



Global Investment Research | Digital Assets

Stablecoins – effective bridge between fiat and crypto, or a bridge too far?

November 2025

AUTHORS

Robin Marshall, M.A., M.Phil
Director, Global Investment Research
robin_marshall@lsegroup.com

Alex Nae, M.Sc
Quantitative Research Analyst, Global
Investment Research
alex_nae@lsegroup.com

**FTSE
RUSSELL**

An LSEG Business

Executive summary

- Stablecoins (SCs) have grown rapidly since Covid, as a blockchain-based money equivalent, with liquidity and cross-border transferability, and as a stable store of value. Their total market capitalisation is now close to \$250bn.
- Unlike other crypto currencies, like Bitcoin and Ethereum, they are issued by private companies, and backed by reserve assets. This distinguishes them from central bank digital currencies, which are issued by central banks, and legal tender, unlike SCs.
- However, the 1:1 peg to underlying reserve assets has some flexibility, like a currency board arrangement. The collapse of Terra (2022) highlighted the importance of the arbitrage mechanism required to ensure SC stability.
- Using FTSE Russell Stablecoin index data, we find SCs do indeed show a very stable return profile and low volatility relative to other cryptocurrencies and traditional financial assets, since 2020.
- SCs backed by fiat currency cash and near-cash display lower volatility than those collateralized by crypto currencies, and also show low correlation to Bitcoin and Ethereum, while being less volatile than algorithmic SCs.
- Passage of the US GENIUS Act gives a more complete regulatory framework for SCs in US dollars, and there are some signs of convergence in regulatory approaches with the Eurozone's framework.
- A clearer, and more complete global regulatory framework reduces financial instability risks emanating from SCs, which do not share the risks of fractional reserve banking systems or permit maturity transformation.
- US dollar SCs comprise 99% of global market capitalization, and may serve to reinforce the dollar's transactional dominance in cross-border payments, trade invoicing and foreign exchange volumes.

Contents

Introduction.....	4
The key questions about Stablecoins	4
Why have Stablecoins grown so quickly in recent years?	4
How SCs work; interaction between primary and secondary markets preserves Stablecoin pegs.....	5
What are the major types of Stablecoins?	7
Stablecoin performance returns and correlations – are Stablecoins stable?	8
Stablecoins as stores of value and the 1:1 price link to underlying reserve assets	9
Performance returns tell a story of relative stability.....	10
Correlations of returns show low Stablecoin correlations to traditional assets.....	11
Tether's higher correlation to Bitcoin, mainly due to the medium of exchange role.....	11
...other Stablecoins show much lower correlation to Bitcoin and Ethereum.....	12
Different regulatory emphasis between the US and Eurozone.....	13
...but the GENIUS Act shows some convergence?	13
Financial stability and parallels with 2008 to 2009 and the shadow banking system	14
Stablecoins are designed to reduce the risks of fractional reserve systems.....	14
...from maturity transformation and lower quality reserve assets	14
Stablecoins and the impact on reserve currencies... Fears of the dollar's death exaggerated?	15

Introduction

A key development in digital assets in recent years is the arrival of, and rapid growth in, stablecoins. A stablecoin (SC) is a type of cryptocurrency that aims to maintain a stable value versus a specified asset, or pool of assets. The attraction of a SC lies in being a blockchain-based money equivalent, with liquidity and cross-border transferability, and a stable store of value. The underlying reserve asset is often a fiat currency, like the US dollar, but the underlying asset can be another cryptocurrency, like Bitcoin or Ethereum. This is a key difference between SCs and other cryptocurrencies which are not collateralized.

Indeed, one of the key drivers of their development has been a reaction to the high volatility in cryptos like Bitcoin and Ethereum, even if Bitcoin volatility has fallen in 2024-25¹. The other key difference with cryptocurrencies is that SCs are issued by private companies, with the backing of reserve assets, rather than issued by a computer code on a network, as is Bitcoin.² Also bear in mind SCs differ from central bank digital currencies (CBDC). CBDC are effectively digital bank notes, legal tender and issued by central banks, whereas SCs are issued by private companies and not legal tender.

The key questions about Stablecoins

In this paper, we look at the recent growth in, and types of, SCs and assess their performance returns and correlations with traditional asset classes, using FTSE Russell digital and multi-asset index data. We seek to answer key questions about SCs, specifically, why have SCs grown so quickly in recent years? Are SCs stable stores of value, and particularly versus their collateral? Is their performance correlated to other crypto-currencies? Will SCs boost the role of the dollar as a dominant global reserve currency, reduce US debt service costs and leave the euro marooned? Finally, is it hype to hazard³, namely could widespread adoption of SCs pose risks to financial systems or stability, or might they actually reduce the risks inherent in fractional reserve banking systems?

Why have Stablecoins grown so quickly in recent years?

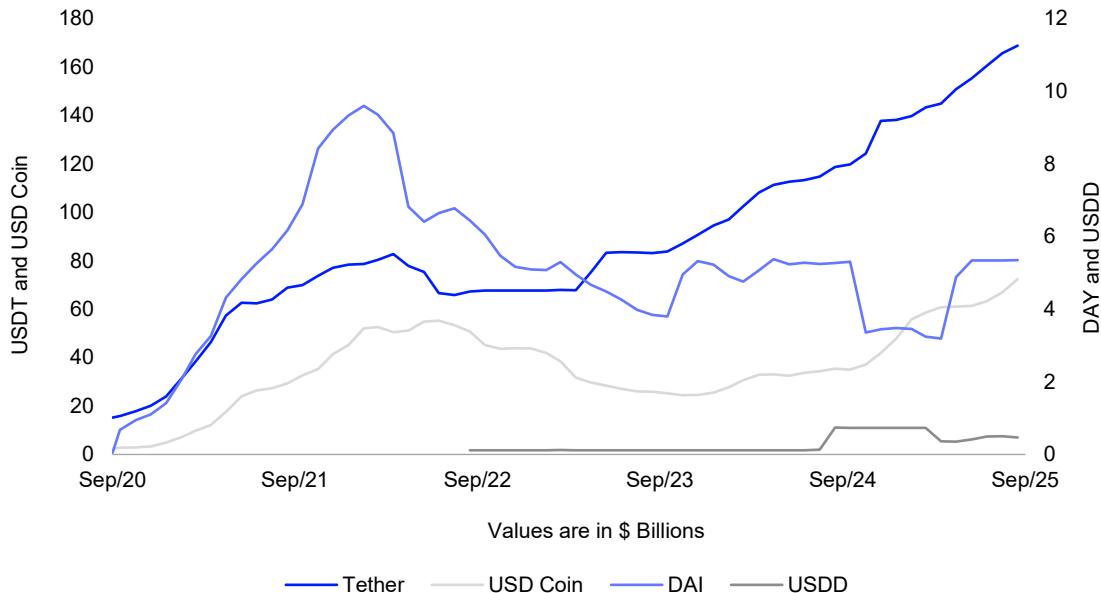
Rapid growth in SCs reflects concern about the stability of fiat currencies and banking systems, particularly in developing countries, slow and costly cross border payment systems and as a bridge between fiat currencies and cryptocurrencies. Recent regulatory changes in the US, including the Guiding and Establishing National Innovation for US Stablecoins Act, or “Genius Act”, and the introduction of an over-arching market structure framework for the regulation of crypto-currencies, are other important factors. Chart 1 illustrates the high growth rate in the market capitalization of SCs in recent years.

¹ See [Digital assets – evolution and correlations with other asset classes](#), FTSE Russell, February 2025

² See [What are stablecoins and how do they work?](#), Bank of England, November 2023.

³ See [From hype to hazard - what stablecoins mean for Europe](#), European Central Bank, Jurgen Schaff, July 2025.

Chart 1: Market capitalization of major Stablecoins



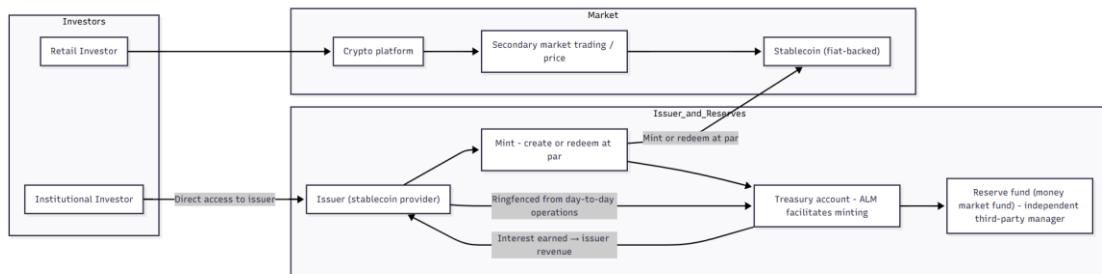
Source: Contrecoup – Cryptocurrency Historical Data, Monthly data December 2021 to August 2025.

How SCs work; interaction between primary and secondary markets preserves Stablecoin pegs

Box 1 outlines the mechanics of SC and the process behind a retail or institutional investor purchase, or sale of SC. The creation or redemption of SCs is similar to an ETF where authorized participants serve that purpose to keep the ETF price in line with underlying NAV⁴. Note that only institutional investors can directly access fiat-backed stablecoins in the primary market, retail investors must rely on secondary markets. Other SCs, like crypto-collateralized SCs, can include a much wider range of participants. Interaction between primary and secondary markets works to preserve the 1:1 peg between a SC and underlying reserve assets. SC investors tend to track the secondary market for price information since issuers will always quote a 1:1 conversion rate in the primary market.

⁴ See "The recent distress in corporate bond markets: cues from ETFs": Sirio Aramonte and Fernando Avalos, BIS bulletin No 6, April 2020.

Box 1: The mechanics of Stablecoins backed by fiat currencies

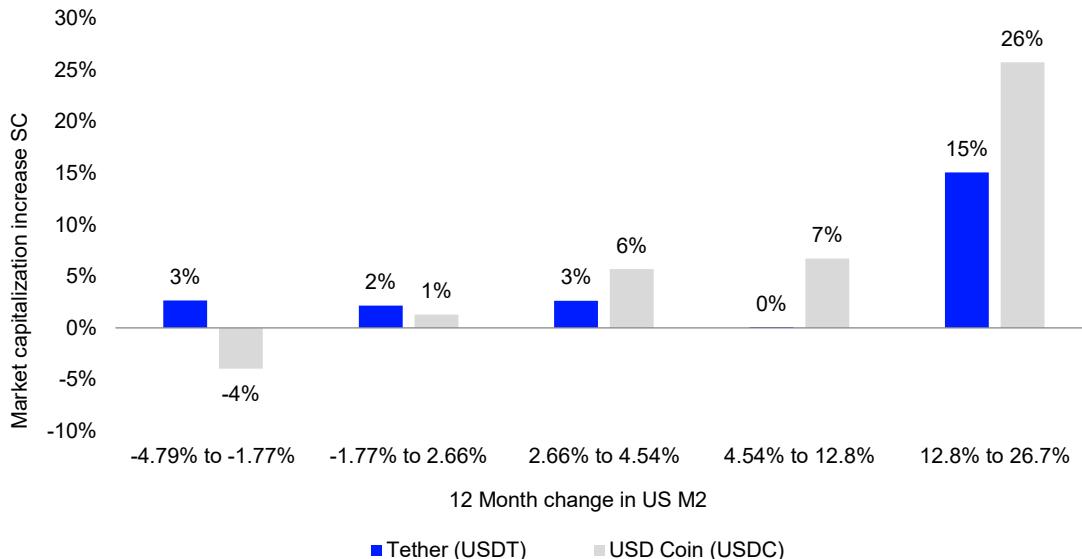


Source: FTSE Russell, October 2025.

Chart 1 shows the market capitalization of 4 major SCs highlighting their rapid growth, and subsequent contraction during the inflation shock and period of macroeconomic stress. SCs are not immune to economic shocks and suffered some contractions in market capitalization during the 2022-2023 period of tightening financial conditions, with Tether's market value falling 13% and USDC by nearly 38%, as redemptions reduced supply (USDD was not operating at that time). The collapse of Terra, with its algorithmic collateralization to the cryptocurrency Luna, was a factor in this. But we note other SC pegs to underlying reserve assets held, even if there were some strains.

Furthermore, there appears to be a relationship between stablecoin market capitalization and the broader US money supply. Chart 2 illustrates the average change in stablecoin market capitalization across different monetary conditions. During periods of contraction or low growth in the money supply, stablecoins expanded only marginally, around 1% on average, with occasional reductions. By contrast, during phases of monetary expansion, stablecoins recorded growth between 15% and 26%. This suggests that increases in dollars in circulation are often accompanied by greater conversion of cash into stablecoins. The pattern is consistent with earlier FTSE Russell research, which found that Bitcoin and Ethereum tend to rise as risk appetite increases, demonstrating that when liquidity expands, demand for both stablecoins and risk assets strengthens. This dynamic can be partly attributed to stablecoins' role as the primary medium of exchange between US dollars and crypto assets.

Chart 2: Stablecoin market capitalization across monetary regimes



Source: CoinCheckupm, FTSE Russell. Monthly data December 2021 to August 2025.

What are the major types of Stablecoins?

Table 1 shows the dominant SC category are SCs backed by fiat currencies, like the dollar or euro, which pay no interest. Variations on this theme include US Treasury bills as the underlying reserve asset, which do pay interest, (such as Ondo's USDY and Hashnote's USYC), crypto-backed SCs, and commodity-backed SCs, with gold or silver backing the SCs. These yield-bearing stablecoins are typically not available to retail investors and fall outside the scope of the US GENIUS Act, which regulates payment stablecoins. The distinction has been at the center of recent policy debates in Washington, particularly around the classification and risk treatment of yield-bearing SCs. Algorithmic SCs are the most complex version, with demand and supply adjusting automatically to maintain stability, via smart contracts, and often backed by an underlying crypto asset.

Terra was the largest of these algorithmic SCs, and collateralized by the cryptocurrency asset, Luna. When demand for Terra SCs fell in 2022, the supply of Luna was increased to preserve the 1:1 peg with Terra, but this drove the value of Luna lower, causing holders to exit Terra as the value of the underlying reserve asset fell. This caused a further increase in the supply of Luna, and so on. Such death spirals make algorithmic SCs riskier than those backed by fiat currencies, since supply of the reserve asset is endogenous, or determined by demand for the SC.

Table 1: Major Stablecoins

Stablecoin	Ticker	Type / Backing	Market Capitalization*	Pros	Key Risks / Issues
Tether	USDT	USD peg (cash + short dated Treasuries etc.) (CoinMarketCap)	~\$160-170 billion (DeFi Llama)	Liquid with blockchain and exchange support, and DeFi. Biggest market share.	Reserve opacity, regulatory scrutiny, reserve and counterparty risk. Transparency.
USD Coin	USDC	USD peg, operated by Circle. Cash reserves or equivalent and US Treasuries...	~\$60-70 billion (DeFi Llama)	Strong regulatory posture, transparency, stable and trusted.	Potential operational or counterparty exposure through reserve custodians; subject to evolving US digital asset regulation.
Dai	DAI	Crypto-collateralized. Over-collateralized with Ethereum etc... (Bankrate)	~\$4-6 billion (Bankrate)	Decentralized and transparent; don't rely on one issuer; good for DeFi composability.	Complex risks from smart issuers. Lower prices may drive under-collateralization.
Ethena USDe	USDe	USD peg; relatively newer stablecoin. (DeFi Llama)	~\$10-15 billion (DeFi Llama)	Rapid growth; and competitor to USDC/USDT; new architecture.	Less trust. Reserve transparency and audit records; regulatory and operational risk.
World Liberty Financial USD	USD1	USD peg, fiat-backed (issuer claims) (Bankrate)	~\$2-3 billion (Bankrate)	Niche stablecoin; broad payment uses; benefit from branding / specific communities.	Smaller, retail adoption, liquidity concentration; reserve transparency.
First Digital USD	FDUSD	USD-pegged, fiat-backed; newer issuer (Bankrate)	~\$1-2 billion (Bankrate)	Alternative when regulation tight. High yield but hinges on reserve strategy.	Smaller; less proven; potentially expensive, counterparty / reserve risk.

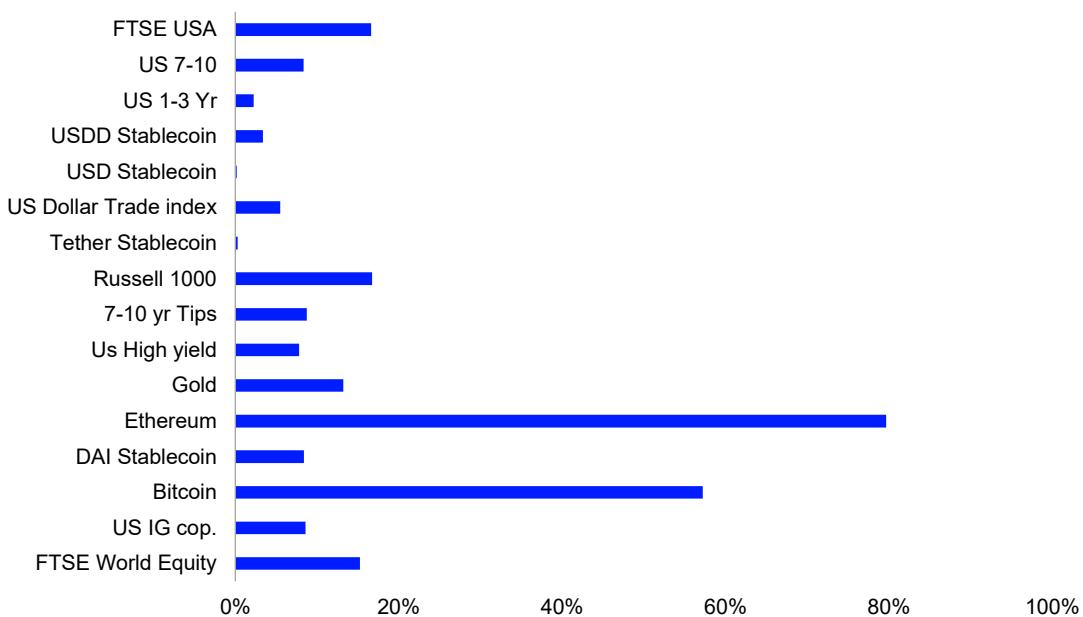
Stablecoin performance returns and correlations – are Stablecoins stable?

To assess the stability of SCs and correlations with other crypto-currencies and multi-asset classes, we looked at the volatility, performance and correlation of returns of SCs with selected major US asset classes for the period 2020 to 2025, using FTSE Russell multi-asset index data. This links to our research earlier this year on digital asset characteristics and correlations of returns⁵. We chose 4 major SCs for this analysis, and included both SCs backed by US dollar cash and near-cash (T-bills) and those backed by crypto-currencies.

⁵ See [Digital assets – evolution and correlations with other asset classes | LSEG](#), February 2025.

Chart 3 shows the variation in volatility between SCs backed by US dollar cash and near-cash (Tether and USDC) and those backed by crypto-currencies, like DAI, which is not backed by US dollars in a bank account, but by collateral from the issuer's Decentralized Autonomous Organization (DAO's) platform, which sits on the Ethereum network. This makes DAI vulnerable to price swings in Ethereum, with its high volatility, as the underlying collateral. Indeed, DAI has similar volatility to 7 to 10 year Treasuries and US credit. In contrast, Tether and USD coin show extremely low volatility, near zero in the same period, with the main reserve assets being dollar cash and short Treasuries.

Chart 3: Volatility of Stablecoins and major US asset classes 2021 to 2025



Source: FTSE Russell. Monthly data December 2021 to August 2025.

So the data confirms SCs are much more stable than Bitcoin or Ethereum in recent years, but that there are unstable SCs, and that users need to be fully aware of the differences in collateral and structure of the arbitrage mechanism.

Stablecoins as stores of value and the 1:1 price link to underlying reserve assets

This raises a more fundamental point on SCs and their role as stores of value. There is no mechanical 1:1 link between the SC and underlying asset in the secondary market, particularly in the case of SCs with less stable collateral, like DAI. Tether's price deviation from the underlying US dollar reserves has fallen since migrating from Omni to the Ethereum blockchain in April 2019, with its greater number of investors, but it does still occur, with a maximum standard deviation of about 5%. The 1:1 link relies on either the issuer intervening to correct a price deviation from the peg – like a central bank pegging an exchange rate to another currency – or decentralized investor arbitrage.

But unlike exchange traded funds (ETFs), where authorized participants intervene to correct discrepancies between an ETF's valuation and underlying net asset value⁶, in the case of SCs there are no authorised participants. The arbitrage mechanism relies on full commitment from the issuer on the supply side, and/or active investor arbitrage from the demand side. The mechanism is similar to that of a currency board, like the Hong Kong dollar peg to the US dollar in place since 1983, which operates with a band around a central rate. Credibility ensures that investors will intervene to keep the HK dollar within the band. Efficiency in the arbitrage design process is even more important for SCs not backed by reserve currencies, which are exposed to bigger price swings in underlying collateral, and concerns about reserve quality.

Apart from Terra's collapse, the other major market stress event for SCs originated in the traditional financial system, due to USDC's exposure to Silicon Valley Bank's collapse in March 2023. These SC failures have driven stronger regulation with both the US GENIUS Act, and the Markets in Crypto Assets Regulation, or MICA framework, in Europe.

Performance returns tell a story of relative stability

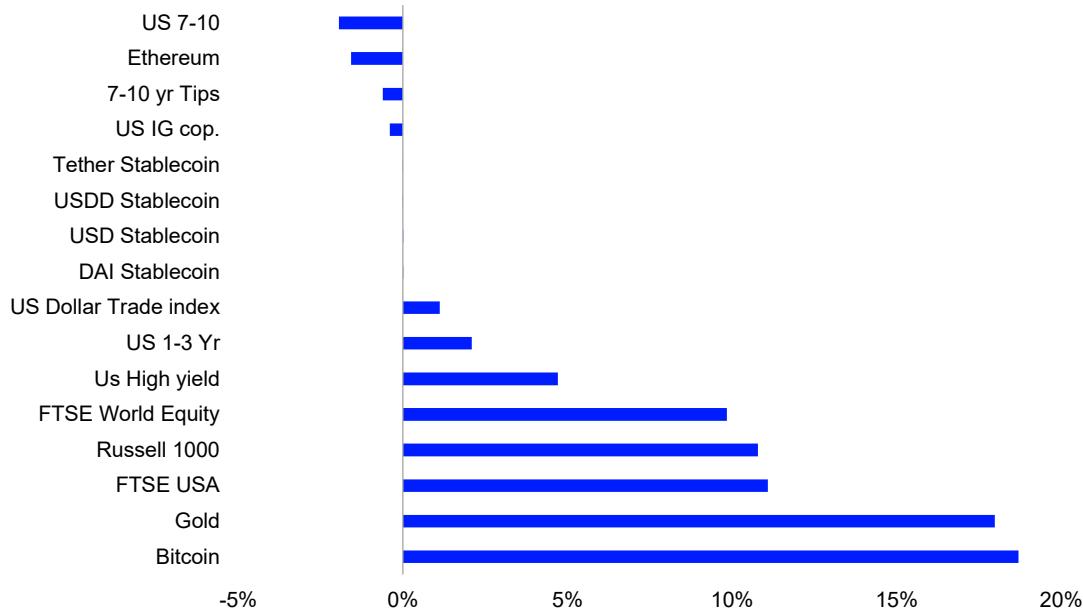
Turning to performance returns and correlation with other asset classes, price returns are close to zero in most SCs in the period 2021 to 2025, as Chart 2 shows, but given there is no interest paid on SCs by issuers, due to US regulation, this is predictable. However, there are intermediaries who hold SCs for retail investors, and then pay "rewards" on these holdings, i.e., Coinbase, offers 4.1% to USDC holders. It has been argued this may raise financial stability issues⁷ if bank deposit holders were to switch large sums from bank deposits into seemingly stable SCs in the pursuit of higher return (see section below on financial stability). Chart 2 also shows that Tether, the largest SC by market capitalization, has delivered positive returns however, reflecting the scale of its reserve holdings in US Treasury Bills (T-bills).

Importantly, the performance returns observed in SCs are less a product of ongoing price appreciation, and more the outcome of temporary peg deviations during stress episodes. In normal conditions, returns hover near zero, consistent with their design. But in periods of market turmoil, such as sharp drawdowns in crypto assets or liquidity squeezes in Defi, small breaks in the peg can translate into measurable price returns.

⁶ See [What keeps stablecoins stable? – ScienceDirect](#), Journal of International Money and Finance, March 2023.

⁷ See [Interest by any other name should be regulated as sweetly | Brookings](#), Aaron Klein September 2025.

Chart 4: Annualized returns of Stablecoins and major US asset classes 2021 to 2025



Source: FTSE Russell. Monthly data December 2021 to August 2025.

Correlations of returns show low Stablecoin correlations to traditional assets...

Stablecoins show low correlation in returns to other asset classes, particularly gold, as Table 4 shows. In addition, despite the peg to the US dollar, SC returns show low correlation with the US dollar index, since dollar index returns reflects the dollar's external value against other currencies.

Tether's higher correlation to Bitcoin, mainly due to the medium of exchange role

Tether shows the highest correlation of returns with Bitcoin (BTC) and Ethereum (Ether) at around 0.4, which may be explained by Tether featuring in about 50% of BTC and Ether trades, as a means of payment for these cryptocurrencies. Furthermore, Tether shows higher correlations with other financial assets, notably US Treasuries and equities, than other SCs. There may be a collateral effect in this in short Treasuries, but it could be driven by Tether's dominant market share in SCs, and greater linkages with the traditional financial system via DeFi, and US Treasury bill holdings.

...other Stablecoins show much lower correlation to Bitcoin and Ethereum

Other SCs show much lower correlation of returns with BTC and Ether. This is likely due to the relative stability and much lower volatility of returns in SCs, as Chart 1 above shows, and the “safe haven” effect during crypto downturns. The correlation of DAI with Ether is more complex, since DAI is backed by Ethereum as collateral. Bull market runs in Ether may induce holders to close DAI-backed loans and switch into Ether, and vice versa during sell-offers in Ether, giving a negative correlation overall. Another complexity is Ether’s role as collateral for DAI, since a sharp drop in the value of Ether could reduce demand for DAI, offsetting the negative correlation.

Table 2: Correlations of selected Stablecoin returns with major US asset classes

Correlation table	Tether Stablecoin	USD Stablecoin	DAI Stablecoin	USDD Stablecoin
FTSE USA	0.24	-0.17	-0.15	0.02
FTSE All World	0.22	-0.18	-0.11	-0.06
US investment grade credit	0.17	-0.16	-0.01	-0.09
1-3 year Treasuries	0.08	-0.07	0.16	-0.01
US high yield	0.22	-0.14	-0.08	-0.08
7-10 year Tips	0.23	-0.04	0.01	0.01
7-10 year Treasuries	0.19	-0.12	0.09	0.01
Gold	-0.05	-0.04	-0.07	-0.23
US Dollar index	0.02	0.13	-0.19	-0.01
Bitcoin	0.41	-0.06	0.03	0.18
Ethereum	0.43	0.07	-0.18	0.15
Tether Stablecoin	1	0.19	0.06	0.14
USD Stablecoin	0.19	1	0.03	-0.03
DAI Stablecoin	0.06	0.03	1	0.02
USDD Stablecoin	0.14	-0.03	0.02	1

Source: FTSE Russell. Monthly data December 2021 to August 2025.

While return correlations provide some insight, they may not be the most effective way to assess SC dynamics. By design, SCs should be stable, and trade with minimal deviation from their peg, meaning price returns are more a reflection of rare stress episodes than of ongoing market drivers. But correlations with other assets can highlight how SCs react to market shocks, liquidity and crypto events, where deviations from the peg may coincide with sharp moves in Bitcoin, Ethereum or risk assets more broadly. In this sense, market analysis should emphasize deviation from \$1.00 and liquidity linkages, while using correlations selectively to reveal stress transmission mechanism channels.

Different regulatory emphasis between the US and Eurozone...

European authorities have shown more concern about financial stability in the regulation of SCs since 2020⁸. As a result, SC regulation includes strong capital buffers and tight operational controls in the Eurozone with strict prohibition of interest payment on SCs. Indeed, ECB President Lagarde recently raised the issue of global equivalence in SC regulation when stating “....in the event of a run (on SCs), investors would naturally prefer to redeem (SCs) in the jurisdiction with the strongest safeguards, which is likely to be the EU, where MICAR (Markets in Crypto Assets Regulation) also prohibits redemption fees.....But the reserves may not be sufficient to meet such concentrated demand.”

European focus on financial stability and risks to monetary sovereignty contrasts with the lighter touch US approach, which allows smaller SCs, with less than \$10 billion in outstanding issuance, to be regulated at state level.

...but the GENIUS Act shows some convergence?

However, the recent US GENIUS Act suggests some regulatory convergence, and as Table 3 shows, permitted reserve assets for SCs under the US GENIUS Act can only consist of US currency, demand deposits, short-term Treasury securities with 93 days or less to maturity, overnight repurchase agreements backed by Treasuries, and specific money market funds. This may boost demand for US T-bills and very short-dated Treasuries and we note that Tether now owns \$127bn in T-bills, as of May 2025 (US Treasury data), which is another example of the link between SCs and fiat currencies.

Table 3: Permitted reserve assets for Stablecoins under the US GENIUS Act

Asset class	Notes
US currency	Notes and coins
US T-bills and Treasuries with < 93 days to maturity	Includes T-bills, notes and bonds
Deposits at Federal Reserve banks	Includes foreign branches
Demand deposits at insured depository institutions	
Overnight repos collateralized by US Treasuries	Includes reverse repos
Shares in registered government money market funds	Also includes securities registered under 1940 Inv. Company Act
Tokenized versions of the above assets	If in compliance with applicable laws and regs.

Source: Guaranteeing Essential National Infrastructure in US-Stablecoins Act, July 2025.

⁸ [Regulation, Supervision and Oversight of "Global Stablecoin" Arrangements – Financial Stability Board](#), ECB October 2020, and [Markets in Crypto-assets Regulation – European Commission](#), December 2024.

Financial stability and parallels with 2008 to 2009 and the shadow banking system

Despite a clearer regulatory framework emerging, financial stability concerns centred on SCs persist.⁹ It may be that the systemic risks caused by the mis-valuation of underlying reserve assets in the Global Financial Crisis (GFC) is part of this, and the related concern SC issuers might switch investment out of permitted reserve assets into higher yielding and higher risk alternatives. A collapse in the value of this collateral could then break the peg of the SC to the fiat currency, prompting capital flight and major losses.

Stablecoins are designed to reduce the risks of fractional reserve systems...

Similarly, the Bank for International Settlements (BIS) has highlighted the risk SCs pose to monetary sovereignty, transparency, capital flight risks in EM and from fragile pegs to underlying reserve assets¹⁰. The BIS also notes SCs may not have the unique characteristics required for money. These are defined as singleness (because the 1:1 peg might deviate from the fiat currency), no restriction to elasticity of supply (because SC issuers cannot expand their balance sheet freely) and integrity (because SCs can circulate freely across borders and may suffer from "KYC" and compliance issues).

...from maturity transformation and lower quality reserve assets

But fractional reserve banking systems, with greater elasticity of money supply and credit, carry their own risks and can be exposed to bank deposit runs, as the recent collapses of some US regional banks, Credit Suisse First Boston in 2023, and Northern Rock in the UK (2007) demonstrated¹¹. In addition, maturity transformation, i.e. investing demand deposits in longer dated assets, and low quality reserve assets have played a part in recent banking collapses, including the GFC, but maturity transformation is not permitted, or minimal, for SC reserves.

So criticism of SCs based on parallels with the GFC and the collapse in the shadow banking system are less obvious, since the underlying reserve assets in the GFC were mainly private, sub-prime mortgage-backed securities, and not US Treasury bills, or dollar cash, backed by the monetary authorities. Fully and properly-regulated SCs may well expedite faster cross-border payments, and serve as a successful bridge between crypto and fiat currencies.

⁹ [Stablecoins could trigger taxpayer bailouts, warns Nobel economics laureate](#), Financial Times, August 31, 2025.

¹⁰ See BIS, Annual Report, 2025.

¹¹ See "On the instability of fractional reserve banking" – Heon Lee, European Economic Review, September 2025.

Stablecoins and the impact on reserve currencies... Fears of the dollar's death exaggerated?

Finally, given the regulatory backdrop, the US dollar's dominance as a global reserve currency¹², and that SCs can be used as settlement assets, it is perhaps unsurprising US dollar SCs comprise about 99% of global market capitalization. This in itself poses a challenge to the Eurozone, since US dollar SCs could achieve a bigger market share in Europe, boosting the US dollar's role further in cross-border payments. It would cast some doubt on the popular notion of de-dollarization, often linked to the (modest) decline in US dollar holdings in central bank foreign exchange reserves in recent years. This is because it might reinforce the transactional dominance of the dollar in foreign exchange volumes, trade invoicing, cross-border liabilities denomination and foreign currency debt issuance.

¹² See [Dollar demise, or a storm in a trade tea-cup? | LSEG](#), May 2025.

ABOUT FTSE RUSSELL

FTSE Russell is a leading global provider of index and benchmark solutions, spanning diverse asset classes and investment objectives. As a trusted investment partner we help investors make better-informed investment decisions, manage risk, and seize opportunities.

Market participants look to us for our expertise in developing and managing global index solutions across asset classes. Asset owners, asset managers, ETF providers and investment banks choose FTSE Russell solutions to benchmark their investment performance and create investment funds, ETFs, structured products, and index-based derivatives. Our clients use our solutions for asset allocation, investment strategy analysis and risk management, and value us for our robust governance process and operational integrity.

For over 40 years we have been at the forefront of driving change for the investor, always innovating to shape the next generation of benchmarks and investment solutions that open up new opportunities for the global investment community.

CONTACT US

To receive our research and insights email and Market Maps reports, directly to your inbox, subscribe [here](#).

To learn more, visit lseg.com/ftse-russell; email info@ftserussell.com; or call your regional Client Service team office:

EMEA +44 (0) 20 7866 1810

Asia-Pacific

North America +1 877 503 6437

Hong Kong +852 2164 3333

Tokyo +81 3 6441 1430

Sydney +61 (0) 2 7228 5659

Disclaimer

© 2025 London Stock Exchange Group plc and its applicable group undertakings ("LSEG"). LSEG includes (1) FTSE International Limited ("FTSE"), (2) Frank Russell Company ("Russell"), (3) FTSE Global Debt Capital Markets Inc. "FTSE Canada", (4) FTSE Fixed Income LLC ("FTSE FI"), (5) FTSE (Beijing) Consulting Limited ("WOFE"). All rights reserved.

FTSE Russell® is a trading name of FTSE, Russell, FTSE Canada, FTSE FI, WOFE, and other LSEG entities providing LSEG Benchmark and Index services. "FTSE®", "Russell®", "FTSE Russell™", "FTSE4Good™", "ICB™", "Refinitiv", "Beyond Ratings™", "WMR™", "FR™" and all other trademarks and service marks used herein (whether registered or unregistered) are trademarks and/or service marks owned or licensed by the applicable member of LSEG or their respective licensors.

FTSE International Limited is authorised and regulated by the Financial Conduct Authority as a benchmark administrator.

All information is provided for information purposes only. All information and data contained in this publication is obtained by LSEG, from sources believed by it to be accurate and reliable. Because of the possibility of human and mechanical inaccuracy as well as other factors, however, such information and data is provided "as is" without warranty of any kind. No member of LSEG nor their respective directors, officers, employees, partners or licensors make any claim, prediction, warranty or representation whatsoever, expressly or impliedly, either as to the accuracy, timeliness, completeness, merchantability of any information or LSEG Products, or of results to be obtained from the use of LSEG products, including but not limited to indices, rates, data and analytics, or the fitness or suitability of the LSEG products for any particular purpose to which they might be put. The user of the information assumes the entire risk of any use it may make or permit to be made of the information.

No responsibility or liability can be accepted by any member of LSEG nor their respective directors, officers, employees, partners or licensors for (a) any loss or damage in whole or in part caused by, resulting from, or relating to any inaccuracy (negligent or otherwise) or other circumstance involved in procuring, collecting, compiling, interpreting, analysing, editing, transcribing, transmitting, communicating or delivering any such information or data or from use of this document or links to this document or (b) any direct, indirect, special, consequential or incidental damages whatsoever, even if any member of LSEG is advised in advance of the possibility of such damages, resulting from the use of, or inability to use, such information.

No member of LSEG nor their respective directors, officers, employees, partners or licensors provide investment advice and nothing in this document should be taken as constituting financial or investment advice. No member of LSEG nor their respective directors, officers, employees, partners or licensors make any representation regarding the advisability of investing in any asset or whether such investment creates any legal or compliance risks for the investor. A decision to invest in any such asset should not be made in reliance on any information herein. Indices and rates cannot be invested in directly. Inclusion of an asset in an index or rate is not a recommendation to buy, sell or hold that asset nor confirmation that any particular investor may lawfully buy, sell or hold the asset or an index or rate containing the asset. The general information contained in this publication should not be acted upon without obtaining specific legal, tax, and investment advice from a licensed professional.

Past performance is no guarantee of future results. Charts and graphs are provided for illustrative purposes only. Index and/or rate returns shown may not represent the results of the actual trading of investable assets. Certain returns shown may reflect back-tested performance. All performance presented prior to the index or rate inception date is back-tested performance. Back-tested performance is not actual performance, but is hypothetical. The back-test calculations are based on the same methodology that was in effect when the index or rate was officially launched. However, back-tested data may reflect the application of the index or rate methodology with the benefit of hindsight, and the historic calculations of an index or rate may change from month to month based on revisions to the underlying economic data used in the calculation of the index or rate.

This document may contain forward-looking assessments. These are based upon a number of assumptions concerning future conditions that ultimately may prove to be inaccurate. Such forward-looking assessments are subject to risks and uncertainties and may be affected by various factors that may cause actual results to differ materially. No member of LSEG nor their licensors assume any duty to and do not undertake to update forward-looking assessments.

No part of this information may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without prior written permission of the applicable member of LSEG. Use and distribution of LSEG data requires a licence from LSEG and/or its licensors.

The information contained in this report should not be considered "research" as defined in recital 28 of the Commission Delegated Directive (EU) 2017/593 of 7 April 2016 supplementing Directive 2014/65/EU of the European Parliament and of the Council ("MiFID II") and is provided for no fee.