From instability to regulation: A systematic literature review on stablecoins

Rubens Moura de Carvalho. University of Aveiro, Portugal, rubens.mcarvalho@ua.pt

Helena Coelho Inácio. ISCA-UA, University of Aveiro & GOVCOPP, Portugal, helena.inacio@ua.pt

Rui Pedro Figueiredo Marques. ISCA-UA, University of Aveiro & GOVCOPP, Portugal, ruimarques@ua.pt

Abstract. We employed a systematic literature review (SLR) to map the intellectual landscape of stablecoin research, categorising it into five critical areas: stability and volatility; use as a safe haven, hedge, or diversifier; the effects of stablecoin events on other cryptocurrencies; financial collapses of stablecoins; regulatory challenges. By investigating price stability mechanisms and factors leading to volatility, our study highlights how stablecoins interact with the broader financial market. We also explored their role in investment portfolios, the repercussions of their transaction activities on the crypto ecosystem, and the systemic risks leading to their collapse. Furthermore, we delved into the regulatory frameworks governing stablecoins, emphasising the evolving challenges and opportunities for regulatory integration. We identified significant research gaps, such as inconsistencies in stablecoin pricing data and undefined events affecting volatility changes. The SLR's limitations include potential bias from the selected literature, suggesting future expansions to include more databases for a broader, more inclusive review. We concluded by proposing future research directions, focusing on stablecoins in business applications and the tax implications of their use, which are crucial for understanding their potential impact on global financial practices. Our investigation underscores the need for comprehensive studies on stablecoins, especially concerning their operational integration and tax-related policies in digital transactions.

Keywords: Crypto asset, stablecoin, stability, collapse, regulation, accounting.

1. INTRODUCTION

Stablecoins are crypto assets designed to combine the transactional efficiency and programmability of blockchain technology with the price stability of traditional financial instruments (Saengchote & Samphantharak, 2024). Their evolution from early experimental models to sophisticated financial tools reflects a maturation driven by advancements in collateralisation methods—fiat-backed, crypto-collateralised, and algorithmic systems. Stablecoins can be classified into three types based on their underlying collateral and stabilisation mechanisms (Grobys et al., 2021; Hampl & Gyönyörová, 2021; Sood et al., 2023). The first type is fiat-collateralised stablecoins, which are backed by traditional currencies such as the US dollar or the euro at a fixed ratio or by commodities such as gold and silver (Feng et al., 2024; Grobys et al., 2021; Hampl & Gyönyörová, 2021; Sood et al., 2023). These stablecoins derive their stability from the tangible value of their reserves, which are typically held in regulated financial institutions. Examples include Tether (USDT) and USD Coin (USDC), which together account for over 80% of the stablecoin market[1]. The second type is that of crypto-collateralised stablecoins, which are backed by other cryptocurrencies (Grobys et al., 2021; Hampl & Gyönyörová, 2021; Sood et al., 2023). While these offer the benefits of decentralisation and are more in line with the ethos of the crypto community, they are inherently more complex and susceptible to the volatility of their underlying assets. MakerDAO's DAI is a prominent example, utilising over-collateralisation and dynamic stabilisation mechanisms to maintain its peg (Grobys et al., 2021; Hampl & Gyönyörová, 2021). The third type, algorithmic stablecoins, relies on software algorithms to dynamically adjust supply and demand without direct collateral backing. These stablecoins aim to achieve stability through market incentives but have faced significant challenges, including catastrophic collapses that have raised questions about their viability (Briola et al., 2023; Cho, 2023; Sood et al., 2023). For instance, the collapse of TerraUSD in 2022 resulted in a loss of over USD 40 billion in market value, highlighting the vulnerabilities of algorithmic stablecoins and the need for robust regulatory frameworks (De Blasis et al., 2023; Lee et al., 2023).

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[1] Stable Coins in Crypto: USDC vs USDT Comparison. Available online: https://blockapps.net/blog/stable-coins-in-crypto-usdc-vs-usdt-comparison/ (Accessed 01 Feb 2025).

Stablecoins have grown exponentially in market capitalisation[2] and utility, facilitating decentralised finance (DeFi) transactions, cross-border payments, and speculative trading (Bank for International Settlements (BIS), 2024; Lyons & Viswanath-Natraj, 2023). The adoption of stablecoins has seen accelerated institutional traction[3], which has been fuelled by corporate integrations and regulatory groundwork (Deloitte, 2022; European Central Bank (ECB), 2021). Institutional use cases expanded beyond trading to encompass cross-border settlements and treasury management, exemplified by PayPal's PYUSD, which surpassed USD 1 billion in circulation within a year of its 2023 launch[4], and Wyoming's initiative in 2023 to introduce a Treasury-backed state stablecoin, reflecting the increasing engagement of the public sector and aiming to streamline government payments through blockchain efficiency[5]. These developments spurred a demand for stricter reserve transparency, prompting closer scrutiny of stablecoin issuers. The Markets in Crypto-Assets (MiCA) framework in the European Union strengthens stablecoin disclosure and governance requirements (Chainalysis, 2024). At the same time, in the United States, the American Institute of Certified Public Accountants (AICPA) (2024) guides best practices for reserve attestation. Both initiatives underscore a global push toward greater accountability and trust in stablecoin markets.

The growing adoption of stablecoins has sparked significant interest and debate within the literature, prompting scholars and regulators to scrutinise their roles, stability, and legal frameworks (Feng et al., 2024; Fernandez-Mejia, 2024; Grobys et al., 2021; Jarno & Kołodziejczyk, 2021; Morgan, 2022). While a growing body of literature explores these challenges, the research landscape remains fragmented, with disparate studies focusing on technical, economic, or regulatory dimensions.

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[2] $200 billion as of early 2025. Stablecoin Regulation Gains Global Momentum. https:// www.spglobal. com/ratings /en/research/articles/250210-stablecoin-regulation-gains-global-momentum-13400761 Accessed 15 February 2025.

[3] "The European Central Bank hopes U.S. President Donald Trump's plan to support cryptocurrencies pegged to the U.S. dollar will speed up legislative backing for the digital euro, ECB board member Piero Cipollone told Reuters." https://www.reuters.com/technology/ecb-hopes-trumps-crypto-plan-will-speed-up-digital-euro-2025-02-06/ Accessed 8 February 2025.

[4] PayPal's Stablecoin PYUSD Surpasses $1 Billion in Market Cap. https://finance.yahoo.com/news/pay_pals-stablecoin-pyusd-surpasses-1-065314501.html Accessed 8 February 2025.

[5] "The commission shall invest funds within the account exclusively in United States treasury bills." and "One (1) Wyoming stable token shall be redeemable for one (1) United States dollar upon demand as set forth by rule of the commission." SF0127 - Wyoming Stable Token Act. https://wyoleg.gov/Legislation/2023/SF0127 Accessed 8 February 2025.

A cohesive synthesis of this scholarship is critical to inform policymakers, investors, and developers as they navigate the evolving role of stablecoins in the digital economy. This article seeks to elucidate the intellectual landscape of stablecoin research by systematically reviewing a curated selection of scholarly articles. The primary research question guiding this study is the following: What are the predominant research themes and gaps in the context of stablecoins? By answering this question, we seek to consolidate knowledge on stablecoins, assess the coherence and evolution of key research themes, and identify any substantial gaps or emerging topics that warrant further investigation. To answer this question, we employ the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) framework (Rethlefsen et al., 2021), which ensures a transparent and methodical approach to literature selection, analysis, and synthesis. Through this process, we identified five themes from the stablecoin literature: intense studies regarding the stability and volatility of stablecoins (Brik et al., 2022; Gadzinski et al., 2023; Smales, 2021); stablecoin is a potential safe haven, hedge, or diversifier in investment portfolios (Baur & Hoang, 2021; Feng et al., 2024; Wang et al., 2020); the effects of stablecoins' issuance (Ante et al., 2021b), burning, and transfer events on other crypto assets such as Bitcoin; the outcomes of stablecoin collapses (De Blasis et al., 2023; Esparcia et al., 2024; Saengchote & Samphantharak, 2024). Additionally, regulatory frameworks are being developed to address the complexities that these digital currencies introduce, aiming to ensure their safe integration into the broader financial ecosystem while mitigating risks associated with their use (Jin et al., 2023; Kochergin, 2020; Morgan, 2022; Sood et al., 2023).

This study contributes to the existing body of knowledge in several ways. First, it expands on the literature review conducted by Ante et al. (2023) by analysing a larger and more recent corpus of articles, thereby capturing the latest developments in stablecoin research, which mainly concern regulatory topics. Second, it particularly emphasises regulatory frameworks, an area that has gained prominence following high-profile stablecoin failures and increasing regulatory scrutiny stems from stablecoins' greater potential to become a widely used payment method, store of value, and unit of account (BIS, 2023, 2024). Third, by synthesising knowledge across diverse themes, this article provides a comprehensive overview of the field, offering valuable insights for policymakers, financial institutions, and technology

providers as they navigate the complexities of integrating stablecoins into mainstream finance.

This article is structured as follows: the next section describes the methodology, including the approach, methods, and data selection. After this, the themes identified in the selected articles are presented and discussed, and the literature gaps are identified. Finally, the article concludes by synthesising the main findings, explaining the limitations, and suggesting directions for future research.

2. METHODOLOGY

2.1. Approach and method

The PRISMA guidelines were employed to conduct this systematic literature review (SLR) on stablecoins (Rethlefsen et al., 2021) to answer the research question. PRISMA is recognised for its rigour and transparency in reporting systematic reviews and meta-analyses, particularly in healthcare research, but it is also widely applicable in business studies (Bhuiyan et al., 2024; Firmansyah & Umar, 2023; Shahana et al., 2023). This method ensures a structured and transparent approach, enabling reproducibility and a clear understanding of how studies are selected, evaluated, and synthesised. Utilising PRISMA enhances the methodological rigour of our review but also assists in maintaining consistency and reducing bias throughout the analysis.

2.2. Data selection

This comprehensive literature review on stablecoins was conducted using the Scopus database. Scopus was chosen due to its inclusive content coverage and openness to society, making it suitable for evaluating research results and performing daily tasks (Pranckutė, 2021). The process of following the PRISMA guidelines is illustrated in Figure 1, providing an organisational representation of our SLR approach.

Searching Scopus for the word "stablecoin*" in the title, keywords, and abstract resulted in 325 document. The database query was performed in April 2024 and the initial search was refined by focusing on articles relevant to the topics "Economics, Econometrics and Finance" and "Business, Management, and Accounting", which excluded 108 articles, narrowing the pool to 217 studies. Further refinement was performed by selecting only articles published in journals, written in English, and

classified under the document type "Article," which resulted in another 66 articles being excluded, leaving 151 studies.

The next screening stage involved thoroughly assessing the remaining records. To ensure that the review focussed on studies where stablecoins were a central theme, articles were excluded if stablecoins were mentioned peripherally or lacked substantive engagement with the topic. For example, studies discussing the metaverse, blockchain, or decentralised finance (DeFi) were excluded if stablecoins were referenced only as a tangential element (e.g., as one of many crypto assets in a technical discussion) rather than as a core subject of analysis. Similarly, articles on central bank digital currencies (CBDCs) were omitted if stablecoins were not explicitly intertwined with the study's framework, findings, or theoretical contributions. Technical papers focusing solely on algorithmic mechanisms without addressing economic, regulatory, or stability implications were also excluded. This criterion ensured that only articles with stablecoins as a central intellectual construct—rather than a passing reference—were retained. During the screening phase, 91 articles were excluded for these reasons, as illustrated in Figure 1.

After these rigorous filtering and screening processes, we included articles from the references cited in the selected articles above and articles related to gold-backed stablecoins. The final count of studies in the SLR amounted to 67, showcasing a focused and relevant assortment of scholarly work on stablecoins within the specified thematic and disciplinary boundaries.

Identification	Article title or Abstract	"stablecoin*"	325
	Subject area	Economics, Econometrics and Finance; Business, Management and Accounting	(108)
	Document type, Source type, Language	Article, Journal, English	(66)

Screening	Assessing records (Title, abstract, keywords)	Related to metaverse, decentralized finance, blockchain, and other themes	(39)
	Reading of the articles	Records excluded due to not being related to the objective of the review, identified through reading of the articles	(52)

Included	Studies included in SLR	articles included from the references cited in the selected articles above and articles related to gold-backed stablecoin	7

Total	Final sample	67

Figure 1. SLR flow
Source: Authors'elaboration

The next phase involves a careful reading of the selected articles to identify major thematic areas of study within the scope of stablecoins, providing the answer to the research question posed.

3. RESULTS AND DISCUSSION

Table 1 presents the scientific articles that are most relevant from the analysis of the number of citations and the year of the publication of the articles. The premise is that the more citations, the more significant an article's impact on the researched topic. The most cited paper, "Is Bitcoin Really Untethered?" by Griffin and Shams (2020), with 204 citations, questions the independence of Bitcoin's valuation from market manipulations, reflecting significant academic and industry interest. Following closely is a study by Baur and Hoang (2021) titled "A crypto safe haven against Bitcoin," which assesses whether other cryptocurrencies can act as a safe haven during Bitcoin's price volatility, drawing considerable attention with 109 citations. Wang et al. (2020), in their work, "Are stablecoins truly diversifiers, hedges, or safe havens against traditional cryptocurrencies as their name suggests?", contributed to the discussion by examining the role of stablecoins vis-a-vis traditional cryptocurrencies, attracting 88 citations. The seminal article "The Impact

of Tether Grants on Bitcoin" by Wei (2018) provides an earlier look into the effects of Tether issuances on Bitcoin's price, gathering 66 citations and suggesting a foundational interest in exploring the linkages between major stablecoins and Bitcoin.

Ante et al. (2021b) discuss "The influence of stablecoin issuances on cryptocurrency markets," which, along with Grobys et al. (2021) in "On the stability of stablecoins," both with 57 citations, emphasises the broader market implications of stablecoin operations. Yousaf and Yarovaya (2022) take a niche angle with "Spillovers between the Islamic gold-backed cryptocurrencies and equity markets during the COVID-19: A sectorial analysis," reflecting on sector-specific impacts and amassing 48 citations. Briola et al. (2023) analyse a significant event in "Anatomy of a Stablecoin's failure: The Terra-Luna case," an essential study after a major market incident, cited 44 times, highlighting the vulnerabilities within cryptocurrency architectures. "How stable are stablecoins?" by Hoang and Baur (2021) and "The impact of transparent money flows: Effects of stablecoin transfers on the returns and trading volume of Bitcoin" by Ante et al. (2021a) each examine different facets of stablecoin influence, and they were cited 36 and 35 times, respectively, indicating focused scholarly interest in the mechanics of stablecoin transactions and their market effects.

Authors	Title	Cited
Griffin & Shams (2020)	Is Bitcoin Really Untethered?	204
Baur & Hoang (2021)	A crypto safe haven against Bitcoin	109
Wang et al. (2020)	Are stablecoins truly diversifiers, hedges, or safe havens against traditional cryptocurrencies as their name suggests?	88
Wei (2018)	The impact of Tether grants on Bitcoin	66
Ante et al. (2021b)	The influence of stablecoin issuances on cryptocurrency markets	57
Grobys et al. (2021)	On the stability of stablecoins	57
Yousaf & Yarovaya (2022)	Spillovers between the Islamic gold-backed cryptocurrencies and equity markets during the COVID-19: A sectorial analysis	48
Briola et al. (2023)	Anatomy of a Stablecoin's failure: The Terra-Luna case	44
Hoang & Baur (2021)	How stable are stablecoins?	36
Ante et al. (2021a)	The impact of transparent money flows: Effects of stablecoin transfers on the returns and trading volume of Bitcoin	35

Table 1. Citations

Source: Authors'elaboration

After reading all of the articles, we found five distinct themes in the stablecoin literature's main intellectual structures. The first theme, when systematised, delves into stablecoins' operational dynamics and economic impacts, specifically focusing on their stability and volatility. Researchers in this area conduct empirical analyses to understand how these mechanisms influence the broader financial ecosystem and contribute to the stability or instability of the market. The second centres on the role of stablecoins as a safe haven, hedge, or diversifier. This strand of the literature investigates whether stablecoins can provide financial stability and safeguard against market volatility in a way similar to traditional assets such as gold. The third theme includes stablecoins' issuance, burning, transfer mechanisms, and relationships with other cryptocurrencies, notably Bitcoin. The fourth systematic segment of the literature examines cases of stablecoin collapses, providing insights into the vulnerabilities and systemic risks associated with these digital assets. The last theme explores the regulatory aspects of stablecoins. This involves scrutinising how different global jurisdictions frame legal and regulatory policies to manage the rise of stablecoins.

3.1. Stability and volatility

In a series of studies exploring the stability of stablecoins with respect to Bitcoin and other crypto assets, researchers have identified nuanced dynamics that govern their volatility. Hoang and Baur (2021) used high-frequency data from the six largest stablecoins by market capitalisation to assess their price stability and volatility in relation to Bitcoin and traditional stable assets, such as fiat currencies and gold. The findings indicated that while stablecoins were less volatile than Bitcoin, they were more volatile than the US dollar, the euro, and gold. This relative instability was attributed to the strong correlations with Bitcoin in terms of returns, volatility, and trading volumes, suggesting that movements in Bitcoin significantly influenced stablecoin metrics. Smales (2021) used a model (DCC-MGARCH) to explore how volatility transmits across different crypto assets, noting that stablecoins such as USDT did not significantly influence broader crypto market volatility despite receiving spillover effects from Bitcoin and Ethereum. Additionally, Grobys et al. (2021) emphasised the reactive nature of stablecoin volatility to Bitcoin's fluctuations, suggesting a one-sided Granger-causal relationship where Bitcoin's volatility is a fundamental driver for that of stablecoins, underscoring their interconnected yet asymmetrically influenced

stability profiles within the crypto asset market. Brik et al. (2022) examined the impact of Bitcoin's market dynamics on stable and nonstable crypto assets. The authors found that Bitcoin returns have a bidirectional influence, positively affecting the returns of some stablecoins (TrueUSD (TUSD) and Synthetic USD (SUSD)) while negatively impacting other stablecoins (USDT, USDC, and Paxos Standard (PAX)). This pattern suggests that information on Bitcoin's performance is swiftly integrated into the prices of these stablecoins, indicating market efficiency. Chen and Chang (2022) discovered a significant stable interconnection between Bitcoin and stablecoins, suggesting that movements in Bitcoin's volatility do not disproportionately affect stablecoin volatilities. The findings reveal no significant volatility spillovers from Bitcoin to the stablecoin markets, indicating that major stablecoins, particularly Tether, often remain stable even when Bitcoin volatility peaks. Grobys and Huynh (2022) investigated the relationship between USDT jumps and subsequent Bitcoin returns from November 2018 to June 2021. The researchers found significant evidence that positive jumps in USDT, particularly those following a day of positive returns, predict large negative price changes in Bitcoin. This correlation challenges the efficient market hypothesis, suggesting that the market may not reflect all available information efficiently, indicating potential market inefficiency.

Recently, other studies have also analysed the instabilities of stablecoin. Hairudin and Mohamad (2023) utilised advanced wavelet transforms to analyse crypto assets' (Bitcoin, Ethereum, USDT, and USDC) fractal volatility and long-range dependence. Their study highlights USDT's consistently low volatility, reinforcing its utility as a stable medium of exchange. In contrast, USDC, though occasionally experiencing spikes, generally maintains a stable profile, indicating its growing reliability in the market. Conversely, Łęt et al. (2023) found that while stablecoins respond to volatile market shocks, these effects are generally short-lived, peaking within three days of the shock. The authors also found that despite their role as safe havens, stablecoins respond more significantly to shocks affecting individual cryptocurrencies than broader market sentiments. Thanh et al. (2023) explored the interconnected stabilities of major stablecoins, discovering that fluctuations in USDT and USDC significantly affect other stablecoins, particularly smaller-cap ones. This finding suggests that larger stablecoins dominate the crypto asset ecosystem, often dictating market dynamics and serving as indicators for trading opportunities.

Regarding empirical research on stablecoins, their interactions with broader market dynamics, and their price stability in response to economic shocks, Ghabri et al. (2022) examined the shifting roles of energy markets (West Texas Intermediate (WTI) and Brent), crypto assets, and stablecoins during the COVID-19 pandemic. Using the Effective Transfer Entropy (ETE), they identified how the directional causal relationships and information spillovers between these markets shifted in response to the pandemic. They discovered that post-pandemic, USDT's influence dynamics changed, and the ETE turned positive, transitioning from a follower to a leader in Brent price. Nguyen et al. (2022) examined the impact of monetary policy instruments, specifically the US federal funds rate and the Chinese interbank rate, on the behaviors of the top five stablecoins and the top five traditional crypto assets. They found that higher rates compress the prices and volatility of stablecoins while increasing those of traditional cryptocurrencies. Both rates boost the trading value of all cryptocurrencies. Similarly, Fernandez-Mejia (2024) delved into the causes of extreme price fluctuations in stablecoins relative to financial and crypto asset indices. Using quantile models, the study uncovered significant asymmetric reactions in stablecoin pricing, influenced by intermediary constraints and liquidity levels, which help predict price movements at the extreme ends of the market. Both studies highlight stablecoins' evolving influence and complex interplay with global market conditions, underlining their critical role in the financial ecosystem amidst post-economic perturbations.

In addition, recent empirical studies have also focused on stabilising stablecoins backed by metals, particularly during periods of broader market volatility. Jalan et al. (2021) examined the behaviour of gold-backed stablecoins during the COVID-19 pandemic and compared them with gold, Bitcoin, and USDT. They found that these stablecoins mirrored gold's volatility, with the primary volatility drivers stemming from the gold market. This indicates that the underlying asset's market dynamics heavily influence the stability of gold-backed stablecoins. Asadov et al. (2023) extended this analysis by exploring the optimal combination of precious metals for backing stablecoins. Their comprehensive use of methodologies such as MGARCH-DCC and wavelet coherence brought them to the conclusion that a mix of gold and silver, specifically in an 88:12 ratio, offered the most stable backing for stablecoins. This combination was chosen due to its lower volatility and reliable supply dynamics, suggesting that precious metals can significantly enhance cryptocurrency portfolios' stability and risk profile.

Other studies have examined the factors contributing to stablecoin stability and the effectiveness of their underlying mechanisms. Jarno and Kołodziejczyk (2021) highlighted significant differences in volatility among stablecoins, showing that designs fully backed by a reference currency and managed by a trusted third party tend to exhibit the lowest volatility. This suggests that simpler, fully collateralised stablecoin designs are more effective in achieving price stability. In contrast, Gadzinski et al. (2023) found that the stabilization mechanisms, whether custodial or algorithmic, do not necessarily correlate with the stability patterns of stablecoins, indicating that other factors may influence their price behavior despite sophisticated protocol designs. Furthermore, Duan and Urquhart (2023) analysed the stability of major stablecoins (USDT, USDC, BUSD, DAI, and PAX) using fractional time series. They found that correction rates varied with respect to their intended pegs, with BUSD displaying the highest stability and quickest correction rate. At the same time, DAI showed persistent instability due to its decentralised, crypto-collateralised nature. On another front, Lyons and Viswanath-Natraj (2023) focussed on structural improvements through the arbitrage design that contributed to stabilising USDT. They noted reforms in 2019, such as USDT's migration to the Ethereum blockchain and the decentralisation of its issuance, which enhanced the efficiency of arbitrage opportunities with the Tether Treasury and cut peg deviations by about 50%. Filezac de l'Etang (2024) discussed the sensitivity of stablecoins to institutional announcements and media coverage, suggesting that not all stablecoins react uniformly to external information. The author found that decentralised stablecoins are more sensitive to institutional announcements than USDC and USDT, indicating nuanced regulatory implications for different stablecoins.

We have identified that research is needed on possible differences between data sources for stablecoin prices. The opposite results reported in the above articles may be due to data sources with different information. Stablecoin price reporting websites may use different methodologies to report stablecoin prices. For example, Hairudin and Mohamad (2023, p.25), using data from CoinGecko.com, found that "all cryptocurrencies, except Tether, absorbed significant disruption at the time of the WHO's announcement of COVID-19's pandemic transition". However, other researchers have found the opposite conclusion using data from coinmarketcap.com (Chen & Chang, 2022; Feng et al., 2024; Smales, 2021; Syuhada et al., 2022).

3.2. Safe haven, hedge, and diversifier

Recent empirical research on stablecoins has examined their effectiveness as financial instruments, focusing on their roles as hedges, safe havens, and diversifiers within crypto and traditional financial markets. Baur and Lucey (2010) provided testable definitions that help analyse and understand various asset characteristics. According to their definitions, a diversifier is an asset that typically shows a positive correlation with another asset or portfolio, though the correlation is imperfect. A hedge is an asset with no correlation or a negative correlation with another asset or portfolio on average. Within this category, a strict hedge demonstrates a consistently negative correlation. Finally, a safe haven is characterised as an asset that remains uncorrelated or negatively correlated with another asset or portfolio during market stress or turmoil (Baur & Lucey, 2010). These definitions are pivotal for identifying and categorising assets based on their behaviour in different market conditions.

Wang et al. (2020) explored the properties of stablecoins (USD-pegged and gold-pegged) as diversifiers, hedges, and safe havens in relation to traditional crypto assets. They found that stablecoins, particularly those pegged to the USD, often act as effective diversifiers in normal market conditions and occasionally as safe havens during market turmoil. They also found that gold-pegged stablecoins were less effective as safe havens. In a similar study, Baur and Hoang (2021) investigated whether stablecoins can serve as a safe haven during extremely negative Bitcoin returns, examining the correlations between stablecoins and Bitcoin returns across various frequencies (1-min returns, hourly returns, and daily returns). They found that stablecoins often provide a safe haven by reacting positively to extremely negative Bitcoin returns. From these results, the authors concluded that stablecoins were not consistently stable, thus contradicting their implied nature. Grobys et al. (2021) found that an increase in lagged Bitcoin volatility decreased stablecoins' future volatilities, confirming Baur and Hoang's safe-haven argument.

Several studies have examined the effectiveness of gold-backed stablecoins as safe havens, hedges, and diversifiers during economic uncertainties, such as the COVID-19 pandemic. Ali et al. (2022) evaluated the role of gold-backed stablecoins (OneGram Coin (OGC) and X8X Token (X8X)) as safe havens for 15 Islamic equity markets. The researchers found that OGC provided significant safe-haven benefits across various Islamic equity markets. Yousaf and Yarovaya (2022)

confirmed that incorporating OGC into portfolios could help cushion Islamic equity portfolios against heightened uncertainties. However, the hedging costs for all pairs increased during COVID-19 compared with the pre-pandemic levels. Similarly, Ali et al. (2023a) explored the relationship between conventional crypto assets (Bitcoin, Ethereum, and Binance coin) and Islamic gold-backed stablecoins (OGC, X8X token, and HelloGold), discovering weak correlations that offer diversification opportunities. These studies suggest that Islamic cryptocurrencies serve as effective risk management tools and present viable investment alternatives for adherents of Sharia-compliant financial practices, especially during global financial distress.

Building on the theme of stablecoins as effective financial tools for risk management, the study by Díaz et al. (2023) complements earlier research by specifically examining the role of stablecoins, including those backed by the US dollar and gold, in mitigating risks in cryptocurrency portfolios. They found that USDT, USDC, and Digix Gold significantly enhance portfolio stability by acting as hedges and diversifiers, effectively reducing tail risk. Belguith et al. (2024) explored the interconnections and hedge effectiveness of gold-backed stablecoins (Pax Gold (PAXG), Tether Gold (XAUT), Perth Mint Gold Token (PMGT), and Digix Global (DGX)) in relation to DeFi and NFT assets from 2021 to 2023. They found that these gold-backed stablecoins acted as robust safe havens during significant market downturns, such as the 2022 bear market, while offering substantial hedging benefits during normal market conditions. Hoque et al. (2024), on the other hand, assessed the hedging and safe-haven potential of XAUT and PAXG amidst various financial stresses using techniques such as dynamic conditional correlation and quantile coherency. Their results indicate that while XAUT and PAXG are strong safe havens against US financial and equity-valuation-related stresses, they are less effective against global financial stressors, particularly credit-related stresses.

There are also studies on the effectiveness of stablecoins as hedges, diversifiers, and safe havens in the oil market. Będowska-Sójka and Kliber (2022) assessed the hedging capabilities of crypto assets (Bitcoin, BNB, Ether, USDT, and USDC) against Brent crude oil price movements, discovering that while USDT and USDC offer some protection against price drops, they did not significantly reduce overall investment volatility. Syuhada et al. (2022) investigated USDT's role as a safe haven within oil portfolios, comparing its risk mitigation effectiveness with that of

Bitcoin and the US dollar. Their analysis indicated that Tether consistently reduced investment risk during the pandemic, performing better than Bitcoin but not as well as the US dollar. Mzoughi et al. (2023) explored the interdependencies between various markets, including West Texas Intermediate (WTI) crude oil and crypto assets, during the pandemic, finding that digital gold outperformed stablecoins such as Tether in terms of return on investment under crisis conditions. These studies illustrate the nuanced roles that stablecoins can play in financial oil portfolios, providing varying degrees of protection and stability in response to market fluctuations.

Gadi and Sicilia (2022) examined the role of various crypto assets, including stablecoins (USDT and USDC), in relation to market indices in G7 and BRICS countries during the COVID-19 pandemic. They discovered that these stablecoins consistently retained their hedging properties across most markets, demonstrating resilience in pre- and post-COVID scenarios. Almeida et al. (2024) examined the relationships between various crypto assets, including stablecoins (USDT and USDC), and measures of uncertainty in BRIC countries by specifically examining geopolitical risk (GPR) and economic policy uncertainty (EPU). They showed that stablecoins did not exhibit consistent results concerning GPR and EPU, suggesting that they may not serve as reliable hedging instruments against geopolitical risks or economic policy uncertainties in the BRIC countries. Similarly, Jana and Sahu (2023) explored the relationships between crypto assets and global stock markets, finding that stablecoins such as USDT and USDC function effectively as hedges and reliable safe havens during stable and turbulent times, underscoring their utility in diversifying investment risks across varying economic conditions. Kołodziejczyk (2023) evaluated the roles of stablecoins in financial markets against crypto assets (Bitcoin, Ether, and XRP) and stock market indices (CAC40, SPX, DAX, Dow Jones Industrial, and WIG20). They found that stablecoins served as weak hedges under normal market conditions and weak safe havens during market turmoil, with little evidence of contagion between crypto assets and stablecoin markets.

In contrast, Feng et al. (2024) demonstrated that stablecoins, especially those pegged to the USD, provided strong hedging capabilities against global stock markets (17 stock markets across Europe, America, and Asia–Oceania) during the pandemic. They also acted as stable safe havens, outperforming traditional assets

such as gold and the USD and volatile Bitcoin. Lamine et al. (2024) further analysed the interactions between the US and Chinese stock markets, crypto assets, and gold. They uncovered that while traditional assets and major crypto assets often absorbed risks and acted as effective diversifiers during the pandemic, stablecoins (USDT and TUSD) did not demonstrate similar hedging effectiveness.

As mentioned in the previous section, different data sources can lead to different results. Given the visible reduction in USDT's volatility and recent USDC returns (Feng et al., 2024; Jana & Sahu, 2023), surveying whether the safe-haven, hedge, and diversifier roles remain unchanged using recent data sources and price data would be ideal.

3.3. Impacts of emission, transfer, and burning of stablecoin

Stablecoins' emission, transfer, and burning events represent significant on-chain activities that can profoundly impact cryptocurrency markets, particularly in centralised exchanges (Kristoufek, 2021; Saggu, 2022; Wei, 2018). When stablecoins such as USDT are minted (emission), they often inject liquidity into the market, potentially driving up the prices of cryptocurrencies as new capital flows in (Saggu, 2022). Conversely, burning events, where stablecoins are removed from circulation, might signal a reduction in liquidity, potentially leading to price drops or increased volatility (Saggu, 2022). Transfer events, which indicate shifts in stablecoin holdings between wallets, can also sway market sentiments by hinting at possible future trades (Ante et al., 2021a). Traders and analysts closely monitor these on-chain activities as they provide insights into the market's underlying demand and supply dynamics[6]. Such events serve as critical indicators that may precede significant price movements on off-chain platforms, impacting trading strategies and market outlooks in the ever-volatile crypto trading environments.

The stablecoin research field, particularly concerning the issuance, burning, and transfer of stablecoins, has substantial implications for crypto asset markets. For instance, Wei (2018) and Griffin and Shams (2020) presented contrasting findings on USDT's issuance and its effects on Bitcoin. Wei (2018) suggests that while USDT's issuance correlates with increased Bitcoin trading volumes, it does not directly influence Bitcoin prices. Conversely, Griffin and Shams (2020) argue that

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[6] Examining the Status of Stablecoin Minting and Burning Activities. https://cointelegraph.com/news/ examining-the-status-of-stablecoin-minting-and-burning-activities Accessed 20 July 2024.

USDT's issuance may be used to manipulate Bitcoin prices, especially following market downturns. Of similar meaning, in a study about the impact of stablecoin transfers worth USD 1 million or more on Bitcoin returns and trading volume, Ante et al. (2021a) found a significant increase in both trading volume and returns. This discrepancy highlights the complexity of stablecoins' role in market dynamics. It suggests that Tether's impact on Bitcoin may vary depending on the context and conditions under which it is issued.

Other researchers delve into the broader effects of stablecoins across various crypto asset markets, analysing how these digital assets react to or influence significant market events. Kristoufek (2021) and Kristoufek (2022) comprehensively examined the interactions between stablecoins and major crypto assets from 2016 to 2021. Contrary to the hypothesis that stablecoins could boost the prices of other crypto assets, the findings revealed no evidence supporting this effect. Instead, stablecoin issuances appear to increase responses to price movements in other crypto assets, suggesting that stablecoins are more reflective of rising demand within the crypto markets. In contrast, Ante et al. (2021b) observed that crypto asset market responses to stablecoin issuances can be immediate and positive, suggesting an anticipatory or speculative investor response to these events. Saggu (2022) identified a pronounced asymmetry in Bitcoin's responses, with positive movements in Bitcoin's price occurring within 5 to 30 minutes following USDT minting events, particularly when these events coincided with positive investor sentiment and were publicly announced through Whale Alerts on Twitter. However, Bitcoin showed no significant price change in response to Tether burning events, regardless of investor sentiment. Gubareva et al. (2023) examined the role of stablecoins in risk management across financial markets. Focusing on the trade volumes of stablecoins rather than price volatility, the study identified that adverse changes in stock and cryptocurrency markets can predict increases in stablecoin issuances, indicating a shift by investors from risky assets to more stable ones such as US Treasuries and stablecoins during market downturns.

Among these operational events, we did not find research that relates an increase in the volume of stablecoin loans obtained on decentralised finance platforms with the volatility of stablecoins, as these loans could be considered new stablecoin "issuances." As a suggestion for future research, researchers could also verify from

recent data whether the studies by Wei (2018) and Griffin and Shams (2020) still have different results or if there is a convergence of results.

3.4. Collapse

During the period analysed, many significant financial collapses occurred, such as Iron Finance, Terra-Luna[7], FTX, and Silicon Valley Bank (SVB). These cases highlight vulnerabilities and systemic risks in the crypto asset and banking sectors. Each study provides a comprehensive understanding of the incidents from multiple analytical perspectives.

Drawing parallels to the similar failure of Terra-Luna (UST) in May 2022, Saengchote and Samphantharak (2024) scrutinised the collapse of Iron Finance's algorithmic stablecoin in June 2021. Their study leveraged transaction-level blockchain data to expose the intrinsic vulnerabilities of algorithmic stablecoins, particularly emphasising the detrimental impact on retail investors, who were disproportionately affected in both cases. To the authors, the findings underscore the fragility and regulatory challenges of using algorithmic stablecoins within decentralised financial ecosystems (DeFi), warning of the potential for future similar failures due to permissionless blockchains' unregulated and anonymous nature.

Briola et al. (2023) and Cho (2023) addressed the Terra-Luna collapse's foundational causes and immediate effects from distinct angles. Briola et al. (2023) applied network science techniques to trace the dependencies and market reactions among cryptocurrencies, concluding that the market did not exhibit herding behaviour and viewed the collapse as an isolated event rather than a systemic threat. On the other hand, Cho (2023) dives into the specific token economics of Terra's UST to understand the misaligned incentives that led to its de-pegging. The author's analysis indicates that the UST's poorly designed redemption structure played a crucial role in the de-pegging, and the "attack" acted as a catalyst for the issues stemming from the flawed design. Lee et al. (2023) and De Blasis et al. (2023) expanded on the broader market implications of the crash. Lee et al. (2023) examined the spillover effects and effective transfer entropy within the crypto asset market, highlighting how the crash disrupted typical market behaviors and

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[7] SEC Charges Terraform and CEO Do Kwon with Defrauding Investors in Crypto Schemes. https://www.sec.gov/newsroom/press-releases/2023-32 Accessed 20 July 2024.

sentiments. They found that the crash, which was initiated by the de-pegging of Terra's UST stablecoin, significantly influenced the connectedness of the crypto asset market, enhancing the internal spillover of returns and volatility between LUNA and UST and altering the information flow to and from these assets. In contrast, De Blasis et al. (2023) examined the reactions across major stablecoins to the collapse of the TerraUSD (UST) stablecoin. They discovered significant contagion effects resulting from the UST collapse, which were likely partly due to herding behavior among traders. They also determined that differences in stablecoin design impacted the direction, magnitude, and duration of the response to shocks. In addition, Azimli (2024) explored the dynamic connectedness of crypto asset markets around COVID-19, wartime, the crypto asset market crash, and the collapse of Luna using high-order moments. He found that volatility shock transmissions were time-varying and gained strength under stressful crypto asset market conditions.

Esparcia et al. (2024) investigated the impact of FTX's bankruptcy on intraday volatility among various cryptocurrencies. Utilising the mcGARCH model for hourly volatility estimation and the TVP-VAR model for network connectedness analysis, they found a significant increase in market volatility post-bankruptcy, with stablecoins experiencing the most pronounced effects. Bouri et al. (2023) studied the dynamic lower-tail dependence and downside risk spillover between the FTX Token and seven major crypto assets. They found strong evidence of risk spillover effects from FTX Token to crypto markets, with USDT being affected least by the FTX fallout, receiving the lowest downside risk spillovers.

The collapse of SVB on March 8, 2023, marked a significant moment in the US banking sector, triggering a widespread flight to quality in financial markets. Oefele et al. (2024) investigated the patterns of investment shifts in response to financial stress experienced during the downfall of SVB. They found a significant influx of capital into money market mutual funds (MMFs), especially those backed by government securities. The study also revealed that stablecoins, which closely resemble MMFs in terms of reserve assets and institutional structure, experienced growth in market value. Galati and Capalbo (2024) explored the ripple effects of the SVB collapse on the crypto asset market, particularly stablecoins, using data from 14 days surrounding the bank's failure in March 2023. They investigated how the prohibition of withdrawals influenced the market. They identified significant

volatility and a flight to safer, more reputable stablecoins. Using high-frequency data, Ali et al. (2023b) found an increase in the return connectedness among major crypto assets post-SVB collapse, while the volatility connectedness remained unchanged. They revealed that traditional crypto assets (Bitcoin and Ethereum) were the primary transmitters of these spillovers, whereas stablecoins (USDT and USDC) mostly received them.

After analysing these studies, we suggested that a study could be conducted to analyse all of these collapse events together to identify similarities and previous differences and obtain a predictive model of these collapses. In addition, the research could address the occurrence of possible co-instabilities between stablecoins in these events and whether these instabilities were in the same direction.

3.5. Regulation

As stablecoins become increasingly integrated into the global financial system, establishing clear and robust rules is essential to enhance transparency, protect investors, and ensure the overall integrity of financial markets. In this fifth systematised theme, we present the literature on the challenges and opportunities faced by regulators in the face of the growing use of stablecoins by individuals and companies, as well as studies on the evolving landscape of accounting and auditing standards pertinent to stablecoins.

3.5.1. Stablecoin adoption

Since the Libra project's introduction in 2019, stablecoins have been a focal point in regulatory discourse, highlighting concerns around financial stability, monetary policy, and risks associated with money laundering and terrorism financing (Copeland, 2020; Ferreira, 2021; Read & Schäfer, 2020). Even though Facebook/Meta eventually abandoned the Libra/Diem initiative, its creation and progress represented a significant moment (Morgan, 2022). The potential of Libra to engage billions via a comprehensive social networking platform sparked widespread concern among regulators (Ferreira, 2021; Read & Schäfer, 2020).

Bolt et al. (2022) highlighted the risks to payment system stability that could arise from the mass adoption of stablecoins, particularly those issued by large tech companies with substantial resources and vast consumer bases. He (2021) noted that the rise of global stablecoins could signify a resurgence of the private sector's

role in the financial domain, with major tech firms potentially expanding their influence not just through goods and services but also by offering payment instruments capable of affecting monetary policies globally (He, 2021). Sood et al. (2023) identified key risk categories hindering stablecoins' mainstream adoption using the Pythagorean fuzzy Delphi method, finding that technical, macroeconomic, and legal risks were predominant. Meanwhile, Cesaratto and Febrero (2023) warned that stablecoins could lead to financial instability due to the absence of monetary safeguards in crisis scenarios.

Kochergin (2020) analysed the economic attributes of different stablecoin types, concluding that they vary significantly in economic and legal characteristics and could serve as effective cross-border payment methods, enhancing transaction speed, reducing costs, and increasing financial inclusion for the unbanked. Lastly, Ferreira (2021) advised regulators to take a broader, more strategic view of stablecoins, recognising their potential benefits to harness the full promise of this technological innovation. The author believes that effective regulation should foster a diverse stablecoin environment and promote competition rather than curb innovation.

3.5.2. Accounting and auditing

Despite the growing prominence of stablecoins, more research needs to be carried out to address their financial reporting and audit procedures. Hampl and Gyönyörová (2021) assessed fiat-backed stablecoins as cash equivalents under IFRS rules. They analysed legal terms, risk characteristics, and general conditions of stablecoins. Using a three-step approach to analyse stablecoins' material substance for reporting, they found that 9 out of 11 stablecoins met cash-equivalent requirements under IFRS. Fernández et al. (2024) analysed Tether's asset-backing risk, liquidity, solvency, and debt ratios. They underlined the need for unified accounting and auditing standards for stablecoins and recommended independent auditors' valuations for investor confidence.

These studies highlight the challenges of integrating new technologies, such as stablecoins, into traditional financial systems[8]. Subsequently, these systems must

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[8] Crypto regulatory affairs: MiCA's stablecoin provisions go live, with Circle the first issuer to obtain full approval. https://www.elliptic.co/blog/mica-stablecoin-provisions-live-with-circle-first-issuer-to-obtain-full-approval Accessed 20 July 2024.

evolve to ensure clarity, consistency, and confidence in financial reporting. As the use of stablecoins increases[9], it is essential to establish strong, unified accounting standards and audit procedures to protect investors' interests and uphold the integrity of financial markets.

4. LITERATURE GAPS

The articles' reviews reveal some insights into stablecoin dynamics and their interactions with other cryptocurrencies and traditional financial markets. However, several gaps that could be addressed in future research remain. One significant gap is the need for a deeper examination of stablecoins' technological and security aspects. The failure of digital currencies, such as in the Terra-Luna and SVB cases studied by Briola et al. (2023) and Galati and Capalbo (2024), respectively, raises questions about the technological robustness and security of stablecoins. Future research could delve deeper into the technological underpinnings of stablecoins, exploring aspects such as blockchain security, the effectiveness of different algorithms, and the potential for technological failures.

In addition, we verified a severe reduction in the volatility of stablecoin from the graphical visualisation of daily returns of USDT in the study by Feng et al. (2024). However, visual verification does not necessarily demonstrate this reduction in volatility mathematically. Future research could perform descriptive statistics to identify when a reduction in the standard deviation of the volatility of stablecoin occurred or to use, for example, the GARCH model to capture coefficients related to the response to market shocks (alpha) and the persistence of volatility (beta).

Lastly, limited research exists on consumer and investor behaviour related to stablecoins. Studies could investigate how different market demographics perceive and use stablecoins, including factors that drive adoption and trust in these digital assets. In addition, more in-depth research is needed on the influence of regulatory changes on stablecoins and their related ecosystems. For example, research concerning companies' practical use of stablecoins and the tax implications of these transactions could be carried out[10]. This gap signifies a promising area for future

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[9] 3 Reasons Why Stablecoins Will Have A Breakout Year In 2024. https://www.forbes.com/sites/digital-assets/2024/01/02/3-reasons-why-stablecoins-will-have-a-breakout-year-in-2024/ Accessed 20 July 2024.

[10] How stablecoins and central bank digital currencies will affect tax. https://www.ey.com/en__gl/insights/tax/how-will-stablecoins-and-central-bank-digital-currencies-affect-tax Accessed 20 July 2024.

research, underscoring the importance of comprehensive studies on the operational integration of stablecoins in business practices and the formulation of tax policies explicitly tailored to digital currency transactions.

5. CONCLUSION

This systematic literature review (SLR) addressed the research question, "What are the predominant research themes and gaps in the context of stablecoins?" by synthesising 67 studies into five core themes: 1) stability and volatility, which delves into the mechanisms that underpin stablecoins' price stability and the factors that can lead to volatility, analysing how these dynamics impact the broader financial market; 2) roles as a safe haven, hedge, or diversifier, where the use of stablecoins as financial instruments for risk management is discussed, exploring how stablecoins can function as safe havens, hedges, or diversifiers within investment portfolios; 3) the impact of events such as issuance and transfer on other crypto assets, exploring the dynamic impacts on the broader cryptocurrency market and providing insights into the interconnectedness and reactions within the crypto ecosystem; 4) incidents of financial collapse of stablecoins, where the vulnerabilities and systemic risks associated with these digital assets are analysed, providing a comprehensive understanding of the factors leading to financial failures and their broader market implications; 5) regulation, focussing on the legal frameworks and compliance issues surrounding stablecoins and examining the evolving regulatory landscape and the challenges and opportunities that regulators face in integrating stablecoins into the financial system. These themes collectively answer the research question by mapping the scholarly focus on stablecoins' economic roles, risks, and governance challenges.

Our analysis also highlights significant gaps, particularly in the verification of possible differences between sources of data on prices of stablecoins, because there were conflicts in the results of studies. In addition, we did not find research to identify when or from which event a reduction in volatility in the daily returns of stablecoins was generated, thus enabling us to compare volatility before and after this identified period.

Practical implications for stakeholders emerge clearly from our findings. Regulators can leverage insights into collapse triggers (e.g., insufficient collateralisation or algorithmic flaws) to design stress-testing protocols and transparency mandates. Financial institutions may adopt stablecoins as short-term

hedges in volatile markets but must account for their evolving regulatory risks. Technology providers should prioritise algorithmic stability mechanisms and interoperability features to enhance resilience, particularly in cross-border payment systems.

This review has limitations. Reliance on Scopus as the sole database may have excluded relevant studies from Web of Science, Google Scholar, or industry reports. Additionally, the rapid evolution of stablecoin markets means that newer developments (e.g., PayPal's PYUSD launch or EU's MiCA regulations) may not be fully captured. Future SLRs should expand database coverage and incorporate grey literature to mitigate these constraints.

Lastly, considering the relevance of understanding stablecoins in trading and their potential in other applications, such as remittances and cross-border payments, which could significantly influence global financial interactions, we suggest avenues for future research, such as studies concerning companies' practical utilisation of stablecoins and the tax implications of these transactions.

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