Box 5
Euro-based stablecoins

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Stablecoins are digital assets designed to minimise price volatility typically against a single fiat currency (or a basket of fiat currencies). There are different types of stablecoins – tokenised, collateralised, algorithmic – which use different mechanisms to ensure that stability against the

target fiat currency is maintained.[64] Price stability may vary significantly across different coins due to differences in the ways in which they are pegged, the type and volatility of reserve assets (if any) and their governance structure. Recent empirical evidence suggests that it is likely that stablecoins have acted primarily as a bridge between traditional fiat currencies and volatile digital assets and as collateral in crypto-asset derivative transactions.[65]

From a financial stability perspective, due to full backing of their liabilities at par, stablecoins have been compared to money market funds or currency boards. However, stablecoins are particularly vulnerable to reserve outflows and therefore exposed to the risk of digital runs in the event that doubts about the backing of a coin issuance surface.[66] Large-scale redemptions of stablecoin units, possibly triggered by confidence shocks, could lead to fire sales of reserve assets, creating disruptions in markets used to invest the reserves. Therefore, stablecoins should not be regarded as a new class of safe asset but rather as a less volatile but risky crypto-asset.[67]

The vast majority of stablecoins are linked to the US dollar, which could support its international profile if private stablecoins were to gain broader acceptance.[68] Stablecoins pegged to the euro have started to gain popularity, although the market remains in its infancy. Given the potential systemic importance of stablecoins should the market develop further in the future, this box aims to assess the role of the euro in this market and whether euro-denominated stablecoins follow trends specific to crypto-asset markets or those of traditional financial instruments.

The stablecoin market has boomed in the past two years. It was valued at about USD 160 billion in 2021. As shown by **Chart A**, the stablecoin ecosystem is strongly dominated by coins linked to the US dollar, which account for about 99% of total capitalisation. The two largest stablecoins, USD Tether and USD Coin, have a combined market capitalisation of about USD 120 billion. Euro-denominated stablecoins are the second largest market segment, but their value is very limited (about €500 million). Their share is very small, at about 0.2% of the total stablecoin market. The market for euro-denominated stablecoins is also dominated by two large coins, EUR Tether and Stasis euro, that together account for about half of the total.

64 For the definition of alternative backing schemes for stablecoins and the difference between tokenised, collateralised and algorithmic coins, see Bullmann, D., Klemm, J. and Pinna, A. (2019), "In search for stability in crypto-assets: are stablecoins the solution?", *Occasional Paper*, No 230, European Central Bank, August.

65 See Griffin, J. and Shams, A. (2022), "Is Bitcoin Really Untethered?", *Journal of Finance*, Vol. 75, Issue 4, 2020, pp. 1913-1964; International Monetary Fund (2022), "Global Financial Stability Report", Washington, October, and Financial Stability Board (2022), "Assessment of Risks to Financial Stability from Crypto-assets", Basel, February.

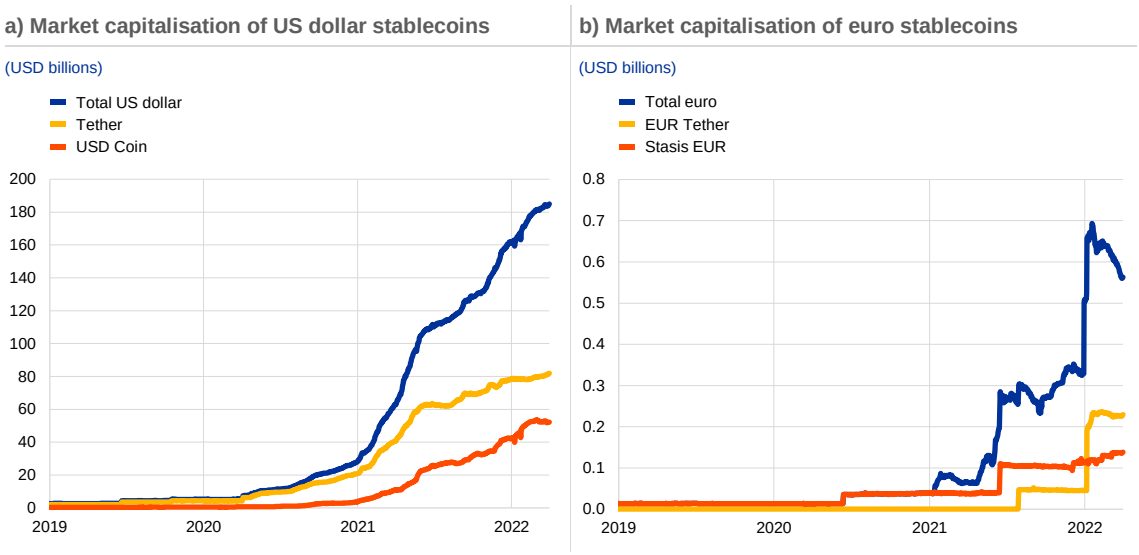
66 See Lyons, R. and Viswanath-Natraj, G. (2020), "What Keeps Stablecoins Stable?", *Working Paper*, No. 27136, National Bureau of Economic Research, Cambridge, May.

67 Panetta, F. (2021), "The present and future of money in the digital age", Lecture at the 2021 Federcasse annual meeting, Rome, 10 December; Arner, D., Auer, R. and Frost, J. (2021), "Stablecoins: risks, potential and regulation", *BIS Working Paper*, No. 905, Bank for International Settlements, Basel, 24 November.

68 Prasad, E., "Digital currencies carry threats as well as promises", *Financial Times*, 14 February 2022; Garratt, R., Lee, M., Martin, A. and Torregrossa, J. (2022), "The Future of Payments Is Not Stablecoins", The Federal Reserve Bank of New York, 7 February. The President's Working Group on Financial Markets Report and Recommendations on Stablecoins (2021), US Department of the Treasury, 1 November, reached similar conclusions.

Chart A

Stablecoin issuance has increased noticeably in the last two years



Sources: CryptoCompare and ECB calculations.
Note: The latest observation is for 31 March 2022.

All major stablecoins trade at a small premium relative to parity on average (see **Table A**). This phenomenon might reflect the use of stablecoins as vehicles for crypto-asset trading or the existence of transaction frictions.[69] Prices are also volatile and may fall below parity, although volatility is substantially lower than riskier crypto-assets, such as bitcoin.[70] This is particularly the case for euro-based stablecoins that are traded on relatively small and shallow markets compared to US dollar-based coins.[71]

Retail investors have significantly increased their exposures to crypto-assets since 2018. Recent analysis suggests that crypto and equity markets have become increasingly interconnected across economies and over time.[72] The evidence can be re-examined by contrasting developments for Stasis euro (the most important euro-backed stablecoin, which has a history of over two years) and USD Tether (the largest stablecoin by market capitalisation) relative to a control group, which includes bitcoin and other financial variables. The analysis examines developments since 2020 – the period over which the stablecoin market has boomed – and consists in comparing returns in periods of global financial market stress, identified by large increases in the VIX index. The aim is to assess whether stablecoins are good hedges against global risk shocks.[73]

69 See Baur, D., Hoang, D. and Lai, T. (2021), "A crypto safe haven against Bitcoin", *Finance Research Letters*, Vol. 38, January.

70 Bitcoin daily returns had an average volatility of 4% in 2020 and 2021, with negative returns in excess of 1% on 30% of the days.

71 Stasis euro, for example, traded below parity about 25% of all days in 2021, against 18% for EUR Tether. Negative spikes are also significant. Stasis euro traded at a discount of 10 basis points or more against parity in 21% of all days in 2021. The largest negative deviation from parity was almost 9%. In comparison for USD Tether the largest discount was only 0.8%.

72 See Iyer, T. (2022), "Cryptic Connections: Spillovers between Crypto and Equity Markets", *IMF Global Financial Stability Note*, No. 2022/01, International Monetary Fund, Washington, January.

73 Results are similar when the early phase (January to March 2020) of the COVID-19 pandemic is excluded.

Table A

Dollar and euro stablecoins

Characteristics of stablecoin premia since 2020

Stablecoin	Average premia (percentage)	Volatility (percentage)	Market capitalisation (USD billions, 01/01/2021)	Market capitalisation (USD billions, 31/12/2021)	Average trading volume (USD billions)	Issuance date
USD Tether*	0.07	0.25	20.93	78.44	64.27	Jan-2014
USD Coin*	0.04	0.25	3.93	42.43	1.81	Sep-2018
EUR Tether°	0.31	0.50	-	0.05	0.01	Jul-2021
Stasis euro°	0.06	1.71	0.04	0.11	0.01	Jul-2018

Sources: Coingeko and ECB calculations.
Notes: Stablecoin premia are defined as the percentage deviation of the stablecoin price from parity with the pegging currency. Because each reporting platform aggregates data using different algorithms and sources, reported values can vary depending on the source used. * Indicates a US dollar-based stablecoin, ° Indicates a stablecoin linked to the euro. Market capitalisation and trading volumes are in billions of US dollars.
The latest observation is for 31 March 2022.

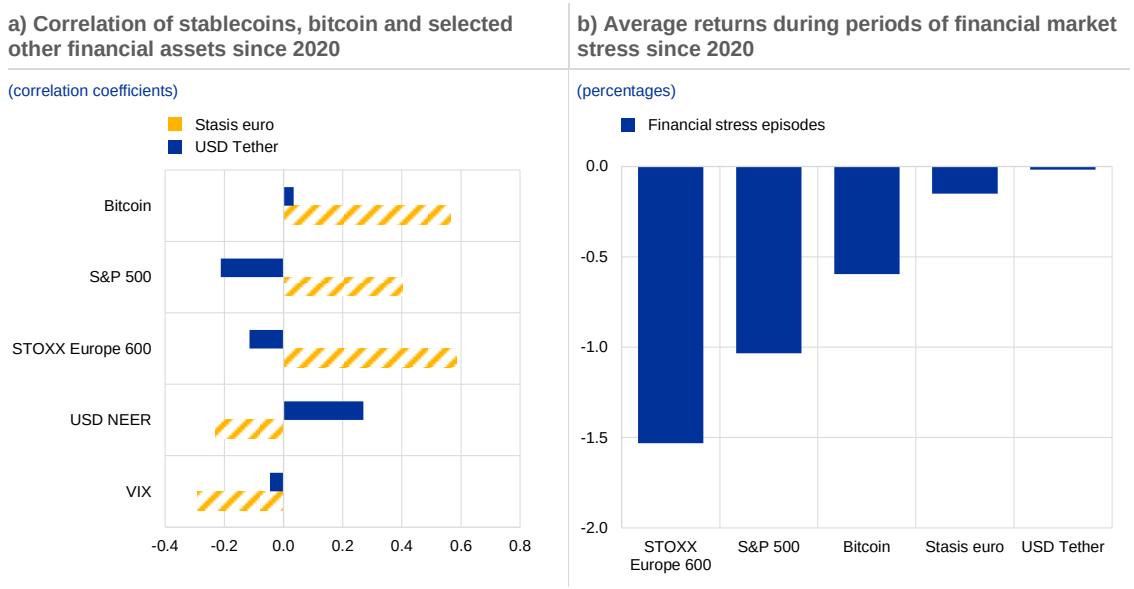
On average, USD Tether returns correlate positively – albeit to a moderate extent – with US dollar exchange rate returns, negatively with stock market returns, and they are uncorrelated with both bitcoin returns and the VIX index (see the blue bars in **Chart B(a)**). However, the correlation coefficients are not statistically significant. USD Tether returns do not therefore appear to be significantly associated with stock market nor with bitcoin price fluctuations. By contrast, returns for the euro-pegged stablecoin, Stasis euro, are positively and significantly correlated with stock market and bitcoin returns (see the dashed yellow bars in **Chart B(a)**). The value of Stasis euro, unlike that of USD Tether, declines when stock market volatility rises. This feature is also evident from the negative correlation between Stasis euro returns and the VIX index. Differences between US dollar and euro-linked stablecoin returns might reflect differences in relative liquidity and risk profiles. Euro-based coins are less liquid and tend to be sold similarly to other risky assets rather than behaving like a vehicle in digital transactions and trading.

A similar picture emerges from the analysis of high-risk episodes, defined as periods in which changes in the VIX index lie within the top 5th percentile of the distribution of weekly changes. In these episodes, stock market returns are negative (by around -1 to -1.5 percent), as are bitcoin returns (by around half a percent), as shown in **Chart B(b)**. This suggests that investors sell risky assets and that bitcoin is considered to be a risky asset. Prices of stablecoins do not decline to a similar extent. However, returns on stablecoins become marginally negative when global financial market volatility rises, in particular those of Stasis euro, which depreciates by about 13 basis points, more than twice the average premium on this instrument. This suggests that investors sell stablecoins alongside other riskier asset classes, thereby raising potential financial stability concerns if larger shocks to global risk were to occur. This confirms the findings of recent studies on the stability of stablecoins.[74]

[74] See Gorton, G.B., Ross, C.P. and Ross, S.Y., (2021), "Making Money", *Working Paper*, No 29710, National Bureau of Economic Research, January: "Stablecoins have not developed individual reputations, nor are they accepted as money, no-questions-asked. As a result, stablecoins do not yet earn a positive convenience yield".

Chart B

Stasis euro was not a good hedge against corrections in risky asset prices



Sources: Coingeko, Haver Analytics and ECB calculations.
Notes: The left panel reports the correlation coefficients of weekly returns between stablecoin prices, financial market variables and bitcoin. The dashed bars indicate coefficients significant at the 10% level of confidence. The USD NEER is the US dollar nominal effective exchange rate. The right panel shows the averages of the returns in these variables in periods when changes in the VIX index lie within the top 5th percentile of the distribution of weekly changes. The latest observation is for 31 March 2022.

Transaction volumes of stablecoins suggest that they are influenced by developments specific to crypto-assets. This is particularly the case for USD Tether, the largest stablecoin by market capitalisation. **Chart C** plots daily changes in traded volumes of stablecoins against those in bitcoin; it shows that purchases of USD Tether strongly co-move with bitcoin transactions (see **Chart C(a)**). For Stasis euro, the correlation is positive but less strong (see **Chart C(b)**). This suggests that euro-denominated stablecoins are used less frequently as vehicles for bitcoin purchases, perhaps because they are less liquid. Additional regression-based estimates show that financial market and crypto-assets returns explain a very low share of transactions in stablecoins. In contrast, transactions in stablecoins, particularly in US dollar stablecoins, are largely driven by transactions in crypto-assets. This suggests that stablecoins are not considered as a new financial asset class that investors would arbitrage against other asset classes, but as vehicles for transactions in more volatile crypto-assets.[75] Potential risks triggered by more widespread stablecoin adoption could be managed through the existing Eurosystem's oversight framework that covers stablecoin arrangements that qualify as payment systems, regardless of the technology used. Moreover, in Europe the issuance of stablecoins and provision of crypto-asset services will be regulated under the Markets in Crypto-Assets (MiCA) Regulation, which is currently at the negotiation stage between the European Parliament, Council and Commission. Any stablecoin transfer function that qualifies as a payment system would either need to comply with the ECB Regulation on oversight requirements for systemically important payment systems or be assessed against the Eurosystem's oversight framework for retail payment schemes.[76] These efforts would need to be complemented by stronger international cooperation on the regulation of crypto-assets.

75 See Griffin and Shams, op. cit., and Lyons and Viswanath-Natraj, op. cit.

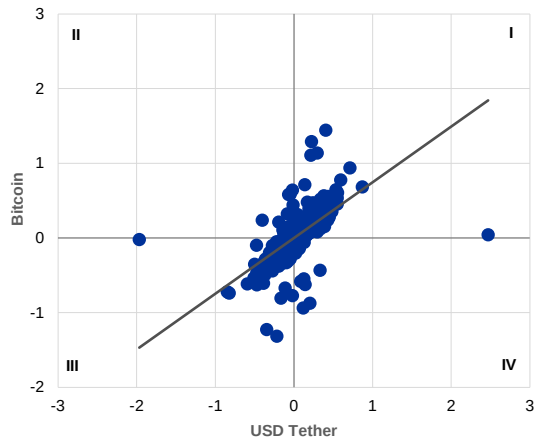
76 See ECB Crypto-Assets Task Force (2020), "Stablecoins: Implications for monetary policy, financial stability, market infrastructure and payments, and banking supervision in the euro area", *Occasional Paper Series*, No 247, European Central Bank, Frankfurt am Main, September.

Chart C

Transactions in stablecoins correlate with transactions in crypto-assets

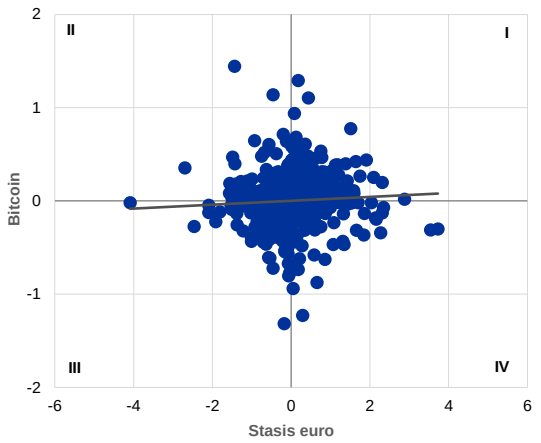
a) Changes in traded volumes: bitcoin vs USD Tether

(daily percentage changes)



b) Changes in traded volumes: bitcoin vs Stasis euro

(daily percentage changes)



Sources: Coingeko and ECB calculations.
Notes: The latest observation is for January 2022.