Foundations for Innovative and Resilient Capital Markets – Opening remarks from Deputy Governor Vasileios Madouros

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Keynote address at the annual conference of the European Capital Markets Institute[1]

Good morning. It is a pleasure to join you today for the annual conference of the European Capital Markets Institute.

I will start today with something that might seem a little removed from capital markets. And that's LEGO: a product that has inspired generations of children (and adults) to build everything from trucks to 35-meter-tall towers.

What makes LEGO so remarkable is not the sophistication of any individual brick. It is how they connect with each other. That 'integration by design' has been a core foundation supporting creativity and innovation over decades.

But there is also another lesson from LEGO. Anyone who has tried to build an elaborate LEGO structure will know that connecting the pieces together is only half the battle. The other half is making sure that the structure itself stays standing. That also requires strong foundations, but of a different kind. Foundations that support resilience and stability.

Today, I want to talk about foundations in capital markets. Two marked, and inter-related, shifts are shaping the future of finance and require a strategic response from Europe. The first is the emergence of tokenised finance. The second is the continued expansion of non-bank finance. The common thread running through these is building foundations that support integration, resilience, innovation and trust in our capital markets.

Tokenised finance: what foundations are needed to scale safely and effectively?

Let me start with the emergence of tokenised finance. At its core, tokenisation is about the underlying 'plumbing' of finance – and the use of shared, programmable ledgers across the financial system. But the implications of tokenisation are much broader than the 'plumbing'.

Tokenised finance offers the potential for faster settlement, reduced counterparty exposure, 24/7 availability and lower costs, making existing financial services more efficient. And it could also enable the emergence of entirely new services, meeting the evolving financial needs of households, businesses and the broader economy.

In a European context, there is a further possible benefit of tokenisation. Done well, it can strengthen integration of our capital markets. Imagine, for example, if Europe's multiple CSDs used shared or interoperable ledgers. This could materially reduce fragmentation at the infrastructure level. Or imagine if the use of shared ledgers made tokenised securities more portable, reducing the cost of market-making across borders and deepening liquidity. These are real possibilities that could be enabled by an integrated, next-generation infrastructure, addressing what has proved to be persistent and costly fragmentation of our capital markets.

Here's the catch though: technology alone will not deliver these benefits. That requires an evolution of the monetary, legal, regulatory and operational arrangements that underpin trust and resilience in finance. And, like LEGO, the pieces must fit together to support integration.

With tokenised finance moving rapidly beyond experimentation towards live applications, the Central Bank published a Discussion Paper in March and engaged with a broad range of stakeholders to inform our thinking on the core foundations needed for tokenisation scale to safely and effectively.[2] So let me turn to these.

Advancing the monetary foundations

I will start with the monetary foundations. As you know, central bank money is the safest, most liquid asset in any economy. Because of that inherent quality, it plays an anchoring role, safeguarding resilience and trust, especially through its use as the ultimate settlement asset for wholesale financial transactions. Maintaining that anchoring role in the emerging tokenised ecosystem is necessary for tokenisation to scale safely and effectively[3] – something that market participants themselves have been emphasizing in our engagements.

Here, the Eurosystem is progressing at pace. Already from September, it is possible to settle wholesale, on-chain transactions in central bank money, under a solution called "Pontes". And this is just the beginning of the journey. The Eurosystem's "Appia" project is taking a whole-of-system approach, supporting the development of a future-ready, innovative and integrated tokenised ecosystem in Europe, through a public-private partnership.[4]

The monetary foundations extend beyond the evolution of central bank money. They also relate to the acceptance of tokenised assets as collateral by the central bank. Indeed, a technology-neutral approach implies focusing on the economics of the collateral accepted, not the technological form in which it is being represented. Again, the Eurosystem has already taken initial steps in that direction – and is working to explore how that could evolve further over time.[5]

Providing the legal and regulatory foundations

The second foundation is legal and regulatory clarity. That is essential, first and foremost, to safeguard resilience and trust in finance. But it is also an important foundation for the private sector to be able to innovate with confidence, having clarity over the rules of the game.

Europe has, and is continuing to make, progress in this area. MiCAR was the first of its kind at a global level. The Markets Integration and Supervision Package is, amongst others, addressing the critical question of settlement finality of transactions on DLT infrastructures. And it is also advancing welcome amendments to the DLT pilot regime.

Still, there are further areas where legal clarity is required. A tokenised security needs a legally authoritative on-chain record of ownership. The legal status of a smart contract needs to be clarified. At the moment, some of that remaining legal clarity is being progressed at a national level across Europe. As that happens, it is important to avoid creating legal inconsistencies, which could add to European fragmentation under the next-generation infrastructure.

Beyond legal clarity, there are also open questions from a regulatory perspective. The guiding principle shaping our response to tokenised finance should be "same activity, same risk, same regulatory outcome." Again, such an approach focuses on the economics of the activity, rather than the technology used (unless the way the technology is used also changes the economics). That has also been an emerging theme in our engagement with stakeholders: an entirely separate regulatory framework for tokenised finance is neither necessary, nor desirable.

Of course, that does not mean that regulation itself does not need to adapt. How do we think about operational resilience in the context of underlying DLT infrastructures with decentralised governance? How do custody rules need to evolve when considering private key custody? How does fund liquidity management need to adapt, when liquidity management tools have typically been designed to operate within traditional dealing and settlement cycles?

These are important questions, and how we approach them matters. Amid rapid financial innovation, regulators and supervisors face a trade-off. Providing clarity is important, but we also need to avoid premature regulatory prescription, while the architecture is still evolving. Navigating that trade-off requires agility.

In recognition of that, last week, the Central Bank announced that we will launch a more pro-active approach to engaging with the ecosystem, through a series of time-bound sprints, working with the sector on particular aspects of the evolution of tokenised finance that require deeper exploration.[6] We will also launch a Tokenisation Access Point, providing a clearer route for market participants to engage with us on the evolving landscape, including on questions around the application of existing rules and frameworks. These mechanisms will allow us both to anticipate emerging policy questions and respond in a flexible and agile manner.

Progressing interoperable tokenised bank deposits

The third foundation relates to tokenised private money. Any security transaction entails a cash leg. Indeed, a key message that emerges from our engagement with market participants is that – for tokenised finance to scale – the evolution of tokenised private money is key. Here, the current state of play is dominated by two forms of on-chain private money: stablecoins (on open, permissionless networks) and non-interoperable tokenised deposits (on financial institutions' proprietary ledgers). What is missing are interoperable, tokenised deposits.

This is an area where the private sector in Europe needs to take up the baton and lead. At a global level, there are now initiatives in that direction. In the US, The Clearing House has launched an initiative to enable banks to clear and settle tokenised deposit transactions with each another. In the UK, the Great British Tokenised Deposit initiative is convened by UK Finance and involves major UK banks. In Korea, the exploration of interoperable tokenised deposits is progressing through Project Hangang. There are also emerging initiatives in Europe, but further momentum is needed. And the focus needs to be squarely on 'interoperability by design', at a pan-European level.

Public sector issuance as a catalyst

Finally, let me turn to the role of the public sector as an issuer. Sovereign debt securities are the benchmark safe asset in the financial system, they are a core source of collateral, and they enable monetary policy implementation and transmission. So, progress towards tokenising sovereign bonds is itself an important foundation for the shift towards tokenised finance. Indeed, our engagement with the market suggests that collateral mobility and tokenised repo are amongst the most promising applications of DLT in wholesale finance.

At a global level, jurisdictions are exploring or progressing tokenised public sector debt issuance. In Europe, only a few weeks ago, the ESM issued the first DLT-based benchmark bond by a European supranational issuer, settled through Pontes. And there has also been tokenised bond issuance by governments in Slovenia and Luxembourg. Looking ahead, there is an opportunity for European public sector issuers to advance issuance of tokenised sovereign securities (or to tokenise existing securities), settled on Pontes. This would both provide the market with high-quality tokenised collateral and act as a catalyst for private sector issuance.

In summary, the shift towards tokenised finance requires a strategic response from Europe. Done well, that shift can help us modernise, integrate and deepen our capital markets. The Eurosystem is advancing the evolution of the monetary foundations. That is necessary, but not sufficient – which is where Appia comes in. A system-wide approach is needed, with a clear focus on connectivity and integration. Just like LEGO pieces are designed to fit together.

The growth of non-bank finance: how does Europe respond?

While LEGO's strength is the connectivity of the pieces, once they form into a larger structure, they also become interdependent. If one section is not sufficiently supported, that could have implications for the resilience of the whole system. The same is true of finance. So let me turn to the second structural shift shaping finance: the growth of non-bank financing.

As you know, non-banks are core to the functioning of capital markets. They comprise a very diverse set of entities, and their role in global and European finance has been steadily expanding over time. In the euro area, for example, the share of total financial sector assets held by non-banks has risen from around 35% in the early 2000s, to around 55% now.

Looking ahead, as the role of capital markets financing in Europe grows, the systemic footprint of the non-bank sector is also likely to expand further. To be clear, a greater diversification in the sources of financing of the European economy would have several macro-financial benefits. But, for those benefits to be realised and sustained, this source of financial intermediation needs to be robust enough to withstand adverse shocks.

There is also a clear interaction between tokenisation and non-bank finance. By enabling collateral to move with fewer frictions across institutions and markets, tokenisation could transform how non-bank entities access and manage liquidity, increasing efficiency. But greater and faster collateral mobility can be a double-edged sword: it could also facilitate higher leverage and accelerate the transmission of liquidity shocks across the financial system.

In that context, our financial stability frameworks cannot stand still. So, as Europe works to strengthen the role of capital market in financing our economies, we also need to enhance our frameworks for identifying and, if needed, addressing vulnerabilities in the non-bank sector. To achieve that, let me cover three foundations, which I think should guide our response.

Adapting our financial stability surveillance frameworks

First, adapting our financial stability surveillance frameworks. In my view, an important priority here is strengthening our ability to assess the *resilience of core markets*. Ultimately, it is the functioning of markets that matters for the provision of financial services – whether it is the sovereign bond market, the repo market, or the corporate bond market.

We have already developed our frameworks for assessing whether the banking sector would have the ability to maintain the provision of credit in times of stress. We should now increasingly develop our approach to assessing whether *markets* could maintain the provision of financing when shocks hit.

That requires taking a system-wide lens. Almost by definition, market functioning depends on the activities of several market participants. Put differently, this is not about whether individual financial institutions are robust enough to withstand a shock, but how market functioning would be affected by their collective responses in a stress. The Bank of England has been going in this direction, through its system-wide exploratory scenarios.[7] The Bank of France has also been conducting a similar exercise.[8] While more complex to achieve in Europe as a whole, this is an avenue we should aim to progress.

Achieving that also requires progress on data sharing. Central banks and regulators across Europe already collect substantial amounts of data on non-banks. But the foundations are not there to share that information across relevant authorities. That prevents us from collectively building a picture of the risks to, and resilience of, European capital markets. We should unlock that potential, reducing duplication for industry and strengthening our collective surveillance.[9]

Strengthening the regulatory framework for non-bank finance

The second foundation relates to regulatory framework for non-bank finance, which also needs to evolve. An important starting point here is implementation of reforms that have been agreed at an international level by the FSB and IOSCO. These reforms were in response to different episodes of stress in recent years, which revealed underlying vulnerabilities in segments of the non-bank sector, with implications for market functioning.

One area where there has been welcome progress recently is on money market funds. Following a period of consultation, the Central Bank of Ireland, the CSSF and the AMF, in coordination with the European Commission, agreed supervisory guidance around higher levels of liquidity – and the useability of that liquidity – for European money market funds.[10]

But there are other areas where internationally-agreed reforms have not yet been implemented in Europe fully. One relates to the FSB's recommendations on open-ended funds, including in relation to the classification of funds by asset liquidity. Another relates to the FSB's recommendations on non-bank leverage.

In Ireland, given the nature of the financial sector, we have been taking concrete steps to safeguard resilience of non-bank finance. For example, consistent with the FSB recommendations, we have focused not just on the availability, but also the use – and consistency of use – of liquidity management tools by open-ended funds.[11] And we have introduced measures to guard against leverage-related vulnerabilities in LDI funds and property funds.[12] These have been targeted, tailored and risk-based interventions, supporting resilience, while activity in the sector has continued to expand.

Of course, strengthening the regulatory framework for non-bank finance needs to progress in a manner that is consistent with the wider regulatory simplification agenda. But that is not a contradiction. Simplification does not mean no new initiatives in regulation and supervision.[13] If they are to remain fit for purpose, our frameworks must be able to evolve alongside the financial system.

Advancing our crisis management toolkit

Finally, let me turn to crisis management. Because the only thing we know with certainty in this increasingly uncertain world is that shocks *will* hit. So how can we enhance our collective preparedness? There are different dimensions here, some more challenging than others.

One relates to authorities' powers to deal with failing financial institutions. In recent years, we have made progress in developing crisis management frameworks beyond banks, to also cover insurers and CCPs. That is positive, but is it enough? That is a question we explicitly asked ourselves at the Central Bank of Ireland a few years ago. At the time, we concluded that one gap in the toolkit relates to liquidation powers to deal with failing non-bank payment providers.[14] A similar question arises for non-bank stablecoin issuers.[15] While there has been progress on the supervisory framework for these entities, crisis management frameworks also need to advance.

Another dimension relates to the provision of central bank liquidity. This is more challenging. Our frameworks in Europe are geared towards providing liquidity to the banking system. That can also indirectly support market functioning in a stress. But other jurisdictions – like the UK and Canada – have also introduced contingent facilities to provide liquidity to certain non-banks.[16] Is this a direction that we should pursue in Europe? I will not attempt to answer that question today, and there are clearly trade-offs, including in terms of risks to the central bank's balance sheet and the potential for moral hazard, unless the regulatory and supervisory framework that applies to non-banks evolves further.[17] But I think it is one of the questions – alongside others – that deserves consideration in the years ahead, as the financial system continues to evolve.

Conclusion

Let me conclude, with three main messages. First, Europe's capital markets have tremendous potential, but fragmentation is holding them back. We must unlock that potential. Second, tokenisation and non-bank finance are interconnected shifts shaping the future of finance. Europe needs a strategic response to harness the benefits of innovation, while safeguarding financial stability. Third, that requires foundations that enable both integration and resilience – just like LEGO pieces must both connect seamlessly and form stable structures. Thank you.

[1] I am very grateful to Sean O'Sullivan for his advice and assistance with preparing these remarks and to Rosemary Hanna, Neill Kileen, Rory McElligott, Anne Marie McKiernan, Cian O'Laoide, Ray O'Connell and Paul Reddan and for comments and suggestions.

[2] See Central Bank of Ireland (2026) 'DLT and tokenisation in financial services (PDF 1.37MB)'.

[3] See, for example, Cipollone (2026), 'From vision to delivery: building Europe's tokenised financial market'; and Duffie (2026) 'Tokenized Finance and the perimeter of central banking'.

[4] See ECB (2026), 'Appia – paving the way for a future-ready, integrated financial ecosystem leveraging tokenisation and DLT'.

[5] See ECB (2026), 'ECB paves way for acceptance of DLT-based assets as eligible Eurosystem collateral'.

[6] See Makhlouf (2026) 'Economic transitions: technology'; and Central Bank of Ireland (2026) 'Feedback Statement on DLT and tokenisation in financial services (PDF 0.99MB)'.

[7] See Bank of England (2025) 'The Bank of England's system-wide exploratory scenario exercise: final report'.

[8] See Banque de France (2026) 'System-wide stress test: interim report'.

[9] See ECB (2026) 'Strengthening the macroprudential lens in the regulation of non-bank financial intermediation', available here.

[10] See Central Bank of Ireland (2026) 'Money market fund weekly asset levels: Guidance (PDF 509.57KB)'.

[11] See Central Bank of Ireland (2026) 'Good Practices on incorporating implicit costs into the calibration of price-based LMTs (PDF 307.7KB)'.

[12] See Central Bank of Ireland (2022) 'The Central Bank's macroprudential policy framework for Irish property funds (PDF 461.08KB)'; and Central Bank of Ireland (2024) 'The Central Bank's macroprudential policy framework for Irish-authorised GBP-denominated LDI funds (PDF 379.32KB)'.

[13] See McMunn (2025) 'Through the cycle – regulation and supervision in an uncertain world'; and Donnery (2026) 'If time stood still: regulatory modernisation and financial stability'.

[14] Under Ireland's National Payment Strategy, the Department of Finance, following input from the Central Bank, will examine the need to provide the Central Bank with liquidation powers in relation to payment firms.

[15] See Laboureix (2026) 'Strengthening the crisis-preparedness community in an interconnected world'.

[16] See Chen at al (2025) 'The contingent term repo facility: Lessons learned and an update', Bank of Canada Staff Analytical Note; and Bank of England (2025) 'Bank of England opens New Contingent Non-Bank Lending Facility for applications'.

[17] For a broader discussion, see BIS Markets Committee (2022) 'Market dysfunction and central bank tools', available here; and De Cos (2026) 'The role of central banks in managing financial crises in times of rapid change'.