

Box 4

Financial stability implications of crypto-assets

Prepared by Mitsutoshi Adachi, Simon Kördel, Spyros Palligkinis, Lea Steininger and Anton van der Kraaij

This box assesses potential financial stability concerns related to the rapidly growing market for crypto-assets. Crypto-assets (e.g. bitcoin, ether and ripple) are a new, innovative and high-risk digital asset class.²¹ Recent price developments and market interest in crypto-assets have given rise to concerns about potential financial stability implications. This box presents key facts on crypto-assets, concluding that they do not currently pose a material risk to financial stability in the euro area, but warrant careful monitoring.

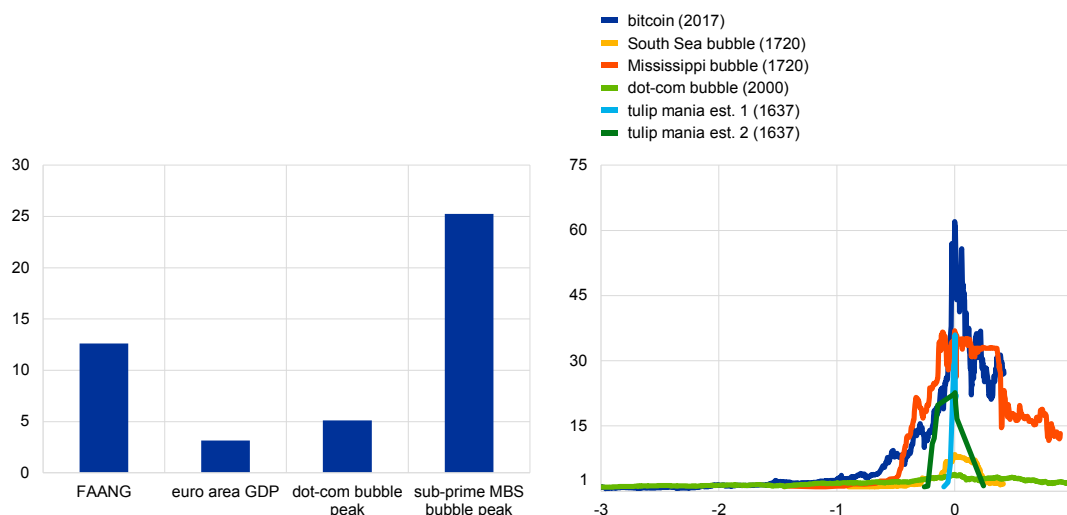
²¹ Crypto-assets use distributed ledger technology, which allows decentralised recording of transactions and holdings, keeping a repeated digital copy of data at multiple locations.

Chart A

Market capitalisation of crypto-assets remains modest despite price developments that are more extreme than those of historical bubbles

Total market capitalisation of crypto-assets as a percentage of FAANG, euro area GDP and past bubbles (left panel) and price changes before and after peaks for bitcoin and historical bubbles (right panel)

(left panel: percentages; 15 May 2018 for crypto-assets and FAANG, Q1 2018 for euro area GDP, market peaks for the dot-com bubble and sub-prime mortgage-backed securities; right panel: index; three years before peak = 1; three years before to one year after peak)



Sources: CoinMarketCap, Thomson Reuters, Haver Analytics, Sifma, Yale School of Management, ECB and ECB calculations.

Notes: Left panel: "FAANG" refers to Facebook, Apple, Amazon, Netflix and Google. The dot-com bubble peak refers to the level of the NASDAQ in March 2000 and the sub-prime peak to 2006. Sub-prime market size is defined as the sum of sub-prime, non-prime and Alt-A US non-agency residential real estate securities. Right panel: the chart shows price evolution, starting from a level of three years before the peak, over a period of four years. Owing to uncertainty about data on the tulip mania, two separate estimates of the size of that bubble are displayed. The years of the peaks are shown in brackets.

Crypto-asset markets have grown more than fivefold in size since July 2017, but they are still small compared to other asset markets. Despite the recent correction to an aggregate valuation of €330 billion from a peak of €680 billion, the market capitalisation of crypto-assets remains modest compared to the market capitalisation of top technology companies, euro area GDP or the size of historical bubbles (see **Chart A**, left panel).

Of the around 1,600 crypto-assets currently in circulation (up from seven in April 2013), bitcoin remains the largest in terms of market capitalisation. Nonetheless, its prominence has decreased in recent months and it now accounts for less than 40% of the market capitalisation of all crypto-assets.

Bitcoin's growth surpassed that of other historical bubbles before it crashed in early 2018, losing 65% of its value (see **Chart A**, right panel). The extreme price developments of bitcoin – with much higher volatility than that observed for traditional asset classes and commodities – mirror similar price changes across the crypto-asset universe. This highlights the poor suitability of these assets as a reliable store of value, useful medium of exchange or efficient unit of account.

Crypto-assets do not currently appear to pose a material risk to financial stability in the euro area. Overall market exposure appears to be modest, correlations with other markets are very low and interlinkages with the financial system and the real economy remain rather limited. Although a significant share of bitcoin's trading volume is settled in euro (around 12% since the beginning of 2018, see **Chart B**), anecdotal evidence suggests that financial institutions have refrained from acquiring sizeable exposures to crypto-assets. Furthermore, ownership of bitcoin is highly

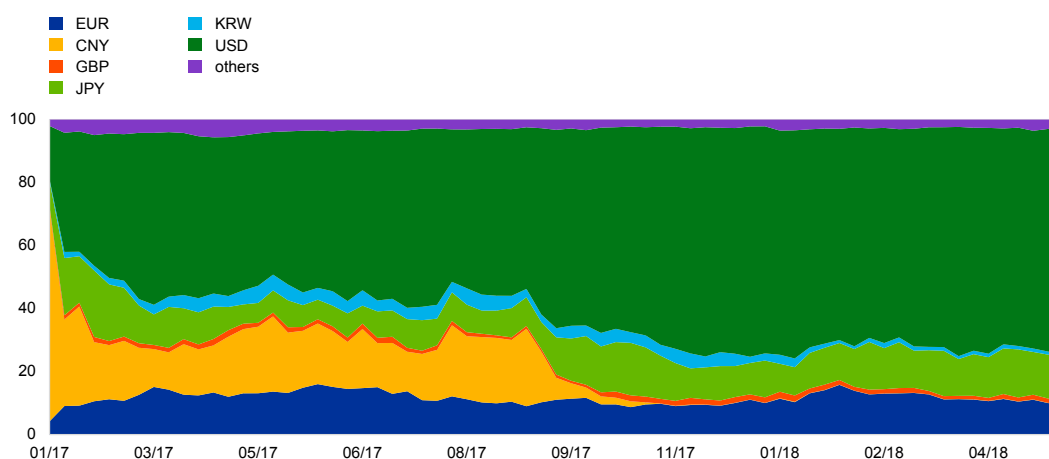
concentrated, which implies that losses from drastic price corrections, such as in the recent crash, are confined to a rather small group of investors.²²

Chart B

Bitcoin trading cleared in euro hovering around 12% since January 2018

Clearance of bitcoin trading volumes by currency

(percentages; 23 Jan. 2017 – 14 May 2018; weekly data)



Sources: Bitcoinity.org and ECB calculations.

Notes: Trading volume data based on aggregated information from bitcoin exchanges. Since no provider aggregates all the exchanges, the true figures may be somewhat different. For example, CoinMarketCap quoted 8% of trading volume in euro on 8 March 2018.

Several sources of potential vulnerability do, however, exist. Anecdotal evidence from outside Europe suggests that some retail investors may be taking on debt to invest in crypto-assets and that some new start-up lenders are accepting crypto-assets as collateral for lending. Retail investors in various jurisdictions also reportedly buy crypto-assets on margin, with some exchanges providing leverage of up to 25 times the principal. Moreover, novel developments, such as regulated bitcoin futures markets in the United States, may increase interlinkages with the financial sector. Other investment vehicles, such as trusts, exchange traded notes (ETNs) and contracts for difference (CFDs), offer crypto-asset exposure to European clients, although their market size is still quite small.

No major regulatory action has been taken so far from a financial stability perspective. The scope of regulatory response has, however, expanded from its initial focus on the prevention of illicit activities, such as money laundering and terrorist finance, to consumer and investor protection and ensuring market integrity, as demonstrated, for example, more recently by the joint warning of the European Supervisory Authorities.²³

The rapid evolution of the crypto-asset market warrants increased data collection and careful monitoring from a multitude of angles. These include: the potential entry by financial institutions into crypto-asset business by, for example, investing in these assets or providing related services; the use of crypto-assets as collateral; the provision of credit to individuals and firms

²² The top 10,000 addresses (0.05% of the total) hold 56% of all bitcoins, while the top 1,000 addresses (0.005% of the total) hold around 35% (source: [BitInfoCharts](#), retrieved on 15 May 2018). Moreover, these figures represent a lower bound on concentration, given that it is possible for the same investor to have multiple addresses.

²³ The warning can be found on the [European Securities and Markets Authority \(ESMA\) website](#).

investing in crypto-assets; and greater interlinkages with the rest of the financial system through crypto-asset derivatives trading and hedge fund/asset manager involvement. Coordinated data collection efforts are required to improve data gaps at both the EU and global level to facilitate effective monitoring and to prevent connections with the financial system from increasing to the point where crypto-assets could pose a risk to financial stability.
