

Financial stability and crypto-assets*



By Pablo Hernández de Cos
Governor of Banco de España
Chairman, Basel Committee on Banking Supervision

JEL codes: E24, E58, G23, G28.

Keywords: Crypto-assets, financial stability, virtual currencies, Initial Coin Offerings, utility tokens, stable coins, non-fungible tokens.

The term crypto-assets typically refers to a wide range of highly heterogeneous assets whose common trait is the fact that they are a digital representation of value or a set of contractual rights. Moreover, crypto-assets rely heavily on distributed ledger technology (DLT) for their transmission, trading and storage. However, unlike central bank digital currencies (CBDCs), they are not backed by a central bank or any other public authority.

Total market capitalisation of crypto-assets grew markedly in recent years. They may only represent a small fraction of the global financial system in terms of size (about 1%), yet some of their most prominent examples (including bitcoin, ether and tether) exhibit trading volumes that can, eventually, compare to those of other well-established asset classes. Moreover, in aggregate terms, global capitalisation of the crypto-asset market reached a peak of about \$3 trillion. In any event, their high volatility is striking, as borne out by a cumulative loss of value of close to 40% in recent months. In tandem, interconnections with the rest of the financial system have increased significantly.

* This is an edited version of the original speech in Spanish delivered at the *II Observatorio de las Finanzas Symposium (El Español)* in February 2022.

The views expressed in this policy note are those of the author and do not necessarily represent the views of the European Central Bank and the Eurosystem.

*Risks stemming from these developments are diverse and start from the **limited understanding** of the features and implications of these assets on the part of investors. Under the right conditions, these vulnerabilities may scale up and eventually have negative implications for financial stability through different channels. In order to address these concerns, various initiatives are under way both at international (FSB, BCBS, CPMI, IOSCO, FATF) and at European scale (MiCA...). In any event, beyond the difficulties inherent to any work involving international coordination, the task at hand is, for different reasons, particularly complex.*

The recent buoyancy and potential consequences of a broader use of crypto-assets calls for public authorities to monitor, regulate and supervise these markets more closely, thus issuing warnings and providing objective information to potential consumers and investors about the associated risks. We must further consider how to best accommodate our current legal and regulatory frameworks to deployed safeguards equivalent to the existing ones. In order for these actions to be effective and efficient, cooperation with international and inter-institutional players is a prerequisite that will further ensure to avoid that fragmentation and arbitration are avoided to the greatest extent possible.

Financial stability and crypto-assets

Despite being a somewhat misleading term, so-called “virtual currencies” have already been part of our lives for over a decade now. However, only in recent times a series of factors have emerged that seem to be underscoring their ultimate potential to end up playing a significant role in the financial system.

Beyond their likely contribution to, e.g., making payments more efficient or to driving innovation in financial markets, crypto-assets pose a number of important risks for the financial stability which could, eventually, become an material source of concern for relevant authorities if not accompanied by effective mitigation measures, as emphasised in the G20 communiqué of 18 February.¹

This short article explores first the defining characteristics of these digital assets as well as their latest developments. It then reflects on the specific threats that their widespread use may entail for financial stability before closing with some references to the most distinctive elements that are currently shaping the response of regulators and supervisors alongside the challenges faced by the latter.

The complex universe of crypto-assets

The term crypto-asset is oftentimes used to refer to a wide range of highly heterogeneous assets whose common trait is that they are a digital representation of value or a set of contractual rights. In contrast with other digital assets already in circulation, they rely on distributed ledger technology (DLT) to be transferred, traded and stored. In addition, unlike central bank digital currencies (CBDCs), they are not backed by a central bank or any other public authority.

To simplify somewhat, they can be said to share certain standard technical features, such as (i) a decentralised ledger, (ii) the use of encryption techniques to secure communications over open networks, and (iii) the deployment of protocols that allow to automatically execute different types of transactions.

¹ <https://g20.org/documents/>

However, the commonalities end there. With over 16,000 existing tokens² (around ten new crypto-assets are estimated to be launched every day on average) the digital asset space exhibits sheer amplitude and a gigantic functional and operational disparity.

When analysing crypto-assets, one practical approach is to classify them in accordance with what apparently is their declared main purpose. As a result, broadly speaking, three different groups may be distinguished.

The first one comprises those assets whose primary objective is to serve as a medium of payment or exchange. These are loosely labelled as “**virtual currencies**”, and they frequently fall outside the prevailing regulatory framework, except where specifically referenced in new or existing provisions, such as the case of Germany or France.³

The second group covers instruments designed to help raise capital from investors. Specific procedures are organised to this end, known as **Initial Coin Offerings**.⁴ Investors receive tokens substantiating their legal claim to participate in any potential increase in the future value of, or returns on, businesses or specific projects. Alternatively, these may be structured to confer rights equivalent to those of other financial instruments. As they largely overlap with marketable securities, usually sectoral regulations which are already in place apply.

The third cluster encompasses so-called **utility tokens**, which act as electronic coupons that can be exchanged for future services, products or benefits marketed through the issuer’s own platform. The very capital raised from the sale of these tokens will then be used to fund the development of the forthcoming products or services. In principle, provided their amount remains limited, these will be subject to regulations on consumer protection, online trading, data protection and business operations, but not financial ones.

An alternative taxonomy, distinguishes between traditional crypto-assets and “**stablecoins**”. In an attempt to reduce their volatility, the latter are usually backed by other real or virtual assets as a means of collateral, be they fiat currencies, securities or other types of commodities.

Furthermore, “**non-fungible tokens**” are a particular subtype of crypto-assets that also worth singling out. These tokens are unique and indivisible, making them particularly appealing to represent artwork or immovable property, for example.

Lastly, we should also bear in mind the world of **decentralised finance** (DeFi), which aims to replicate the dynamics of the provision of financial products and services, but in a decentralised and fully automated environment, thus removing the need for intermediaries.

With such a wealth of initiatives, the **significant developments** experienced by crypto-asset markets in recent times may come as no surprise. In particular, total capitalisation grew very markedly until reaching a peak of \$3 trillion in November 2021, three times higher than the previous all-time high of 2017. Yet, in aggregated terms this market still only represents around 1% of the global financial system.

² According to information available at [Coinmarketcap.com](https://coinmarketcap.com).

³ Bitcoin is the most notable example.

⁴ A couple of years ago the connected cars platform Next became the first company to be authorised to undertake such a round of financing in Spain.

Another interesting feature of this period was the fact that trading volumes for some of the most representative assets types (including bitcoin, ether and tether) came, occasionally, close to those of the New York Stock Exchange (somewhere in between 70% and 95%). In any event, their high volatility is striking, as borne out by a cumulative loss of value of close to 40% in recent months.

Moreover, **interconnections with the rest of the financial system** have increased substantially. One such example is the sudden rise in the number of crypto-asset investors (both institutional and retail). In addition, the range of sophisticated products around crypto-assets expanded, with a growing portfolio of exchange-traded funds (ETFs),⁵ investment funds and futures contracts referenced to crypto-assets. The latter was key to attracting new investor cohorts to the digital assets' space.⁶

What's more, some large private firms did publicly announce their interest in using crypto-assets for cash management purposes, while others were campaigning in favour of their wide acceptance as a means of payment.⁷ Some major financial players, such as global banks and international card service providers, have enlarged the selection of ancillary services around digital assets (including custody and trading services) which they offer or have allowed them to be used directly as a medium of exchange in their proprietary networks.

Turning to decentralised finance, while still in its early stages, this market segment has proven stamina as it quadrupled its size in just one year.⁸ What's more, other parts of the crypto-asset ecosystem echoed this movement. For instance, the need for collateral tailored to this environment spurred demand for certain types of digital assets. The same can be said about certain investment strategies, known as yield farming, which support the automated lending or borrowing of crypto-assets in order to underpin DeFi's markets liquidity.⁹

Risks to financial stability

The above developments have caused a number of valid concerns among financial authorities. For instance, the Financial Stability Board (FSB) recently stressed that, if not properly regulated and supervised, these markets could quickly reach an inflection point where they start posing serious threats to global financial stability¹⁰.

Such risks are diverse in their origin. They may, e.g., arise as a result of a **limited understanding** by investors on the actual features and implications of these assets.¹¹ By way of example, a recent research from the UK's

⁵ ETFs are investment instruments that function as a hybrid between funds and shares. Their defining characteristic is that they can be traded and settled in straightforward stock exchange transactions much like shares.

⁶ A case in point is the Chicago Mercantile Exchange, which in October 2021 became one of the first to launch a bitcoin ETF. It surpassed the \$1 billion mark in just two days, making it the fastest growing ETF in history.

⁷ For instance, Expedia, Tesla and Microsoft.

⁸ See "Understanding digital bubbles amidst the COVID-19 pandemic: Evidence from DeFi and NFTs". Y. Maouchi, L. Charfeddine and G.E. Montasser (2021), *Finance Research Letters*.

⁹ The idea behind this strategy is to incentivise investors to lend their crypto-assets to a pool that helps provide liquidity to decentralised finance systems, while offering potential investors the highest possible returns at all times. To simplify somewhat, this strategy is structured around smart contracts that select which environment each of the pooled assets will be sent to at any given moment to optimise economic returns for their rightful holders.

¹⁰ See "Assessment of Risks to Financial Stability from Crypto-assets". FSB (2021).

¹¹ This extends to all matters concerning compliance with the tax obligations associated with investing in these markets. With this in mind, Spain has announced new reporting obligations that are expected to enter into force in 2023. The treatment of such assets for the purposes of the various different taxes has to date been resolved in the form of requests for binding rulings from the Directorate General of Taxation.

Financial Conduct Authority (FCA) showed that around 20% of crypto-asset owners assumed an equivalent level of customer protection as with traditional banking products.¹² An OECD study reached similar conclusions for the Asian market.¹³

In this regard, it is worthwhile mentioning initiatives such as the recent publication of a Spanish National Securities Market Commission (CNMV) Circular regulating the advertising of crypto-assets. By emphasising the need to highlight the associated risks, including the possible loss of the entire investment, it can prove to be an effective tool to address the above frictions.¹⁴

A second source of risk stems from the potential impact of crypto-assets on the smooth functioning of **financial markets**. Broadly speaking, wild swings in their prices may sway investor sentiment, triggering an overreaction that ends up influencing their behaviour in other markets. Equally, the need to respond to such volatility with frequent adjustments to the necessary collateral could precipitate sales of other asset classes. Indeed, the IMF has recently warned of a notable increase in the positive correlation between crypto-asset and capital markets, which has in certain cases increased by a factor of 35.¹⁵

These effects may be further aggravated in the event that alternatives such as stablecoin scale up. Specifically, an accumulation of redemption requests resulting from, for instance, widespread panic around such assets, could put money markets under strain and, by extension, spread to those institutions acting as custodians of the hedging assets.

Further, these tensions could spill over into payment systems, as they would be forced to handle a very significant rise in transaction volumes that, in certain circumstances, could lead to delays in execution or even bring services to a standstill.

A third source of vulnerability has to do with the **impact on the banking sector**. Crypto-assets represent a new competitive threat for traditional transactional services, with some variants (such as stablecoins) also potentially compromising deposit-taking activities as they intend to become a store of value. Moreover, any rise in banks' direct and indirect exposure to crypto-assets would also increase both their financial and reputational risks¹⁶. While currently limited, exposures relating to the provision of ancillary services, to the distribution of third-party products or as a result of providing support to clients operating in the crypto sphere are on the rise.

Fourth, the potential consolidation of crypto-assets as an alternative payment method threatens to create **parallel value transfer systems**. For as long as such assets fall out of the scope of central bank oversight, they will be hard pressed to contain the emergence of possible systemic risks. In certain circumstances (particularly in emerging markets), there may be even a risk of what is known as "cryptoisation": i.e. the replacement of the

¹² See "Research Note: Cryptoasset consumer research 2021". FCA (2021).

¹³ Specifically, even though half were University graduates, almost two thirds of the crypto-asset owners interviewed admitted to having limited or zero understanding of the most basic features of the associated risks and rights. See "Cryptoassets in Asia: consumer attitudes, behaviour and experiences". OECD (2019).

¹⁴ CNMV Circular 1/2022 of 10 January 2022.

¹⁵ See "Cryptic Connections: Spillovers between Crypto and Equity Markets". Iyer, T. (2022), IMF Global Financial Stability Notes, No. 2022/01.

¹⁶ Investment in or proprietary trading of crypto-assets or the purchase of structured products in which they are an underlying asset would appear to be the most common means by which they are incorporated onto banks' balance sheets.

national currency and other financial assets denominated in that currency with a crypto alternative.¹⁷ Among other aspects, such circumstance can compromise a country's monetary autonomy and undermine the ability to exercise effective control over international capital movements.¹⁸

Fifth, we should also be mindful that some crypto-assets could increase **the financial sector's climate transition risk**, given that some of the underlying consensus mechanisms require a significant amount of energy. To put this more clearly, proof-of-work associated crypto-assets currently account for around 80% of the total capitalisation value. In certain cases, their carbon footprint is as large as the one of 15.5 million petrol cars in a year.¹⁹ Hence, by selling or investing in these digital assets, banks undertake serious risks.

Lastly, since crypto assets can also be used for **unlawful activities, including money laundering**, financial integrity concerns follow. On account of the fact that transactions are performed through non-standard payment systems and their heightened degree of anonymity, such risks could be larger. This explains the Financial Action Task Force's (FATF) commitment on continuously adapting applicable international standards. Nonetheless, since this initiative is rather novel, only a few countries have already implemented said framework effectively.²⁰

Designing an appropriate response framework

These risks call for an urgent response on behalf of regulatory and supervisory authorities. Given the global nature of such initiatives and the sheer number of agents involved, these actions would bear best results when coordinated both internationally and across sectors. The following paragraphs, delve into some of the initiatives currently under way along those lines.

At a **global level**, what started out with the regular monitoring of such initiatives became, in 2020 and at the behest of the G20, a multilateral regulatory response from the **FSB**.²¹

The FSB first released a report setting out high-level recommendations for the regulation and supervision of so-called "global stablecoins" (i.e., those operating across multiple jurisdictions and in widespread use). Flexible and proportionate to the risks, this approach seeks to minimise the possibility of arbitration while adhering to the "same business, same risk, same rules" principle.

The FSB recommends using the existing international rules and standards, albeit adapted in practice to the services provided and the features and risks of global stablecoins. It highlights the importance of ensuring suitable governance and proper transparency around these products for users and the market, including, in particular, whether or not users enjoy redemption rights against the issuer or the reserve assets. It also stresses that the authorities should not allow such arrangements to be launched before confirming that all of the relevant requirements have been met.

¹⁷ In certain cases (e.g. El Salvador), this state of affairs is deliberate.

¹⁸ See "Cryptoassets as National Currency? A Step Too Far". T. Adrian and R. Weeks-Brown (2021), IMF blog, 26 July.

¹⁹ See "*Hearing on Cleaning Up Cryptocurrency: The Energy Impacts of Blockchains*". US House of Representatives Committee on Energy and Commerce (2022).

²⁰ See "*Supervising cryptoassets for anti-money laundering*". R. Coelho, J. Fishman and D. Garcia Ocampo (2021), FSI Insights on policy implementation, No 31.

²¹ <https://www.fsb.org/2020/10/regulation-supervision-and-oversight-of-global-stablecoin-arrangements/>

In any event, the FSB continues to work both on identifying and resolving possible regulatory gaps relating to global stablecoins and on regulatory approaches relating to unbacked crypto-assets, such as bitcoin.

In addition, the Basel Committee on Banking Supervision (**BCBS**) launched a consultation last year on a proposal for the prudential treatment of banking exposures to crypto-assets.²² The proposal classifies these exposures taking into account their risk, based on certain conditions that include the existence of value stabilising mechanisms and redemption rights, the security of the technological platform where they operate and regulatory requirements for network agents performing critical functions.

Specifically, two groups are distinguished, resulting in different capital requirements. The first one includes certain tokenised traditional assets, which would be subject to the same prudential treatment that applies to traditional assets insofar as they confer the same legal rights. These rules would also apply to stablecoins whose requirements would be set on the basis of the risk of valuation differences in the reserve assets and the risk of failure to comply with redemption commitments. The second group comprises assets that generate a greater risk. These would be subject to a new conservative prudential treatment, which establishes a weighting of 1,250%, the most penalising one within the Basel framework, not allowing the recognition of hedging to calculate their exposure.

After analysing the comments received, the Committee is currently revising the proposal and will foreseeably publish a second consultation document in mid-2022. This review takes into account the importance of developing a conservative risk-based minimum standard at international scale.

Finally, the Committee on Payments and Market Infrastructures (**CPMI**) and the International Organization of Securities Commissions (**IOSCO**) have also been discussing crypto-assets for some time now. For instance, a consultative report was recently published which reinterprets the standards applicable to the traditional financial market infrastructures and have them extended to systemically important stablecoins.²³

At European scale, a regulation known as Markets in Crypto-Assets (MiCA) is under development. Its goal is to establish a regulatory framework and a common supervisory architecture²⁴ applicable to both issuers and providers of crypto-asset services. In essence, MiCA, which would not apply to the monetary authorities, aims to regulate those crypto-assets which, owing to their characteristics, cannot be equated to other financial products for which there is already legislation.²⁵

²² <https://www.bis.org/bcbs/publ/d519.pdf>

²³ In essence, this exercise largely equates the transfer mechanisms of stablecoins to those used by payment systems and proposes that they be subject to a subset of principles that the latter must already comply with. In particular, it places emphasis on ensuring an adequate governance model and on the effective management of the risks which the particularities of stablecoins might pose to their function as a payment infrastructure.

²⁴ As regards the supervisory architecture, it is proposed that the issuer authorisation, the white paper or reporting document that the issuer must submit and the authorisation to provide crypto-asset services fall under the remit of the national competent authorities (NCAs). NCAs also supervise issuers, unless the e-money tokens and asset-referenced tokens are considered significant, in which case the EBA and a college of supervisors have supervisory responsibilities. Lastly, NCAs are responsible for supervising crypto-asset service providers.

²⁵ Neither does it apply to non-fungible crypto-assets, i.e. basically those with unique characteristics or functions that cannot be immediately exchanged with other crypto-assets and whose value cannot be determined with reference to an existing market or other equivalent assets.

Thus, there are three types of crypto-assets whose issuance is regulated: e-money tokens,²⁶ asset-referenced tokens²⁷ and other crypto-assets. The first two aim to maintain a stable value by reference to an official currency or another asset, respectively. They are similar to stablecoins and may be classified as significant when certain criteria are met or certain thresholds are exceeded. To regulate their issuance, rules are introduced for each of them in connection with their authorisation, organisation, governance and supervision and the drafting of the white paper. The proposal includes different rules for crypto-asset service providers,²⁸ including rules on prudential (own funds, insurance policy), organisational and customer information matters, and on fund safekeeping, conflicts of interest and outsourcing.

Over and above these practical examples of successful international cooperation, a number of important challenges arise which make this coordination effort oftentimes complex.

First, the buoyancy of crypto-asset markets frequently defies the scope and timeliness of any potential regulatory response. By way of example, decentralised finance and non-fungible tokens have only recently taken the foreground in the discussions to held among financial sector authorities in the coming months.

Second, the decentralised nature of the initiatives sometimes makes it difficult to identify a counterparty that could be held responsible for compliance or with whom to engage in an active and fruitful dialogue. This problem is exacerbated by the absence of a clear jurisdictional framework.

Third, given the complexity of these assets and their associated risks, it is difficult to identify and coordinate the different relevant (not only financial) regulators and supervisors, even within each country.

Finally, there are important information shortcomings, not only in quantitative terms, but also as regards the reliability and consistency, deriving from (i) the global nature of the issue, (ii) the fact that a large part of the activity takes place outside the regulated environment, and (iii) the growth of off-chain operations,²⁹ which limits the level of detail to which the platform itself has access.

Conclusions

In short, given the recent buoyancy and potential risks of the crypto-assets market, as public authorities we are required to monitor, regulate and supervise it more closely, providing warnings and ongoing information to users about the associated risks. In order for it to be effective and efficient, this must be done in very close cooperation with international and inter-institutional players, to avoid the fragmentation and arbitration that would ultimately lead to insufficient mitigation of the risks and vulnerabilities associated with these markets. ■

²⁶ Crypto-assets that are used as a medium of exchange and aim to maintain a stable value by referring to the value of a country's official currency. They are considered electronic money.

²⁷ Crypto-assets other than e-money tokens, which aim to maintain a stable value by referring to any other value or right, or a combination thereof, including one or several official currencies.

²⁸ They may provide the following services: custody and administration of crypto-assets on behalf of third parties, operating a trading platform, exchange of crypto-assets for funds or other crypto-assets, execution of orders, placement, reception and transmission of orders relating to crypto-assets on behalf of third parties, providing advice and managing crypto-asset portfolios.

²⁹ Off-chain transactions are conducted outside the blockchain, often with the goal of making them faster and reducing associated costs, as they use different validation procedures. In some cases, they return subsequently in aggregate form to the decentralised ledger.

About the author

Pablo Hernández de Cos is Governor of the Banco de España and member of the Governing and General Council of the European Central Bank. He is Chair of the Basel Committee on Banking Supervision (BCBS). He is Chair of the Advisory Technical Committee (ATC) and member of the Steering Committee of the European Systemic Risk Board (ESRB). He is also member of the Financial Stability Board (FSB), of the BIS Group of Governors and Heads of Supervision, of the Advisory Board of the Financial Stability Institute (FSI) of the BIS and of the Center for Latin American Monetary Studies (CEMLA). He is Vice-Chairman of the Board of the Macroeprudential Authority Financial Stability Board (AMCESFI). He is also President of the Board of Trustees of Centro de Estudios Monetarios y Financieros (CEMFI). From 2015 to 2018 he was Director General for Economics, Statistics and Research of the Banco de España and Alternate to the Governor on the Governing Council of the European Central Bank. Between 2017 and 2018 he was a member of the Economic and Financial Committee of the European Union. Prior to that he headed the Economic Policy Analysis Division at the Banco de España and chaired the European Central Bank's Public Finances Working Group. He holds a PhD in Economics from the Complutense University of Madrid, a degree in Economics and Business Studies from CUNEF and a degree in Law from UNED.

SUERF Publications

Find more **SUERF Policy Notes** and **Policy Briefs** at www.suerf.org/policynotes



SUERF is a network association of central bankers and regulators, academics, and practitioners in the financial sector. The focus of the association is on the analysis, discussion and understanding of financial markets and institutions, the monetary economy, the conduct of regulation, supervision and monetary policy. SUERF's events and publications provide a unique European network for the analysis and discussion of these and related issues.

SUERF Policy Notes focus on current financial, monetary or economic issues, designed for policy makers and financial practitioners, authored by renowned experts.

The views expressed are those of the author(s) and not necessarily those of the institution(s) the author(s) is/are affiliated with.

All rights reserved.

Editorial Board:
Natacha Valla, Chair
Ernest Gnan
Frank Lierman
David T. Llewellyn
Donato Masciandaro

SUERF Secretariat
c/o OeNB
Otto-Wagner-Platz 3
A-1090 Vienna, Austria
Phone: +43-1-40420-7206
www.suerf.org • suerf@oenb.at