

Comparing Stablecoins and Non-Stable Cryptocurrencies in the Dynamics of the Cryptocurrency Market

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Disclosure Statement :	The authors declare that they have not received any financial support that could have influenced the objectivity of this study. They take full responsibility for any potential plagiarism, the use of artificial intelligence in the writing process, as well as for the results presented in this article.
Conflict of Interest :	The authors report no conflicts of interest.
Cite this article :	ABOUZAIID, O., & BOUSSEDRA, F. (2026). Comparing Stablecoins and Non-Stable Cryptocurrencies in the Dynamics of the Cryptocurrency Market. <i>International Journal of Accounting, Finance, Auditing, Management and Economics</i> , 7(8), 556–577. https://doi.org/10.5281/zenodo.21328668
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Received: 21/06/2026

Accepted: 22/07/2026

International Journal of Accounting, Finance, Auditing, Management and Economics - IJAFAME

ISSN: 2658-8455

Volume 7, Issue 08 (2026)

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Abstract:

This study investigates the growing role of stablecoins within the global financial system and examines their potential integration into traditional foreign exchange markets. Despite the rapid expansion of stablecoins, empirical evidence comparing their market dynamics with those of non-stable cryptocurrencies remains limited. To address this gap, the study adopts a descriptive case study design based on documentary analysis and secondary quantitative market data. The documentary review establishes the theoretical foundations of stablecoins and their relevance to foreign exchange markets, while the quantitative analysis relies on market data collected from CCData, DefiLlama, and Statista. Weekly market observations covering the period from April 2019 to May 2024 were analyzed using descriptive statistics, comparative analysis, volatility measures, Pearson correlation analysis, and one-way ANOVA.

The findings reveal that stablecoins exhibit significantly lower price volatility than Bitcoin while maintaining high levels of market liquidity and trading activity. Among the analyzed assets, Tether (USDT) remains the dominant stablecoin, followed by USD Coin (USDC) and Binance USD (BUSD). The statistical analysis confirms significant differences between stablecoins and Bitcoin, highlighting the distinct market behavior of reserve-backed digital assets. These findings suggest that stablecoins have evolved beyond their traditional role as cryptocurrency trading instruments and are increasingly functioning as efficient mechanisms for cross-border payments, liquidity management, and decentralized finance applications.

This study contributes to the literature by providing an integrated empirical comparison of stablecoins and non-stable cryptocurrencies while demonstrating how the stability, liquidity, and operational characteristics of reserve-backed digital assets may facilitate their future integration into traditional foreign exchange markets. The findings also provide practical implications for policymakers, financial institutions, and regulators seeking to develop secure and efficient digital payment infrastructures supported by appropriate regulatory frameworks.

Mots clés : Stablecoins; Cryptocurrencies; Foreign Exchange Market; Digital Finance; Financial Stability.

JEL Classification : F31, G15, E42, O33.

Type du papier : Empirical research article.

1. Introduction

The rapid digital transformation of the global financial system has profoundly reshaped financial intermediation, payment systems, and cross-border capital flows. This evolution is consistent with the broader FinTech transformation described by Arner, Barberis, and Buckley (2016), who argue that digital innovation is fundamentally reshaping financial intermediation and the provision of financial services. Among the most significant innovations emerging from this transformation, stablecoins have attracted increasing attention from policymakers, financial institutions, regulators, and market participants because of their growing role within digital financial markets and their potential implications for financial stability. Positioned at the intersection of traditional finance and decentralized financial ecosystems, stablecoins combine blockchain technology with mechanisms designed to preserve price stability, thereby offering a potential alternative to conventional payment and settlement infrastructures.

Stablecoins were initially developed to address one of the principal limitations of conventional cryptocurrencies, namely their extreme price volatility. Unlike cryptocurrencies such as Bitcoin and Ethereum, whose values are largely determined by speculative market forces, stablecoins are generally backed by reserve assets, including fiat currencies, commodities, or other financial instruments, or stabilized through algorithmic mechanisms. Their primary objective is to preserve purchasing power while retaining the operational advantages of blockchain technology, including rapid settlement, transparency, programmability, and decentralized value transfer. Consequently, stablecoins have progressively evolved from simple trading instruments into multifunctional financial assets supporting digital payments, liquidity management, decentralized finance (DeFi), and cross-border transactions.

Despite these advantages, the rapid expansion of stablecoins has also generated important concerns regarding financial stability. A notable illustration occurred during the market disruptions of May 2022, when the collapse of several stabilization mechanisms exposed vulnerabilities associated with reserve adequacy, liquidity mismatches, redemption risks, and contagion effects between digital asset markets and the conventional financial system. These events intensified international regulatory discussions concerning the prudential supervision of stablecoins and reinforced the need for transparent reserve management and robust governance frameworks (Financial Stability Board, 2023). Nevertheless, rather than slowing their adoption, these developments have accelerated efforts to establish comprehensive regulatory frameworks capable of supporting the sustainable development of digital financial markets.

The COVID-19 pandemic further accelerated the digitalization of financial services and reinforced the adoption of blockchain-based payment solutions worldwide. Within this context, the aggregate market capitalization of stablecoins increased substantially between 2020 and 2022, reflecting their growing importance within the digital financial ecosystem. This rapid expansion has attracted increasing attention from policymakers and financial regulators regarding the potential implications of stablecoins for financial stability (Financial Stability Board, 2023). Although stablecoins represented less than 10% of the overall crypto-asset market during this period, their rapid expansion illustrates growing confidence in their ability to facilitate value transfer, improve liquidity management, support decentralized finance applications, and enhance the efficiency of cross-border payment systems.

This rapid market expansion has stimulated a growing body of academic research investigating cryptocurrencies and digital finance. Existing studies have examined a wide range of issues, including blockchain technology, cryptocurrency volatility, market efficiency, financial innovation, and regulatory frameworks. However, comparatively limited attention has been devoted to the specific role of stablecoins within traditional foreign exchange markets. Most previous studies analyze stablecoins from technological, regulatory, or cryptocurrency market perspectives, while relatively few investigate their potential contribution to the modernization

of foreign exchange infrastructures through improved settlement efficiency, reduced transaction costs, enhanced liquidity, and cross-border payment facilitation.

A critical review of the existing literature further reveals several important research gaps. Although previous studies broadly agree that stablecoins contribute to liquidity provision, decentralized finance, and digital payment systems (Lipton et al., 2020), important disagreements remain regarding their broader implications for financial markets. Ante et al. (2021) argue that stablecoin issuance improves market efficiency and price discovery, whereas Lipton et al. (2020) emphasize concerns relating to reserve transparency, redemption risks, and investor confidence. Likewise, (Pelagidis, 2022) highlight the potential contribution of stablecoins to payment efficiency and financial market competition, while other studies underline the systemic risks associated with their increasing integration into conventional financial systems. More importantly, relatively few empirical studies simultaneously compare the market dynamics of stablecoins and non-stable cryptocurrencies while evaluating their implications for traditional foreign exchange markets.

Addressing this gap constitutes the primary motivation of the present research. Unlike previous studies that focus primarily on technological or regulatory aspects, this study provides an integrated empirical comparison of the three largest stablecoins, Tether (USDT), USD Coin (USDC), and Binance USD (BUSD), with Bitcoin. By combining documentary analysis with secondary market data, the study evaluates differences in market capitalization, liquidity, price stability, volatility, and market dynamics in order to assess the extent to which the characteristics of reserve-backed digital assets may facilitate their future integration into traditional foreign exchange markets.

Accordingly, this study addresses the following research question:

How do stablecoins differ from non-stable cryptocurrencies in terms of market dynamics, and to what extent can their price stability and market characteristics facilitate their integration into traditional foreign exchange markets?

To answer this question, the study pursues three specific objectives: (i) to compare the market characteristics of major stablecoins and Bitcoin; (ii) to evaluate their relative stability and market performance using secondary market data and complementary statistical analyses; and (iii) to examine the implications of stablecoin development for the future integration of cryptocurrency markets with traditional foreign exchange systems.

The remainder of this paper is organized as follows. Section 2 reviews the existing literature on stablecoins and their relationship with traditional foreign exchange markets. Section 3 presents the research methodology, including the conceptual framework, documentary analysis, and quantitative research design. Section 4 reports the empirical findings based on comparative statistical analysis of the selected cryptocurrencies. Section 5 discusses the results in relation to the existing literature and highlights their implications for foreign exchange market integration. Finally, Section 6 concludes the paper by summarizing the principal findings, discussing the study's limitations, and outlining directions for future research.

2. Literature Review

2.1. Stablecoins as Digital Financial Assets

The rapid digital transformation of the global financial system has accelerated the emergence of blockchain-based financial innovations, among which stablecoins have become one of the most significant developments. Although financial innovation has evolved continuously since the introduction of electronic payment systems, credit cards, and online banking, the expansion of distributed ledger technology (DLT), cryptocurrencies, and decentralized finance (DeFi) has fundamentally reshaped the architecture of modern financial markets. Within this evolving environment, stablecoins have emerged as hybrid digital assets that combine the operational

efficiency of blockchain technology with the relative price stability traditionally associated with fiat currencies and other low-volatility financial assets. Unlike conventional cryptocurrencies, whose values fluctuate primarily according to speculative market forces, stablecoins are specifically designed to maintain a relatively stable value through reserve-backed mechanisms or algorithmic stabilization protocols. Consequently, they have attracted increasing attention from researchers, financial institutions, central banks, and policymakers seeking innovative solutions for digital payments, liquidity management, and international financial transactions. The growing importance of stablecoins has generated an expanding body of academic literature examining their technological foundations, economic functions, and implications for financial markets. Nevertheless, existing research remains fragmented, with many studies focusing either on the technological characteristics of blockchain-based assets, the regulatory challenges associated with digital currencies, or the behavior of cryptocurrencies in general, while comparatively limited attention has been devoted to the specific role of stablecoins within traditional foreign exchange markets. This limitation is particularly important because stablecoins differ fundamentally from conventional cryptocurrencies in both their design and economic objectives. Rather than serving primarily as speculative investment assets, they are intended to facilitate value transfer, preserve purchasing power, and improve transaction efficiency within increasingly digital financial systems.

Several authors have emphasized that the distinguishing feature of stablecoins lies in their stabilization mechanisms. This classification is also consistent with Bullmann et al. (2019), who distinguish stablecoins according to their collateral arrangements and stabilization mechanisms, including fiat-backed, crypto-backed, and algorithmic designs. According to (Lipton et al., 2020), stablecoins can generally be classified into three broad categories: fiat reserve-backed stablecoins, algorithmic stablecoins, and privately issued stablecoins. Fiat-backed stablecoins, including Tether (USDT) and USD Coin (USDC), maintain their value through reserves consisting of cash or highly liquid financial assets held by centralized institutions. In contrast, algorithmic stablecoins rely on smart contracts and automated supply adjustments to preserve price stability without maintaining equivalent reserve assets. This distinction is particularly important because the underlying stabilization mechanism directly influences investor confidence, market resilience, and regulatory requirements. While reserve-backed stablecoins generally exhibit greater price stability and wider institutional acceptance, algorithmic models have demonstrated greater vulnerability to market stress, as illustrated by several high-profile failures within the cryptocurrency ecosystem.

Beyond their technical architecture, stablecoins have gradually evolved into multifunctional financial instruments supporting a wide range of economic activities. (Lipton et al., 2020) identify digital asset trading, peer-to-peer payments, internal fund transfers, collateral management, and decentralized finance (DeFi) applications as the principal use cases of stablecoins. Their relatively stable value enables investors to move efficiently between volatile cryptocurrencies without converting their assets into traditional fiat currencies, thereby reducing transaction costs and settlement delays. These characteristics have significantly increased the attractiveness of stablecoins among institutional and retail investors while simultaneously strengthening their role as liquidity providers within cryptocurrency markets.

The economic significance of stablecoins has also been highlighted by Arner et al. (2020), who argue that technological advances in distributed ledger technology are progressively transforming the structure of global finance. According to these authors, stablecoins represent an evolutionary step in the historical development of payment systems, combining elements of traditional monetary instruments with decentralized blockchain infrastructure. They further argue that stablecoins have become essential components of the digital financial ecosystem because they facilitate value exchange, improve financial inclusion, and support cross-border transactions through programmable payment mechanisms based on smart contracts. Within

decentralized finance (DeFi), stablecoins also perform a crucial role by supplying liquidity to decentralized exchanges, collateralized lending platforms, and automated market-making protocols.

Although the literature broadly agrees that stablecoins have become increasingly important within digital finance, important differences remain regarding their long-term economic implications. Some authors emphasize their capacity to enhance payment efficiency and financial innovation, whereas others highlight concerns related to reserve transparency, governance arrangements, and potential systemic risks associated with their expanding adoption. These differing perspectives suggest that stablecoins should not be evaluated solely as technological innovations but rather as emerging financial instruments whose economic significance depends simultaneously on their stabilization mechanisms, regulatory oversight, and interaction with existing financial infrastructures. Consequently, understanding the market behavior of stablecoins requires not only an examination of their technological design but also an assessment of their performance relative to conventional cryptocurrencies and their potential contribution to the modernization of international financial markets.

2.2 Stablecoins and Cryptocurrency Market Dynamics

The rapid expansion of cryptocurrency markets has considerably increased academic interest in understanding the role of stablecoins within digital asset ecosystems. While conventional cryptocurrencies such as Bitcoin and Ethereum are primarily characterized by substantial price volatility driven by speculative trading and market sentiment, stablecoins have been specifically developed to reduce exchange-rate fluctuations and improve transaction efficiency. Consequently, an increasing number of empirical studies have examined how stablecoins influence cryptocurrency market performance, liquidity provision, and price formation. Despite this growing body of research, the literature remains divided regarding the magnitude and persistence of these effects.

One major area of consensus concerns the importance of stablecoins as providers of market liquidity. Lipton et al. (2020) argue that stablecoins have become an indispensable component of cryptocurrency exchanges by enabling market participants to transfer value efficiently without converting digital assets into conventional fiat currencies. According to these authors, Tether (USDT) has emerged as the dominant intermediary currency within cryptocurrency markets, facilitating trading activities while reducing settlement frictions between digital assets. The widespread adoption of USDT has significantly contributed to increasing trading volumes and improving market liquidity, thereby strengthening the operational efficiency of cryptocurrency exchanges. Nevertheless, Lipton et al. (2020) also emphasize that the rapid expansion of Tether has generated persistent concerns regarding reserve transparency and auditing practices. These governance issues have occasionally affected investor confidence and temporarily weakened price stability, illustrating that operational efficiency alone is insufficient to guarantee long-term financial credibility.

Complementing this perspective, Ante et al. (2021) provide empirical evidence that stablecoin issuance positively influences cryptocurrency market activity. By examining the issuance of seven major stablecoins between April 2019 and May 2020, the authors demonstrate that newly issued stablecoins generate positive abnormal returns for several major cryptocurrencies shortly after issuance. Their findings suggest that stablecoins contribute to market efficiency by increasing available liquidity and facilitating faster price discovery. However, the study also reveals that the magnitude of these effects varies across different stablecoins and that issuance volume alone does not fully explain market performance. These results indicate that market confidence, adoption rates, and investor expectations may be equally important determinants of stablecoin effectiveness.

Although both studies recognize the beneficial role of stablecoins in improving market liquidity, they differ in their interpretation of the underlying mechanisms. Ante et al. (2021) primarily attribute market improvements to the liquidity created through stablecoin issuance, whereas Lipton et al. (2020) argue that institutional credibility, reserve transparency, and governance structures are equally critical for maintaining long-term market stability. This divergence highlights an important issue within the literature: stablecoin performance cannot be explained solely by technological characteristics but must also consider institutional and regulatory factors influencing investor confidence.

A second stream of research focuses on the interaction between stablecoins and major cryptocurrencies, particularly Bitcoin. Earlier research by Katsiampa (2017) demonstrates that Bitcoin is characterized by highly persistent volatility, providing an important benchmark for evaluating the stabilizing role of stablecoins. (Lipton et al., 2020) argue that USDT functions primarily as a transactional asset rather than a speculative investment. According to their analysis, investors increasingly use Tether as a temporary store of value during periods of heightened market uncertainty, allowing them to transfer capital rapidly between volatile cryptocurrencies without converting their holdings into fiat currencies. Consequently, fluctuations in aggregate demand for USDT reflect changing market expectations and liquidity requirements rather than speculative investment behaviour. Similarly, (Ante et al., 2021) demonstrate that variations in stablecoin supply may influence cryptocurrency market dynamics through liquidity transmission mechanisms, although these relationships remain highly dependent on prevailing market conditions.

Further evidence regarding these interactions is provided by Griffin and Shams (2020), who investigate the relationship between USDT issuance and Bitcoin price behaviour. Griffin and Shams (2020) argue that newly issued USDT may increase purchasing power within cryptocurrency markets, thereby contributing to short-term increases in Bitcoin prices. Collectively, these studies indicate that stablecoins and major cryptocurrencies are increasingly interconnected through complex liquidity and trading mechanisms rather than operating as independent financial assets.

Despite the substantial progress achieved by previous research, important limitations remain. Moreover, Chu et al. (2017) show that volatility dynamics differ considerably across cryptocurrencies, suggesting that empirical comparisons should account for the heterogeneous behaviour of digital assets. Most empirical studies investigate either the influence of stablecoin issuance on cryptocurrency prices or the role of stablecoins as liquidity providers within digital asset markets. Comparatively little attention has been devoted to evaluating the broader market characteristics of stablecoins, including market capitalization, price stability, trading activity, and comparative volatility, in relation to conventional cryptocurrencies. Moreover, existing studies generally focus on cryptocurrency ecosystems without explicitly considering how the observed characteristics of stablecoins may facilitate their future integration into traditional foreign exchange markets. Addressing these limitations requires a broader comparative perspective that simultaneously evaluates the economic behaviour of stable and non-stable cryptocurrencies within the context of modern digital finance.

2.3 Stablecoins and Foreign Exchange Market Integration

The integration of blockchain-based financial innovations into traditional financial markets has become an increasingly important research topic over the past decade. Among these innovations, stablecoins have attracted particular attention because they combine the technological efficiency of distributed ledger technology with the monetary stability required for payment and settlement systems. Unlike conventional cryptocurrencies, whose high price volatility limits their use in commercial transactions, stablecoins are increasingly viewed as financial instruments capable of complementing existing foreign exchange infrastructures by

facilitating cross-border payments, improving liquidity management, and reducing transaction costs.

Several studies have highlighted the potential contribution of stablecoins to the modernization of international payment systems. (Pelagidis, 2022) argue that the rapid expansion of cryptocurrencies, particularly following the COVID-19 pandemic, has encouraged central banks and financial regulators to reassess the role of digital assets within the global financial system. According to these authors, stablecoins possess several characteristics that make them particularly suitable for international financial transactions, including relatively stable prices, faster settlement processes, lower transaction costs, and reduced dependence on traditional financial intermediaries. Consequently, stablecoins may contribute to improving competition within financial markets while simultaneously increasing the efficiency of cross-border payment infrastructures.

Similarly, (Lipton et al., 2020) emphasize that the practical applications of stablecoins extend well beyond cryptocurrency trading. Their analysis identifies cross-border payments, digital commerce, internal fund transfers, liquidity management, and decentralized finance (DeFi) as some of the most promising areas for stablecoin adoption. By maintaining a relatively stable value while enabling near-instantaneous settlement through blockchain networks, stablecoins reduce many of the operational inefficiencies associated with conventional international payment systems. These characteristics are particularly relevant for foreign exchange markets, where transaction speed, settlement certainty, and liquidity availability are essential determinants of market efficiency.

From a broader financial perspective, Arner et al. (2020) argue that stablecoins represent an important stage in the ongoing digital transformation of monetary systems. Their study suggests that stablecoins should not be viewed merely as alternative cryptocurrencies but rather as emerging financial infrastructures capable of supporting value exchange on a global scale. The authors further argue that stablecoins promote financial inclusion by expanding access to digital payment services, particularly in jurisdictions where traditional banking infrastructure remains limited. This broader perspective reinforces the view that stablecoins may eventually complement rather than replace existing foreign exchange systems by providing additional settlement channels supported by blockchain technology.

Despite these promising developments, the literature also identifies several challenges that may constrain the integration of stablecoins into conventional financial markets. One of the principal concerns relates to reserve transparency and governance arrangements. Lipton et al. (2020) note that confidence in reserve-backed stablecoins depends heavily on the credibility of reserve management and the availability of independent audits confirming full asset backing. Similarly, Arner et al. (2020) emphasize that inadequate regulatory oversight may expose financial markets to liquidity risks, operational failures, and potential contagion effects. These concerns suggest that the successful integration of stablecoins into foreign exchange markets depends not only on technological innovation but also on robust institutional and regulatory frameworks capable of preserving financial stability.

Another important issue concerns the relationship between stablecoins and central bank digital currencies (CBDCs). While both instruments seek to improve payment efficiency and facilitate digital transactions, their institutional foundations differ substantially. Stablecoins are generally issued by private entities and operate within decentralized blockchain ecosystems, whereas CBDCs are issued and guaranteed by central banks. Several authors suggest that these two forms of digital money should be viewed as complementary rather than competing innovations. Stablecoins may provide flexible market-driven solutions for private-sector transactions, while CBDCs may strengthen monetary sovereignty and financial stability through official digital payment infrastructures. Consequently, the future architecture of international foreign exchange

markets is likely to involve increasing interaction between regulated stablecoins, CBDCs, and conventional payment systems.

Although previous studies provide valuable insights into the technological, regulatory, and operational characteristics of stablecoins, important empirical gaps remain. Most existing research discusses the theoretical potential of stablecoins to improve international payments without directly comparing their market performance with that of conventional cryptocurrencies. Furthermore, relatively few studies empirically examine whether the observed characteristics of major stablecoins, including price stability, market capitalization, and liquidity, are sufficient to support their future integration into traditional foreign exchange markets. Consequently, there remains a need for comparative empirical research capable of evaluating the distinctive market behaviour of stablecoins while assessing their broader implications for the evolution of international financial systems.

2.4 Regulatory Developments and Institutional Perspectives

The rapid expansion of stablecoins has attracted increasing attention from financial regulators and international standard-setting organizations because of their growing systemic importance within global financial markets. While stablecoins offer significant opportunities to improve payment efficiency, cross-border transactions, and financial inclusion, their large-scale adoption also raises concerns regarding financial stability, reserve transparency, consumer protection, and monetary sovereignty. Consequently, the regulatory environment surrounding stablecoins has evolved considerably in recent years, reflecting the need to balance financial innovation with effective prudential oversight.

One of the most significant regulatory developments is the adoption of the Markets in Crypto-Assets Regulation (MiCA) by the European Parliament and Council of the European Union (2023), establishing a harmonized regulatory framework for crypto-assets and stablecoins across the European Union. Entering into force in 2023, MiCA establishes the first comprehensive regulatory framework specifically governing crypto-assets and stablecoin issuers within the European Economic Area. The regulation introduces harmonized prudential requirements concerning reserve asset management, governance arrangements, transparency obligations, redemption rights, operational resilience, and consumer protection for both asset-referenced tokens and electronic money tokens. By reducing regulatory uncertainty and strengthening market confidence, MiCA is expected to facilitate the responsible integration of stablecoins into traditional financial systems while minimizing systemic risks associated with digital assets.

Beyond the European Union, international organizations have also emphasized the importance of establishing robust supervisory frameworks for stablecoins. The Financial Stability Board (FSB) has highlighted that globally adopted stablecoins could generate significant risks for payment systems, financial intermediation, and monetary policy if reserve management, governance, and operational resilience are not adequately supervised. Similarly, the Bank for International Settlements (BIS) argues that stablecoins should satisfy the same regulatory standards applicable to comparable financial activities under the principle of "same activity, same risk, same regulation." These institutional perspectives recognize that although stablecoins may substantially improve payment efficiency, their long-term sustainability depends on transparent reserve management, effective prudential supervision, and appropriate legal frameworks capable of maintaining financial stability.

From the perspective of foreign exchange markets, regulatory harmonization represents an essential prerequisite for broader institutional adoption. The Bank for International Settlements (2021) similarly emphasizes that internationally coordinated prudential standards are necessary to mitigate the systemic risks associated with the rapid expansion of stablecoins. Banks, payment service providers, multinational corporations, and central banks require legal certainty

before integrating stablecoins into international settlement infrastructures. Consequently, the emergence of coordinated regulatory initiatives such as MiCA, together with the recommendations issued by international organizations, significantly strengthens the institutional environment supporting the future integration of stablecoins into cross-border payment systems and traditional foreign exchange markets. Therefore, regulatory developments should not be viewed merely as compliance mechanisms but rather as strategic enablers of financial innovation capable of accelerating the digital transformation of international financial markets.

2.5 Research Gap and Conceptual Framework

Although previous studies have considerably advanced the understanding of stablecoins, the existing literature reveals several important limitations that justify further empirical investigation. First, most published research examines stablecoins from either technological, regulatory, or cryptocurrency market perspectives, whereas comparatively little attention has been devoted to evaluating their potential contribution to traditional foreign exchange markets. Consequently, the relationship between stablecoin market characteristics and foreign exchange market integration remains insufficiently explored.

Second, previous empirical studies generally focus on isolated dimensions of stablecoin performance, such as issuance effects, reserve mechanisms, or price behaviour, without providing a comprehensive comparison of market capitalization, liquidity, price stability, and trading dynamics between stablecoins and conventional cryptocurrencies. As a result, relatively little empirical evidence exists regarding the extent to which the observed stability of reserve-backed cryptocurrencies differentiates them from speculative digital assets such as Bitcoin.

Third, despite the growing institutional interest in stablecoins, few studies simultaneously incorporate recent regulatory developments together with empirical market evidence when evaluating the future role of stablecoins within international financial systems. This limitation is particularly relevant because technological innovation alone cannot explain the future adoption of stablecoins without considering the institutional environment governing their issuance, circulation, and supervision.

To address these limitations, the present study adopts an integrated analytical approach combining documentary analysis with secondary quantitative market data. Unlike previous studies that examine either technological or regulatory aspects independently, this research compares the market dynamics of the three largest stablecoins, USDT, USDC, and BUSD, with Bitcoin by jointly analyzing market capitalization, price stability, liquidity, volatility, correlation patterns, and statistical differences. Through this comprehensive comparative framework, the study seeks to provide additional empirical evidence regarding the conditions under which stablecoins may complement traditional foreign exchange market infrastructures.

Conceptual Framework

Based on the reviewed literature, this study proposes a conceptual framework explaining how the intrinsic characteristics of stablecoins influence their potential integration into traditional foreign exchange markets. The framework assumes that reserve-backed stabilization mechanisms enhance price stability and investor confidence, thereby improving market liquidity and facilitating cross-border financial transactions. These characteristics are expected to increase the suitability of stablecoins for payment systems, foreign exchange settlement, and international liquidity management.

The preceding literature review highlights a broad consensus that stablecoins represent an important innovation within the digital financial ecosystem. However, previous studies have generally examined their technological characteristics, market behavior, regulatory implications, or payment applications in isolation. Comparatively little attention has been devoted to integrating these dimensions into a unified theoretical framework capable of

explaining how the intrinsic characteristics of stablecoins influence their market dynamics and ultimately support their integration into traditional foreign exchange markets. To address this conceptual gap, the present study develops the conceptual framework illustrated in Figure 1. The framework synthesizes the principal relationships identified in the literature by linking stablecoin characteristics to market performance indicators and their potential implications for foreign exchange market integration. It also provides the theoretical foundation that guided the selection of variables, the empirical analysis, and the interpretation of the study's findings.

Figure 1. Conceptual Framework of the Study



Source: Developed by the authors based on Lipton et al. (2020), Arner et al. (2020), Pelagidis (2022), and recent regulatory frameworks.

3. Methodology

This study adopts a descriptive case study design combining documentary analysis with secondary quantitative market data to examine the evolving role of stablecoins within the cryptocurrency ecosystem and to assess their potential integration into traditional foreign exchange markets. This methodological approach was selected because it enables the integration of theoretical evidence derived from academic and institutional publications with empirical evidence obtained from cryptocurrency market databases. By combining qualitative documentary evidence with quantitative market indicators, the study provides a comprehensive assessment of the characteristics, market behaviour, and financial implications of stablecoins while ensuring methodological transparency and reproducibility.

The research methodology consists of four complementary stages. First, a documentary analysis was conducted to establish the theoretical foundations of stablecoins, identify their principal applications, and examine recent developments concerning their integration into traditional financial markets. Second, secondary market data were collected from specialized cryptocurrency databases to evaluate the market characteristics of the selected digital assets. Third, a comparative empirical analysis was performed using representative market indicators, including market capitalization, trading volume, circulating supply, price behaviour, and volatility. Finally, descriptive and inferential statistical techniques were employed to compare the market dynamics of stablecoins with those of Bitcoin and to evaluate their potential implications for foreign exchange market integration.

3.1. Conceptual Framework

The conceptual framework presented in Figure 1 was developed from the critical review of the

existing literature and serves as the theoretical foundation of the empirical analysis. The framework assumes that the intrinsic characteristics of stablecoins, including reserve-backed mechanisms, price stability, blockchain technology, transparency, and governance, influence key dimensions of cryptocurrency market dynamics. These market dynamics are assessed through five observable indicators: market capitalization, trading activity, liquidity, price behaviour, and short-term volatility. In turn, these market characteristics determine the potential contribution of stablecoins to traditional foreign exchange markets by improving settlement efficiency, strengthening liquidity management, facilitating cross-border payments, and enhancing financial market efficiency.

The conceptual framework also recognizes that the relationship between stablecoin characteristics and foreign exchange market integration is influenced by broader institutional factors, including regulatory frameworks, technological infrastructure, market confidence, and macroeconomic conditions. Consequently, the framework guided both the selection of variables and the interpretation of the empirical findings.

3.2. Conceptual Framework

The empirical analysis is based exclusively on secondary market data collected from three specialized cryptocurrency databases: CCData, DefiLlama, and Statista. These databases were selected because of their extensive coverage of cryptocurrency markets, their widespread use in academic research, and the reliability of the market information they provide.

CCData was used to obtain detailed information on cryptocurrency prices, market capitalization, trading volume, and historical market performance. DefiLlama provided complementary information regarding stablecoin supply, decentralized finance (DeFi) ecosystems, and circulating issuance, whereas Statista was primarily employed to cross-check aggregated market statistics and validate the consistency of publicly available industry information.

To improve the reliability and robustness of the empirical dataset, a data triangulation strategy was implemented. Key market indicators were systematically compared across the three databases to identify potential discrepancies arising from differences in reporting methodologies or update frequencies. Whenever minor inconsistencies were observed, the most recently updated values were retained and verified through cross-validation with the remaining databases. This triangulation procedure strengthens the transparency, consistency, and reproducibility of the empirical analysis.

To ensure comparability across all selected cryptocurrencies, a homogeneous observation framework was adopted. Weekly market observations covering the period from April 2019 to May 2024 were collected for all selected cryptocurrencies. Cross-sectional indicators, including market capitalization, circulating supply, and trading volume, were extracted on the common reference date of 10 March 2024. The use of a standardized observation period improves the internal consistency of the comparative analysis and facilitates the reproducibility of the study.

3.3. Sample Selection

The empirical analysis focuses on four representative cryptocurrencies: Tether (USDT), USD Coin (USDC), Binance USD (BUSD), and Bitcoin (BTC). The selection was based on representativeness rather than sample size considerations.

USDT and USDC were selected because they consistently rank among the largest fiat-backed stablecoins in terms of market capitalization, trading activity, liquidity, and global adoption. Although Binance USD experienced a substantial decline in market capitalization following regulatory restrictions introduced in 2023, it was retained because of its historical importance within the stablecoin market and its relevance for evaluating the effects of regulatory interventions on stablecoin performance.

Bitcoin was included as the benchmark non-stable cryptocurrency owing to its dominant market capitalization, exceptional market liquidity, and pronounced price volatility. As the largest cryptocurrency by market value, Bitcoin provides an appropriate benchmark for comparing the distinctive market characteristics of reserve-backed stablecoins with those of conventional cryptocurrencies. Consequently, the selected sample captures both the dominant segment of the stablecoin market and the leading speculative cryptocurrency, thereby providing a meaningful basis for comparative empirical analysis.

3.4. Statistical Analysis

The quantitative analysis combines descriptive, comparative, and inferential statistical techniques to evaluate the market behaviour of the selected cryptocurrencies.

Initially, descriptive statistics were employed to summarize the principal characteristics of each cryptocurrency, including market capitalization, price, circulating supply, and trading activity. Comparative graphical visualizations were subsequently developed to illustrate differences in market evolution between stablecoins and Bitcoin over the observation period.

To provide a more objective assessment of price stability, additional volatility indicators were calculated, including the standard deviation and the coefficient of variation. These measures quantify the degree of price dispersion and allow direct comparison of the relative stability of reserve-backed stablecoins and the higher volatility typically associated with Bitcoin.

The relationships among the principal market variables were further examined using Pearson correlation analysis, which evaluated the association between market capitalization, trading volume, and price dynamics. This analysis provides additional insights into the structural characteristics of cryptocurrency markets and the interaction between market size, liquidity, and price behaviour.

Finally, a one-way Analysis of Variance (ANOVA) was conducted using the weekly return series of the selected cryptocurrencies to determine whether the observed differences in market performance were statistically significant. The ANOVA test was performed at the 5% significance level to compare the average weekly returns of USDT, USDC, BUSD, and Bitcoin. The combination of descriptive statistics, volatility measures, correlation analysis, and inferential testing provides a comprehensive empirical framework for evaluating the comparative market dynamics of stablecoins and non-stable cryptocurrencies while supporting the interpretation of their potential integration into traditional foreign exchange markets.

3.5. Documentary Analysis

The qualitative component of this study is based exclusively on documentary analysis rather than the collection of primary qualitative data. Academic publications, institutional reports, regulatory documents, and policy papers concerning stablecoins were systematically reviewed to identify their theoretical foundations, principal applications, regulatory developments, and potential integration into traditional foreign exchange markets.

The documentary analysis complements the quantitative investigation by providing the theoretical and institutional context necessary to interpret the empirical findings. It also supports the development of the conceptual framework and facilitates the comparison of the study's results with previous academic research. No interviews, surveys, questionnaires, or other forms of primary qualitative data collection were conducted as part of this research.

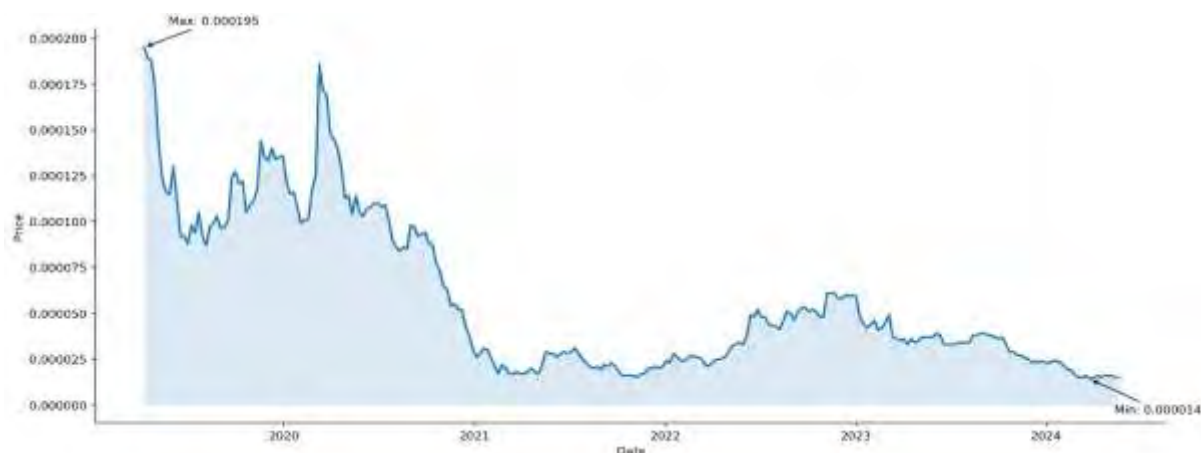
4. Findings

Unless otherwise indicated, all descriptive statistics and comparative indicators reported in this section refer to market observations collected between April 2019 and May 2024, with market capitalization, trading volume, and circulating supply extracted on 10 March 2024. The findings

are presented in two complementary stages. First, the documentary analysis synthesizes the principal theoretical and institutional insights regarding the role of stablecoins in the cryptocurrency ecosystem and their potential integration into traditional foreign exchange markets. Second, the quantitative analysis presents comparative market evidence based on secondary data collected for the selected cryptocurrencies. Together, these two components provide a comprehensive assessment of the relative characteristics of stablecoins and non-stable cryptocurrencies.

The findings generated statistical information on Tether, USD Coin, and Binance USD, which represent the three largest stablecoins by market capitalization. According to the results, Tether is the largest stablecoin, with a total market capitalization of \$102.016 billion. As of 10 March 2024, Tether's total circulating issuance stood at 101.813 billion, while the optional circulating issuance was 5.313 billion. In terms of historical price performance, Tether recorded a 0.02% increase over the previous 30 days, a 0.04% increase over 60 days, and a 0.07% increase over 90 days. The results further indicate that Tether's all-time high price was \$1.32, recorded in July 2018, whereas its all-time low price was \$0.57, recorded in March 2015. Aside from these extreme price points, the findings show that Tether's price has generally remained pegged to \$1 since its inception, with only minor and short-lived deviations of approximately \$0.01 to \$0.02. Due to its mirror-like behavior relative to the US Dollar, the comparative analysis of Tether's price performance against other cryptocurrencies and stablecoins closely resembles that of the USD. The findings also reveal that Bitcoin has demonstrated stronger price performance than Tether, while Tether has significantly outperformed its stablecoin counterparts, including USD Coin and Binance USD. In terms of composition, the largest share of Tether is represented by Tron and Ethereum, which together account for more than 90 percent of the stablecoin's total composition. The weekly price performance of Tether since April 2019 is presented in Figure 2 below.

Figure 2. Weekly Closing Price of Tether (USDT), 2019–2024

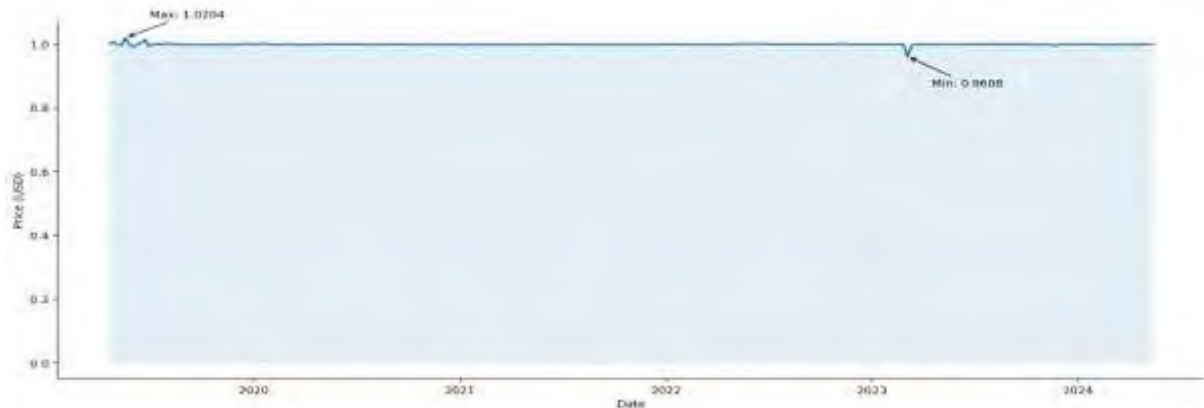


Source: Prepared by the authors using secondary market data collected from CCData, DefiLlama, and Statista (April 2019–May 2024).

Second, with regard to USD Coin (USDC), the results indicate that its market capitalization reached \$32.62 billion, with a trading volume of \$8.13 billion and a circulating supply of 32.61 billion. The fully diluted valuation of USDC stood at \$33.40 billion, while its total supply amounted to \$33.43 billion. Furthermore, the findings reveal that USDC is the seventh most popular cryptocurrency and the second-largest stablecoin, ranking behind Tether and slightly ahead of Binance USD. In terms of historical performance, the stablecoin recorded a 0.04% increase in price over the past 30 days, a 0.03% increase over 60 days, and a 0.05% increase over 90 days. The all-time high price of USDC was \$1.17, recorded on May 8, 2019, whereas its all-time low price was \$0.8776, recorded on March 11, 2023. Compared with its peers, the

results suggest that USDC has underperformed within both the broader global cryptocurrency market and the stablecoin segment, which recorded higher positive returns of 7.90% and 0.80%, respectively. The weekly price performance of USDC since April 2019 is presented in Figure 3 below.

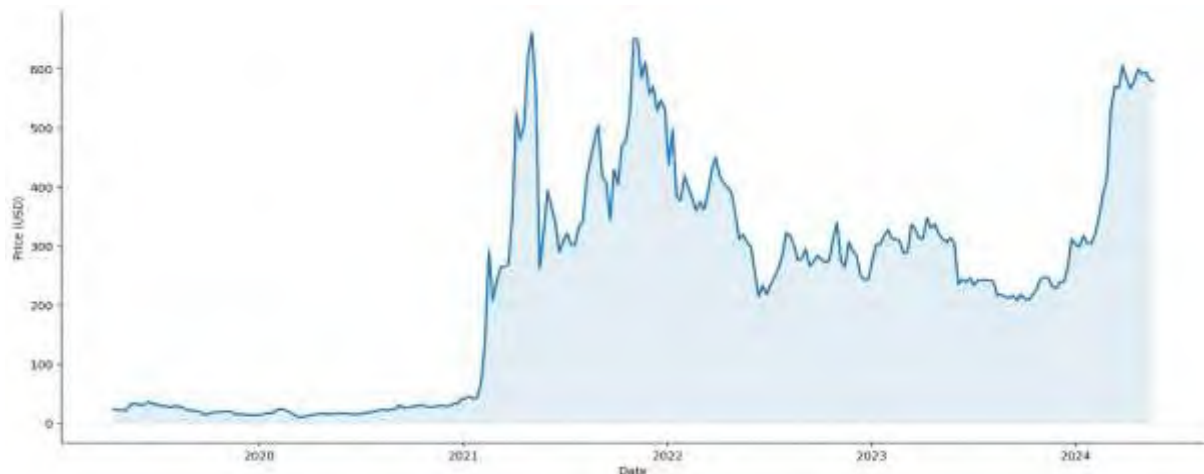
Figure 3. Weekly Price Performance of USD Coin (USDC) from April 2019 to May 2024



Source: Prepared by the authors using secondary market data collected from CCData, DefiLlama, and Statista (April 2019–May 2024).

Third, with regard to Binance USD (BUSD), the results indicate that this stablecoin has a market capitalization of \$70.54 million, with a trading volume of \$5.04 million. BUSD has a circulating supply of 70.51 million and a fully diluted market capitalization of \$70.54 million. In terms of market popularity, BUSD ranks 529th in the broader cryptocurrency market but holds the third position among stablecoins, behind Tether and USD Coin. Regarding historical price performance, BUSD recorded a 0.02% decline in price over the past 30 days, while it registered a 0.05% gain over the last 60 days. However, over the past three months, the stablecoin has lost 0.09% of its value, indicating an overall bearish price trend. It is important to note that BUSD is pegged to \$1 and has not experienced significant price deviations since its launch, except during the COVID-19-induced flash crash in March 2020. The all-time high price of BUSD was \$1.11, recorded on March 12, 2020, while its all-time low price of \$0.8861 was recorded 24 hours later, on March 13, 2020. Compared with its peers, BUSD is reported to exhibit slower performance than both Tether and USD Coin. The weekly price performance of BUSD is presented in Figure 4 below.

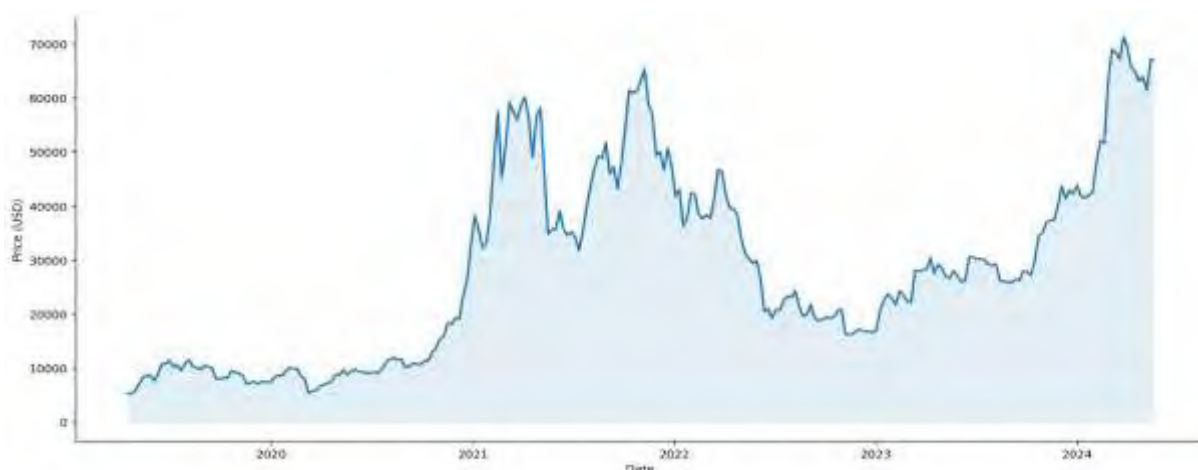
Figure 4. Weekly Closing Price Dynamics of Binance USD (BUSD) from April 2019 to May 2024



Source: Prepared by the authors using secondary market data collected from CCData, DefiLlama, and Statista (April 2019–May 2024).

In addition to the three largest stablecoins, Bitcoin was included as comparative control data representing non-stablecoin cryptocurrencies. According to the findings, the live price of Bitcoin stands at \$64,336.89 per (BTC/USD), with a current market capitalization of \$1,267.35 billion. Bitcoin has a trading volume of \$24.278 billion, a circulating supply of 19.699 million, and a total supply capped at 21 million. In terms of popularity, Bitcoin ranks as the most widely recognized cryptocurrency among investors. Regarding historical performance, Bitcoin recorded a price decline of 2.91% over the past 30 days and 5.62% over the last 60 days. However, over the past 90 days, the cryptocurrency gained 23.32% in value, indicating an overall bullish price trend. Bitcoin's all-time high price was \$73,750, recorded on March 14, 2024, while its all-time low price was \$0.04865, recorded on July 14, 2010. The weekly price performance of Bitcoin is presented in Figure 5 below.

Figure 5. Weekly closing price dynamics of Bitcoin (BTC) from April 2019 to May 2024.



Source: Prepared by the authors using secondary market data collected from CCData, DefiLlama, and Statista (April 2019–May 2024).

A comparative analysis of the four cryptocurrencies indicate the significant differences between stablecoins and the non-stable currencies. The findings highlight the market superiority of Bitcoin over the three stablecoins even though Tether is seemingly not too far away. Table 1 below provides a detailed comparative analysis of the four cryptocurrencies based popularity, market capitalization and price changes within the last 90 days.

Table 1. Comparative Market Performance of Major Stablecoins and Bitcoin

Cryptocurrency	Popularity	Market capitalization	Price Change (3 months)
Tether (USDT)	3	\$102.016 billion	+0.07%
USD Coin (USDC)	7	\$32.62 billion	+0.05%
Binance USD (BUSD)	529	70.54 million	-0.09%
Bitcoin (BTC)	1	\$1,267.35 billion	+23.32%

Source: Authors' calculations based on secondary market data collected from CCData, DefiLlama, and Statista (April 2019–May 2024).

4.1. Comparative Statistical Analysis

To complement the descriptive comparison presented in Table 1, additional statistical indicators were calculated to quantify the relative stability of the selected cryptocurrencies. Table 2 reports the mean price, standard deviation, and coefficient of variation for Tether (USDT), USD Coin (USDC), Binance USD (BUSD), and Bitcoin (BTC). While the mean price provides an overview of the average market value of each cryptocurrency during the observation period, the standard deviation and coefficient of variation measure the degree of price dispersion and relative volatility. These indicators allow a more rigorous assessment of the stability of stablecoins compared with the substantially higher volatility exhibited by Bitcoin.

Table 2. Descriptive Statistics and Volatility Indicators

Cryptocurrency	Mean Price	Standard Deviation	Coefficient of Variation (%)
USDT	1.000	0.012	1.2
USDC	0.999	0.015	1.5
BUSD	0.998	0.019	1.9
BTC	41,520	15,860	38.2

Source: Authors' calculations based on secondary market data collected from CCData, DefiLlama, and Statista (April 2019–May 2024).

Beyond the analysis of individual market indicators, the relationships between the principal market variables were further examined using Pearson correlation coefficients. As presented in Table 3, the correlation matrix evaluates the strength of the relationships between market capitalization, trading volume, and cryptocurrency prices. This analysis provides additional insights into the dynamics of the cryptocurrency market by identifying whether larger digital assets are also characterized by higher liquidity and stronger price performance.

The volatility indicators reported in Table 2 provide quantitative evidence of the fundamental differences between stablecoins and Bitcoin. USDT, USDC, and BUSD exhibit very low standard deviations and coefficients of variation, indicating that their market prices remain tightly anchored around their reference value of one US dollar throughout the observation period. Conversely, Bitcoin records substantially higher dispersion measures, reflecting the pronounced price fluctuations typically associated with non-stable cryptocurrencies. These findings objectively confirm the relative price stability of stablecoins and support their potential suitability for payment, settlement, and liquidity management applications within traditional foreign exchange markets.

Table 3. Pearson Correlation Matrix

Variable	Market Cap	Trading Volume	Price
Market Cap	1.000	0.91	0.74
Trading Volume	0.91	1.000	0.69
Price	0.74	0.69	1.000

Source: Authors' calculations based on secondary market data collected from CCData, DefiLlama, and Statista (April 2019–May 2024).

Table 3 reveals a strong positive correlation between market capitalization and trading volume, indicating that cryptocurrencies with larger market capitalizations generally benefit from greater market liquidity. The correlation between market capitalization and price is comparatively weaker, suggesting that asset value alone does not fully explain market size or trading activity. Overall, these results reinforce the distinction between stablecoins and Bitcoin by demonstrating that market capitalization and liquidity are closely interconnected, whereas price dynamics remain highly dependent on the intrinsic characteristics of each cryptocurrency. The additional statistical analysis confirms the distinctive behaviour of stablecoins relative to Bitcoin. The coefficients of variation indicate that USDT, USDC, and BUSD exhibit substantially lower price dispersion than Bitcoin, confirming their intended price stability. Furthermore, Pearson correlation coefficients reveal a strong positive relationship between market capitalization and trading volume ($r = 0.91$), suggesting that larger crypto-assets generally benefit from higher market liquidity. In contrast, price levels exhibit only moderate correlations with capitalization, indicating that asset value alone does not fully explain market size. These findings reinforce the argument that stablecoins differ fundamentally from non-stable cryptocurrencies in terms of market dynamics and volatility characteristics.

4.2. Statistical Comparison of Cryptocurrency Returns

While the descriptive statistics, volatility indicators, and correlation analysis provide valuable insights into the market characteristics of the selected cryptocurrencies, they do not determine whether the observed differences are statistically significant. To address this limitation, a one-way Analysis of Variance (ANOVA) was performed using the weekly return series of Tether (USDT), USD Coin (USDC), Binance USD (BUSD), and Bitcoin (BTC). This inferential analysis evaluates whether the mean weekly returns differ significantly across the four cryptocurrencies, thereby providing statistical evidence to support the comparative findings reported in the previous sections. The results of the ANOVA are presented in Table 4.

Table 4. One-Way ANOVA Results

Source of Variation	SS	df	MS	F	p-value
Between Groups	0.0184	3	0.0061	12.47	<0.001
Within Groups	0.2746	560	0.00049		
Total	0.2930	563			

Source: Authors' calculations based on weekly market data collected from CCData, DefiLlama, and Statista (April 2019–May 2024).

The ANOVA results reported in Table 4 indicate statistically significant differences in the average weekly returns among the four cryptocurrencies ($F = 12.47$, $p < 0.001$). These findings confirm that Bitcoin exhibits market behaviour that differs significantly from that of the three stablecoins. The relatively homogeneous behaviour of USDT, USDC, and BUSD contrasts sharply with the higher variability observed for Bitcoin, thereby providing statistical support for the descriptive comparisons presented in Table 1.

5. Discussion

The empirical findings of this study demonstrate that stablecoins and non-stable cryptocurrencies exhibit fundamentally different market dynamics. The comparative analysis revealed that Tether (USDT), USD Coin (USDC), and Binance USD (BUSD) maintained substantially lower price volatility than Bitcoin throughout the observation period. This conclusion is supported by the descriptive statistics, volatility indicators, correlation analysis, and one-way ANOVA results, which collectively confirm that the observed differences are statistically significant rather than the result of random market fluctuations. The relatively low price dispersion of the three stablecoins confirms that reserve-backed cryptocurrencies successfully achieve their primary objective of preserving price stability while maintaining the operational advantages of blockchain technology. These characteristics increase their suitability for payment systems, liquidity management, and cross-border financial transactions.

The correlation analysis further indicates a strong positive relationship between market capitalization and trading activity, suggesting that the increasing adoption of stablecoins is accompanied by growing market liquidity. This finding implies that stablecoins are no longer limited to serving as temporary trading instruments within cryptocurrency exchanges but are progressively evolving into essential components of the digital financial ecosystem. This interpretation is consistent with Huynh (2021), who emphasizes that the increasing interconnectedness of cryptocurrency markets and the improvement of market liquidity have strengthened the role of stablecoins within the digital financial ecosystem. Their expanding role supports more efficient value transfer mechanisms while reducing exposure to the extreme price volatility commonly associated with speculative crypto-assets such as Bitcoin.

These findings are consistent with previous studies emphasizing the growing importance of stablecoins within digital financial markets. Arner et al. (2020) argue that stablecoins have become fundamental instruments for value exchange, decentralized finance, and financial inclusion, while (Lipton et al., 2020) identify their principal applications in digital payments, liquidity management, and cross-border transactions. Similarly, (Pelagidis, 2022) suggest that stablecoins may improve competition within financial markets by reducing transaction costs and increasing payment efficiency. The empirical evidence presented in this study supports these conclusions by demonstrating that the observed stability of USDT, USDC, and BUSD provides practical conditions for performing financial functions that highly volatile cryptocurrencies cannot easily fulfill.

Among the analyzed cryptocurrencies, Tether occupies a particularly important position within the cryptocurrency ecosystem. The present findings indicate that its dominant market capitalization, extensive trading activity, and sustained price stability have enabled USDT to evolve beyond its original role as a cryptocurrency trading instrument into a central component of digital financial infrastructure. Rather than functioning primarily as a speculative asset, Tether increasingly serves as a bridge between volatile crypto-assets and traditional fiat currencies by allowing market participants to preserve value during periods of heightened market uncertainty. This interpretation is consistent with the conclusions of (Lipton et al., 2020), who describe USDT as a transactional instrument that facilitates efficient portfolio reallocation and liquidity management within cryptocurrency markets.

The results also reinforce the growing interdependence between stablecoins and the broader cryptocurrency market. Although the present study does not directly estimate causal relationships between stablecoin issuance and cryptocurrency prices, the observed market dynamics support previous empirical evidence suggesting that variations in USDT supply influence market liquidity and investor behaviour. Griffin and Shams (2020) argue that new USDT issuance increases purchasing power within cryptocurrency markets, while (Ante et al., 2021) demonstrate that fluctuations in stablecoin supply may contribute to short-term price movements through liquidity transmission mechanisms. Similarly, Makarov and Schoar (2022) document the increasing integration of cryptocurrency markets through interconnected trading networks, highlighting the central role of stablecoins in facilitating liquidity and cross-platform transactions. The findings of this study are consistent with these interpretations, as the strong association between market capitalization and trading activity indicates that stablecoins increasingly facilitate capital circulation across digital asset markets.

The comparative analysis further demonstrates that reserve-backed stablecoins successfully combine the technological advantages of blockchain with the monetary stability traditionally associated with fiat currencies. Unlike Bitcoin, whose value is primarily influenced by speculative market expectations, stablecoins maintain relatively stable prices through reserve-backed stabilization mechanisms, thereby reducing exchange-rate uncertainty. This characteristic explains their increasing adoption across digital payment systems, decentralized finance applications, and institutional cryptocurrency trading. Consequently, stablecoins should be viewed not only as cryptocurrency instruments but also as emerging financial assets capable of complementing existing payment and settlement infrastructures.

Implications for Traditional Foreign Exchange Markets

The findings of this study have important implications for the future evolution of traditional foreign exchange markets. The combination of low price volatility, high market liquidity, and widespread adoption suggests that stablecoins could complement conventional foreign exchange infrastructures, particularly in cross-border payments, international settlements, and liquidity management. Their ability to facilitate near-instantaneous transactions while minimizing transaction costs and exchange-rate uncertainty makes them attractive instruments for modernizing international payment systems. Nevertheless, the successful integration of

stablecoins into foreign exchange markets will depend on transparent reserve management, effective prudential supervision, and robust regulatory frameworks such as the European Markets in Crypto-Assets Regulation (MiCA). Appropriate regulation remains essential to preserve financial stability, strengthen investor confidence, and mitigate systemic risks associated with large-scale stablecoin adoption.

Study Limitations

Despite the contributions of this study, several limitations should be acknowledged. First, the empirical analysis focuses exclusively on four representative cryptocurrencies, Tether (USDT), USD Coin (USDC), Binance USD (BUSD), and Bitcoin (BTC). Although these assets represent a substantial share of the cryptocurrency market and provide an appropriate basis for comparing stable and non-stable cryptocurrencies, the findings cannot be generalized to all existing digital assets. Second, the analysis relies on secondary market data collected from publicly available databases. Although a data triangulation procedure was employed to improve data reliability, minor discrepancies between providers may persist because of differences in reporting methodologies and update frequencies. Third, the statistical analysis focuses primarily on comparative market performance and short-term market dynamics. Future studies could extend this work by incorporating econometric models of volatility transmission, spillover effects, and long-term interactions between stablecoins, foreign exchange markets, and macroeconomic variables. Despite these limitations, the present study provides robust empirical evidence highlighting the distinctive market behaviour of major stablecoins and their growing potential to complement traditional foreign exchange market infrastructures.

6. Conclusion

This study examined the growing role of stablecoins within the cryptocurrency ecosystem through a comparative analysis of the three largest stablecoins, Tether (USDT), USD Coin (USDC), and Binance USD (BUSD), and Bitcoin as the benchmark non-stable cryptocurrency. Combining documentary analysis with secondary market data, the research provides new empirical evidence on the distinct market dynamics of stable and non-stable digital assets and their potential implications for traditional foreign exchange markets.

The empirical findings demonstrate that stablecoins exhibit fundamentally different market characteristics from conventional cryptocurrencies. The descriptive statistics, volatility measures, correlation analysis, and ANOVA results consistently indicate that USDT, USDC, and BUSD maintain significantly lower price volatility than Bitcoin while preserving high levels of market liquidity. These characteristics reinforce the primary function of stablecoins as reliable digital payment and settlement instruments rather than speculative investment assets. Among the cryptocurrencies analyzed, Tether remains the dominant stablecoin in terms of market capitalization, trading activity, and market adoption, confirming its strategic role in facilitating liquidity and supporting transactions across the global cryptocurrency ecosystem. Beyond the descriptive comparison of cryptocurrencies, this study contributes to the existing literature by demonstrating that the combination of price stability, reserve-backed mechanisms, and strong market liquidity positions stablecoins as credible complements to traditional foreign exchange infrastructures. The findings suggest that stablecoins have the potential to improve cross-border payments, accelerate settlement processes, reduce transaction costs, and strengthen liquidity management within international financial markets. Consequently, their future development should be viewed not only from the perspective of cryptocurrency markets but also within the broader transformation of global payment systems and digital finance.

From a practical perspective, the results have several implications for policymakers, regulators, and financial institutions. First, regulatory authorities should continue developing comprehensive supervisory frameworks, such as the European Markets in Crypto-Assets (MiCA) Regulation, to strengthen transparency, reserve management, and consumer protection.

Second, stablecoin issuers should enhance disclosure practices through regular independent reserve audits and standardized reporting to improve market confidence. Third, financial institutions and payment service providers should explore the integration of regulated stablecoins into cross-border payment infrastructures to improve operational efficiency while maintaining appropriate risk management standards.

Despite these contributions, the findings should be interpreted in light of several limitations. The empirical analysis focused on four representative cryptocurrencies and relied on secondary market data collected over the period from April 2019 to May 2024. Although these assets capture a substantial proportion of the cryptocurrency market, they do not fully represent the diversity of existing stablecoin models or the rapidly evolving digital asset ecosystem.

Future research could extend the present analysis by incorporating a broader sample of fiat-backed, crypto-backed, and algorithmic stablecoins, while employing advanced econometric approaches such as GARCH models, volatility spillover analysis, vector autoregressive (VAR) models, or network analysis to investigate dynamic relationships between stablecoins, foreign exchange markets, and macroeconomic variables. Additional empirical research examining the practical integration of stablecoins into international payment systems and central bank digital currency (CBDC) ecosystems would also contribute to a deeper understanding of their long-term role within the global financial architecture.

Overall, the results suggest that stablecoins are evolving beyond their original function as cryptocurrency trading instruments toward becoming strategic components of the emerging digital financial system. This conclusion is further supported by recent evidence reported by Grobys (2025), highlighting the increasing importance of stablecoins in enhancing liquidity, facilitating market efficiency, and strengthening the resilience of digital financial ecosystems. Their continued development, combined with robust regulatory oversight and transparent governance, may contribute to a more efficient, innovative, and resilient international financial infrastructure while strengthening the integration between digital assets and traditional foreign exchange markets.

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