Christine Lagarde: Technology as a new frontier for macroprudential policy

Welcome address by Ms Christine Lagarde, President of the European Central Bank and Chair of the European Systemic Risk Board, at the eighth annual conference of the European Systemic Risk Board, Frankfurt am Main, 26 September 2024.

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I would like to welcome all of you to the eighth annual conference of the European Systemic Risk Board (ESRB).

The theme this year – "New Frontiers in Macroprudential Policy" – challenges us to rethink the ways in which we ensure financial stability in an evolving world.

Traditionally, macroprudential policy has focused on safeguarding the stability of banks, particularly by addressing boom-bust cycles in real estate. Banks continue to hold significant exposures to the real estate sector, and this remains a core area of our oversight.

But today our world is undergoing swift and profound changes.

While we must remain alert as ever to cyclical risks, major structural transformations – from shifting geopolitics to a changing climate and extraordinary advances in technology – are creating new frontiers in macroprudential policy. These have important implications for financial stability that are not yet fully reflected in our current frameworks.

Today I would like to focus on what one of those frontiers – technology – means for the financial system and, by extension, the response of macroprudential policy.

As the Nobel laureate Christian Lange once observed, technology can be a "useful servant", but it can also be a "dangerous master" if left unchecked.[1] That observation holds true for the financial system, where technological advances pose both sizeable opportunities and risks.

In this setting, macroprudential policy needs to pull off a unique balancing act. To effectively mitigate the risks posed by new technologies, macroprudential policy must paradoxically embrace and harness the very innovations they create.

Technology as the enabler of modern financial systems

The basic needs that financial systems meet have not changed for centuries: saving for future needs, borrowing against future income, directing capital to productive uses and reallocating risk.

But the way financial systems deliver their services has changed radically – driven largely by advances in information and communications technologies.

In recent decades, powerful computing has revolutionised risk management and boosted market efficiency, enabling the pricing of complex financial instruments and the rise of algorithmic trading. One study, for example, finds that by facilitating faster price discovery, algorithmic trading improves liquidity for large-cap stocks.[2]

Another key enabler of modern finance is encryption technology. Without it, there would be no online banking and no electronic payments. But encryption has not only aided the digitalisation of traditional finance. It has also facilitated the rise of a new asset class and a parallel financial system: crypto-assets and decentralised finance.

The problems with crypto-assets are many, well-documented and not well-addressed – from weak fundamentals to questionable governance and inefficient validation methods.[3] But the encryption technology on which crypto-assets are based has so far proven robust. And distributed ledger technology can offer real benefits to our financial systems through the streamlining of processes.

But it is perhaps artificial intelligence (AI) that may prove to be the most transformative for the financial system.

For years now, analytical AI models designed to perform specific tasks have helped financial institutions in areas such as fraud detection, credit assessment and predicting portfolio returns.

But the recent breakthroughs in generative AI – thanks to growth in computing power combined with extensive data access – are inducing a rapid uptake of AI across the board. According to one international study, almost two-thirds of companies – across all regions, sectors and sizes – are already using generative AI.[4]

While new technologies have brought tremendous benefits for the financial system over time, they have always tended to carry potential risks with them.

And we see this tension between opportunity and risk playing out today. The latest AI models, and budding technologies like quantum computing, have the potential to exert a profound impact on our economies and financial systems.

Technological change and vulnerabilities

As a tool, technology is neither good nor bad. It all depends on who uses it, and for what purpose.

The financial sector will come up with numerous ways to use AI to improve existing operations. But the reliance on ever more sophisticated technologies – which typically demand highly specialised skills and enormous levels of investment to implement and maintain – creates new vulnerabilities in our financial system.

We see this especially in areas where our financial institutions are increasingly reliant on a small number of external service providers.

In July, a faulty software update from a leading cybersecurity firm caused worldwide computer outages and severe disruptions across many sectors, including finance. For

instance, over eight million devices operating Microsoft Windows were hit simultaneously around the world.[5]

While the disruption did not last long, the episode demonstrated the potential dangers of a broad-based reliance on a small number of third-party providers. These technology firms may have systemic importance and are a key element of the Digital Operational Resilience Act, an EU microprudential legislation.[6]

This concentration risk is further heightened in an environment marked by geopolitical tensions and the rapid uptake of AI.

Hostile states could wreak havoc if they uncover just one critical weakness in our financial system. At the ESRB, we expected intensified cyberattacks following Russia's invasion of Ukraine.[7] Fortunately, the financial system has proven resilient so far, but the risk remains.

The widespread adoption of AI may also have systemic implications for the financial system. For example, if AI suppliers were to remain concentrated, operational risk, market concentration and too-big-to-fail externalities may arise. Moreover, an extensive uptake of AI could increase the potential for herding behaviour.[8]

Looking further ahead, advances in quantum computing may pose a serious threat to our encryption-based financial system. The technology may even go on to eventually break current encryption methods, although it is difficult to know when this might happen.

That is why it is critical to start preparing early – and there are already efforts to do so.

In August, for example, the National Institute of Standards and Technology in the United States finalised the first post-quantum encryption standards and called for their rapid deployment.[9] Efforts by individual financial institutions will not be enough, however: the shift to post-quantum encryption standards will need to be implemented across the economy to ensure sufficient resilience.

The implications of technology for macroprudential policy

As macroprudential policymakers, our primary role is to ensure that the financial system remains stable and resilient in the face of emerging threats.

Historically, macroprudential policy has focused heavily on cyclical risks. But as we look into the future, we need to pay more attention to major structural changes. Technologies such as AI and quantum computing will reshape the financial landscape in ways we are only beginning to grasp.

Macroprudential policy must evolve to meet these new frontiers. The risks stemming from disruptive technologies will not be confined to individual institutions – they will be systemic. But the tools we have relied on in the past may no longer be sufficient. Larger buffers are not always the right answer, nor are they the only answer.

Our task now is to focus on how technological risks affect the interconnections and vulnerabilities across the entire financial system and ask ourselves how we may need to expand our toolkit.

The answer is for macroprudential authorities to harness the power of new technologies, using the new opportunities they create as a force for good to mitigate the risks that technology may pose to the financial system.

There is substantial potential on this front. AI can give us the capability to analyse vast amounts of supervisory and market data. And it can help us conduct more rigorous risk assessments to identify vulnerabilities faster and ensure timely prudential responses to new threats.

We will need to consider a broader range of potentially disruptive scenarios and improve our capacity to model the financial stress that such scenarios can generate. The available data allow us to go a long way. But we need to go even further and remove obstacles to safe data sharing.

In my capacity as Chair of the ESRB, I have recently called on European lawmakers to facilitate the removal of barriers to safe data sharing between the ESRB and European Supervisory Authorities, a crucial step towards enabling us to use data to their full potential.[10] At the same time, we need to enhance our collaboration across institutions, sharing insights and expertise so that we can collectively tackle the challenges ahead.

By embracing technology, the role of macroprudential policy will be to help microprudential supervision to stay ahead of the curve, ensuring financial institutions are not only compliant with today's rules but are also resilient to tomorrow's threats.

Conclusion

Let me conclude.

As with tackling cyclical risks, macroprudential policy at the new frontier centres on being proactive rather than reactive.

Policymakers cannot afford to simply respond to crises as they emerge. We must continually attempt to anticipate them, harnessing the power of technology and data to build a financial system that is truly resilient. As Benjamin Franklin once wrote, "an ounce of prevention is worth a pound of cure".[11] And Franklin knew this first-hand. He is widely credited for developing and popularising the use of the lightning rod, which would go on to prevent many disasters.

Looking at this conference's agenda, I am confident that the discussions will spark fresh perspectives and innovative ideas as we explore the new frontiers of macroprudential policy.

Thank you.

[1] Lange, C. L. (1921), "Lecture upon receipt of the Nobel Peace Prize", 13 December.

[2] Hendershott, T. et al. (2011), "Does Algorithmic Trading Improve Liquidity?", *The Journal of Finance*, Vol. 66, Issue 1, February.

[3] See, for example, Bindseil, U. and Schaaf, J. (2022), "Bitcoin's last stand", *The ECB Blog*, 30 November.

[4] McKinsey (2024), "The state of AI in early 2024: Gen AI adoption spikes and starts to generate value", 30 May.

[5] Microsoft (2024), "Helping our customers through the CrowdStrike outage", 20 July.

[6] See EIOPA, "Digital Operational Resilience Act (DORA)".

[7] ESRB (2022), "Warning of the European Systemic Risk Board of 22 September 2022 on vulnerabilities in the Union financial system", 22 September.

[8] Leitner, G. et al. (2024), "The rise of artificial intelligence: benefits and risks for financial stability", *Financial Stability Review*, ECB, May.

[9] National Institute of Standards and Technology (2024), "NIST Releases First 3 Finalized Post-Quantum Encryption Standards", 13 August.

[10] Lagarde, C. (2024), "Data sharing between the European Supervisory Authorities and the ESRB", letter to Aurore Lalucq, Chair of the ECON Committee, 19 August.

[11] Labaree, L. W. (ed.) (1961), *The Papers of Benjamin Franklin, Vol. 2, January 1, 1735, through December 31, 1744*, Yale University Press, p. 12.