA franc is governed by France. As a result, cryptocurrencies do not pose a major threat to the domestic currencies of these countries. Furthermore, El Salvador and the Central African Republic see Bitcoin as an alternative to traditional fiat currencies, rather than as a sole replacement, leading to differing impacts on their national currency markets and economies. Moreover, cryptocurrency policies are closely tied to the type of regime and the ruling party. The policy-making process is influenced by citizen participation, which, in turn, shapes the outcomes of cryptocurrency adoption. India and the Central African Republic both operate under parliamentary systems, where India's Prime Minister is constrained by parliament, leading to less centralized control over the market. Therefore, evaluating the effectiveness and economic impact of Bitcoin across these different contexts is not straightforward, and the comparison should consider more than just numerical data.

5. Conclusion

Despite the potential of cryptocurrencies, particularly Bitcoin, to bring economic inflows to developing countries, their actual benefits often depend on the improvement of infrastructure, the establishment of sound regulations, and the resolution of entry barriers. Developing countries need to find a balance between environmental impacts and market volatility; even with the full adoption of cryptocurrencies, fiat currencies may still maintain their dominance, as they reflect the power of governments and their global influence. Moreover, the inflation-hedging benefits of weak currency countries do not apply to strong currency countries. Therefore, adopting Bitcoin as a legal tender may not significantly improve the economic system. The operation of Bitcoin relies on blockchain and mobile wallet technologies, which vary in prevalence across different countries. Thus, developing countries must address these technological issues to better realize the potential of cryptocurrencies. This study's limitations include the constraints of quantitative data and case studies. future research could further validate the arguments through mathematical modeling simulations. Although the future of cryptocurrencies is filled with uncertainty, they possess the potential to become a part of a new economic system. To this end, improving infrastructure, enhancing educational levels, and establishing public trust in a democratic government are key to strengthening national power. By lowering banking fees, increasing financial inclusion, and attracting capital investment, cryptocurrencies are expected to promote economic growth in developing countries.

References

[1] *Kayal, P. and Rohilla, P. (2021) Bitcoin in the economics and finance literature: a survey. SN Bus Econ 1, 88.*
[2] *Liu, T, Wang, X. and Woo, W.T. (2019) The road to currency internationalization: Global perspectives and chinese experience. Emerging Markets Review, 38: 73-101.*
[3] *Jin, H., Takumah, W. and Jorenby, J. (2018) Currency Internationalization and the International Price System. Int Adv Econ Res 24, 303-309.*
[4] *Genc, H.O. and Takagi, S. (2024) A literature review on the design and implementation of central bank digital currencies. IJEPS 18, 197-225.*
[5] *Kenen, P.B. (2011) Currency Internationalisation: An Overview.*
[6] *Hong, E. (2024) How does bitcoin mining work? A beginner's guide. https://www.investopedia.com/tech/how-does-bitcoin-mining-work/*
[7] *James, A. (2024) Why is bitcoin so volatile? https://www.theblock.co/learn/286338/why-is-bitcoin-so-volatile.*
[8] *Vidal-Tomás, D., Briola, A. and Aste, T. (2023) FTX's Downfall and Binance's Consolidation: The Fragility of Centralised Digital Finance.Physica A: Statistical Mechanics and its Applications, 625: 129044.*
[9] *Marzo, G.D., Pandolfelli, F. and Servedio, V.D.P. (2022) Modeling innovation in the cryptocurrency ecosystem. Sci Rep 12, 12942.*
[10] *Song, J. (2017) Why bitcoin is different than other cryptocurrencies. Medium. https://jimmysong.medium.com/why-bitcoin-is-different-than-other-cryptocurrencies-e16b17d48b94.*

DOI: 10.54254/2754-1169/158/2025.19697

[11] Ammous, S. (2018). The bitcoin standard: The decentralized alternative to Central Banking. John Wiley & Sons.
[12] Qureshi, S. and Xiong, J. (2018) Global Financial Inclusion and Human Development: The Bitcoin Effect. GlobDev.
[13] Cornèr, K.L. (2024) How can third-world countries counter inflation using Bitcoin?. https://cointelegraph.com/learn/how-can-third-world-countries-counter-inflation-using-bitcoin
[14] Aldaz-Carroll, E. and Aldaz-Carroll, E. (2022) Can cryptocurrencies and Blockchain help fight corruption? https://www.brookings.edu/articles/can-cryptocurrencies-and-blockchain-help-fight-corruption/#:~:text=Cryptocurrency%20and%20blockchain%20could%20help, of%20spending%2C%20increasing%20development%20impact.
[15] Reeves, M. (2017) Cryptocurrency-remittance transfers Futuristic Technologies & Poverty Alleviation. Creative Matter. https://creativematter.skidmore.edu/econ_studt_schol/56/.
[16] Dix-Carneiro, R., et al. (2023) Globalization, Trade Imbalances, and Labor Market Adjustment, The Quarterly Journal of Economics, 138(2): 1109-1171.
[17] Msefula, G., Hou, T.CT. and Lemesi, T. (2024) Financial and market risks of bitcoin adoption as legal tender: evidence from El Salvador. Humanit Soc Sci Commun, 11: 1396.
[18] Alvarez, F., Argente, D. and Van Patten, D. (2023). Are cryptocurrencies currencies? bitcoin as legal tender in El Salvador. Science, 382(6677).
[19] Böhme, R., et al. (2015) Bitcoin: Economics, Technology, and Governance. Journal of Economic Perspectives, 29(2): 213-238.
[20] El Hajj, M. and Farran, I. (2024) The Cryptocurrencies in Emerging Markets: Enhancing Financial Inclusion and Economic Empowerment. Journal of Risk and Financial Management, 17(10): 467.
[21] Coinbase. (2023) Crypto could help save people in the US billions of dollars. https://www.coinbase.com/blog/crypto-could-help-save-billions-of-dollars-remittance-fees
[22] World Bank Group. (2024) The World Bank in El Salvador - Overview. https://www.worldbank.org/en/country/elsalvador/overview
[23] Welle, D. (2022). El Salvador: 70% de la Población Desconfía del bitcóin - DW . dw.com. https://www.dw.com/es/el-salvador-70-de-la-poblaci%C3%B3n-desconf%C3%ADa-del-bitc%C3%B3in-seg%C3%BAn-sondeo/a-60432915
[24] Cota, I. (2023). Two years of bitcoin in Bukele's El Salvador: An opaque experiment with a little-used currency. https://english.elpais.com/international/2023-09-02/two-years-of-bitcoin-in-bukeles-el-salvador-an-opaque-experiment-with-a-little-used-currency.html
[25] Browne, R. (2022). Central african republic becomes second country to adopt Bitcoin as legal tender. https://www.cnbc.com/2022/04/28/central-african-republic-adopts-bitcoin-as-legal-tender.html#:~:text=The%20Central%20African%20Republic%20has, a%20statement%20from%20the%20presidency.
[26] Reuters (2022) Bitcoin adoption by Central African Republic baffles cryptoverse. https://financialpost.com/pmn/business-pmn/bitcoin-adoption-by-central-african-republic-baffles-cryptoverse.
[27] Kshetri, N. (2022) Bitcoin's Adoption as Legal Tender: A Tale of Two Developing Countries. IT Professional, 24(5): 12-15.
[28] Nzaou-Kongo, A. and Biankola-Biankola, M. (2020) International Law and Monetary Sovereignty: The Current Problems of the International Trusteeship of the Cfa Franc and the Crisis of Sovereign Equality. African Review of Law and Critical Thinking, 1(1).
[29] ConinTelegraph. (2022) Sango: The first e-governance Bitcoin layer-2 solution. https://cointelegraph.com/press-releases/sango-the-first-e-governance-bitcoin-layer-2-solution.
[30] Reuters. (2022) Central African Bank Regulator reminds states of crypto ban. https://www.reuters.com/world/africa/central-african-bank-regulator-reminds-states-crypto-ban-2022-05-13/
[31] Tambe, N. (2024) All you need to know about India's crypto bill.
[32] Bharucha, J.M. (2024) How cryptocurrencies are taxed in India. Forbes.
[33] Saritha, S.R. et al. (2023) A Study on Cryptocurrency in India. International Journal of Humanities Social Science and Management (IJHSSM), 3(2): 816-821.
[34] Jagtiani, J., Papaioannou, M., Tsetsekos, G., Dolson, E., and Milo, D. (2021) Cryptocurrencies: Regulatory Perspectives and Implications for Investors. In: Rau, R., Wardrop, R., Zingales, L. (eds) The Palgrave Handbook of Technological Finance. Palgrave Macmillan, Cham.