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Advancing Financial Regulation and Supervision

This volume, titled “**Advancing Financial Regulation and Supervision**” focuses on the ongoing evolution of financial regulation and supervision as authorities respond to geopolitical developments, technological innovation, and the pursuit of more effective and proportionate oversight. The articles are organized to cover key themes such as cross-border supervision and geopolitical risk, the regulation of emerging technologies and payments, and the advancement of smarter, outcomes-based supervisory practice, reflecting the comprehensive approach needed to support well-functioning, resilient, and inclusive financial markets.





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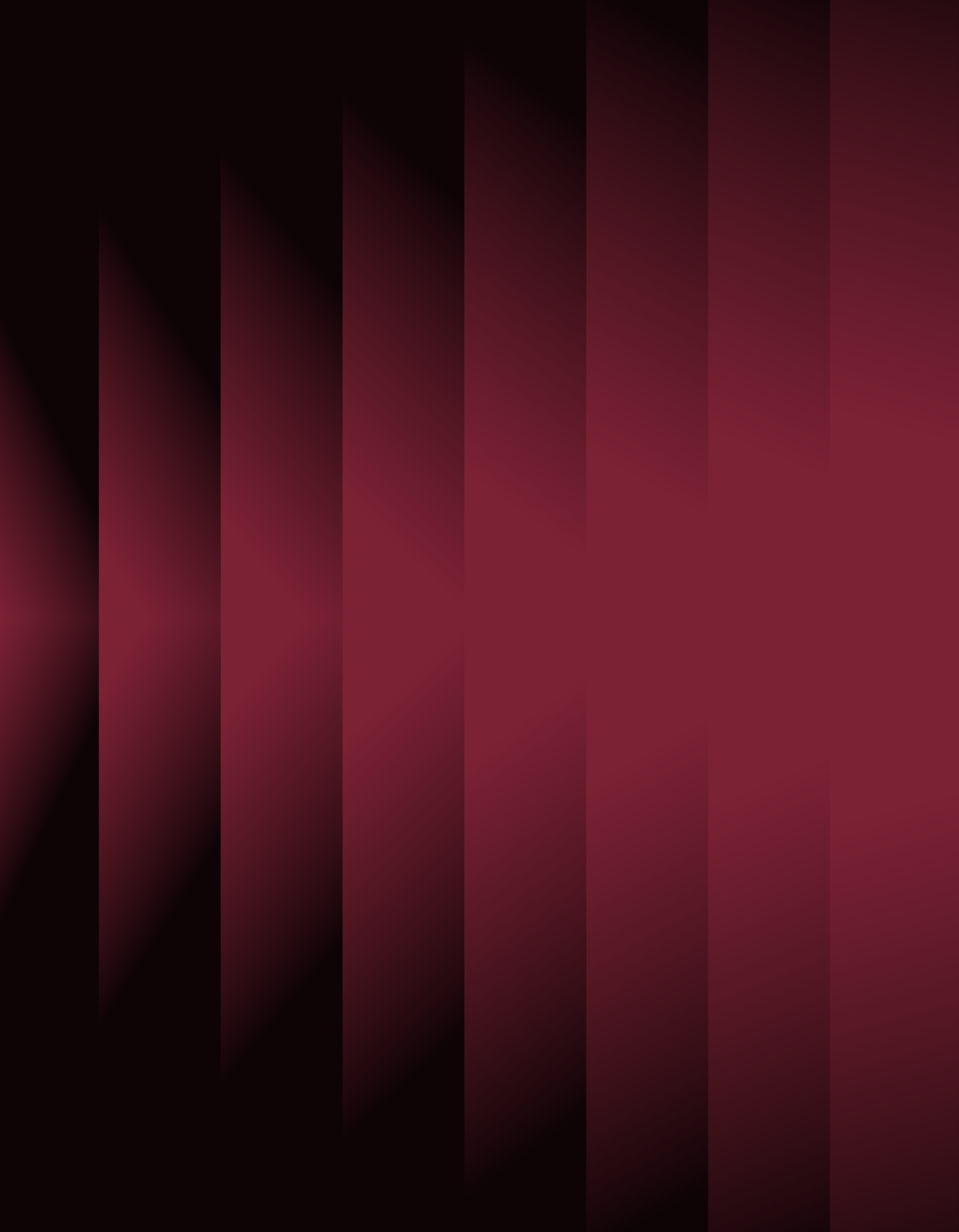
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Geopolitics, Fragmentation, and Cross-Border Supervision





1.1
Academic Article

**From Equivalence to Exposure
Management: EMIR 3.0's
Active Accounts as a Tool of
Cross-Border Supervision**

Xenia Seabright



Author's Bio



Xenia Seabright is a doctoral candidate at the University of Vienna, Faculty of Law. Her research focuses on international financial regulation, global financial governance, OTC derivatives markets, and post-crisis regulatory reform. She holds an MSc in Law and Finance from the University of Oxford and a Mag. iur. from the University of Vienna. She has professional experience in derivatives, financial regulation, and legal practice, having worked at Goldman Sachs, Morgan Stanley, and PwC.

Abstract

EMIR 3.0 introduces an Active Account Requirement (AAR) obliging certain EU counterparties to maintain and use accounts at EU-based Central Counterparties (CCP) for clearing specific derivative contracts. This measure aims to reduce the EU's excessive reliance on third-country (notably UK) CCPs identified as systemically important. The policy embodies a trade-off between resilience and market fragmentation: it seeks to bolster financial stability by on-shoring a portion of clearing activity into the EU, yet risks fragmenting global liquidity and increasing costs.

This article maps the legal design of the AAR against EMIR's third-country equivalence and recognition framework, especially in light of the European Commission's decision to extend UK CCP equivalence to 30 June 2028 and European Securities and Markets Authority's (ESMA) parallel extension of UK CCP recognition. It then develops a *comity-aware proportionality test* to evaluate when a use-mandate like the AAR is justified despite commitments to equivalence. Economically, I quantify how '*split clearing*', which spreads a portfolio across EU and UK CCPs, can erode netting efficiency, fragment liquidity, and raise initial margin requirements.

Under current research, duplicative clearing of correlated positions can increase total margin needs by about 5–15%, with larger uplifts under stressed correlations. I argue that a calibrated '*equivalence-plus*' approach that leverages robust cooperation mechanisms (data-sharing, crisis coordination, and portability arrangements) under the revised ESMA – Bank of England Memorandum of Understanding (MoU) can achieve the EU's oversight goals with less market disruption than forced relocation (ending UK-CCP equivalence/recognition) or binding clearing quotas under the AAR. The article concludes by proposing a template of targeted safeguards (enhanced reporting channels, default management coordination, client-position portability) to reconcile EU financial stability with international comity through 2028 and beyond.

Keywords: *Central clearing, EMIR 3.0, active account requirement, equivalence, CCP recognition, cross-border supervision, market fragmentation, initial margin*

01

Why Active Accounts, Why Now? EMIR 3.0's Trade-off Between Resilience and Fragmentation

In the wake of Brexit, EU regulators confronted a delicate balance between safeguarding financial stability and avoiding fragmentation of clearing activity and collateral pools. A large share of euro-denominated derivatives has long been cleared in London, at UK CCPs such as LCH Ltd (London Clearing House), which became third-country entities after 2020. To avoid a cliff-edge loss of access from 1 January 2021, the Commission adopted Implementing Decision (EU) 2020/1308 under EMIR Article 25(6), granting time-limited equivalence to the UK CCP regime.¹ This enabled ESMA to recognise UK CCPs so that Union clearing members and clients could continue clearing there.²

However, when extending equivalence, the Commission made clear that Union clearing members should reduce their exposures to systemically important UK CCPs over the coming years.³ In December 2021, ESMA concluded that three clearing services were of substantial systemic importance to the Union: LCH Ltd's SwapClear for euro and Polish zloty IRS, and ICE Clear Europe's euro-denominated CDS (Credit Default Swaps) and STIR (Short Term Interest Rate Derivatives) services. It also concluded that the risks may not be fully mitigated under the current EMIR framework, given limited supervisory tools in crisis scenarios.⁴ In other words, EU authorities feared that a crisis at a London CCP could reverberate through EU markets, beyond the reach of EU oversight tools.

Adopted on 27 November 2024, EMIR 3.0 is the EU's response to over-reliance on third-country CCPs seeking to reduce excessive exposures and make EU clearing more efficient.⁵ Its centerpiece is the new AAR.⁶ A mandate that in-scope EU clearing participants maintain at least one clearing account at an EU-based CCP and use it to clear a minimum, representative volume of certain derivative trades. Recital 11 frames this as reducing excessive exposures to systemically important Tier 2 CCP services.⁷

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- 1 Commission Implementing Decision (EU) 2020/1308 of 14 September 2020 determining, for a limited period of time, that the regulatory framework applicable to central counterparties in the United Kingdom of Great Britain and Northern Ireland is equivalent, in accordance with Regulation (EU) No 648/2012 of the European Parliament and of the Council 2020 (2020/1308 (EU)) 3.
 - 2 Commission Implementing Decision (EU) 2020/1308 of 21 September 2020 determining, for a limited period of time, that the regulatory framework applicable to central counterparties in the United Kingdom of Great Britain and Northern Ireland is equivalent, in accordance with Regulation (EU) No 648/2012 of the European Parliament and of the Council 2020 (Official Journal of the European Union) 1.
 - 3 Commission Implementing Decision (EU) 2022/174 of 8 February 2022 determining, for a limited period of time, that the regulatory framework applicable to central counterparties in the United Kingdom of Great Britain and Northern Ireland is equivalent, in accordance with Regulation (EU) No 648/2012 2022 (Official Journal of the European Union) 40.
 - 4 European Securities and Markets Authority (ESMA), 'ESMA Concludes Tier 2 CCP Assessment Under Article 25(2c) of EMIR' (European Securities and Markets Authority (ESMA) 2021) Public Statement ESMA91-372-1913.
 - 5 Regulation (EU) 2024/2987 of the European Parliament and of the Council of 27 November 2024 amending Regulations (EU) No 648/2012, (EU) No 575/2013 and (EU) 2017/1131 as regards measures to mitigate excessive exposures to third-country central counterparties and improve the efficiency of Union clearing markets 2024 (Official Journal of the European Union).
 - 6 Active Account Requirement (AAR): Under Art. 7a EMIR (as inserted by Reg (EU) 2024/2987), financial and non-financial counterparties that are subject to the clearing obligation and exceed the relevant clearing thresholds must hold at least one active account at a Union-authorized CCP and clear a representative number of trades through that account (operative text uses 'trades').
 - 7 Ibid.

Importantly, the final scope of the AAR was tailored to the specific products that ESMA's 2021 report flagged: primarily OTC interest rate derivatives in EUR and PLN, and short-term interest rate derivatives in EUR.⁸ Notably, euro-denominated CDS were excluded after ICE Clear Europe ceased CDS clearing in October 2023.⁹

This policy push to reduce excessive exposures to Tier 2 CCPs has not been without controversy. Some argue that forcibly relocating trades could fragment global pools of liquidity and increase costs for EU end-users.¹⁰ Maintaining related positions at a single CCP improves netting efficiency. Splitting across CCPs typically raises the total initial margin.¹¹ Splitting trades across CCPs can erode those efficiencies and raise margin requirements, as I explore in Section V.¹² There is also a cross-border regulatory cooperation dimension: the UK's Bank of England remains the primary supervisor of UK CCPs, and the UK has its own robust regulatory regime.¹³

Critics argue the AAR operates as a *de facto* location policy that fragments global clearing and risks undermining cross-border supervisory cooperation.¹⁴ On 17 March 2025, the Bank of England welcomed ESMA's decision to extend EU recognition of UK CCPs until 30 June 2028.¹⁵ That same day, ESMA prolonged its tiering determinations and recognition decisions for ICE Clear Europe, LCH Ltd (Tier 2) and LME Clear Ltd (Tier 1), and signed a revised MoU with the Bank of England to reflect EMIR 3 cooperation requirements.¹⁶

Against this backdrop, EMIR 3.0 preserves near-term UK CCP access while putting in place a framework intended to build EU clearing capacity. In January 2025, the Commission prolonged UK CCP equivalence for three years, until 30 June 2028, to avoid short-term disruption while EMIR 3 measures take effect.¹⁷ The policy trade-off, articulated by Commissioner Maria Luís Albuquerque, is to safeguard stability in the short run while reducing reliance on UK CCPs over time.¹⁸

8 Ibid.

9 'ICE Announces Successful Transition of Credit Default Swap Open Interest from ICE Clear Europe'.

10 Darrell Duffie and Haoxiang Zhu, 'Does a Central Clearing Counterparty Reduce Counterparty Risk?' (2011) 46 Rock Center for Corporate Governance at Stanford University Working Paper 1.

11 Ibid.

12 Ibid.

13 Bank of England, *The Bank of England's approach to financial market infrastructure supervision* (Nov. 2024), esp. Section 1 (objectives and remit) and Section 5 (non-UK FMIs under UK EMIR). See also Regulation (EU) No 648/2012 on OTC derivatives, central counterparties and trade repositories as it forms part of UK law ('UK EMIR'), as amended by the Over the Counter Derivatives, Central Counterparties and Trade Repositories (Amendment, etc., and Transitional Provision) (EU Exit) Regulations 2019 (SI 2019/335) and (No. 2) Regulations 2019 (SI 2019/1416).

14 EFAMA and others, 'Active Accounts – Joint Trade Association Statement' (EFAMA 2023) Joint trade association statement.

15 Bank of England, 'Bank of England Statement on the European Securities and Markets Authority's Decision Regarding EU Recognition of UK Central Counterparties' (17 March 2025).

16 European Securities and Markets Authority (ESMA), 'ESMA Extends the Tiering and Recognition of the Three UK-Based CCPs' (17 March 2025).

17 Commission Implementing Decision (EU) 2025/215 of 30 January 2025 determining, for a limited period of time, that the regulatory framework applicable to central counterparties in the United Kingdom of Great Britain and Northern Ireland is equivalent, in accordance with Regulation (EU) No 648/2012 of the European Parliament and of the Council 2025 (Official Journal of the European Union); 'Commission Extends Time-Limited Equivalence for UK Central Counterparties (CCPs) Until 30 June 2028' (European Commission 2025) Press release.

18 European Commission, 'Commission Extends Time-Limited Equivalence for UK Central Counterparties' (31 January 2025).

The central thesis of this article is that the success of this balancing act will depend on the proportionality of the AAR (is it a measured tool or an overreach?) and the strength of cooperative oversight mechanisms put in place. I will examine whether active accounts can be implemented in a manner that genuinely enhances systemic resilience without unduly fragmenting markets or risking tensions in cross-border supervisory cooperation.

02

From Rulebook to Trades: Making the AAR Work

EMIR 3.0 sets out the AAR at Level 1 and mandates ESMA to specify key details by regulatory technical standards. The regime is codified in EMIR primarily through new Articles 7a (Active account) and 7b (Monitoring), with related information duties in 7c.¹⁹ Article 7a(1) requires in-scope financial and non-financial counterparties to hold at least one active account at an EU-authorised CCP and to clear a representative number of trades in that account.²⁰ When a counterparty becomes subject to the obligation, it must notify ESMA and its competent authority and establish the account within six months.²¹ Articles 7b–7c provide for semi-annual monitoring and information duties.²²

2.1 Scope: Who and what is covered?

The AAR applies to EU clearing members and clients (financial or large non-financial counterparties) with significant clearing activity in the targeted product classes. Third-country entities are not directly bound.²³

However, for Union-group supervision, Article 7a(2) requires a group basis assessment: all relevant cleared derivatives across the group (excluding intragroup transactions) are counted, capturing trades cleared by third-country subsidiaries of Union groups.²⁴ This limits regulatory arbitrage without asserting direct extraterritorial effect.

Under EMIR 3.0, financial counterparties and non-financial counterparties that are subject to the EMIR clearing obligation and exceed the relevant clearing threshold, assessed on a Union-group basis including third-country subsidiaries, must maintain an active account at an EU-authorised CCP. The recitals specify the initial product scope as: (i) euro-denominated OTC interest-rate derivatives, (ii) Polish złoty OTC interest-rate derivatives, and (iii) euro-denominated short-term interest-rate derivatives.²⁵

19 Regulation (EU) 2024/2987 of the European Parliament and of the Council of 27 November 2024 amending Regulations (EU) No 648/2012, (EU) No 575/2013 and (EU) 2017/1131 as regards measures to mitigate excessive exposures to third-country central counterparties and improve the efficiency of Union clearing markets.

20 Ibid.

21 Ibid.

22 Ibid.

23 Ibid.

24 Art 7a(2) and Recital 12 EMIR (as amended by Reg (EU) 2024/2987). (ibid)

25 Ibid.

ESMA's technical standards refine the categories as follows: EUR IRS (fixed-to-float, OIS, FRAs), PLN IRS (fixed-to-float, FRAs), and EUR STIR futures (Euribor and €STR), with options excluded.²⁶ Euro-denominated credit derivatives and other currencies are outside the initial scope, reflecting the narrower focus on the most critical EU exposures and the cessation of EUR CDS clearing at ICE Clear Europe in late 2023.²⁷

2.2 Calibration and 'Representativeness'

EMIR 3.0 states the principle, and ESMA turns it into practice by defining what representative volume means in numbers. EMIR 3.0 sets the parameters: ESMA may designate up to three classes per category and, for each class, up to five sub-categories based on trade size and maturity (with caps of four maturity ranges and three size ranges).²⁸

The representativeness obligation is 5 trades per reference period in each ESMA-designated 'most relevant' subcategory. If that would exceed half of the counterparty's total trades over the prior 12 months, one trade per subcategory suffices.²⁹ The minimum-trades test functions as a floor to ensure the active account is not dormant.^{30,31}

A de minimis rule applies: where the normal AAR calculation would require more than half of the firm's total trades (over the previous 12 months), the obligation is reduced to one trade per most-relevant subcategory (annual-average basis).³² For example, for EU pension scheme arrangements – which often have only a few large, long-dated trades – a scaled-down requirement of 1 trade per sub-category applies.³³ These nuances reflect proportionality concerns, aiming not to force trivial or uneconomic trading just to meet a quota.

ESMA's Final Report on the AAR outlined these details in draft RTS, and ultimately retained the basic subcategory structure while narrowing short-term rate derivatives to futures.³⁴ Within each class, subcategories are defined by combinations of maturity and trade-size ranges rather than by product type, and ESMA slightly extended the longest maturity band for EUR STIR to capture relevant trades.³⁵ The practical effect is a low but non-trivial trading floor intended to ensure the active account is used in a representative way.

26 European Securities and Markets Authority (ESMA), 'Final Report on the EMIR 3 Active Account Requirement' (European Securities and Markets Authority 2025) ESMA91-1505572268-4201.

27 Regulation (EU) 2024/2987 of the European Parliament and of the Council of 27 November 2024 amending Regulations (EU) No 648/2012, (EU) No 575/2013 and (EU) 2017/1131 as regards measures to mitigate excessive exposures to third-country central counterparties and improve the efficiency of Union clearing markets; European Securities and Markets Authority (ESMA), 'Consultation Paper: Conditions of the Active Account Requirement Under EMIR 3' (2024) ESMA91-1505572268-3856.

28 Regulation (EU) 2024/2987 of the European Parliament and of the Council of 27 November 2024 amending Regulations (EU) No 648/2012, (EU) No 575/2013 and (EU) 2017/1131 as regards measures to mitigate excessive exposures to third-country central counterparties and improve the efficiency of Union clearing markets.

29 Ibid.

30 Recital 14.

31 Ibid.

32 Ibid.

33 Ibid.

34 European Securities and Markets Authority (ESMA) (n 24).

35 Ibid.

2.3 Operational Readiness and other Conditions

Beyond trade counts, Article 7a(3) requires the active account to be permanently functional and capable of absorbing a significant volume of business on short notice.³⁶ ESMA's final draft RTS streamline operational conditions into outcome-based requirements (contractual arrangements, adequate resources, and a CCP capacity statement), with annual operational testing.³⁷ The RTS replaced prescriptive requirements (such as named responsible individuals) with a more flexible human-resourcing standard, allowed electronic CCP certifications, and pared back stress testing to an annual exercise.³⁸ These refinements reduce duplication with ordinary onboarding while preserving credible capacity assurance.

2.4 Timeline and Entry Into Force

EMIR 3.0 was published in the Official Journal in December 2024 and entered into force on 24 December 2024.³⁹ Firms had six months to establish an active account (late June 2025).⁴⁰ ESMA transmitted its Final Report and draft RTS on 19 June 2025. Endorsement and scrutiny followed the usual Level 2 sequence.⁴¹ Reporting obligations followed on a staggered timetable, with initial returns due by end-January 2026.⁴²

2.5 Ongoing Reporting and Monitoring

Under Article 7b, in-scope counterparties report every six months to their competent authority, which forwards information to ESMA.⁴³ ESMA's RTS divide reporting into activity/exposure metrics, operational readiness, and representativeness.⁴⁴ After consultation, ESMA simplified the template by removing margin/collateral fields and aligning it with existing EMIR Article 9 reporting.⁴⁵ For operational readiness, firms submit a compliance statement and retain evidence on request. For representativeness, the focus is on trade counts rather than notionals or trade IDs.⁴⁶

36 Regulation (EU) 2024/2987 of the European Parliament and of the Council of 27 November 2024 amending Regulations (EU) No 648/2012, (EU) No 575/2013 and (EU) 2017/1131 as regards measures to mitigate excessive exposures to third-country central counterparties and improve the efficiency of Union clearing markets.

37 European Securities and Markets Authority, 'Final Report on EMIR 3 Active Account Requirement' (ESMA 2025); 'ESMA Publishes the Final Report on the Active Account Requirement Under EMIR 3' (European Securities and Markets Authority (ESMA) 2025) Press release.

38 European Securities and Markets Authority (ESMA) (n 24); Daniel Franks and Kirsty McAllister-Jones, 'EMIR 3: ESMA Revises Draft Active Account Technical Standards' (*Ashurst*, 18 July 2025).

39 Regulation (EU) 2024/2987 of the European Parliament and of the Council of 27 November 2024 amending Regulations (EU) No 648/2012, (EU) No 575/2013 and (EU) 2017/1131 as regards measures to mitigate excessive exposures to third-country central counterparties and improve the efficiency of Union clearing markets.

40 Ibid

41 European Securities and Markets Authority (ESMA) (n 24).

42 Franks and McAllister-Jones (n 35).

43 Regulation (EU) 2024/2987 of the European Parliament and of the Council of 27 November 2024 amending Regulations (EU) No 648/2012, (EU) No 575/2013 and (EU) 2017/1131 as regards measures to mitigate excessive exposures to third-country central counterparties and improve the efficiency of Union clearing markets.

44 European Securities and Markets Authority (ESMA) (n 24).

45 Ibid; Franks and McAllister-Jones (n 35).

46 European Securities and Markets Authority (ESMA) (n 24).

In summary, EMIR 3.0's AAR regime is now largely defined: the law and RTS establish who must comply, what they must do, how they must do it, and how compliance is monitored. This provides the foundation for the subsequent analysis.

03

From Equivalence to Exposure Management: Article 25 EMIR and the Active-Account Requirement

EMIR's third-country CCP regime (Art. 25 of EMIR 648/2012) was built on a philosophy of conditional equivalence-based recognition: if the EU deems a non-EU country's CCP oversight 'equivalent' to EMIR and establishes cooperation arrangements, ESMA can recognise individual CCPs from that country to offer clearing services to EU firms. Once recognised, a third-country CCP can be used by EU clearing members just as freely as an EU-authorised CCP.

EMIR 2.2 (2019) added a 'tiering' regime. ESMA places each recognised third-country CCP in Tier 1 (not systemically important) or Tier 2 (systemically important). Tier 2 CCPs face tougher ESMA supervision, including direct compliance with specified EU rules and participation in ESMA's stress tests.⁴⁷ In extreme cases, if EU authorities judge that the risks cannot be managed, recognition can be refused either for a CCP as a whole or for particular services.⁴⁸

In reality, UK CCP equivalence and recognition have been politically charged since Brexit. Temporary equivalence granted in 2018 and extended in 2020 and 2022 was set to expire on 30 June 2025.⁴⁹ On 30 January 2025 the Commission extended UK CCP equivalence by three years, to 30 June 2028, explicitly to allow EMIR 3.0 measures (including the AAR) to take effect and be assessed.⁵⁰ ESMA then confirmed that recognition decisions for LCH Ltd, ICE Clear Europe and LME Clear remain valid through June 2028, aligning recognition with the new equivalence period.⁵¹

47 Regulation (EU) 2019/2099 of the European Parliament and of the Council of 23 October 2019 amending Regulation (EU) No 648/2012 as regards the procedures and authorities involved for the authorisation of CCPs and requirements for the recognition of third-country CCPs 2019 (L 322) 1.

48 European Securities and Markets Authority, 'ESMA Concludes Tier 2 CCP Assessment Under Article 25(2c) of EMIR' (European Securities and Markets Authority 2021) Public Statement.

49 Implementing Decision (EU) 2022/174.

50 Commission Implementing Decision (EU) 2025/215 of 30 January 2025 determining, for a limited period of time, that the regulatory framework applicable to central counterparties in the United Kingdom of Great Britain and Northern Ireland is equivalent, in accordance with Regulation (EU) No 648/2012 of the European Parliament and of the Council.

51 European Securities and Markets Authority (ESMA) (n 14).

The net effect is that UK CCPs are 'safe' for EU firms to use until mid-2028 from a legal perspective. EU banks can continue clearing at LCH, for example, without breaching EMIR mandates, and EU clearing members retain their status at those CCPs. The AAR, however, overlays a new condition on how much of that clearing can remain abroad. In essence, even though UK CCPs are recognised (and equivalent) – meaning the EU accepts UK rules and supervision as meeting EU standards – the AAR says: 'we still want part of the business in the EU'.

This raises an apparent tension: under EMIR's equivalence framework, one might expect that if a foreign CCP and home regulator (the Bank of England) are trusted and equivalent, EU participants should be free to use that CCP for all their needs. Imposing an active account usage mandate suggests a lack of complete trust or a higher prudential standard being applied.

In short, Article 25 sets a two-gate regime: system-level preconditions (equivalence, cooperation, authorisation, AML/CFT) and an entity- or service-level ESMA assessment via tiering. Tier 2 CCPs can be recognised only with additional EU-style prudential conditions and central-bank-of-issue safeguards, and ESMA can refuse recognition for services deemed of substantial systemic importance where risks cannot be mitigated. EMIR 3.0 preserves this architecture but tightens it by adding criteria and ongoing monitoring for equivalence decisions and by expanding mandatory MoU content.

In light of the above, one way to view the AAR is as a complementary safeguard layered atop equivalence/recognition. The EU may be saying: 'We acknowledge UK CCPs are properly regulated and are not cutting them off, but for our own systemic risk comfort, we require that EU firms also maintain the capacity to clear in the EU and actually do some clearing there.' This is framed as mitigating the concentration risk of too much EU business in one foreign CCP. By maintaining active accounts domestically, EU authorities ensure there is at least a foothold of activity in EU CCPs, which could be scaled up in an emergency (if, say, UK CCP access were compromised by crisis or geopolitical fallout).

However, this stance must pass proportionality and non-discrimination scrutiny. Recognised third-country CCPs meet high standards, and capping usage via minimum-trade obligations can be seen as discriminatory unless carefully calibrated. The recitals emphasise that the regulation should not go beyond what is necessary, and ESMA must review AAR implementation and its impact (including via the Joint Monitoring Mechanism).⁵² This built-in review suggests the AAR is not intended as a permanent, blind quota.

To conclude this section, the AAR does not overturn or negate the Art. 25 equivalence/recognition framework, instead, it operates within it, as a kind of overlay. UK CCPs are deemed equivalent and remain recognised for EU users, but EU users themselves face a new internal requirement on how they allocate their business.

The legal interface is novel: it preserves formal market access (compliance with Art. 25) while pursuing a quantitative risk rebalancing. Whether this is sustainable or a stable equilibrium is debatable. Much will depend on the cooperative arrangements and mutual trust between EU and UK regulators, which I address next. Effective cooperation could make the AAR's intrusive aspects seem less necessary over time, whereas frictions could reinforce arguments for keeping or even tightening such measures.

⁵² Regulation (EU) 2024/2987 of the European Parliament and of the Council of 27 November 2024 amending Regulations (EU) No 648/2012, (EU) No 575/2013 and (EU) 2017/1131 as regards measures to mitigate excessive exposures to third-country central counterparties and improve the efficiency of Union clearing markets.

04

International Comity by Design: The ESMA-Bank of England MoU as a Supervisory Backstop

A key enabling condition for the EU's continued use of UK CCPs is ESMA's recognition under EMIR, which, among other requirements, depends on a cooperation arrangement (MoU) between ESMA and the Bank of England. This MoU was revised in March 2025, alongside the extension of the UK CCPs' recognition to 30 June 2028.⁵³ Beyond creating the active-account rule, EMIR 3.0 strengthens the legal terms of ESMA's third-country cooperation arrangements for systemically important (Tier 2) CCPs, requiring more frequent data sharing, full information access, inspection coordination, and crisis-planning hooks.⁵⁴ On March 17, 2025, ESMA and the Bank of England announced a revised MoU that 'follows the amendments introduced by EMIR 3' regarding the content of cooperation arrangements.⁵⁵ This MoU is a cornerstone of international comity: it sets out how two sovereign regulators will share information, coordinate oversight, and manage crises for UK CCPs that are deeply interconnected with EU markets. The 2025 ESMA-Bank of England MoU meets EMIR's recognition requirement and acts as a supervisory safety net, so the EU can keep using UK CCPs unless cooperation breaks down or another serious oversight problem arises.

The March 2025 ESMA-Bank of England MoU records arrangements to enable ESMA's 'immediate access on an on-going basis to all information requested' about the covered CCPs.⁵⁶ This encompasses significant model changes, governance issues, default fund resources, stress test results, and any issue that could affect CCP safety. Under EMIR 3.0, cooperation arrangements for Tier 2 CCPs must provide (at least monthly) whatever information ESMA requests to ensure EMIR compliance, creating a direct data pipeline that mitigates information asymmetry.⁵⁷

4.1 On-site Inspections and Investigations

EMIR 2.2 had controversially empowered ESMA to conduct on-site inspections of third-country CCPs. The revised ESMA-Bank of England MoU sets practical protocols: ESMA will ordinarily undertake any General Investigations or On-site Inspections as part of the Bank's supervisory program. Independently planned on-site inspections 'will only be considered in limited cases', and where ESMA intends such an inspection it must consult the Bank beforehand.⁵⁸ The Bank of England may accompany ESMA or even conduct a joint inspection. The MoU balances

53 European Securities and Markets Authority, 'ESMA and Bank of England Conclude a Revised MoU in Respect of UK-Based CCPs Under EMIR' (17 March 2025).

54 Regulation (EU) 2024/2987 of the European Parliament and of the Council of 27 November 2024 amending Regulations (EU) No 648/2012, (EU) No 575/2013 and (EU) 2017/1131 as regards measures to mitigate excessive exposures to third-country central counterparties and improve the efficiency of Union clearing markets.

55 European Securities and Markets Authority (n 50).

56 European Securities and Markets Authority (ESMA) and Bank of England, 'Memorandum of Understanding Between ESMA and the Bank of England to Set Out Arrangements for Cooperation on the Monitoring and Supervision of CCPs Established in the UK' (Bank of England; European Securities and Markets Authority 2025) Memorandum of Understanding.

57 Regulation (EU) 2024/2987 of the European Parliament and of the Council of 27 November 2024 amending Regulations (EU) No 648/2012, (EU) No 575/2013 and (EU) 2017/1131 as regards measures to mitigate excessive exposures to third-country central counterparties and improve the efficiency of Union clearing markets.

58 European Securities and Markets Authority (ESMA) and Bank of England (n 53).

ESMA's statutory right to investigate (e.g. if there is a suspicion of a rule breach at a Tier 2 CCP) with respect for the Bank of England's jurisdiction and primary role. In essence, ESMA would likely exercise on-site powers only if remote information sharing proves insufficient, and with Bank of England cooperation. This comity-driven approach helps prevent turf wars and maintains respect for UK sovereignty, while still giving ESMA a meaningful tool if needed to verify conditions on the ground.

4.2 Crisis Management and Emergency Coordination

Perhaps the most crucial test of cross-border cooperation is during a financial crisis or CCP distress scenario. The 2025 MoU affirms close cooperation, consultation, and timely information sharing, and makes clear that the Bank of England leads in emergencies while ESMA is informed and consulted.⁵⁹ The Bank commits to take ESMA's views into account as far as possible, and to keep ESMA apprised of developments.⁶⁰ This hierarchy reflects comity: the home authority retains primacy, while the host authority has meaningful voice and visibility.

4.3 Ongoing Supervisory Cooperation

Beyond emergencies, the MoU covers routine interactions. It sets periodic meetings where ESMA and Bank of England discuss the CCPs' risk profiles, model changes, examination findings, and so on. Under EMIR 3.0, the MoU must enumerate the CCP information to be shared regularly and procedures for swift communication of any emerging risk.⁶¹ For instance, if a UK CCP plans to expand into new products or significantly change margin parameters, the Bank of England would inform ESMA in advance. There are also likely provisions for data-sharing on clearing participation, e.g. the Bank of England providing ESMA with data on EU banks' positions or default fund contributions at the CCP (which helps ESMA gauge systemic exposure). Under EMIR Article 23b, ESMA establishes, manages and chairs the Joint Monitoring Mechanism, which brings together the European Central Bank (ECB)/ Single Supervisory Mechanism (SSM), European Systemic Risk Board (ESRB), European Banking Authority (EBA), European Insurance and Occupational Pensions Authority (EIOPA) and relevant central banks of issue to monitor the EU-wide implementation of the Active Account requirements and related financial-stability risks. This EU-side monitoring complements analytically the information ESMA receives under the ESMA-Bank of England MoU⁶² and the Bank of England MoU ensures ESMA has the input (from the UK side) needed for that monitoring.

4.4 Default Management and Portability

Although the published MoU does not detail default-management playbooks, cross-border coordination is implicit. A defaulting EU clearing member could have positions at both LCH and an EU CCP. Effective porting of client positions or auctioning of the defaulting portfolio would require the Bank of England and ESMA to coordinate. The MoU's information-sharing and consultation channels provide the infrastructure for that coordination, even if the operational details are handled case by case. In practice, the ability to move positions or manage loss

59 'Memorandum of Understanding Between ESMA and the Bank of England to Set Out Arrangements for Cooperation on the Monitoring and Supervision of CCPs Established in the UK'; European Securities and Markets Authority (ESMA) and Bank of England (n 53).

60 European Securities and Markets Authority (ESMA) and Bank of England (n 53).

61 Regulation (EU) No 648/2012 of the European Parliament and of the Council of 4 July 2012 on OTC derivatives, central counterparties and trade repositories (EMIR) 2012 (Official Journal of the European Union) 1.

62 Ibid.

allocation without spillovers is a central stress-test for comity, and this is one area where deeper equivalence-plus mechanisms could further reduce reliance on unilateral measures.

Trust and Verification: Ultimately, the efficacy of this MoU comes down to trust between ESMA and the Bank of England, reinforced by legal obligation. The Bank of England welcomed ESMA's extended recognition decision in 2025 and emphasised cooperation to enable effective cross-border supervision.⁶³ This signals shared incentives: the EU gains oversight comfort and the UK retains access for its CCPs.

In summary, the ESMA-Bank of England MoU can be seen as the 'comity guardrail' around the AAR. It assures that even as the EU mandates some on-shoring of clearing, it is simultaneously deepening cross-border cooperation to manage the remaining offshore clearing. The MoU's robust provisions (real-time data sharing, joint oversight, crisis coordination) address many of the concerns that originally drove the AAR. If the Bank of England provides ESMA everything it needs to monitor UK CCP risks, and if in crises the Bank of England acts in a way that protects EU stability (while keeping ESMA fully informed), then the rationale for heavy-handed tools diminishes. Conversely, if cooperation faltered, EU authorities might feel vindicated in having required those active accounts as an insurance policy.

05

The Cost of Split Clearing

A core economic concern about the Active Account mandate is that it will force *split clearing* of portfolios, whereby a firm's derivative positions end up divided between an EU CCP and a third-country CCP (like LCH). Clearing fragmentation can introduce several inefficiencies: loss of margin netting benefits, duplication of default fund contributions, liquidity strains from managing collateral in multiple places, and operational complexity.⁶⁴ In this section, I focus on the initial margin impact and related netting and liquidity effects, using examples to gauge the magnitude of these costs.

5.1 Netting and Initial Margin Basics

Clearinghouses require each member (or client) to post initial margin against its portfolio's potential future exposure. Margin is calculated at the CCP level, taking into account offsetting positions within that CCP. If a bank clears all its euro interest rate swaps at one CCP, long and short positions can be offset, reducing the net risk. If those swaps are split across two CCPs, each CCP sees only its slice and cannot recognise cross-CCP offsets. In general, the total IM required by two CCPs for two sub-portfolios will be greater than the IM required for the combined portfolio at one CCP. This is the familiar netting inefficiency or de-netting effect, and reflects the subadditivity

63 'Bank of England Statement on the European Securities and Markets Authority's Decision Regarding EU Recognition of UK Central Counterparties' (17 March 2025).

64 Duffie and Zhu (n 9); Rama Cont and Thomas Kokholm, 'Central Clearing of OTC Derivatives: Bilateral Vs Multilateral Netting' [2012] SSRN Electronic Journal; Evangelos Benos and others, 'The Cost of Clearing Fragmentation'; John Heilbron and Stathis Tompaidis, 'The Impact of CCP Liquidity and Capital Demands on Clearing Members Under Stress' (Office of Financial Research, US Department of the Treasury 2025) Working Paper 25-03; Thomas B King and others, 'Central Clearing and Systemic Liquidity Risk' (2023) 19 International Journal of Central Banking 85; Luitgard AM Veraart and Iñaki Aldasoro, 'Systemic Risk in Markets with Multiple Central Counterparties' (Bank for International Settlements 2022) Working Paper 1052.

of risk measures applied within a CCP's own liquidation groups.⁶⁵

How large the uplift is depends on the portfolio structure and the offsets a CCP recognises.⁶⁶ For opposite-direction, highly correlated hedges, one-CCP margin can be very low. Splitting removes that offset, and the uplift can be large. For same-direction exposures, splitting matters less. Across weakly related or cross-asset positions, the uplift reflects the loss of any diversification the CCP's model would have recognised, and fragmentation is also associated with a CCP-to-CCP pricing 'basis' documented in industry and policy work.⁶⁷

Empirical and modelling work suggests the uplift is economically significant but sensitive to correlation: for highly correlated rates portfolios, splitting across CCPs may raise IM by single-digit to low-double-digit percentages, while weaker correlations can yield much larger penalties.⁶⁸

In short, the lower the cross-correlation of risks that end up separated, the higher the margin penalty. Typical interest rate curves are highly correlated along tenors (hence splitting the same asset class between CCPs might only raise IM by perhaps 5–15%).⁶⁹ But splitting different asset classes (e.g. clearing credit derivatives in one CCP and rates in another) could have a bigger impact if those asset classes had some diversification benefit under a single CCP's multi-product margin methodology.⁷⁰ In effect, split clearing converts diversification into trapped collateral: once offsets are broken across CCPs, the foregone netting becomes a structural liquidity charge that tends to widen when correlations weaken or models tighten under stress.

A simple illustration clarifies the mechanism. Suppose two highly correlated swap positions would largely offset if cleared together. At a single CCP, the combined margin requirement can be small relative to the stand-alone margin on each position. Split across two CCPs, those offsets are not recognised across the divide, so total IM rises materially. The exact magnitude depends on correlations and model design, but the direction is robust.

5.2 Measuring the Split

Prior to EMIR 3.0, many large banks cleared certain products in multiple CCPs but kept core swaps portfolios consolidated to maximise netting. LCH's SwapClear remains the dominant venue for EUR IRS, with Eurex holding a smaller share.⁷¹ Under the AAR, some volume must migrate or be replicated at an EU CCP, meaning two margin pools and higher collateral usage.

65 Commission Delegated Regulation (EU) No 153/2013 supplementing Regulation (EU) 648/2012 of the European Parliament and of the Council with regard to regulatory technical standards on requirements for central counterparties 2013 (OJ L 52) 41.

66 'Uplift' means the additional initial margin required when the same portfolio is cleared across more than one central counterparty rather than a single one. It is the difference between the total margin required across those CCPs and the margin that would have been required if the positions were kept together at one CCP. Expressed as a percentage, it is that difference relative to the single-CCP margin.

67 Ismael Alexander Boudiaf, Martin Scheicher and Francesco Vacirca, 'CCP Initial Margin Models in Europe' (European Central Bank 2023) Occasional Paper Series 314.

68 Ibid; Rama Cont and Thomas Kokholm, 'Central Clearing of OTC Derivatives: Bilateral Vs Multilateral Netting' (2014) 31 Statistics & Risk Modeling 3.

69 Commission Delegated Regulation (EU) No 153/2013 supplementing Regulation (EU) 648/2012 of the European Parliament and of the Council with regard to regulatory technical standards on requirements for central counterparties.

70 Ibid.

71 Jon Skinner, 'Q2 2025 CCP Volumes and Share in IRD' (*Clarus Financial Technology Blog*, 30 July 2025).

For context, as of Q1 2025 LCH cleared roughly 93% of EUR IRS (Euribor) gross notional and Eurex about 7%, with LCH's share even higher in EUR OIS.⁷² These shares underscore the historic concentration of euro rates clearing and why even modest shifts can have noticeable margin and liquidity effects.

Beyond margin, liquidity fragmentation is a concern. If, say, 10% of euro swap trades move to Eurex, will there be enough liquidity (market makers, trading activity) in that CCP to keep spreads tight and allow smooth execution? The answer is uncertain. So far Eurex has grown its share mainly through incentive programs and the looming regulatory push, but market depth is thinner than at LCH. Traders might experience slight pricing differentials – indeed some anecdotal evidence shows a small ‘basis’ or price discrepancy between Eurex-cleared and LCH-cleared euro swaps (reflecting relative demand to clear at one vs. the other). If liquidity fragments, it can also create operational frictions: firms might need to maintain connectivity to multiple trading venues or brokers to execute at the different CCPs, and manage collateral pools separately (one can not freely move collateral between CCPs without cost or delay).

There is also default fund duplication: clearing members contribute to each CCP's default fund. More CCP memberships mean committing more capital to default funds, another implicit cost of fragmentation (though typically smaller than IM).⁷³

Are these costs systemic or just private? From the individual bank's perspective, higher IM is a cost – it ties up liquidity/collateral that could be used elsewhere. But one might argue that from a system perspective, higher total collateral on the same portfolio is extra safety. However, requiring double posting of margin for essentially the same risk does not actually make the system safer if the risk was already being covered once – it just immobilises resources.

In extreme cases, if firms struggle to find collateral to meet dual margin calls, it could cause stress (especially in a crisis when liquidity is scarce).

There is also an opportunity cost: collateral locked at CCPs can not be used to fund other activities or absorb other shocks. Regulators acknowledge these trade-offs. Indeed, EMIR 3.0's recitals explicitly speak of ‘avoiding unnecessary market balkanisation’ and calibrating the AAR to minimise undue burden.⁷⁴ The inclusion of de minimis thresholds and the narrow product scope are part of keeping fragmentation costs in check.

Another externality is product and basis risk. If an EU bank decides not to mirror trades but rather to clear different sets of trades in EU vs UK CCP (to meet the representativeness requirement), it might end up with a slightly different portfolio in each. Managing those two portfolios to remain aligned with the bank's overall risk target could get complicated. For instance, if hedging certain tenors is easier at LCH due to liquidity, but a bank must do some at Eurex to satisfy AAR, it could face basis risk between Eurex-cleared and LCH-cleared exposures (if their valuations diverge or if one CCP has a margin/haicut change that forces position adjustments).

72 Ibid.

73 ‘Commission Staff Working Document: Impact Assessment Report (EMIR 3.0 – Measures to Mitigate Excessive Exposures to Third-Country CCPs and Improve the Efficiency of Union Clearing Markets)’ (European Commission 2022) SWD(2022) 697 final; Duffie and Zhu (n 9).

74 Regulation (EU) 2024/2987 of the European Parliament and of the Council of 27 November 2024 amending Regulations (EU) No 648/2012, (EU) No 575/2013 and (EU) 2017/1131 as regards measures to mitigate excessive exposures to third-country central counterparties and improve the efficiency of Union clearing markets.

Ultimately, the policy question is not whether split clearing raises initial margin, but whether this incremental liquidity charge purchases proportionate resilience, an issue that can only be credibly assessed under stress, not inferred from calm-period averages.

5.3 Policy Implications

The margin and netting externalities of split clearing feed directly into the proportionality analysis of the AAR. If the systemic stability gained (via some risk reduction) is minor compared to the cost imposed on market participants and liquidity, the mandate might not be justified. Conversely, if the margin uplift is small and firms adapt efficiently, the cost argument weakens. The analysis here suggests that for highly correlated portfolios (like within one asset class), the inefficiency, while not negligible, is likely in the single-digit percent range for IM. This was arguably deemed an acceptable cost for the benefit of having an EU fallback clearing channel.

Moreover, one could argue that maintaining active accounts has a positive externality: it spurs development of EU CCP capacity, which in the long run could yield more competition and lower clearing fees or better services. Over time, if Eurex or others deepen their liquidity, the spreads between CCPs may narrow and the cost of splitting could diminish (especially if banks can more flexibly allocate trades where they get the best execution at any given time).

In conclusion, split clearing does impose tangible economic costs on clearing participants - primarily through increased initial margin requirements and collateral fragmentation. My stylised examples point to a trade-off that is real but potentially contained if carefully managed. Policymakers will need to watch these indicators (hence the importance of AAR reporting data) to ensure the requirement does not unduly harm market liquidity or efficiency. This economic perspective will be crucial in the next section, where I assess whether the AAR, in light of these costs and the cooperation mechanisms in place, can be considered a proportionate (or un-proportionate) measure under principles of EU law and international comity.

06

Proportionality with Comity: A Test for Use-Mandates

When evaluating a regulatory measure like the AAR, EU law requires compliance with proportionality, the measure must be appropriate to a legitimate objective, necessary (no equally effective but less onerous alternative), and proportionate *stricto sensu* (the disadvantages must not be disproportionate to the aims pursued). Here, those principles must be applied with an international legal lens, given the cross-border implications of the AAR.

I propose a comity-aware proportionality test for the AAR, consisting of three stages:

6.1 Suitability

Is the AAR able to achieve the objective of reducing excessive exposure to third-country CCPs and enhancing EU financial stability? On its face, yes. By mandating that some portion of clearing be done on EU CCPs, the AAR directly seeks to curb absolute reliance on foreign CCPs. The measure addresses the identified risk: e.g., if LCH (UK) were to face distress, EU firms would at least have an alternative pipeline (their active accounts) to continue clearing critical trades, and they would already have experience and infrastructure in using it.

Recital 11 of EMIR 3.0 states that the AAR should reduce reliance on Tier 2 CCP services of substantial systemic importance.⁷⁵ The measure therefore targets a legitimate objective, even if its modest scale is better understood as building operational readiness than as an immediate transfer of risk.

The AAR's scale is modest: representativeness can mean as few as five trades per subcategory per year. This suggests the measure is primarily about ensuring operational capability and a foothold of activity rather than an immediate redistribution of market share. Suitability therefore depends on whether operational readiness is the relevant goal and whether EU CCPs can credibly absorb a surge if needed.

6.2 Necessity

Necessity is the most contested limb. The existence of a robust ESMA–Bank of England MoU and extended equivalence might support a softer approach (trust but verify through information-sharing and joint oversight) instead of mandatory relocation.⁷⁶ Less intrusive options include stress-testing and contingency planning without mandated activity, or prudential capital add-ons for concentrated exposures. The EU nevertheless opted for a direct mandate, reflecting a judgment that cooperation and information access alone are insufficient insurance against tail risk at a foreign CCP. From a comity perspective, this is a cautious choice that prioritises self-reliance over deference to the home regulator.

Necessity also turns on risk tolerance. Even with robust UK recovery and resolution powers, EU authorities may be unwilling to rely on discretionary decisions by a foreign central bank in a crisis where EU interests are large. Active accounts provide an insurance policy and a domestic lever. At the same time, if cooperation and equivalence already mitigate the most plausible risks, the necessity case for a mandatory usage rule becomes contestable rather than self-evident.

6.3 Proportionality in the Strict Sense

Do the benefits of the AAR outweigh its costs and adverse impacts, considering less intrusive measures were either inadequate or not available? This is a balancing exercise. On the benefit side, stability has been enhanced (or at least reduced worst-case risk), increased EU oversight in normal times (since EU CCPs are directly supervised by ESMA/NCAs, giving a clearer view of some trades), and a strategic goal of building out EU clearing capacity

⁷⁵ Ibid.

⁷⁶ European Securities and Markets Authority (ESMA) and Bank of England (n 53).

(the open strategic autonomy angle).⁷⁷ On the cost side, as detailed in the previous section, we have margin inefficiencies, liquidity fragmentation, operational burdens, and potential dampening of London-EU financial ties, which could reduce market efficiency globally. There is also a financial stability cost if fragmentation goes too far: forcing business into smaller liquidity pools can concentrate risk differently or reduce the ability to port positions in a crisis (if EU CCPs can not absorb large volumes that might need to move). So the balance must consider: is the incremental resilience gained worth the sum of these costs?

Capacity matters for this balance. EU CCPs have grown and invested in euro IRS capability, but remain smaller than LCH. Eurex's partnership program and rising notional outstanding suggest that capacity exists for a gradual rebalancing, while also indicating why a sudden, large reallocation could be destabilising.⁷⁸ This supports a calibrated AAR rather than an aggressive relocation mandate.

A comity-aware lens also adds the international relational cost: Does the AAR unnecessarily antagonise a partner jurisdiction? The fact that the UK has so far accepted the situation (Bank of England welcomed ESMA's extension and by extension lives with AAR's effects)⁷⁹ suggests the tension is being managed. But if the EU were to expand the AAR and increase the required portion of trades, or extend it to more product classes without clear justification, it might strain relations and potentially invite retaliation (like the UK imposing its own localisation requirements).

One way to ensure proportionality is to embed conditionality and review: the AAR is not set in stone. ESMA will evaluate its effects by 2026. If data shows limited exposure reduction but meaningful cost, ESMA could recommend scaling it back. If cooperation falters or UK rules diverge, tighter measures might be justified.

Practical indicia for this balancing exercise include: (i) the quality of cooperation under the MoU (information flows, crisis coordination, and supervisory access), (ii) EU CCP market depth and operational capacity to absorb shifts, and (iii) whether the margin and liquidity costs of fragmentation are outweighed by measurable reductions in concentration risk. These indicators help distinguish a proportionate insurance policy from an overreach.

One must also weigh the absence of feasible alternatives. Letting equivalence lapse and forcing all EU business onshore was widely viewed as too disruptive. The AAR is therefore a compromise between doing nothing and doing everything, and can be defended as the less restrictive means of reducing exposure.

Finally, recital 15 of EMIR 3.0 mandates ESMA to report on whether the AAR is reducing exposures and to propose adjustments if needed.⁸⁰ This built-in review acknowledges uncertainty and helps guard against overshooting.

⁷⁷ Regulation (EU) 2024/2987 of the European Parliament and of the Council of 27 November 2024 amending Regulations (EU) No 648/2012, (EU) No 575/2013 and (EU) 2017/1131 as regards measures to mitigate excessive exposures to third-country central counterparties and improve the efficiency of Union clearing markets.

⁷⁸ Eurex Clearing AG, 'Eurex Clearing – Partnership Program (OTC IRD Summary)' (Eurex Clearing AG 2025).

⁷⁹ Bank of England, 'Bank of England Statement on the European Securities and Markets Authority's Decision Regarding EU Recognition of UK Central Counterparties' (17 March 2025).

⁸⁰ Regulation (EU) 2024/2987 of the European Parliament and of the Council of 27 November 2024 amending Regulations (EU) No 648/2012, (EU) No 575/2013 and (EU) 2017/1131 as regards measures to mitigate excessive exposures to third-country central counterparties and improve the efficiency of Union clearing markets.

In conclusion, applying the comity-aware proportionality test suggests: the AAR can be justified (as proportionate) only under certain conditions – it must remain limited in scope, paired with deep cooperation, and continuously justified by outcomes. If those conditions hold, the AAR is an innovative blend of unilateral precaution and international oversight. If any condition fails (cooperation strong but AAR overshoots, or AAR not actually needed due to cooperation), then either the AAR should be dialed back or the cooperation improved, to restore balance.

07

Equivalence-Plus: Data Gateways, Portability, and Crisis Playbooks

Is there a long term solution that reconciles the EU's quest for financial stability with the efficiencies of a global clearing market? I posit that the answer lies in an 'equivalence-plus' framework: equivalence paired with active safeguards and cooperation mechanisms, yet short of market fragmentation. This would hardwire the best elements of current arrangements (the MoU, data-sharing) and add new tools to address EU concerns, potentially allowing the AAR to be relaxed or not renewed after 2028 if benchmarks are met.

Key components of an equivalence-plus template could include:

1. **Real-time Reporting Gateways:** Building on the ESMA-Bank of England MoU, formalise direct data feeds from UK CCPs to ESMA. EMIR 3.0 already requires at least monthly exchanges and 'access to all information requested by ESMA'.⁸¹ An equivalence-plus addendum could operationalise near-real-time feeds comparable to ESMA's oversight of EU CCPs.⁸² With this depth of insight, the case for relocating trades weakens.
2. **Enhanced Portability and Segregation Safeguards:** Equivalence-plus can address CCP failure risk by improving portability of positions and collateral from a UK CCP to an EU CCP in a crisis. At minimum, counterparties must ensure their EU-CCP active account is permanently functional, with documentation, connectivity and processes to absorb a rapid increase in volume.⁸³ More ambitious arrangements (inter-CCP transfer protocols) would likely require legislative or contractual groundwork.
3. **Crisis-Time Coordination Mechanisms:** Beyond the MoU, equivalence-plus could embed joint crisis simulations and clearer playbooks, formalising ESMA's role in recovery and resolution discussions while respecting the Bank of England's lead. This would reduce uncertainty about cross-border coordination in stress.

81 Ibid.

82 Regulation (EU) No 648/2012 of the European Parliament and of the Council of 4 July 2012 on OTC derivatives, central counterparties and trade repositories (EMIR).

83 European Securities and Markets Authority (n 34).

- 4. Harmonised Risk Standards:** Another element could be aligning certain risk management standards across CCPs. EMIR 2.2 enabled ESMA to impose some EU requirements on Tier 2 CCPs (covering liquidity, collateral, etc.). Equivalence-plus might involve the UK and EU agreeing on certain enhanced standards for systemically important clearing services, like minimum liquidation period, margin buffer levels, default fund sizing. This would help the EU feel comfortable that a UK CCP is not holding less resources than an EU CCP would. If the regulatory outcomes are the same, the EU has less reason to worry about the location. In fact, dual supervision (Bank of England and ESMA both overseeing UK CCP risk models) is already emerging, and formalising that into a cooperative oversight committee could be envisaged.
- 5. Market Transparency and Incentives:** A lighter-touch complement would be greater transparency around CCP margin and haircut practices, enabling participants to compare costs and risks across venues. Private incentive schemes (such as fee rebates to shift volume) can support EU CCP growth without mandates, though they should remain consistent with competition and stability objectives.
- 6. Sunset and Review Clauses:** Equivalence-plus could pair enhanced safeguards with a clear understanding that if they function effectively, the AAR would be relaxed or not renewed. If cooperation weakens or risk standards diverge, stronger measures could be re-triggered.

All these proposals would require varying degrees of implementation effort. Some (like data sharing or crisis drills) are already happening or can be done through MoU addenda. Others (such as inter-CCP portability or formal joint oversight bodies) may require political negotiation or legislative changes, including potential amendments to insolvency and resolution frameworks. The benefit is mutual: the UK retains EU business and the EU gains oversight comfort without routine market intervention.

In effect, equivalence-plus is a package deal: EU retains access to global clearing, UK retains EU business, and both coordinate deeply to manage risks. The 'plus' are those extra safeguards ensuring EU comfort. Equivalence-plus can be described as a template for post-Brexit financial services relations, treating equivalence not as a one-off unilateral determination but as an ongoing, condition-based partnership.

To connect back to the theme of this paper: the existence of an effective equivalence-plus framework could be the key to phasing out the AAR eventually. If, for instance, by 2027 EU authorities see that due to cooperation and some growth of EU CCP capacity, the systemic risk is adequately controlled, they may decide not to renew the active account requirement (or to modify it such that it becomes almost symbolic). At that point, EU firms might still voluntarily maintain multiple CCP memberships (which is prudent risk management anyway), but without a rigid mandate. On the other hand, if by 2027 the cooperation has gaps or EU CCP uptake is minimal, they might feel the need to maintain or even intensify the mandate. So pushing for these 'plus' measures is in the interest of all parties to avoid that latter scenario.

If achieved, this approach aims to maintain financial stability without resorting to protectionist mandates, essentially achieving the AAR's goals through a cooperative safety net. In reality, some mix of on-shoring and cooperation will likely persist, but the balance can shift away from blunt instruments like the AAR as trust and experience in collaboration build up. The key is credibility: if the 'plus' measures work in practice, the case for mandatory usage shrinks.

Conclusion

EMIR 3.0's Active Account Requirement is a cautious attempt to reduce systemic concentration risk without severing cross-border clearing. It arose in a post-Brexit context that combines genuine financial-stability concerns with a strategic push to build EU clearing capacity. This paper examined the AAR's legal design, economic implications, and its interface with EMIR's equivalence/recognition framework and supervisory cooperation.

Several conclusions follow.

1. The AAR can be justified in principle as a proportionate measure only under specific conditions: it must target clearly identified systemic exposures, allow calibrated flexibility to avoid undue burden for smaller or special-case participants, and be embedded in robust supervisory cooperation to mitigate extraterritorial effects. EMIR 3.0 frames the AAR as risk-driven and time-limited, with an ESMA review around 18 months after entry into force and alignment with the 2028 equivalence timeline. This conditionality is key to legitimacy and provides a pathway for recalibration if evidence shows either limited stability benefits or undue costs.⁸⁴

The observed market impact to date appears deliberately modest: by requiring only a representative set of trades, the AAR nudges rather than forces relocation. EU CCPs have gained some share in targeted products while London remains the primary pool. If the objective is to build a scalable EU fallback and gently re-balance exposures, this 'light-touch' usage mandate is coherent. A meaningful test by 2028 will be whether EU CCPs handle a materially greater portion of euro-denominated clearing without compromising efficiency.

1. Supervisory comity has been strengthened in parallel. The revised ESMA-Bank of England cooperation arrangements, alongside the multi-year extension of UK-CCP equivalence and recognition to 30 June 2028, address information-asymmetry and crisis-coordination concerns and reduce the case for blunt relocation tools.⁸⁵ This supports the paper's claim that equivalence can be made more resilient through 'equivalence-plus' (richer data access, clearer crisis playbooks, and portability safeguards) rather than through rigid volume mandates.

Netting and margin externalities from split clearing are real but typically bounded. For correlated portfolios within a single asset class, the initial-margin uplift is often in the single-digit to low-teens percent range in normal conditions, rising under stress when correlations weaken. These costs belong squarely in the proportionality calculus: if stability gains are modest while IM and liquidity costs mount, recalibration is warranted. If costs stay contained and readiness benefits materialise, the mandate's burden is more easily justified.

84 Regulation (EU) 2024/2987 of the European Parliament and of the Council of 27 November 2024 amending Regulations (EU) No 648/2012, (EU) No 575/2013 and (EU) 2017/1131 as regards measures to mitigate excessive exposures to third-country central counterparties and improve the efficiency of Union clearing markets.

85 Commission Implementing Decision (EU) 2025/215 of 30 January 2025 determining, for a limited period of time, that the regulatory framework applicable to central counterparties in the United Kingdom of Great Britain and Northern Ireland is equivalent, in accordance with Regulation (EU) No 648/2012 of the European Parliament and of the Council.

The 2025-2028 period functions as a controlled experiment. Useful metrics include: the EU-vs-UK share of in-scope exposures, changes in default-fund concentration, aggregate IM for major EU participants, bid-ask spreads and depth in targeted products, and operational readiness to scale EU clearing if needed. If by 2028 UK CCPs remain safe, cooperative, and systemically important to EU markets, while EU CCP capacity has improved but not fully substituted London, extending equivalence (and relying more on equivalence-plus safeguards) will likely dominate abrupt relocation. In that scenario, the AAR could be refined or gradually relaxed if supervisory cooperation achieves the same stability objectives at lower cost. Conversely, if EU CCPs can reliably absorb the bulk of relevant clearing without fragmentation-induced fragility, a more ambitious onshoring path could be contemplated, though a complete severance remains unlikely absent exogenous shocks.

In sum, active accounts and international comity are complementary tools for managing cross-border CCP risk. EMIR 3.0's approach uses limited, reviewable use mandates layered on top of an equivalence regime reinforced by stronger cooperation, and it seeks a state of 'secure openness.' The preferred end-state by 2028 is one where EU authorities have sufficient visibility and contingency options, EU CCPs are resilient and contestable, and heavy mandates are unnecessary because cooperation and market capacity together deliver the intended risk reduction.⁸⁶

86 Regulation (EU) 2024/2987 of the European Parliament and of the Council of 27 November 2024 amending Regulations (EU) No 648/2012, (EU) No 575/2013 and (EU) 2017/1131 as regards measures to mitigate excessive exposures to third-country central counterparties and improve the efficiency of Union clearing markets; Commission Implementing Decision (EU) 2025/215 of 30 January 2025 determining, for a limited period of time, that the regulatory framework applicable to central counterparties in the United Kingdom of Great Britain and Northern Ireland is equivalent, in accordance with Regulation (EU) No 648/2012 of the European Parliament and of the Council.



1.2
Academic Article

Supervising Finance in a Fragmented World: Geopolitical Risk and the Quest for Regulatory Resilience

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Abstract

The growing fragmentation of the global order driven by sanctions regimes, trade realignments, and strategic competition has reshaped the landscape of financial supervision. This paper examines how geopolitical risk permeates supervisory practice through channels such as market volatility, supply-chain reconfiguration, and data-sovereignty constraints. Drawing on international reports and supervisory statements, it analyses how regulators are adapting stress-testing frameworks, risk taxonomies, and cross-border cooperation mechanisms to reflect geopolitical exposures. The paper argues that geopolitical fragmentation constitutes a structural transformation rather than a contextual shock, requiring a shift from rule-based supervision toward adaptive, resilience-oriented governance. It conceptualises this shift through the notion of regulatory resilience – the capacity of supervisory authorities to anticipate, absorb, and adapt to risks originating beyond the financial system. By mapping emerging supervisory responses across jurisdictions, the paper offers a comparative framework for integrating geopolitical risk into prudential and conduct supervision, while highlighting the need to balance resilience with proportionality and regulatory simplicity.

Key words: global fragmentation, geopolitical risk, regulatory resilience

Supervising Finance in a Fragmented World: Geopolitical Risk and the Quest for Regulatory Resilience

Introduction

The global financial landscape is transitioning from a period of deep integration toward a regime characterised by ‘strategic autonomy’ across major regional blocs.¹ This shift is underscored by a reorientation of trade and financial linkages,² moving away from multilateral efficiency toward infrastructures shaped by national security considerations and political alignment.³ This shift toward “just-in-case” (contingent) economic strategies, encompassing nearshoring and friendshoring is replacing traditional models with supply chains fortified against geopolitical volatility.⁴ These systemic recalibrations, driven by heightened competition and the resulting fragmentation of globalised economies, exacerbate banking vulnerabilities and diminish the efficacy of traditional risk diversification strategies.⁵ Consequently, the increasing unpredictability of cross-border economic policies, compounded by tensions surrounding critical resources and trade,⁶ necessitates that supervisory authorities account for the systemic risks inherent in this era of deglobalisation.⁷ However, current international regulatory frameworks remain largely tethered to the now-fragmenting model of financial globalisation, suggesting that uniform global standards will likely prove insufficient to address these localised geopolitical pressures.⁸

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- 1 David Taliente (2024) in Andreas Dombret and Patrick Kenadjian (eds.) (2024) *The Next Systemic Financial Crisis – Where Might it Come From? Financial Stability in a Polycrisis World*, p. 1, <https://doi.org/10.1515/9783111340937-202>
 - 2 Florencia Airaudo, Francois De Soyres, Keith Richards, and Ana Maria Santacreu (2025) “Measuring Geopolitical Fragmentation: Implications for Trade, Financial Flows, and Economic Policy”, *International Finance Discussion Paper*, (2025), p. 1. doi:10.17016/ifdp.2025.1408.
 - 3 Antonis Ballis (2025) “Geopolitical Tensions and Financial Networks: Strategic Shifts Toward Alternatives”, arXiv (Cornell University), doi:10.48550/arxiv.2505.21480, Available at: <https://arxiv.org/abs/2505.21480> accessed: 5 March 2025
 - 4 Boris Blagov, Maximilian Dirks, Michael Funke (2024) “Economic Knock-On Effects of Russia’s Geopolitical Risk on Advanced Economies: A Global VAR Approach”, CESifo Working Paper No. 10880, ISSN 2364–1428, January 2024, Available at: https://www.ifo.de/DocDL/cesifo1_wp10880.pdf accessed: 23 March 2026
 - 5 Abdullah Alsadan, Hassan Alalmaee, Chokri Zehri, Wissem Ajili Ben Youssef (2025) “Global financial fragmentation under raised geopolitical risk”, *Int Econ Econ Policy*, Volume 22, article number 44, (2025), <https://doi.org/10.1007/s10368-025-00671-x>
 - 6 ECB, (2023) “The EU’s Open Strategic Autonomy from a central banking perspective Challenges to the monetary policy landscape from a changing geopolitical environment”, European Central Bank, Occasional Paper Series, No 311, March 2023, Available at: <https://www.ecb.europa.eu/pub/pdf/scpops/ecb.op311~5065ff588c.en.pdf> Accessed: 1 April 2026
 - 7 Yu Wang, Gaoya Song, Yiming Lu (2025) “Geopolitical risk, bank regulation, and systemic risk: A cross-country analysis”, *Finance Research Letters*, Volume 76, <https://doi.org/10.1016/j.frl.2025.106893>
 - 8 Iris H.Y. Chiu (2022) “Prospects for international financial deglobalisation and its potential impact on international financial regulation”, *Law and Financial Markets Review*, 16 (1–2, 1–19), <https://doi.org/10.1080/17521440.2023.2204991>

This paper makes three contributions. First, it brings together the emerging literature on geopolitical risk and financial supervision, fields that have largely developed in parallel. Second, it develops the concept of regulatory resilience as an analytical framework for understanding supervisory adaptation under conditions of geopolitical fragmentation. Third, by analysing recent reports issued by leading supervisory institutions, it identifies common patterns of supervisory evolution and proposes a structured framework for integrating geopolitical risk into prudential supervision.

This paper proceeds as follows. The next section reviews the existing literature on geopolitical risk and financial supervision, identifying key gaps in the current prudential and macroprudential frameworks. A theoretical framework grounded in resilience theory and adaptive governance is then proposed, providing an analytical lens through which supervisory responses to geopolitical risk can be systematically assessed. The work employs qualitative document analysis of selected supervisory and policy reports issued by leading international financial institutions. The analysis is organised around a theoretical framework of regulatory resilience, through which contemporary supervisory responses to geopolitical risk are examined and compared. The subsequent sections present the results of the analysis, focusing on the transmission channels through which geopolitical risk affects financial systems and supervisory practice. The discussion then interprets these findings in light of emerging regulatory challenges, proposing adaptive supervisory responses and policy considerations. The paper concludes by synthesising the main insights and outlining implications for the development of resilient, forward-looking supervisory frameworks in an increasingly fragmented global financial environment.

01

Literature Review

The growing intersection between geopolitical risk and financial stability has generated a rapidly expanding body of interdisciplinary scholarship. This literature spans macroeconomics, banking regulation, and political economy, converging on the recognition that geopolitical developments, once treated as exogenous shocks, are increasingly embedded within the structural dynamics of financial systems. This section synthesises the key strands of this literature, focusing on three core themes: (i) the relationship between geopolitical risk and financial stability, (ii) the limitations of existing prudential frameworks, and (iii) emerging supervisory and regulatory responses. For the purposes of this paper, regulatory resilience is treated as the principal analytical concept through which supervisory adaptation to geopolitical fragmentation is examined.

1.1 Geopolitical Risk and Financial Stability

A central insight emerging from recent empirical studies is that geopolitical risk has a measurable and often destabilising impact on financial systems. Elevated geopolitical tensions have been shown to increase systemic risk by amplifying individual bank vulnerabilities, triggering asset price volatility, and intensifying cross-market spillovers.⁹ These dynamics are further compounded by economic policy uncertainty, which interacts with

⁹ Jinlin Zheng, Baoyu Wen, Yaohui Jiang, Xiaohan Wang, Yue Shen (2023) "Risk spillovers across geopolitical risk and global financial markets", *Energy Economics*, Volume 127, Part A, <https://doi.org/10.1016/j.eneco.2023.107051>.

geopolitical instability to erode bank profitability and weaken capital positions.¹⁰ The literature highlights the transformation of global financial interdependence – whereas cross-border integration was previously associated with risk diversification, recent evidence suggests that it now facilitates the rapid transmission of geopolitical shocks across geographically dispersed portfolios.¹¹ This shift reflects the increasing synchronisation of financial cycles and the deep interconnectedness of banking systems, particularly within advanced economies.¹²

At the macro level, geopolitical tensions have been linked to rising sovereign risk, increased borrowing costs, and heightened volatility in bond and foreign exchange markets.¹³ These effects are especially pronounced in emerging markets, where institutional fragility and limited policy space exacerbate exposure to external shocks.¹⁴ At the same time, geopolitical developments in strategic sectors such as energy and critical raw materials, generate spillover effects that propagate through financial markets, reinforcing systemic instability.¹⁵ These studies lead the argument that geopolitical risk is not merely episodic but a persistent driver of financial instability, requiring closer integration into supervisory analysis.

1.2 Limitations of Existing Prudential Frameworks

Despite the growing recognition of geopolitical risk, existing regulatory frameworks remain largely anchored in models developed for a more stable global environment. The Basel III framework,¹⁶ while effective in strengthening capital and liquidity buffers, has been criticised for its limited capacity to capture non-linear and exogenous shocks.¹⁷ In particular, standardised risk-weighting approaches are ill-suited to capturing the heterogeneous and evolving exposure of financial institutions to geopolitical risk. Macroprudential policies face similar constraints. Although designed to address systemic risk, they often rely on indicators derived from financial and macroeconomic variables, with limited incorporation of political or strategic factors.

10 Oluwaseyi Ebenezer Olalere and Janine Mukuddem-Petersen (2024) “Geopolitical risk, economic policy uncertainty, and bank stability in BRICS countries”, *Cogent Economics & Finance*, 12: 2290368 <https://doi.org/10.1080/23322039.2023.2290368>

11 Friederike Niepmann and Leslie Sheng Shen (2025) “Geopolitical Risk and Global Banking”, CESifo Working Papers, 12145, September 2025 Available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=5524101 accessed: 25 March 2026

12 Georgios Magkonis and Andreas Tsopanakis (2019) “The financial connectedness between eurozone core and periphery: A disaggregated view”, *Macroeconomic Dynamics*, 2020, 24(7):1674–1699, doi:10.1017/S1365100518000998

13 António Afonso, José Alves and Sofia Monteiro (2024) “Echoes of Instability: How Geopolitical Risks Shape Government Debt Holdings”, CESifo Working Paper No. 11235, Available at: https://www.ifo.de/DocDL/cesifo1_wp11235.pdf accessed: 30 March 2026

14 Dexiang Wu, Ahmed Rashed, Ahmed A. Elamer (2026) “Geopolitical Risk and Bank Stability in the MENA Region: The Moderating Role of Diversification and Financial Flexibility”, *International Journal of Finance & Economics*, 2026, 1–32, <https://doi.org/10.1002/ijfe.70165>.

15 Franziska M. Hoffart, Paola D’Orazio and Claudia Kemfert (2022) “Geopolitical and climate risks threaten financial stability and energy transitions”, *Energy Proceedings*, Vol 29, 2022 Available at: <https://www.energy-proceedings.org/wp-content/uploads/icae2022/1671846623.pdf> Accessed: 10 March 2026

16 Basel III is an internationally agreed regulatory framework developed by the Basel Committee on Banking Supervision in response to the 2007–2009 financial crisis, aimed at strengthening the regulation, supervision, and risk management of banks. For further detail see: <https://www.bis.org/bcbs/basel3.htm>

17 Massimo Arnone, Alberto Costantiello, Angelo Leogrande (2025) “Analyzing Risk Exposure Determinants in European Banking: A Regulatory Perspective”, Munich Personal RePEc Archive, Available at: https://mpa.ub.uni-muenchen.de/123190/1/MPRA_paper_123190.pdf accessed: 5 April 2026

As a result, they may underestimate the impact of sudden geopolitical disruptions or fail to anticipate second-order effects, such as panic-driven market behaviour or the breakdown of cross-border cooperation.¹⁸

The challenges are particularly acute in the context of geoeconomic fragmentation. As global financial integration gives way to regionalisation and strategic decoupling, supervisory frameworks based on harmonised international standards encounter increasing friction. Divergences in regulatory regimes, data governance, and enforcement priorities complicate cross-border supervision and reduce the effectiveness of coordinated policy responses.¹⁹ Moreover, the emergence of alternative financial infrastructures such as regional payment systems and digital financial networks raises new questions about the scope and reach of regulatory oversight.²⁰ These developments suggest that the traditional model of globally coordinated supervision may need to be complemented by more flexible, context-specific approaches.

1.3 Emerging Supervisory and Regulatory Responses

In response to these challenges, recent literature has begun to explore new approaches to integrating geopolitical risk into financial supervision. One prominent strand emphasises the role of enhanced risk measurement and early warning systems. The incorporation of geopolitical risk indices and uncertainty measures into macroprudential analysis has been shown to improve the identification of systemic vulnerabilities,²¹ particularly for institutions with significant cross-border exposure.²² Another area of innovation concerns the use of advanced analytical tools, including machine learning and high-frequency data analysis, to detect emerging patterns of volatility and contagion.²³ These tools enable supervisors to move beyond static risk assessments toward more dynamic and forward-looking approaches. Scenario-based stress testing has gained prominence as a means of evaluating the resilience of financial institutions under extreme but plausible geopolitical conditions.²⁴

The literature also highlights the importance of proportionality and regional adaptation in regulatory design. Given the heterogeneous impact of geopolitical risk across jurisdictions, there is growing support for tailoring supervisory frameworks to local conditions, while maintaining alignment with broader international standards.²⁵ This approach is especially relevant for smaller or open economies, where exposure to external shocks is significant but supervisory resources may be limited.

18 Mert Topcu and Ufuk Can (2025) "Political stability, geopolitical risks, and bank stability", *Finance Research Letters*, *Finance Research Letters* 86 (2025) 108889, <https://doi.org/10.1016/j.frl.2025.108889>

19 Iris H.Y. Chiu (2022) "Prospects for international financial deglobalisation and its potential impact on international financial regulation", *Law and Financial Markets Review*, 16 (1–2, 1–19), <https://doi.org/10.1080/17521440.2023.2204991>

20 Ballis, A. (2025) "Geopolitical Tensions and Financial Networks: Strategic Shifts Toward Alternatives", arXiv (Cornell University), doi:10.48550/arxiv.2505.21480, Available at: <https://arxiv.org/abs/2505.21480> accessed: 5 March 2025

21 Mirko Gabbiadini, Michele Meoli, and Silvio Vismara (2025) "Geopolitical risk and systemic risk in the European banking system", *Finance Research Letters*, Volume 86, Part F, December 2025, <https://doi.org/10.1016/j.frl.2025.108796>

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23 Catalin Gheorghe and Oana Panazan (2025) "Geopolitical risk contagion across strategic sectors: Nonlinear evidence from defense, cybersecurity, energy, and raw materials", *PLoS ONE*, 20(9), <https://doi.org/10.1371/journal.pone.0330557>

24 Adriana N. Dugbartey (2025) "Systemic financial risks in an era of geopolitical tensions, climate change, and technological disruptions: Predictive analytics, stress testing and crisis response strategies", *International Journal of Science and Research Archive*, 2025, 14(02), 1428–1448, Available at: https://ijsra.net/sites/default/files/fulltext_pdf/IJSRA-2025-0563.pdf accessed: 20 February 2026

25 Galina Gospodarchuk and Nataliya Amosova (2020) "Geo-financial stability of the global banking system", *Banks and Bank Systems*, 15(4): 164–178, [http://dx.doi.org/10.21511/bbs.15\(4\).2020.14](http://dx.doi.org/10.21511/bbs.15(4).2020.14)

Institutional innovation represents a further dimension of emerging responses. Proposals for interinstitutional intelligence units and enhanced public-private cooperation reflect the recognition that geopolitical risk cannot be effectively managed within traditional regulatory silos.²⁶ Similarly, calls for improved international coordination underscore the need to reconcile national policy objectives with the collective goal of financial stability, even in an increasingly fragmented global environment.²⁷ Finally, the literature emphasises the role of governance quality and institutional capacity as critical factors in mitigating the impact of geopolitical shocks. Strong governance frameworks, effective enforcement mechanisms, and robust financial infrastructures are consistently associated with greater resilience to external disruptions.²⁸

1.4 Synthesis and Research Gap

While the existing literature provides valuable insights into the relationship between geopolitical risk and financial stability, several gaps remain. First, much of the empirical work focuses on the impact of geopolitical risk on financial outcomes, with less attention to how supervisory systems themselves should adapt. Second, there is limited integration between macro-level analyses of geoeconomic fragmentation and micro-level considerations of supervisory practice. The objective of this paper is to address these gaps by shifting the focus from risk impact to regulatory response. Specifically, it seeks to develop a conceptual framework for understanding how supervisory authorities can incorporate geopolitical risk into their operational and strategic functions. By linking empirical findings to the concept of regulatory resilience, the analysis contributes to a more integrated understanding of financial supervision in a fragmented global context. These limitations point to the need for a more adaptive theoretical framework, which is proposed in the following section.

02

Theoretical Framework: Regulatory Resilience and Adaptive Supervision

The growing centrality of geopolitical risk in financial systems challenges the conceptual foundations upon which modern financial supervision has been constructed. Traditionally, supervisory frameworks have been designed to address endogenous risks arising within financial markets, such as credit cycles, liquidity mismatches, and institutional failures – under the implicit assumption of a relatively stable and cooperative international order. However, as geopolitical fragmentation increasingly shapes economic outcomes, this assumption no longer holds. Supervisory authorities are now required to operate in an environment characterised by persistent uncertainty, strategic competition, and the politicisation of economic relations. In this context, existing regulatory paradigms

26 José Miguel Alonso-Trabanco and José Carrillo-Piña (2021), “Understanding Mexico’s Position in the Context Of the Growing Intersection between Geopolitics and International Finance”, *Norteamérica*, 16(1), January-June 2021, <https://doi.org/10.22201/cisan.24487228e.2021.1.471> Available at: <https://www.scielo.org.mx/pdf/namerica/v16n1/2448-7228-namerica-16-01-61.pdf> accessed: 1 April 2026

27 Ethan Kapstein (2006) “Architects of stability? International cooperation among financial supervisors”, BIS Working Papers No 199, February 2006, Available at: <https://www.bis.org/publ/work199.pdf> accessed: 23 February 2026

28 Hai Hong Trinh and Thao Phuong Tran (2024) “Global banking systems, financial stability, and uncertainty: How have countries coped with geopolitical risks?”, *International Review of Economics & Finance*, Volume 96, Part B, <https://doi.org/10.1016/j.iref.2024.103647>

must be complemented by theoretical approaches capable of addressing systemic uncertainty beyond the financial domain.

The concept of regulatory resilience builds upon broader scholarship on responsive regulation while extending it to a new category of systemic risk. Effective regulation requires regulators to adapt their interventions to the conduct, behaviour, and risk profile of regulated entities rather than relying exclusively on prescriptive rules.²⁹ Subsequent work in financial regulation has similarly emphasised the importance of supervisory flexibility, proportionality, and risk-sensitive oversight in environments characterised by uncertainty and complexity.³⁰ Viewed through this lens, regulatory resilience may be understood as an extension of responsive regulation to the domain of geopolitical risk, where supervisors must continuously adjust their analytical frameworks, supervisory priorities, and regulatory tools in response to evolving external threats.

This work adopts a combined framework of resilience theory and adaptive governance to conceptualise how supervisory systems can respond to geopolitical risk. Together, these perspectives provide the analytical foundation for what is termed here regulatory resilience: the capacity of supervisory institutions to anticipate,³¹ absorb,³² and adapt to exogenous shocks while maintaining core financial stability objectives.³³

2.1 Resilience Theory and Financial Supervision

Resilience theory conceptualises systems not as static equilibria but as dynamic structures capable of absorbing disturbances and reorganising in response to change. In contrast to traditional models that prioritise efficiency and optimisation, resilience emphasises robustness, redundancy, and adaptability as key system properties. Over time, this perspective has been extended to infrastructure systems, public policy, and, more recently, financial regulation.³⁴

In the context of financial supervision, resilience shifts the focus from preventing crises to ensuring that financial systems can withstand and recover from them. This distinction is particularly relevant in an era of geopolitical fragmentation, where shocks are not only more frequent but also less predictable and less amenable to conventional modelling techniques. As highlighted in the literature, geopolitical risks often manifest as non-linear and asymmetric shocks, producing cascading effects across interconnected financial networks. Traditional prudential tools, such as fixed capital buffers or risk measures based on past data, are not well suited to capturing these dynamics.

29 Ian Ayres and John Braithwaite (1992) *Responsive Regulation – Transcending the Deregulation Debate*, Oxford Socio-Legal Studies, Oxford University Press

30 Robert Baldwin and Julia Black (2008) “Really responsive regulation”, *Modern Law Review*, 71 (1): 59–94, DOI: 10.1111/j.1468–2230.2008.00681.x

31 Andrew G. Haldane (2012) “The dog and the frisbee”, Given at the Federal Reserve Bank of Kansas City’s 36th economic policy symposium, “The Changing Policy Landscape”, Jackson Hole, Wyoming, Available at: <https://www.bankofengland.co.uk/-/media/boe/files/paper/2012/the-dog-and-the-frisbee.pdf> accessed: 3 April 2026

32 Christopher K. Ansell, Jarle Trondal, and Morten Øgård (2017) *Governance in Turbulent Times*, Oxford: Oxford University Press.

33 Igor Linkov and Benjamin D. Trump (2019) *The Science and Practice of Resilience*. Cham: Springer.

34 Fn 33. Igor Linkov and Benjamin Trump conceptualise resilience as the capacity of systems to anticipate, absorb, recover from, and adapt to disruptive events while maintaining essential functions. They emphasise resilience as a dynamic, multi-stage process that integrates risk management, robustness, and adaptive governance under conditions of uncertainty.

Regulatory resilience, by contrast, prioritises the capacity of institutions and regulatory frameworks to function under stress conditions. This involves not only maintaining adequate capital and liquidity levels but also ensuring operational continuity, diversified exposures, and institutional flexibility.³⁵ Importantly, resilience does not imply resistance to change; rather, it encompasses the ability to adapt and transform in response to evolving risk environments. For supervisors, this entails moving beyond compliance-based approaches toward a more holistic understanding of systemic vulnerability.

2.2 Adaptive Governance Under Conditions of Uncertainty

While resilience theory provides a system-level perspective, adaptive governance offers an institutional framework for decision-making under conditions of uncertainty. Originating in public administration and environmental policy studies, adaptive governance emphasises iterative learning, decentralised problem-solving, and flexible rule-making in response to complex and evolving challenges.³⁶ In contrast to hierarchical, rule-bound regulatory models, adaptive governance recognises that in highly uncertain environments, no single authority possesses complete information or predictive capacity. Instead, effective governance relies on continuous feedback loops, experimentation, and coordination across multiple actors. This approach is particularly relevant for financial supervision in a fragmented global system, where geopolitical developments can rapidly alter the operating environment in ways that cannot be fully anticipated. For supervisory authorities, adopting an adaptive governance framework implies several shifts.

First, it requires the integration of forward-looking risk assessment tools, such as scenario analysis and horizon scanning, to complement traditional backward-looking indicators. Second, it necessitates enhanced institutional coordination, both domestically and internationally, to share information and align responses in the face of cross-border risks. Third, it involves a degree of regulatory flexibility, allowing supervisors to adjust rules and supervisory intensity in response to emerging threats without undermining legal certainty or market confidence.

Importantly, adaptive governance also highlights the role of learning institutions. Supervisory bodies must develop the capacity to incorporate new information,³⁷ revise assumptions, and update regulatory practices in an ongoing manner.³⁸ In the context of geopolitical risk, this may involve integrating insights from non-financial domains such as political analysis, security studies, and technological risk assessment into supervisory decision-making processes.³⁹

35 For adjustment in governance at the European Union level, see Charles F. Sabel and Jonathan Zeitlin (2012) *Experimentalist Governance in the European Union: Towards a New Architecture*. Oxford: Oxford University Press.

36 Chris Ansell and Arjen Boin (2019) "Taming deep uncertainty: The potential of pragmatist principles for understanding and improving strategic crisis management", *Administration & Society*, 51(7): 1079–1112.

37 Arjen Boin and Martin Lodge (2016) "Designing resilient institutions for transboundary crisis management: A time for public administration", *Public Administration*, 94(2): 289–298.

38 Christopher Ansell, Eva Sørensen and Jacob Torfing (2021) "The COVID-19 pandemic as a game changer for public administration and leadership? The need for robust governance responses to turbulent problems", *Public Management Review*, 23:7, 949–960, DOI: 10.1080/14719037.2020.1820272

39 OECD (2021) Foresight and anticipatory governance – Lessons in effective foresight institutionalisation, Strategic Foresight Unit.

2.3 Towards a Concept of Regulatory Resilience

Building on these two theoretical strands, this paper conceptualises regulatory resilience as a multi-dimensional property of supervisory systems. Regulatory resilience refers not only to the robustness of individual financial institutions but also to the capacity of the supervisory architecture itself to operate effectively under conditions of geopolitical stress. This concept can be operationalised along four interrelated dimensions: (1) Anticipation, (2) Absorption, (3) Adaptation and (4) Coordination.

i. Anticipation

Supervisors must develop the ability to identify early signals of geopolitical risk and assess their potential impact on financial systems. This includes the use of geopolitical risk indices, scenario-based stress testing, and qualitative intelligence gathering. Anticipation is closely linked to the notion of horizon scanning, where emerging risks are systematically monitored even in the absence of immediate financial indicators.

ii. Absorption

The financial system's capacity to absorb shocks without systemic breakdown remains a core objective of prudential regulation. In a geopolitical context, this involves ensuring that banks and financial institutions maintain sufficient capital and liquidity buffers, diversified asset portfolios, and robust risk management practices to withstand external disruptions.

iii. Adaptation

Adaptation refers to the ability of supervisory frameworks to adjust in response to changing conditions. This may involve recalibrating capital requirements, revising supervisory priorities, or introducing new regulatory tools tailored to specific geopolitical exposures. Adaptation requires institutional flexibility and the capacity to implement changes in a timely manner.

iv. Coordination

Given the cross-border nature of geopolitical risk, effective supervision depends on coordination among national and international authorities. However, fragmentation complicates this process, as geopolitical tensions may limit information sharing and regulatory alignment. Regulatory resilience therefore entails developing mechanisms for cooperation that can function even in politically constrained environments.

Together, these dimensions provide a structured framework for analysing how supervisory systems respond to geopolitical risk. They also highlight the inherent tension between national strategic autonomy and global financial integration, a theme that this paper aims to unpack.

2.4 Implications for Supervisory Practice

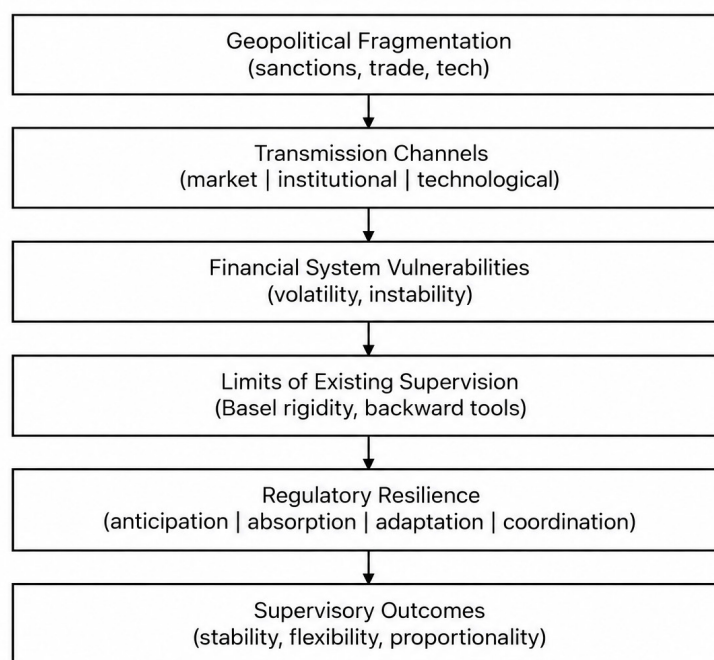
Applying the concept of regulatory resilience to financial supervision reveals several important implications. First, it suggests that supervisors must expand their analytical scope beyond traditional financial metrics to

include geopolitical variables as integral components of systemic risk assessment. This requires interdisciplinary approaches that bridge finance, economics, and political analysis.⁴⁰

Second, it underscores the importance of dynamic regulatory tools. Static frameworks, while effective in stable environments, are insufficient in the face of rapidly evolving geopolitical risks. Supervisors must therefore adopt tools that allow for continuous adjustment, such as scenario-based stress testing and real-time monitoring systems.

Third, the framework highlights the need to balance complexity and simplicity in regulatory design. While incorporating geopolitical risk inevitably increases analytical complexity, excessive regulatory burden can undermine efficiency and compliance. Regulatory resilience thus involves identifying proportionate responses that enhance stability without overburdening institutions. Finally, the framework points to the growing significance of institutional capacity. Supervisory authorities must invest in expertise, data infrastructure, and international partnerships to effectively manage geopolitical risk. For smaller jurisdictions, this may involve leveraging cooperative networks to access resources and knowledge that would otherwise be beyond their reach. The below figure illustrates the conceptual framework of the study, linking geopolitical fragmentation to financial system vulnerabilities through multiple transmission channels, and highlighting the role of regulatory resilience as an adaptive supervisory response.

Figure 1: A Conceptual framework of geopolitical risk and regulatory resilience.



40 For a good exposition of the political foundations of global finance, see Eric Helleiner (2014) *The Status Quo Crisis: Global Financial Governance after the 2008 Meltdown*. Oxford: Oxford University Press.

03**Research Design and Data Sources**

This study adopts a qualitative content analysis using desktop research which is based on the systematic analysis of secondary sources, including academic literature, policy reports, and supervisory publications. The empirical component of the analysis focuses on a selected set of reports issued by key international financial institutions and regulatory bodies, as summarised in Table 1. These include publications from the International Monetary Fund (IMF), the Bank for International Settlements (BIS), the European Central Bank (ECB), the Financial Stability Board (FSB), and the European Banking Authority (EBA).

These sources were selected based on three criteria: (i) institutional authority in global financial supervision, (ii) recency and relevance to emerging geopolitical risks, and (iii) explicit engagement with systemic risk, financial stability, or supervisory policy. In addition, the selection reflects the prominence of these institutions in shaping global supervisory discourse and their direct involvement in macroprudential oversight and policy coordination. Together, they provide a representative cross-section of contemporary supervisory thinking at both global and European levels. The analysis combines thematic synthesis with comparative interpretation. First, recurring patterns in the literature and policy reports are identified, particularly concerning the transmission channels of geopolitical risk: market, institutional, and technological, and their impact on financial stability. Second, these patterns are interpreted through the analytical lens of regulatory resilience, focusing on how supervisory authorities anticipate, absorb, adapt to, and coordinate responses to geopolitical shocks.

The study does not seek to establish causal relationships, but rather to provide a structured and conceptually informed interpretation of how geopolitical risk is currently understood and operationalised within supervisory practice. As such, the findings should be understood as analytical insights intended to inform the development of more adaptive and resilient supervisory frameworks.

Institution	Report	Year	Relevance to Study
Financial Stability Board (FSB)	<i>Supervisory and Regulatory Approaches to Risks</i> ⁴¹	2022–2023	Supervisory coordination and emerging risks
European Central Bank (ECB)	<i>The EU's Open Strategic Autonomy from a Central Banking Perspective</i> ⁴²	2023	Geopolitical fragmentation and implications for monetary policy and financial stability
International Monetary Fund (IMF)	<i>Global Financial Stability Report</i> ⁴³	2023	Analysis of systemic risk and geopolitical fragmentation
Bank for International Settlements (BIS)	<i>Annual Economic Report</i> ⁴⁴	2023	Geoeconomic fragmentation and financial stability
European Banking Authority (EBA)	<i>Risk Assessment Report</i> ⁴⁵	2023–2024	Banking sector vulnerabilities and supervisory priorities
Academic-policy interface (sources cited)	<i>Afonso et al. (2024)</i> , ⁴⁶ <i>Gabbiadini et al. (2025)</i> , ⁴⁷ <i>Niepmann and Shen (2025)</i> ⁴⁸	2024– 2025	Empirical evidence on geopolitical risk transmission and banking stability

Table 1: Primary documentary sources analysed

04

Results

Drawing on the comparative analysis of the policy and supervisory sources outlined in Table 1, the findings are organised around the key dimensions of regulatory resilience: anticipation, absorption, adaptation, and coordination – identified in the theoretical framework. The analysis identifies a set of consistent patterns regarding the interaction between geopolitical risk and financial stability, as well as the implications for supervisory practice. Four main observations emerge.

Geopolitical risk as a driver of systemic instability. Elevated geopolitical tensions are associated with increased systemic risk across banking systems. This occurs through multiple channels, including heightened asset price

41 Available at: <https://www.fsb.org/uploads/P131022-1.pdf> accessed 1 April 2026

42 Available at: <https://www.ecb.europa.eu/pub/pdf/scpops/ecb.op311~5065ff588c.en.pdf> accessed 8 March 2026

43 Available at: <https://www.imf.org/-/media/files/publications/gfsr/2023/april/english/text.pdf> accessed 17 February 2026

44 Available at: <https://www.bis.org/publ/arpdf/ar2023e.pdf> accessed 1 April 2026

45 Available at: <https://data.europa.eu/doi/10.2853/634573> accessed 15 March 2026

46 Fn 13.

47 Fn 21.

48 Fn 11.

volatility, rising sovereign risk, and increased funding costs. Empirical studies consistently show that geopolitical uncertainty amplifies bank-level vulnerabilities,⁴⁹ particularly by eroding profitability and weakening capital positions.⁵⁰ In addition, geopolitical shocks generate non-linear effects, including second-order panic dynamics that are not captured by conventional risk models.⁵¹ These dynamics can accelerate contagion across financial markets, particularly in highly interconnected systems.

Heterogeneous institutional vulnerabilities. The impact of geopolitical risk is not uniform across jurisdictions or institutions. Banks with high cross-border exposure, limited liquidity buffers, or reliance on volatile funding sources are disproportionately affected. Institutions operating in emerging or conflict-affected regions exhibit heightened sensitivity to geopolitical shocks, often responding by reducing lending activity and retrenching from international markets.⁵² Conversely, strong governance frameworks, robust regulatory environments, and diversified asset structures are associated with greater resilience.⁵³ This suggests that institutional capacity plays a critical moderating role in shaping the transmission of geopolitical risk.

Limitations of existing supervisory frameworks. The analysis further indicates that existing prudential and macroprudential frameworks struggle to fully capture the complexity of geopolitical risk. Standard models, including Basel III-based approaches, are primarily designed for financial and economic shocks and therefore lack sensitivity to political and strategic disruptions. A key limitation of traditional stress-testing methodologies is their insufficient integration of forward-looking geopolitical scenarios, which constrains their effectiveness in anticipating systemic vulnerabilities.⁵⁴ This gap is compounded by challenges related to information asymmetry and the difficulty of quantifying non-financial risks.

Emerging supervisory adaptations. The reports reviewed reveal a gradual shift toward more adaptive supervisory practices. The ECB emphasises the need to incorporate geopolitical fragmentation into central bank risk assessment and supervisory planning,⁵⁵ while the IMF highlights the growing importance of scenario-based analysis for assessing financial vulnerabilities arising from geopolitical tensions.⁵⁶ Similarly, the BIS stresses the need for forward-looking approaches capable of addressing geoeconomic fragmentation,⁵⁷ and the EBA identifies geopolitical developments as a growing source of banking sector vulnerability.⁵⁸ Together, these reports point toward greater use of geopolitical risk indicators, scenario analysis, and early warning mechanisms within supervisory practice.

49 Fn 10.

50 Fn 7.

51 Haibo Wang (2025) "Modeling Bank Systemic Risk of Emerging Markets under Geopolitical Shocks: Empirical Evidence from BRICS Countries", arXiv (Cornell University), <https://doi.org/10.48550/arXiv.2512.20515> Available at: <https://arxiv.org/abs/2512.20515> accessed on: 10 April 2026

52 Fn. 11.

53 Fn. 28.

54 Patrick Bolton, Morgan Despres, Luiz Awazu Pereira Da Silva, Frédéric Samama, Romain Svartzman (2020) "The green swan – Central banking and financial stability in the age of climate change", *Bank for International Settlement*, January 2020, Available at: <https://www.bis.org/publ/othp31.pdf> accessed: 2 April 2026

55 Fn. 42. pp. 155–160

56 Fn. 43. pp. 81–101

57 Fn. 44. pp. 50

58 Fn. 45. pp. 24–25, 105–106, 115–116

05

Discussion

The analysis of the selected reports reveals both incremental adaptation and persistent structural gaps in current supervisory frameworks. The results underscore the importance of anticipation as a core dimension of supervisory resilience. While the incorporation of geopolitical risk indices and scenario-based stress testing represents a significant step forward, current practices remain largely reactive. Supervisory frameworks continue to rely heavily on backward-looking indicators, limiting their ability to detect emerging geopolitical threats before they materialise as financial instability. Strengthening horizon-scanning capabilities and integrating qualitative geopolitical intelligence into risk assessment processes therefore remain critical priorities.^{59 60}

The evidence also points to the uneven capacity of financial systems to absorb shocks, reflecting differences in institutional strength and governance quality. Banks operating in jurisdictions with robust regulatory frameworks and diversified exposures demonstrate greater resilience, while those in more fragile environments are disproportionately affected by geopolitical volatility. This reinforces the need for proportionate supervisory approaches that account for heterogeneous risk profiles.

The reports also highlight the growing importance of adaptation in supervisory practice. The shift toward dynamic, risk-sensitive capital frameworks and scenario-based analysis reflects an emerging recognition that static regulatory models are insufficient in a fragmented global environment. However, the pace of adaptation remains uneven, and in many cases constrained by legal, institutional, and political factors. The results illustrate the central role of coordination, particularly in managing cross-border risks. While macroprudential cooperation is widely recognised as essential, geopolitical fragmentation complicates information sharing and policy alignment. This creates a structural tension between the need for international cooperation and the pursuit of national strategic autonomy.^{61 62 63}

These dynamics suggest that regulatory resilience is not simply a function of stronger rules, but of more adaptive and context-sensitive supervisory systems. The challenge for policymakers is therefore to design frameworks that balance robustness with flexibility, and coordination with sovereignty. This also has implications for the ongoing agenda of simplification and burden reduction. While the integration of geopolitical risk inevitably increases analytical complexity, excessive regulatory layering may undermine effectiveness. A resilience-oriented approach thus requires identifying targeted interventions that enhance systemic stability without imposing unnecessary compliance burdens.^{64 65}

59 European Central Bank (2023) “The EU’s Open Strategic Autonomy from a central banking perspective Challenges to the monetary policy landscape from a changing geopolitical environment”, Occasional Paper Series, No 311 / March 2023.

60 International Monetary Fund (2023) *Global Financial Stability Report – Safeguarding Financial Stability amid High Inflation and Geopolitical Risks*, Washington DC, April. Available at: <https://www.imf.org/-/media/files/publications/gfsr/2023/april/english/text.pdf> accessed: 25 June 2026

61 Financial Stability Board (2022) *Supervisory and Regulatory Approaches to Climate-related Risks*. Basel: Financial Stability Board.

62 Fn. 47.

63 Daniel Drezner, Henry W. Farrell, Abraham L. Newman (2021) *The Uses and Abuses of Weaponized Interdependence*, Washington, DC: Brookings Institution Press.

64 Fn. 41.

65 Fn. 44.

More broadly, the findings suggest that geopolitical fragmentation challenges one of the implicit assumptions underpinning post-crisis financial regulation: namely, that systemic risk is primarily generated within financial markets themselves. Instead, supervisory authorities increasingly confront risks originating outside the financial system, requiring broader institutional capabilities and closer interaction between financial supervision, economic policy and geopolitical analysis. Ultimately, these reports indicate that geopolitical risk is reshaping not only financial markets but also the very foundations of financial supervision. Addressing this challenge requires a shift from static, rule-based models toward a more dynamic paradigm of regulatory resilience.

The study is also subject to several limitations. It relies on qualitative analysis of institutional reports rather than primary empirical data and therefore does not assess the effectiveness of supervisory responses in practice. Future research could examine whether supervisory authorities that more explicitly integrate geopolitical risk into prudential frameworks exhibit greater resilience during episodes of financial fragmentation.

06

Conclusion

The paper argued that geopolitical fragmentation is not merely a contextual factor but a structural transformation that requires a shift from rule-based supervision to adaptive, resilience-oriented governance. By looking at a selection of reports, it examined how geopolitical risk is reshaping the landscape of financial supervision, arguing that traditional regulatory frameworks, largely designed for economically driven shocks, are increasingly insufficient in a fragmented and politically contingent global environment. The analysis demonstrated that geopolitical risk has become a systemic and persistent driver of financial instability, affecting banking systems through multiple transmission channels, including market volatility, sovereign risk dynamics, and disruptions to cross-border financial integration.

The studies under the spotlight highlighted both progress and limitations in current supervisory practice. While there is growing evidence of innovation, particularly in the use of scenario-based stress testing, geopolitical risk indicators, and early warning systems, these efforts remain uneven and often constrained by institutional, legal, and political factors. The persistence of backward-looking risk models and the fragmentation of international cooperation frameworks continue to limit the effectiveness of supervisory responses.

From a policy perspective, the analysis underscored the need for a more integrated and forward-looking supervisory approach. This included strengthening horizon-scanning capabilities, enhancing macroprudential coordination, and developing proportionate regulatory tools that reflect heterogeneous institutional exposures. At the same time, the pursuit of resilience must be balanced against the imperative of simplification and burden reduction, ensuring that increased analytical sophistication does not translate into excessive regulatory complexity.

The future of financial supervision will be defined not by the elimination of risk, but by the capacity to manage uncertainty in an increasingly fragmented global system. Developing resilient supervisory frameworks is therefore not only a technical challenge, but also an institutional and strategic one, requiring continuous adaptation to the evolving interplay between geopolitics and finance.



1.3
Academic Article

Banking and the Geopolitics of Payments

Jörg Bibow



Author's Bio



Jörg Bibow is a professor of economics at Skidmore College. As a monetary macroeconomist, his main research areas are international finance and European integration, as well as international trade and development and the history of economic thought. A particular research focus is central banking and financial systems and the effects of monetary policy on economic performance. This work builds on his earlier research on the monetary thought of John Maynard Keynes. Prior to joining Skidmore College in 2006, Bibow held teaching positions at the University of Cambridge (UK), University of Hamburg (Germany), and Franklin University (Switzerland).

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Abstract

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For the past 100 years or more, payments have been primarily associated with banking, and banking as we know it today features a bundling of (at least) three main lines of business: lending, deposit-taking, and payment services. In the past 15 years or so banks have come under severe competition as providers of payment services – payments may appear to become untethered from banking. Moreover, following many decades of progressing globalization marked by a move towards smoother interconnectivity of national payment systems under US dollar supremacy, payments have become subject to geostrategic competition.

This paper sets out to explore the potential consequences of the apparent “unbundling” of the traditional connections in banking, highlighting the challenges facing central bankers and financial regulators/supervisors as the evolution of money, banking and payments has entered the realm of geopolitics.

Keywords: banking, money, payments, financial intermediation, bank regulation, national security

Jel Codes: B22, E12, E42, E58, F50, G21

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Banking and the Geopolitics of Payments

Introduction

For the past 100 years or more, payments have been mostly associated with banking. Banking as we know it today, being the result of many centuries of evolution, features a bundling of (at least) three main lines of business: lending, deposit-taking, and payment services. In the traditional “bundled” banking model that typifies today’s two-tiered monetary system of bank money, money is primarily issued by profit-seeking private banks as part of their lending business, but is ultimately anchored by a national central bank equipped with a public mandate that is also issuing a shrinking residual of public (paper) money. The public-private partnership of issuance of bank money observed around the world with manifold national idiosyncrasies—particularly its associated centralized ledger-based payments technological infrastructure—had not seen much fundamental change over the past century. In the past 15 years or so banks have come under severe competition as providers of payment services.

In fact, since the Global Financial Crisis of 2007–9, banks and bank money have come under a multi-pronged attack. With banks both weakened by the crisis and restrained by post-crisis re-regulation, new players and new products have entered the market for payments, traditionally occupied by banks alone. New technologies and a zero-interest monetary policy backdrop helped to stir up the new-found competition. As a result, after being rather dormant for a century, money and payments are changing super rapidly today. One important issue for policymakers is whether “banking on payments” might become outmoded, and payments untethered from banking. Another critical development for policymakers is that payments have become the subject of geopolitics. Following an era of progressing globalization under the US dollar as the supreme global currency, the world today not only features tendencies of fracturing and block-building but also competing geopolitical ambitions in the payments sphere. These developments create new challenges for policymakers, including financial regulators/supervisors.

The analysis proceeds as follows. Section 2 revisits some conspicuous dichotomies present in theories of money and banking, highlighting the critical role of innovation and evolutionary change in financial structures when seen from the vintage point of a Minskyan symbiosis of Schumpeter’s and Keynes’ theories of banking. Ongoing changes observed in money and payments might potentially affect the provision of finance and liquidity to the economy – potentialities that policymakers must be alert to; as underscored by a selective review of the microeconomic banking literature in Section 3. Section 4 then discusses the never-ending challenges of regulating banking and finance generally, while Section 5 zooms in on payments, focusing on China, the EU, and the United States as key players in the evolution of global payments in the era of geostrategic competition. Section 6 concludes.

02

Dichotomies in Monetary and Banking Theories, and a Minskyan Symbiosis of Schumpeter and Keynes on Banking Evolution

Classical and Neoclassical economists have always wrestled to make sense of money.² (Goodhart 2005). The most sophisticated (Arrow-Debreu) version of neoclassical economics cannot find any room for money at all (the “Hahn problem”). In general, neoclassical economists have charted an ambivalent course on money. On the one hand, money is acknowledged as an important device in facilitating exchange in market economies lacking the Walrasian auctioneer. On the other hand, there is an overarching urge afflicting all neoclassical investigation to somehow look through the “veil of money” and treat economic activities *as if* they were determined by “real” things only. In short, a “dichotomy” is presumed to exist between the real and monetary spheres of the economy. Money somehow matters as a means of exchange but not otherwise. Given commercial habits and the exchange technology in place, (the quantity of) money allegedly only determines the price level but does not shape anything “real.”

The pedigree of money neutrality compulsion describes conventional monetary theory until today. An equilibrium determined by real forces alone provides the benchmark for all conventional macroeconomic theorizing. Money enters the analysis only as an afterthought. The standard approach is to add money as a “friction” of one kind or another that might affect, at least temporarily, the course of the real economy in certain ways. There are variations

2 Charles A.E. Goodhart, “What is the essence of money?” in Cambridge Journal of Economics [2005] 29(5): 817–25

on how money (and/or other aspects of the financial system) seemingly matter(s) to the economy briefly disturbed and pushed away from its real long-run equilibrium.

Both Joseph Schumpeter and John Maynard Keynes judged the conventional approach to monetary theory as misguided. Schumpeter argued that evolution was the essence of capitalism and that conventional equilibrium thinking was ill-equipped to come to grips with the phenomenon supposedly under study by economists. Keynes argued that, rather than being merely an afterthought, “money plays a part of its own and affects motives and decisions and is, in short, one of the operative factors in the situation, so that the course of events cannot be predicted, either in the long period or in the short, without a knowledge of the behavior of money between the first state and the last”.³ In short, the postulated dichotomy between the real and monetary spheres of the economy also marks a dichotomy in monetary thought between the neoclassical mainstream on one side and Schumpeter and Keynes on the other.

Schumpeter and Keynes departed from mainstream thinking about money in another important way. Classical and neoclassical economists have traditionally approached money itself as a real thing, a commodity like gold, or some numeraire good. The phenomenon of banking, once again, is more of an afterthought in their thinking about money, a factor adding instability to the real thing. By contrast, Schumpeter and Keynes associated money not with any commodity, but with banking, and saw banking as a fundamental force in economic performance and evolution. Schumpeter and Keynes treated money as bank money, a financial instrument created by banks that *also* facilitates exchange as a means of payments.

Moreover, Schumpeter and Keynes conceived of banking in a way diametrically opposed to the conventional conception. Schumpeter himself identified yet another dichotomy in monetary theory by contrasting, what he called, the [mainstream] “monetary theory of credit” with the alternative “credit theory of money”.⁴ He associated his own monetary theory and that of Keynes with the latter.

The essential point is that, by the time Schumpeter and Keynes were theorizing about money and banking and certainly no less today, banks created money (i.e., immediate purchasing power denominated in the national⁵ unit of account) by lending and investing. In short and in reality, loans make deposits. By contrast, mainstream textbooks even today still tell stories whereby bank deposits make loans. In other words, Schumpeter and Keynes’s credit theories of money are diametrically opposed to monetary theories of credit, with the latter featuring the standard mainstream depiction of banks as special financial intermediaries collecting deposits (“loanable funds”) first, which are then made available as loans to borrowers.⁶

3 John Maynard Keynes, “A monetary theory of production” first published in 1933, reprinted in Donald Moggridge (ed) *Collected Writings of John Maynard Keynes*, vol. XIII – *The General Theory and After, Part I*, (Macmillan 1973)

4 Joseph A. Schumpeter, *History of Economic Analysis* (first published 1954, Routledge 1997). The reader of chapter 6 of Schumpeter’s opus will not miss that the substance of what I stated here largely echoes Schumpeter’s assessment of “real” versus “monetary analysis” of 80 years ago.

5 We ignore here the phenomenon of banks creating purchasing power denominated in foreign currency. See for instance Robert McCauley, “Internationalising the Australian dollar” in Chang Shu and Wensheng Peng (eds), *Currency internationalization: international experiences and implications for the renminbi* (Palgrave Macmillan 2010)

6 Jakab and Kumhof (2015) critique the conventional loanable funds theoretical banking tradition by presenting a new generation of DSGE models featuring a “financing through money creation” (FMC) conception of banking. Their contribution had little impact though. Zoltan Jakab and Michael Kumhof, “Banks are not intermediaries of loanable funds – and why this matters” (Bank of England Working Paper no. 519, 2015) <https://www.bankofengland.co.uk/working-paper/2015/banks-are-not-intermediaries-of-loanable-funds-and-why-this-matters> accessed 26 July 2026

How exactly do banks matter in Schumpeter's and Keynes's monetary thought then? Schumpeter's own credit theory of money features banks as "ephors" (gatekeepers), determining which potential "innovations" do or do not get finance and hence are made to happen, or not, in the evolution of capitalism.⁷ In other words, Schumpeter highlights the micro role of banks and considers banks' credit creation as the vital monetary complement to innovation. Keynes, on the other hand, offers a macro perspective on bank credit while also underscoring the importance of "liquidity"—with bank deposits featuring as "liquidity par excellence" in his "liquidity preference theory"—as a vital element facilitating capitalistic production under uncertainty.⁸

Schumpeter's and Keynes's emphases are complementary, and Keynes himself suggests a synthesis in his discussion of investment in capital goods from a macroeconomic perspective, noting that the pace "at which the innovating entrepreneurs will be able to carry their projects into execution at a cost in interest which is not deterrent to them, will depend on the degree of complaisance of those responsible for the banking system" (Keynes 1930, 85-86). Moreover, both monetary thinkers portray bankers as active players rather than as passive channels of depositors' funds or automatic multipliers of central bank reserves; they are players equipped with agency that can be applied for better or worse, but which is inherently essential for economic performance.

Conventional monetary analysis underplays the relevance of money and systematically misrepresents banking, solely focusing on the medium of exchange function of money.

From this perspective the observed changes in money and payments unfolding today can only matter as an *efficiency booster to the economy*. By contrast, Schumpeter and Keynes, sharing a real-world conception of banking at the heart of their credit theories of money, emphasize money as a real factor in shaping capitalistic evolution. The potentiality emerges here that *the apparent unbundling of "banking on payments" might have consequences for the evolution of financial structures and the economy* well beyond any potential efficiency gains in payments itself.

Providing a symbiosis of the monetary thoughts of Schumpeter and Keynes, Hyman Minsky proposes an evolutionary theory of banking and finance that develops hypotheses both regarding medium-term cyclical as well as longer-term structural developments.⁹ The cyclical part is captured by Minsky's famous "financial instability hypothesis" according to which "stability breeds instability." Even more relevant for the analysis here is Minsky's theorizing and analysis of the longer-term evolution of financial instruments, practices, and structures. Banking is central to his analysis, but the nature of banking—and the ways in which banks and near-banks create liquidity—continues to evolve. Policymakers must be alert to this evolution. From the perspective of a Minskyan symbiosis of Schumpeter and Keynes, the issue at hand has both a micro dimension (allocation [Schumpeter]), as well as a macro dimension (stability [Keynes]). Until today, regulated banks, as providers of bank credit and liquidity and as actors in financial markets, remain an essential core element of the financial system. But banking and finance

7 Joseph A. Schumpeter, *The Theory of Economic Development* (first published 1912, Harvard University Press 1959)

8 John M. Keynes, *A Treatise on Money* (first published 1930, reprinted in *The Collected Writings of John Maynard Keynes*, Vols 5 and 6, Macmillan 1971); Keynes, *The General Theory of Employment, Interest and Money* (first published 1936, reprinted in *The Collected Writings of John Maynard Keynes*, Vol. 7, Macmillan 1973); Jörg Bibow, *Keynes on Monetary Policy, Finance and Uncertainty: Liquidity Preference Theory and the Global Financial Crisis* (Routledge 2009)

9 See Hyman P. Minsky, *John Maynard Keynes* (Columbia University Press 1975); Minsky, "Money and crisis in Schumpeter and Keynes" in Hans-Jürgen Wagener and Jan Drukker (eds) *The Economic Law of Motion of Modern Society* (Cambridge University Press 1986); Minsky, "Schumpeter and finance" in Salvatore Riasco, Alessandro Roncaglia and Michele Salvati (eds.), *Markets and Institutions in Economic Development* (Macmillan 1993).

continue to evolve, and one recent and conspicuous aspect of this evolution concerns the formerly exclusive role of bank deposits in payment systems.

03

Microeconomic Theories of Banking

This section selectively reviews microeconomic theorizing about banking, approaches that investigate what banks do, what kind of risks they take on in the process, and why and how banks can get themselves—and the financial system and wider economy—quite easily into serious trouble.

3.1 Money in a Theory of Finance: Are Banks Special?

Gurley and Shaw's influential treatise titled "Money in a Theory of Finance" provides an excellent starting point.¹⁰ Their central point is the conception of financial intermediaries as entities that "go in between" two parties that could also interact directly, but choose to do so indirectly.

Financial intermediaries—positioned between ultimate borrowers and ultimate lenders—have financial instruments on both sides of their balance sheet, their assets providing financing in some form to certain parties and their liabilities providing specific forms of wealth holding to other parties. The characteristics of their financial assets and liabilities differ in important ways, differences that seem to constitute the attractiveness, from the perspective of the two parties that could also deal with each other directly, to employ the go-between entity instead. Of course, financial intermediaries exist in this business to make profit, that is, profit from finance and money by going in between.

Gurley and Shaw's approach helps to identify both what financial intermediaries "produce" and what kind of risks they are taking on in that capacity. For instance, if a financial intermediary's assets have longer maturities than liabilities, they may be said to engage in "maturity transformation," taking on interest rate risk in the process (i.e., insuring the holder of its liabilities against such risks), or, if the financial intermediary's assets bear credit risk while certain liabilities are promised not to, the intermediary may be said to engage in "credit risk transformation." If a financial intermediary issues financial instruments that are promised to have a certain monetary value under all circumstances ("money"), we may speak of "liquidity production" and identify this kind of intermediary as a "bank", that is, an entity issuing a presumed perfectly safe and liquid financial instrument that can also be used for making payments, whilst holding a portfolio of risky assets.¹¹

In his essay "Commercial banks as creator of 'money'," James Tobin elaborates on what was by then dubbed the

10 John G. Gurley and Edward S. Shaw, *Money in a Theory of Finance* (Brookings Institution 1960)

11 Anil K. Kashyap, Raghuram G. Rajan, Jeremy C. and Stein, "Banks as liquidity providers: an explanation for the coexistence of lending and deposit-taking" in *Journal of Finance* [2002] 57: 33–73. Of course, "liquidity" production may also be conceived more broadly. See for instance John M. Keynes 1930, 1936; Gary Gorton and George Pennacchi, "Financial intermediaries and liquidity creation" in *Journal of Finance* [1990] 45: 49–71; Rudy Bougelli, "A note on 'rethinking liquidity creation: Banks, shadow banks and the elasticity of finance'" in *Journal of Post Keynesian Economics* [2018] 41(4): 648–53.; Daniela Gabor, "Critical macro-finance: A theoretical lens" in *Finance and Society* [2020] 6(1): 45–55

“new view” of banking and financial intermediation, namely that the differences between commercial banks and other financial intermediaries were a matter of degree rather than kind. Tobin defines the “new view” as stating that “the essential function of financial intermediaries, including commercial banks, is to simultaneously satisfy the portfolio preferences of two types of individuals or firms”.¹²

Notably, Tobin rejects both conventional views that have banks as either lending out deposits or multiplying reserves provided by the central bank. Instead, he approvingly refers to “a long line of financial heretics [who] have been right in speaking of ‘fountain pen money,’ money created by the stroke of the bank president’s pen when he approves a loan and credits the proceeds to the borrower’s checking account” (Tobin 1963, 1); which puts him in one camp with Schumpeter and Keynes. But at the same time, Tobin rebuffs the idea that commercial banks possess a “widow’s cruse,” emphasizing that *profit-seeking* banks (and other financial intermediaries alike) face constraints on their balance sheet expansion dependent on prevailing yields on the financial instruments they take on as their assets, on the one hand, by issuing their liabilities, on the other:

There is at any moment a natural economic limit to the scale of the commercial banking industry. Given the wealth and the asset preferences of the community, the demand for bank deposits can increase only if the yields of other assets fall. The fall in these yields is bound to restrict the profitable lending and investment opportunities available to banks themselves. (Tobin 1963, 9)

What is not spelt out by Tobin here is the central bank’s role in providing a key benchmark and anchor to asset yields in general, determined by the financial system with banks as a chief player.

Regarding the principal concern here—payments—Tobin acknowledges that the “means-of-payment characteristic of demand deposits is indeed a feature differentiating bank liabilities from those of other intermediaries” (Tobin 1963, 7), but he does not see this feature as granting banks exceptional powers. Banks can pay for the assets they buy by “writing up” their deposit liabilities, thereby directly creating new purchasing power. But unless nonbanks wish to hold correspondingly more deposit liabilities, this might only be for a “fleeting moment” until banks sell additional (supposedly higher-yielding) non-deposit (or non-payment-deposit) liabilities instead. This possibility has to be part of banks’ profit calculus at the time of purchasing any assets or making loans.

By contrast, other financial intermediaries generally cannot directly create the new purchasing power needed to purchase and pay for their target assets. Hence, the nonbank financial intermediary has to first acquire the bank deposits serving that purpose. But, again, Tobin explains, this may only be for a “fleeting moment” until the asset swap on the nonbank financial intermediary’s balance sheet is completed.

The commonness feature is that financial intermediaries issue their liabilities by buying assets. One might even imagine situations here like a nonfinancial corporation’s financial officer issuing commercial paper acquired by a money market fund, with the nonfinancial corporation holding MMF shares issued by said money market fund as a precautionary reserve. Payments may still involve bank deposits and settlement central bank deposits, but only for “fleeting moments.” *Also, the faster the payment system, the more fleeting these moments will be.* The alternative option would be for a bank providing an overdraft facility to the nonfinancial corporation, at a fee. Liquidity statistics would look different. Different choices might be more or less attractive under varying circumstances. And different

12 James Tobin, “Commercial banks as creators of money” in *Cowles Foundation Discussion Paper* no 388 (1963)

financial structures may offer different degrees of elasticity, especially under varying circumstances.

The broader issue is that banks may not only be lending directly to nonfinancial corporations and households as their ultimate borrowers, but indirectly, namely by lending to other financial players. Similarly, they may be borrowing from ultimate lenders indirectly by borrowing from other financial intermediaries. What is true for banks is also true for other financial intermediaries, thus potentially forming whole *chains of financial intermediation*, which may be either transparently reflected in statistics or quite opaque, but with banks remaining at the core of an increasingly complex financial structure; as second degree liquidity closest to the ultimate system liquidity provided by the central bank.

The “new view” of the 1960s still offers an insightful depiction of the phenomenon of financial intermediation. Financial innovations in financing and liquidity creation also show up as extended chains of financial intermediation. Focusing on the apparent “unbundling” of banking through payment innovations: *how do these innovations affect the position of the banks at the core of an increasingly complex financial structure featuring chains of financial intermediation?*

3.2 Imperfect Information and Relationship Banking

As one reason for the role of financial intermediaries in transforming the characteristics of financial instruments available, Tobin (1963, 5) identifies “expertise in negotiating, accounting, appraising, and collecting.” An extensive literature on “asymmetric information” in credit and insurance markets, championed by Joe Stiglitz, has emerged since the 1970s.¹³ The asymmetric information paradigm only covers specific informational challenges that are examples of the realities of uncertainty and evolution emphasized by Keynes and Schumpeter¹⁴; which are generally assumed away in conventional modelling exercises of a perfect-information world criticized by Stiglitz.

The general result in this literature is that markets may not see clearing through prices but through quantity “rationing” instead as this—together with other contractual stipulations—might create superior incentives that ameliorate the informational challenges. Applied to financial intermediation, the general insight is that banks (or other financial intermediaries) develop special expertise in “screening” and “monitoring” risks delegated to them.

Apart from the specific cases of asymmetric information featured in the literature, a more general approach to informational challenges highlights *relationship-building* between banks and their customers as important.¹⁵ This literature emphasizes that certain types of borrowers may be “bank-dependent” as they lack alternative sources of finance. Banks gain important informational advantages from their longer-standing relationships with clients, specifically from handling their payments.¹⁶

13 See for instance Joseph E. Stiglitz and Andrew Weiss, “Credit rationing in markets with imperfect information” in *American Economic Review* [1981] 71(3): 393-410

14 Sheila C. Dow, “Knowledge, information and credit creation” in: Roy Rotheim (ed) *New Keynesian Economics / Post Keynesian Alternative* (Routledge 1998)

15 Mitchell Berlin and Loretta J. Mester, “Deposits and relationship lending” in *The Review of Financial Studies* [1999] 12(3): 579-607

16 Kumar Rishabh, “Beyond the bureau: interoperable payment data for loan screening and monitoring” in *SSRN Working Paper* [2025], https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4782597 accessed 26 July 2026

This literature thus alerts us to the question of how the apparent “unbundling” of banking, through newfound competition from nonbank payment service providers, might undermine the banks’ traditional informational advantages, and what the wider repercussions of “open banking” might be regarding the provision of financing and liquidity for the economy.

3.3 Diversification, Liquidity Creation, and the Challenge of Bank Runs

As another rationale for financial intermediation Tobin (1963, p. 5) identifies “the pooling of independent risks, with respect both to loan default and to deposit withdrawal.” Diversification of independent risks is the general case that is central to the theory of finance. But pooling also features in an influential literature on bank runs that started with Diamond and Dybvig’s seminal essay titled “Bank runs, deposit insurance, and liquidity”.¹⁷

The Diamond and Dybvig (DD) model of banking highlights the transformation of illiquid assets into liquid liabilities. It describes how banks’ demand deposit contracts enable risk sharing among depositors with random consumption (and hence withdrawal or payment) needs. The DD-model introduces shifts in depositors’ expectations (or confidence) that can prompt depositors to run on the banks even though they do not have actual liquidity needs. Such self-fulfilling bank runs can cause real damage to the economy as they force DD-banks to recall loans, which, in turn, causes production disruptions.

Credit as a factor that can disrupt production describes some common ground with concurrent research by Ben Bernanke on the “Nonmonetary effects of the financial crisis in the propagation of the Great Depression”.¹⁸ Both branches of this related research on banking—specifically bank credit—represent a critique of the influential monetarist interpretation of the Great Depression due to Friedman and Schwarz, which solely focuses on deposit shrinkage through bank failures.¹⁹ DD promotes deposit insurance by the government as a solution to panic-driven bank runs.

Banking models in the DD tradition highlight that banks are special among lenders in producing “liquidity” as their own funding source, despite the fact that such liquidity production seems to leave them fragile. Diamond and Rajan propose a rationalization of the existence of fragile demand deposits that allows persistent relationship building between lenders and entrepreneurial borrowers to be delegated to bankers.²⁰

DD bank-run models seem to unearth a role for “liquidity” that is otherwise absent from conventional macro models. But these models do not illuminate why the peculiar form of liquidity produced by banks may be especially important in the economy and fundamentally different from the liquidity provided by financial markets. And the payment function of liquidity in the form of bank deposits does not feature prominently. It is only captured implicitly as the threat of quick withdrawal at par—which equally affects money market funds, providing (near)perfect liquidity without instant payment functionality.

17 Douglas W. Diamond and Philip H. Dybvig, “Bank Runs, Deposit Insurance, and Liquidity” in *Journal of Political Economy* [1983] 91(3): 401–19

18 Ben S. Bernanke, “Nonmonetary effects of the financial crisis in the propagation of the Great Depression” in *American Economic Review* [1983] (73)3: 257–76

19 Milton Friedman and Anna J. Schwarz, *A Monetary History of the United States, 1867–1960* (Princeton University Press 1963).

20 Douglas W. Diamond and Raghuram G. Rajan, “Liquidity Risk, Liquidity Creation, and Financial Fragility: A Theory of Banking” in *Journal of Political Economy* [2001] 109(2): 287–327

Keynes emphasized the importance of liquidity, particularly “liquidity par excellence” issued by the banking system, under conditions of uncertainty. Demand deposits—as “instant-access deposits”—are directly related to the payment system and their “fragility,” from the perspective of the issuing bank, arises from the standing option of moving them away at any time; even if for the banking system, including the central bank, it is not really an issue as long as the challenge is liquidity rather than solvency.²¹ *Uninsured demand deposits are runnable and subject to confidence shocks, and greater speed in payments means greater speed in runs—perhaps even beyond instant-access deposits.*²² Non-payment deposits and various other near-monies are next in line in terms of liquidity. How do the ongoing innovations in money and payments affect (the fragility of) banking and “shadow banking” and the potentiality of disruptions to the economy? In particular, do the shadow banks bank with banks, implying connectedness and contagion risks through chains of intermediation?

3.4 Some Preliminary Conclusions

The evolution of financial structures features rising complexity and lengthening chains of intermediation, with *banks traditionally, and until today, positioned at the core*. Faster payment processes may seem to shrink the differences between banks and other financial intermediaries. But the key issue remains: banks and bank deposits stand higher in the liquidity hierarchy, closest to the central bank as the source of ultimate liquidity. Technological innovations, including payment innovations, are changing the collection and aggregation of information and who has access to it. This can affect banks’ traditional competitive informational advantages derived from payments. In fact, it might potentially improve the efficiency of lending (Schumpeter). But “Open Banking” regulations need to ensure a level playing field in lending.²³ Payments are traditionally associated with instant-access deposits as perfect liquidity produced by banks. The emergence of “shadowy” instant-access products might impact the vulnerability of banks as the traditional providers of liquidity and system elasticity (Bagehot, Keynes).²⁴

21 Ulrich Bindseil and Richard Senner, “Destabilisation of bank deposits across destinations: assessment and policy implications” in *ECB Working Paper No. 2887* (2024), <https://www.ecb.europa.eu/pub/pdf/scpwps/ecb.wp2887~845e136b3b.en.pdf> accessed 26 July 2026

22 The design of the underlying payments infrastructure shapes the banks’ intra-day and overnight liquidity needs and the extent to which their assets become encumbered as collateral. See Biliiana Alexandrova Kabadjova, Anton Badev, Saulo Benchimol Bastos, Evangelos Benos, Freddy Cepeda-López, James T E Chapman, Martin Diehl, Ioana Duca-Radu, Rodney Garratt, Ronald Heijmans, Anneke Kosse, Antoine Martin, Thomas Nellen, Thomas Nilsson, Jan Paulick, Andrei Pustelnikov, Francisco Rivadeneyra, Mario Rubem do Coutto Bastos and Sara Testi, “Intraday liquidity around the world” in *Bank for International Settlement Working Paper no. 1089* [2023], <https://www.bis.org/publ/work1089.htm> accessed 26 July 2026

23 See Andrés Alonso-Robisco, José Manuel Carbo, Pedro Jesús Cuadros-Solas, and Jara Quintanero, “The effects of open banking on Fintech providers: evidence using microdata from Spain” in *Banco De España Documentos de Trabajo no. 2514* [2025]. The issue remains contested. See Akila Quinio and Joshua Franklin, “J. P. Morgan spooks fintechs with plans to charge for access to customer data” in *Financial Times* 28 July 28 2025, <https://www.ft.com/content/85ccc517-4a34-4221-aec7-4d8a72a21f35?segmentId=ddd6252-6e37-bb4b-bda7-2193a3453893> accessed on 26 July 2026

24 Walter Bagehot, *Lombard Street: A Description of the Money Market* (first published 1873, Charles Scribner’s Sons 1906); Keynes 1936.

Regulation Of Banking: The Never-Ending Challenge

The quest for sound money and stable banking calls for regulation—but of what kind? The temptation of gaining resources through “creating new purchasing power” seems too great to be left unchecked. The temptation exists for the sovereign, and many cases of “over-issuance” in one form or another are scattered throughout history. The temptation exists in equal measure for private money issuers, as a long history of banking instability vividly attests—with certainly not all cases signifying the risk from over-issuance as such.

There is a long-running divide between those who believed that restricting the issuance of some strictly-defined “money” would solve the whole matter for good, and others who believed that “moneyness” was too slippery a slope to yield to any easy and clear-cut solution. David Ricardo’s intellectual powers stood behind the British Banking Act of 1844, as an example of the former. Milton Friedman’s monetarism represented a revival of the same tradition of ideas that generally fall in line with “narrow” banking regulation. Adam Smith, Henry Thornton, Walter Bagehot, Joseph Schumpeter, and John Maynard Keynes are representatives of the other tradition, thinkers who were vigilant observers of financial realities and who concluded that “money” could not be bottled up for safety all that easily. Historically, these debates also related to the intellectual challenge of grasping the emerging role of central banking as the heart of the emerging public-private partnership that is the foundation of bank money issuance today.

In light of the review of banking theories in Sections 2 and 3, regulation should best help rather than hinder efficiency in the allocation of bank credit as part of overall finance provided to the economy; judged as critical to the progressive evolution of capitalist economies by Schumpeter. At the same time, regulation should help rather than hinder gauging and steering the right provision of aggregate credit and liquidity—as part of overall finance and liquidity needed by the economy—conducive to economic and financial stability (diagnosed as critical by Keynes).

Keynes identified monetary policy as the lead “central control” for steering the macro economy through adjusting the price of “money,” the (policy) rate of interest. In practice, the monetary authority has two policy parameters to operate on, fast-moving monetary [i.e., interest rate] policy, and typically slow-moving regulation (and supervision); although regulation too might be adjustable more quickly when needed, especially in acute crisis or its aftermath (“forbearance”).

Originally, banking regulation focused on what kind of business banks can do and where. America’s “Glass-Steagall” separation of commercial and investment banking is a famously restricting example. As is a strong American focus on separating banking from commerce. Still visible today are historical locational restrictions imposed on American banks (scattered regulatory framework). With banking historically fractured along national lines, additional restrictions of these kinds played less of a role in continental European countries where the prevalence of “universal banking” paired with generally less-developed financial markets persists. And a significant degree of financial fragmentation along national lines still characterizes Europe’s monetary union today.

With the rise in banks' international activities since the 1970s, there have been continued attempts and various rounds of negotiations to establish some degree of harmonization in banking regulation globally through the "Basel Committee"—focusing on quantifying banking risks and requiring banks to harbor adequate precautions against those very risks on (and off) their balance sheets. Those precautions mainly concern bank capital on the one hand, and bank liquidity on the other. And this approach may be understood as broadly following the "new view" and DD model discussed above.

Given the evolution in finance emphasized by Schumpeter and Minsky, regulation has to be continuously adapted to "financial innovations." In turn, however, financial practices and innovations continuously adapt to changing regulations, often with the aim of circumventing or evading regulation or at least weakening its impact ("regulatory arbitrage"). So there is a long-standing, two-way relationship and rich interaction between financial regulation, on the one hand, and competition through technology and financial innovation, on the other, featuring "trial & error" on both sides and with monetary policy as an important backdrop to economic and financial activities in general. Adding bank lobbying into the picture, especially powerful in the US, there is a constant wrangling between financial innovation and (re-)regulation (and supervision) shaping financial evolution.

In the decades leading up to the Global Financial Crisis of 2007–9, "securitization" and "structured finance" innovations were the order of the day, allowing banks to "economize" on their capital. The banks' connectedness with the expansive "shadow banking system" through liquidity lines and asset exposures—signifying chains of intermediation—then came back to haunt them—and the public.²⁵

The GFC, which at its heart was a banking crisis at the center of the globalized financial system, triggered a profound rethinking and recalibration in regulation. The post-crisis assessment concluded that regulated banks had taken on excessive risks, were extremely levered, as well as highly interconnected with nonbank financial intermediaries, and deeply globally interconnected on top. In response, capital and liquidity requirements were generally raised, especially for large banks. Special treatment is applied to (globally) systemically important banks (and some nonbank financial institutions).²⁶ Relating financial evolution to Minsky's "financial instability hypothesis", Goodhart and Lastra argue that the "inability to determine the optimal amount of risk leads to what may be called 'the Minsky cycle'".²⁷

The relative weakness of banks in the GFC aftermath and the tightening of restraints they were facing through re-regulation provided an opening for new nonbank competitors.²⁸ Intense competition affected all traditional lines of banking business. Asset managers and nonbank financial intermediaries have grown greatly in influence, as have "private markets." In particular, "private credit" surged as an alternative for syndicated loans or high-risk bonds.

25 Zoltan Pozsar, Tobias Adrian, Adam Ashcraft, and Hayley Boesky, "Shadow Banking" in *New York Fed Staff Report* No. 458 [2010]

26 Samuel G. Hanson, Anil K. Kashyap, and Jeremy C. Stein, "A macroprudential approach to financial regulation" in *Journal of Economic Perspectives* [2011] 25(1): 3–28

27 Charles A.E. Goodhart and Rosa Lastra, "Financial regulation: Where do we stand?" in *CEPR Discussion Paper* no. 21590 [2026] <https://ideas.repec.org/p/cpr/ceprdp/21590.html> accessed 26 July 2026

28 See Gregor Buchak, Gregor Matvos, Tomasz Piskorski, and Amit Seru, "Fintech, regulatory arbitrage, and the rise of shadow banks" in *Journal of Financial Economics* [2018] 130.3, pp. 453–483; Claudia M. Buch, B. Gerard Dages, and Hermann Remsperger, "Structural Changes in Banking After the Crisis" in *International Journal of Central Banking* [2021] 17.4, pp. 1–38; Hyun Song Shin, "Financial Intermediation and the Post-Crisis Financial System" in *BIS Working Paper* No. 304 [2010]; Pablo Navarro and Philip E. Strahan, "How Shadow Banking Competes with Traditional Banks" in *Journal of Money, Credit and Banking* [2023] 55.2, pp. 427–456

Effectively, though, bank lending is both enabling “private credit” through loans to NBFI—signifying new chains of intermediation—as well as competing with private credit as a source of finance for others.²⁹ Similarly, banks also lend extensively to hedge funds (through repos), enabling them to lever up their holdings of Treasury securities, supplementing the banks’ own Treasury holdings as dealers. Money market funds and repo markets have greatly expanded as alternatives for liquidity in the form of bank deposits, providing a liquid store of wealth under uncertainty that is trusted to be convertible into deposits at par. While these (unregulated or more lightly regulated) near-monies may not be “payments-ready” (directly usable for payments), they are nonetheless “runnable” and hence can trigger “liquidity events”—i.e., when trust suddenly dissipates, quite similar to regulated banks (since uncertainty also means promises that are accepted by convention at some point in time can become questionable at another.)

Coinciding with new technologies—most prominently, “blockchain”—banks’ role in payments has become a new surprise pressure point of intense competition. This comes after a long period of relative tranquility in payments evolution, aside from the introduction of ATMs and real-time gross settlement systems decades ago. New products and new players have suddenly entered the market for payments services, challenging banks as the traditional top dog in payments. Competition may concern access to the payments network and/or its underlying infrastructures³⁰ as well as other lines of banking business.

Notably, recent innovations in money and payments fundamentally challenge the existing balance in the public-private partnership that serves as the foundation of today’s bank money system, which has simultaneously also come under pressure due to the declining use of banknotes in payments. What is unclear is whether these changes really involve an “unbundling” of banking as we know it. In other words, is the apparent “unbundling of banking” real or are we witnessing processes whereby new payment service providers simply use payments as their entry point into banking, which remains as traditionally bundled as ever?

The next section discusses the new key players in payment innovations and the consequences for banking and banking regulation (and supervision), zooming in on developments in the EU, China, and the US in the age of geostrategic competition.

29 Sirio Aramonte, S. and Fernando Avalos, “The rise of private markets” in BIS Quarterly Review [2021] December 69-82; Carolyn Sissoko, “Banks are different: why bank-based versus market-based lending is a false dichotomy” in *European Journal of Economics and Economic Policies: Intervention* [2025] 22(1): 32-53; Fernando Avalos, Sebastian Doerr, and Gabor Pinter, “The global drivers of private credit” in *BIS Quarterly Review* [2025] March, 13-30; Sergey Chernenko, Robert Larenti, and David S. Scharstein, “Bank capital and the growth of private credit” in *SSRN Working Paper* [2025] https://papers.ssrn.com/sol3/papers.cfm?abstract_id=5097437 accessed 26 July 2026

30 Ulrich Bindseil and George Pantelopoulos, *Introduction to Payments and Financial Market Infrastructures* (Springer 2023)

Fresh Challenges for Policymakers: Payment Innovations and Geopolitics

The (private) challengers to banking come in the form of fintech companies, big techs, and cryptocurrencies, including “stablecoins.” All portend to have some technological edge over banks in payments, and customer usage suggests this is true. Fintechs and big techs are often lumped together and not clearly distinguished, and there is some commonality in that both use innovative technology which they apply to payment services. The distinctive feature of big techs, however, is that they start with a huge network of their original (non-payments) customer base. They were big players in commerce and/or social media to begin with. The fact that their original line of business is built on a huge network appears to tempt them into payments as an additional exploit of network externalities and of potential economies of scope.

It is mainly for these reasons that big techs pose peculiar public policy challenges. The challenges are only partly related to payments as a traditional banking business as such. There are other challenges that may be even more important related to big techs’ sheer network size, mass data aggregation, and deep connections of banking with commerce. Potentially, given the size of its network, a big tech could create a monetary system that is wholly private, global in reach, and largely separated from existing bank money-based monetary systems. It is therefore no surprise that Facebook’s “Libra” initiative in 2019 triggered major concerns among central bankers and other public policy authorities.

Fintechs are a different matter.³¹ The splurge of these companies into the payments market is purely based on technology—typically, as start-up firms—in the absence of any existing “network” to speak of. In fact, part of their advantage may stem from not having legacy issues such as existing IT systems or branches. Another part of their competitive advantage over banks in payments purely stems from some technological edge, most often in offering faster, safer and/or more convenient ways to access and use the existing bank money-based payment system.

Original cryptocurrencies, such as Bitcoin, are not only separate from the existing bank money-based monetary system but also are based on a very different “decentralized ledger” technology (DLT) that comes with the ideological kicker of getting rid of the middleman (the centralized ledger in traditional banking), including the government’s central bank. DLT offers the opportunity to be applied in payments, however inefficient, wasteful, and cumbersome the payment process may be in specific cases, and this feature inspired the marketing of instruments such as Bitcoin as “currencies”—private currencies free from government or bank control.

Importantly, cryptocurrencies can be used in global payments. Any apparent advantage over cross-border bank money payments may arise precisely from avoiding the “frictions” created by national borders rather than from purely technological efficiency. Apart from special situations where these “frictions,” especially legal ones such as anti-money-laundering/countering the financing of terrorism (AML/CFT) laws, are especially annoying, cryptocurrencies are of limited usefulness as payment instruments given their remarkable price volatility—reflecting their true nature

31 Sumit Agarwal and Jian Zhang, “Fintech, lending and payment innovation: a review” in *Asia-Pacific Journal of Financial Studies* [2020] 49(3): 353-367

as highly speculative assets.³² There are variations in the issuance of cryptocurrencies. For instance, Bitcoins get “mined,” or so it may seem, for this mining appearance conveniently hides the fact that the inventor (“Satoshi Nakamoto”) sits on a seigniorage hoard of some \$100 billion.³³ An extreme version of cryptocurrencies with less complicated issuance mechanisms, not masquerading as a payments instrument, is “meme coins”—i.e., collector “coins”—which provide opportunities for online gambling apart from enriching their “issuer” (original seller).

A second generation of cryptocurrencies is known as “stablecoins”.³⁴ Their key characteristic is the promise to stay “stable” in terms of a particular government currency (mostly USD). This means that stablecoins must have some market-making mechanisms in place to actually make the promised peg effective in the market in the face of fluctuating demand. Stablecoins have come to hold a “central” position in the crypto universe as a medium of exchange for pure cryptocurrencies and as a way to temporarily park crypto liquidity. Stablecoins are also used in cross-border payments, side-stepping bank money-based monetary systems while borrowing the stability of some official unit of account.

There are many questions around the promised stability of stablecoins and how they should best be regulated. There are some similarities to the fragility of money market funds, but the threat of “breaking the buck” (or rather, breaking the promise of trading and exchanging at par with bank money at all times) seems even more acute given that stablecoins are more like instant-access deposits than non-payment (saving) deposits, which does not preclude the possibility that they might gain greater use, including internationally, as a liquid store of wealth.

It is in response to this potpourri of challengers to bank money, and also in view of the declining role of banknotes in payments (though not as a precautionary liquid store of wealth) that appears to have accelerated since the pandemic³⁵, that many central banks have decided to enter the fray and explore the issuance of a new form of central bank money called (retail) “central bank digital currency” (rCBDC) for general public use. Specific motivations differ markedly between central banks ranging from financial inclusion, market concentration in

32 See Beat Weber, “Bitcoin and the legitimacy crisis of money” in *Cambridge Journal of Economics* [2014] 40(1); Maarten R.C. van Oordt, “Bitcoin valuation: transactional demand versus speculative bubble” in *VoxEU* 7 December 2024, <https://cepr.org/voxeu/columns/bitcoin-valuation-transactional-demand-versus-speculative-bubble>; Maarten R.C. van Oordt, “On bubbles in cryptocurrency prices” *SSRN Working Papers* 2025, file:///C:/Users/Joerg/Downloads/ssrn-4913885.pdf; Raphael Auer, Ulf Lewrick and Jan Paulick, “DeFying gravity? An empirical analysis of cross-border Bitcoin, Ether and stablecoin flows” in *BIS Working Papers* No 1265 <https://www.bis.org/publ/work1265.pdf>; Paul Krugman, “Crypto is for criming” in *Substack* 16 December 2024 <https://paulkrugman.substack.com/p/crypto-is-for-criming>. Van Oordt applies the classical framework for rational bubbles to model the price of Bitcoin, distinguishing transactional demand and speculative demand derived from net investment inflows. Auer et al. 2025 provide an empirical analysis of cross-border flows of Bitcoin, Ether and stablecoins. Krugman 2024 makes the point that any transactional demand for crypto may be strongly associated with crime.

33 Nassos Stylianou, Nikou Asgari, Dan Clark, Sam Joiner, and Irene de la Torre Arenas, “Can Trump make bitcoin useful?” in *Financial Times* 12 April 2025 <https://ig.ft.com/trump-bitcoin-reserve/>

34 See Rashad Ahmed, R. and Iñaki Aldasoro, “Stablecoins and safe asset prices” in *BIS Working Papers* No 1270, [2025]; Rashad Ahmed, Iñaki Aldasoro, and Chanelle Duley, “Public information and stablecoin runs” in *BIS Working Papers* no 1164 [2025]; Iñaki Aldasoro, Giulio Cornelli, Massimo F. Minesso, Leonardo Gambacorta and Mauricio M. Habib, “Stablecoins, money market funds and monetary policy” in *BIS Working Papers* No 1219 [2025]; Kenechukwu Anadu, Pablo D. Azar, Marco Cipriani, Thomas M. Eisenbach, Catherine Huang, Mattia Landoni, Gabriele La Spada, Marco Macchiavelli, Antoine Malfroy-Camine, and J. Christina Wang, “Stablecoins and crypto shocks: an update” in *Liberty Street Economics* 23 April 2025 <https://libertystreeteconomics.newyorkfed.org/2025/04/stablecoins-and-crypto-shocks-an-update/> accessed 26 July 2026

35 Alberto Di Iorio, Anneke Kosse, and Ismail Mustafi, “And so we pay: more digital and faster, with cash still in play” BIS Committee on Payments and Market Infrastructure, *CPMI Brief* no. 8 (2025) https://www.bis.org/statistics/payment_stats/commentary2503.htm accessed 26 July 2026

payments, national security, and monetary sovereignty.³⁶

There was once a fairly steady balance between banks and the central bank in the “money business”—as a well-established public-private partnership—over the past hundred years. The GFC rocked the balance as banks’ central bank reserves, which were generally very small prior to the crisis, surged in the context of quantitative easing. But through newly remunerating reserves central banks made sure this was not going to rock bank profitability as well. Now, with the declining use of banknotes, it is the central banks’ profitability which is under (longer-term) threat, heralding the unwelcome prospect that one day central banks might become dependent on finance ministries for their own budgets. But other motivations are important too and central banks seem to be inclined to design their rCBDCs in ways that would tend to protect rather than expand their share in the money business – particularly as banks are under pressure from those other challengers anyway.³⁷

All these factors are likely to continue playing a role in the evolution of payments and banking.³⁸ In the next 10 years, decisive change appears possible. It is informative to now take a closer look at some international experiences. Different countries are charting different courses at this stage in the evolution of payments and banking. We will first focus on China, the EU, and the US as the three key global players, before turning to the rest of the world at the dawn of a new era of geopolitics shaping global payments.

5.1 China

China experienced super-rapid innovations in payments, described by many observers as a “revolution” in payments.³⁹ Until about 10 years ago, there was still very extensive use of banknotes in payments in China. The banking system was dominated by large (state-owned) banks catering mainly for large (state-owned) enterprises while presiding over an antiquated bank money-based payment system with little use of card payments. China’s central bankers and regulators then chose to stay on the sidelines as China’s two home-grown big techs—Alipay and WeChat Pay—catapulted “fintech” into China’s payment system. The two giants essentially took over much of the payments market. While doing so—and also exploiting their data advantages derived from their commercial

36 Samuele Bibi, and Islam Yerzhan, “Central Bank Digital Currency and digital payment instruments: Kazakhstan’s experience between obstacles, threats and opportunities” in *Journal of Post Keynesian Economics* [2025] 48(3): 575–603 <https://www.tandfonline.com/doi/full/10.1080/01603477.2025.2503149?src=exp-la>; Kevin Dowd, “So far, Central Bank Digital Currencies have failed” in *Economic Affairs* [2024] 44: 71–94 <https://onlinelibrary.wiley.com/doi/10.1111/ecaf.12621>; Charles A.E. Goodhart, David Llewellyn, and Alistair Milne, “Retail Central Bank Digital Currency: A review and assessment” in *SUERF Policy Notes* no. 370 [2025] <https://www.suerf.org/publications/suerf-policy-notes-and-briefs/retail-central-bank-digital-currency-a-review-and-assessment/>; Geoffrey Goodell, Hazem D. Al Nakib, and Tomaso Aste, “Retail Central Bank Digital Currency: Motivations, opportunities, and mistakes” in *International Journal of Political Economy* [2026] 55(1): 109–143

37 Martin Diehl and Constantin Drott, “Empowering central bank money for a digital future” in *SUERF Policy Notes* no 312 [2023] <https://www.suerf.org/publications/suerf-policy-notes-and-briefs/empowering-central-bank-money-for-a-digital-future/>; European Central Bank, “A Stocktake on the Digital Euro: Summary Report on the Investigation Phase and Outlook on the Next Phase” [2023]; https://www.ecb.europa.eu/euro/digital_euro/progress/shared/pdf/ecb.dedocs231018.en.pdf; ECB, Preparation phase of a digital euro – closing report [2025] https://www.ecb.europa.eu/euro/digital_euro/progress/html/ecb.deprp202510.en.html

38 Samuele Bibi, “Bitcoin, Central Bank Digital Currency and the loss of money value(s)” in *Review of Political Economy* [2025] <https://www.tandfonline.com/doi/full/10.1080/09538259.2025.2456734>; Brett Fiebiger, “The future of money – Central Bank Digital Currencies and/or cryptocurrencies?: Safeguarding monetary sovereignty and deterring U.S.-owned payment system oligopolies” in *Review of Political Economy* [2025] <https://www.tandfonline.com/doi/full/10.1080/09538259.2025.2481424?af=R>

39 Martin Chorzempa, *The Cashless Revolution – China’s Reinvention of Money and the End of America’s Domination of Finance and Technology* (BBS Public Affairs 2022); David Dollar and Yiping Huang (eds), *The Digital Financial Revolution* (China Brookings Institution Press 2022); Thunes, “China: Asia’s digital payments titan” [2025] <https://www.thunes.com/insights/trends/china-asia-digital-payments-titan/>

and/or social media platforms—they added the whole range of other financial services to their business. In other words, starting with payments, they became banks.

As other Chinese fintechs joined the online financial marketplace, fraud was rampant, and turmoil ensued—so regulators stepped in to end China’s brief era of financial Wild West. Regulators stepped in hard on payments too. The two big techs dominating payments had to turn their payments business into “narrow banking”; they have to hold 100 percent backing for their money balances at the Peoples Bank of China. They were essentially absorbed for safekeeping into China’s bank money-based monetary system which is ultimately controlled by the PBoC.

In effect, China marshalled its home-grown big techs as a vehicle to leap-frog Western payment system technology, and ended up with a state-of-the-art payment system that, at the end of the journey, became tightly regulated (again). That is not to say that China has found any satisfactory solutions to dealing with the other challenges posed by big techs related to data aggregation and connections between commerce and banking. Moreover, whatever lessons China has learned in this regard, they may not be easily transferable to the West. Suffice to mention that China is hostile to cryptocurrencies and the PBoC launched a retail CBDC years ago, which uses a two-tier model of CBDC design and pays no interest. The “digital yuan” has only met comparatively limited demand.⁴⁰

While China’s payments revolution is very illuminating, it is hard to tell to what extent the loss of payments business may have weakened Chinese banks in their traditional role. China’s banking system is still reflective of its centrally-planned economy of the past. China’s mostly state-owned banks remain central to the provision of credit to the economy which, in turn, is central to how China’s Communist Party (CCP) controls the economy today. But the CCP has other levers of control at its disposal which make the role of finance in China’s economy uniquely different from Europe and the US (the background to Schumpeter and Keynes’ theorizing). A lack of finance does not seem to hinder innovation and investment in China, although a good number of Chinese private corporations have listed on US stock markets.

5.2 Europe (with a Concentration on the EU and Euro Area)

Europe’s banks may be “universal banks” by tradition, but their financial market activities have customarily played a relatively smaller role reflecting the “underdevelopment” of financial markets compared to America’s more “market-based” financial system. Today, the issue is not so much “underdevelopment” as such but the continued fragmentation in both banking and financial markets along national borders that is holding back Europe’s financial system.

Europe also lacks home-grown big techs, and card payments too are dominated by US players. Attitudes toward crypto vary among EU members. Europe’s banks are either competing or merging with its cohort of flourishing fintechs that have delivered manifold innovations in retail payments access products. The EU has passed regulations on payments at a relatively early stage of the recent surge in payment innovations to provide a level playing field for

40 Ahanya Kumar, “A report card on China’s Central Bank Digital Currency: the eCNY” (Atlantic Council GeoEconomics Center 2022) <https://www.atlanticcouncil.org/blogs/econographics/a-report-card-on-chinas-central-bank-digital-currency-the-e-cny/> accessed 26 July 2026; Haichen Bai, Lin William Cong, Mai Luo, and Ping Xie, “Adoption of Central Bank Digital Currencies: Initial Evidence from China” in *FEB-RN Research Papers* No. 43/2025 <https://ssrn.com/abstract=5022129> accessed 26 July 2026

fair competition between banks and nonbank payment service providers and forestall regulatory arbitrage.⁴¹

Some might say that the EU's payments regulations are too "preemptive" in the sense of hindering experimentation and innovation; exemplifying "over-regulation" as the culprit of Europe's lack of innovation and growth. But with Europe's recent record of banking crises in mind, much is at stake. At least the events in the US in the spring of 2023—when America experienced three of its four largest bank failures in history, with the crypto industry featuring prominently—did not spread to the EU. (Switzerland's Credit Suisse seems to be a special case.)

At this point, ongoing payments innovations taking shape in a settled regulatory environment do not seem to decisively undermine banks' capacity to fulfill their traditional roles as providers of finance and liquidity in Europe's bank-based financial system. Start-up financing appears to be a particular weakness, despite the presence of public sector investment banks (KfW, Bpifrance, for instance). But deficiencies do not seem to stem from payments innovations and their potential impact on banks. Furthermore, the ECB appears to be cautious in designing the "digital euro" (rCBDC) in ways that would not encroach on the banks' money business and profitability either.

Regarding its payments infrastructure, Europe would appear to be broadly on track to follow the path outlined in the BIS blueprint for a modernized monetary system based on bank money but featuring "tokenized" bank deposits and tokenized central bank reserves (wholesale CBDC) with transactions being recorded in a (permissioned) "unified ledger".⁴²

5.3 United States of America

The evolution of payments in America appears to point in a different direction. Despite recent Instant Payment innovations (the Federal Reserve's FedNow service and the Clearing House's RTP network), America's payment system is in many ways "behind the curve" and exceptionally costly. Card payments are deeply entrenched, but many fintechs and some of the US's big techs are active in payments, including collaborations with America's powerful credit card companies. Arguably, US payments regulation is even more dated than its payment system, which is at least catching up.⁴³ Payment service providers are either regulated (and supervised) as banks by the respective authorities (depending on size and location) or "money transmitters", the prudential regulation of which is a state-level responsibility.

The U.S. payment system may be set for disruption though – mainly by a big gamble on crypto. Having issued his own meme coin, President Trump declared that America should be the "crypto capital of the planet". The gamble features the idea of building a strategic crypto reserve and promoting stablecoins as a means to bolster the US

41 In particular, the "Markets in Crypto-Assets Regulation" (MiCA) of 2023 (<https://eur-lex.europa.eu/eli/reg/2023/1114/oj/eng>), which is part of the EU's Digital Finance Strategy, and the EU's "Payment Services Directive" (PSD3, updating PSD2) <https://eur-lex.europa.eu/eli/dir/2015/2366/oj/eng>

42 The Bank for International Settlements makes the case for modernizing rather than replacing the established two-tiered banking system with central banks as guardians of the payment system and stability of the unit of account, creating a new tokenized monetary architecture incorporating "smart contracts" transforming settlement processes. See BIS, "Annual Report", chapter 3: The future monetary system [2022]; BIS, "Annual Report", chapter 3: Blueprint for the future monetary system: improving the old, enabling the new [2023]; BIS, "Annual Report", chapter 3: The next-generation monetary and financial system [2025]; BIS, "Annual Report", chapter 3: Anchoring trust in money: innovations beyond stablecoins [2026]

43 Dan Awrey, *Beyond Banks – Technology, Regulation, and the Future of Money* (Princeton University Press 2024)

dollar's global status.⁴⁴ Given the global roles of the US dollar and US finance, the unfolding American crypto gamble will be a development of global significance.

The “Guiding and Establishing National Innovation for U.S. Stablecoins” (GENIUS) Act⁴⁵ regulating stablecoins was passed contemporaneously with the administration's landmark fiscal legislation – the “One, Big, Beautiful Bill Act” (OBBBA) – in the summer of 2025. While OBBBA set the issuance of Treasuries on a rampant path, the hope is that growing global use of USD stablecoins would boost the demand for Treasuries as backing. America is actively promoting the use of USD stablecoins in foreign nations for both payment and holding purposes. While the Federal Reserve was blocked from launching a CBDC, issuance of stablecoins is open to both banks and nonbanks, including even commercial players.

Domestically, at this time, it is hard to gauge to what extent payment innovations as such might undermine America's financial system's capacity to fulfil its vital roles in providing finance and liquidity to the economy.⁴⁶ Banks have long played a relatively smaller role in the US “market-based” financial system. But perhaps that appearance is misleading. As in the US, too, liquidity produced by banks—as member banks of the Federal Reserve System—remains the closest layer to ultimate system liquidity and therefore central to finance. But the chains of intermediation are becoming ever longer and ever more complex, making it ever harder to identify just how and by which players the job of providing credit and liquidity to the economy is achieved, both in the aggregate and through which specific channels any new purchasing power might reach the creatively destructive entrepreneurs as drivers of innovation and growth in the US economy.

The evolution of the US financial system, featuring rising complexity and lengthening of chains of intermediation and including new forms of “shadow banking” that pertain to payments, might provide indications for the direction of travel elsewhere. Financial evolution makes deciphering the “transmission mechanism of monetary policy” ever harder. It becomes more testing to imagine that the routes through which policy impulses are travelling through the system will remain stable over time. Innovations in payments and their potential impact on banking provide just one of the moving parts in the overall picture.⁴⁷

What is true in normal times is even more so at moments of acute crisis. Crisis management is about flushing official liquidity into the system or opening new valves for the system to draw on when private channels of finance are at risk of stoppage due to a surge in preference for liquidity of higher quality. The Federal Reserve's emergency

44 Donald J. Trump, “Strengthening American Leadership in Digital Financial Technology” Executive Order 23 January 2025 <https://www.whitehouse.gov/presidential-actions/2025/01/strengthening-american-leadership-in-digital-financial-technology/> accessed 26 July 2026

45 See <https://www.congress.gov/bill/119th-congress/senate-bill/1582/text>. As of July 2026, the “Digital Asset Market Clarity Act” (CLARITY Act) is still under discussion in U.S. Congress.

46 And US banks like JP Morgan are experimenting with tokenized deposits (“JPM Coins”). See <https://www.jpmorgan.com/kinexys/jpm-coin>

47 Fiorella De Fiore, Leonardo Gambacorta, and Cristina Manea, “Bit techs and the credit channel of monetary policy” in *BIS Working Papers* no. 1088 [2023] <https://www.bis.org/publ/work1088.htm> accessed 26 July 2026; Samuel G. Hanson, Victoria Ivashina, Laura Nicolae, Jeremy C. Stein, Adi Sunderam, and Daniel K. Tarullo “The evolution of banking in the 21st century: evidence and regulatory implications” in *Brookings Papers on Economic Activity* [2024]

liquidity programs unleashed in the context of the GFC, the pandemic⁴⁸, and the most recent US banking crisis in the spring of 2023⁴⁹ illustrate what is required to keep a complex financial system afloat and in shape to provide adequate finance and liquidity to the economy. While some liquidity programs were designed to bolster banks, either in their lending to the economy or to the financial system, the vast majority were set up to target specific markets directly. Evolution forced central banks to extend their “lending of last resort” responsibility for banks à la Walter Bagehot to financial markets, assuming a “market maker of last resort” role.⁵⁰

Recent rounds of innovation and financial evolution in America were built on securitization and repo and derivative markets. Stablecoins might turn out to be the decisive factor in shaping the extent of connectedness between the crypto universe and dollar banking (and global monetary) system(s). Beyond their backing in the form of T-bills and private traditional short-term financial instruments, including bank deposits, stablecoins will bridge the crypto-dollar divide also through “wealth effects” and “collateral effects”.⁵¹ Monetary policy will be a critical factor shaping the fate of stablecoins. Higher short-term interest rates boost the profitability of stablecoin issuance (seigniorage) but competition from (tokenized) money market funds or (tokenized) Treasury funds will tend to limit the demand for zero-yielding stablecoins. By contrast, a zero-interest rate environment would mean less competition from close substitutes while stablecoin issuers – escaping regulation – might be tempted into “investing” in high-risk assets (including crypto), creating more interconnections with traditional finance.

Globally, America’s crypto gamble will be felt as a double-whammy, first as a rising presence of USD stablecoins competing with national monies of all forms, and second, as all this is unfolding in the context of America’s general push for financial deregulation, shaking up the “Basel endgame” along the way and chancing another “Minsky moment”.⁵²

5.4 Rest of the World and Cross-Border Payments

Much innovation and experimentation in payments is also unfolding with rapid speed in the rest of the world. In Asia, India’s “Unified Payments Interface” (UPI) is lauded as a great success in boosting financial inclusion

48 Jordan Barone, Alain Chaboud, Adam Copeland, Cullen Kavoussi, Frank Keane, and Seth Searls, “The Global Dash for Cash in March 2020”, Federal Reserve Bank of New York *Liberty Street Economics Blog* [2022] <https://libertystreeteconomics.newyorkfed.org/2022/07/the-global-dash-for-cash-in-march-2020/>; Eric Milstein and David Wessel, “What did the Fed do in response to the COVID-19 crisis?” (Brookings Institute 2024) <https://www.brookings.edu/articles/fed-response-to-covid19/> accessed 26 July 2026

49 Cecilia Caglio, Jennifer Dlugosz, and Marcello Rezende, “Flight to Safety in the Regional Bank Crisis of 2023” (NYU Law School Working Papers 2023) https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4457140; Jonathan Rose, “Understanding the speed and size of bank runs in historical comparison” in Federal Reserve Bank of St. Louis, *On the Economy Blog* [2024] <https://www.stlouisfed.org/on-the-economy/2023/may/understanding-the-speed-and-size-of-bank-runs-in-historical-comparison>; Cipriani et al. (2024) Marco Cipriani, Thomas Eisenbach, and Anna Kovner, “Anatomy of the bank runs in March 2023” Federal Reserve Bank of New York *Liberty Street Economics Blog* [2024] <https://libertystreeteconomics.newyorkfed.org/2024/12/anatomy-of-the-bank-runs-in-march-2023/>

50 Perry Mehrling, *The New Lombard Street: How the Fed became the Dealer of Last Resort* (Princeton University Press 2011).

51 Joshua Franklin reports that “JPMorgan explores lending against clients’ crypto holdings” (Financial Times 22 July 2025), <https://www.ft.com/content/70279a78-6e48-49ec-a0c3-b091e9d87bc1> George Steer reports that “Crypto lenders dial up risk with ‘microfinance on steroids’” (Financial Times 27 July 2025) <https://www.ft.com/content/c531a2bc-d258-431b-855c-2a6aaf230661?syn-25a6b1a6=1>

52 Charles A.E. Goodhart and Rosa Lastra, “Financial regulation: Where do we stand?” in CEPR Discussion Paper no. 21590 [2026] <https://ideas.repec.org/p/cpr/ceprdp/21590.html> accessed 26 July 2026

and reaching many previously unbanked people.⁵³ In Latin America, Brazil's central bank coordinated an instant payment system initiative ("Pix") that proved so successful⁵⁴ as to provoke an attack by President Trump, alleging unfair discrimination against US credit card giants.⁵⁵ Additionally, Kenya's mobile money success story M-Pesa has reached many countries in Africa and beyond.⁵⁶ Countries at different stages in their financial development explore different paths.

The "quest for speed in payments" continues.⁵⁷ A key obstacle is that countries have different payment and settlement infrastructures that hinder global payments.⁵⁸ For now, the G20 continues to pursue a coordinated upgrade to cross-border payments, traditionally based on correspondence banking with SWIFT as the central messaging network hub.⁵⁹ Related initiatives (initially) spearheaded by the BIS Innovation Hub include "Nexus", "Dunbar", "Jura", "mBridge" and "Agorá".⁶⁰ CBDCs, stablecoins, and connecting national instant payment systems—perhaps built on tokenized bank deposits—provide alternative avenues for cross-border payments that will not be fully compatible without a high degree of international cooperation in both regulation and infrastructure. Correspondence banking networks typically include credit and hence feature the elasticity characteristic of bank money, in contrast to stablecoins.

While global finance would gain from more efficient cross-border wholesale payments, remittances represent an important concern for cross-border retail payments. The high cost of remittances and the lack of inclusiveness of banking continue to represent development challenges in many poorer countries. This is a niche in which stablecoin usage seems promising, and principally a safe "narrow banking" stablecoin version backed by wCBDC is conceivable. But this is not the approach pursued by the Trump administration which seems determined to extract more dominant currency rent ("exorbitant privilege"). Alas, dollar stablecoins might further impinge on nations' monetary sovereignty and further augment vulnerabilities created by financial globalization,

53 Sen 2025). Giulio Cornelli, Jon Frost, Leonardo Gambacorta, Sonalika Sinha, and Robert M. Townsend, "The organization of digital payments in India – lessons from the Unified Payments Interface (UPI)" in *SUERF Policy Notes* no. 355 [2024] https://www.bis.org/publ/bppdf/bispap152_e_rh.pdf accessed 26 July 2026; Julius Sen, "India's Unified Payments Interface (UPI) system and its transformative impact" in *Financial Markets Group Discussion Papers* DP 918 [2025] <https://www.fmg.ac.uk/publications/discussion-papers/indias-unified-payments-interface-upi-system-and-its-transformative> accessed 26 July 2026

54 Angelo Duarte, Jon Frost, Leonardo Gambacorta, Priscilla Koo Wilkens, and Hyun Son Shin, "Central banks, the monetary system and public payment infrastructures: lessons from Brazil's Pix" in *BIS Bulletin* No. 52 [2022] <https://www.bis.org/publ/bisbull52.pdf> accessed 26 July 2026

55 Michael Stott and Michael Pooler, "Brazil rallies to defend much-loved payment system from Donald Trump's attack." In *Financial Times* 21 July 2025, <https://www.ft.com/content/e17e6de1-d863-46f8-bfab-fa8cbfc495f0>; Samantha Pearson, "Why Trump Is Going After Brazil's Beloved Payment System" *Wall Street Journal* 17 July 2026 <https://www.wsj.com/world/americas/trump-brazil-payment-system-pix-097baca?mod=Searchresults&pos=1&page=1> accessed 26 July 2026

56 IMF Blog "Fintech in Sub-Saharan Africa: A Potential Game Changer" [2019] <https://www.imf.org/en/Blogs/Articles/2019/02/14/fintech-in-sub-saharan-africa-a-potential-game-changer> accessed 26 July 2026

57 Morten L. Bech, Yuuki Shimizu, and Paul Wong, "The quest for speed in payments" in *BIS Quarterly Review* [2017] https://www.bis.org/publ/qtrpdf/r_qt1703g.htm accessed 26 July 2026

58 Kabadjova et al. 2023

59 Marco Cipriani, Linda S. Goldberg, and Gabriele La Spade, "Financial sanctions, swift, and the architecture of the international payment system" in *Journal of Economic Perspectives* [2023] 37(1): 31–52; Rodney Garratt, Patricia Koo Wilkens, and Hyun Son Shin, "Next generation correspondent banking" in *BIS Bulletin* no. 87 [2024]

60 Rudy Bouguellia and Bruno De Contib, "Building bridges or competing in a payments arms race? The geopolitics of the mBridge Project" in *International Journal of Political Economy* [2026] 55(1): 70–87

especially—but not only—in developing countries.⁶¹

A fundamental challenge in payments, especially global payments, concerns the interoperability of different payment rails and systems. Traditionally global cooperation focused on establishing network compatibility and connectivity. With the (partial) fragmentation of the global financial system and global trade system that appears to be in the making, (partially) fragmented and competing payment systems may become a feature rather than a bug.

As payments have thus become a matter of geopolitics, China's ambitions to further expand the external reach of renminbi payments, through CIPS and other channels, whilst reducing its dependency on the US dollar, seem most advanced. After successfully creating a common currency (adopted by a majority of countries) and the associated payments infrastructure, Europe's aspired "strategic autonomy", which has found new urgency in light of the ongoing dissolution of the transatlantic partnership by US President Trump, will inevitably also include payments; as protection of its monetary sovereignty. Policymakers confronted with the usual challenges of financial innovation and evolution will have to be on geopolitical alert as well.

06

Conclusions

A conventional perspective might suggest that "better payments" are essentially an efficiency booster to the economy (either productivity or convenience). The Minskyan synthesis of Schumpeter and Keynes presented here would not deny this prospect – but add another dimension as innovation shapes the evolution of financial structures. Specifically, *if payments become "unbundled" from banking, the capacity of banks to provide finance and liquidity to the economy might become impaired*. The issue has both a micro dimension—allocation (Schumpeter)—as well as a macro dimension—stability (Keynes). Policymakers will be interested in whether regulatory arbitrage is at play or level-playing-field competition guiding the financial system towards balancing any impact that payment innovations might have on banking with respect to the overall provision of finance and liquidity. Central bankers will be particularly interested in whether any reduced role of banks – the second line of defense in the system and vital providers of elasticity – might call for further extensions of the first line of defense, by central banks themselves.

Banks remain the closest liquidity layer to the ultimate (official) system liquidity. Banks stand at the (private) core of expanding "chains of financial intermediation" featuring non-bank financial intermediaries that constitute the shadow banking sprawl. Banks could lose their informational advantages gained through payment services if payments "unbundled" from banking. The presence of big techs in payments raises questions about a level playing

61 EC B, "Stablecoins: implications for monetary policy, financial stability, market infrastructure and payments, and banking supervision in the euro area" Crypto-Assets Task Force, Occasional Paper no. 247 [2020] <https://www.ecb.europa.eu/pub/pdf/scpops/ecb.op247~fe3df92991.en.pdf>; Jan A. Kregel and Paolo Savona, "The Impact of Technological Innovations on Money and Financial Markets" Levy Economics Institute Public Policy Brief No. 150 [2020]; Jamie Morgan, "Systemic stablecoin and the brave new world of digital money" in *Cambridge Journal of Economics* [2023] 47: 215–60; Colin Chia and Eric Helleiner, "Central bank digital currencies and the future of monetary sovereignty" in *Finance and Space* [2024] 1(1): 35–48; Philip R. Lane, "The digital euro: maintaining the autonomy of the monetary system", (ECB 2025) https://www.ecb.europa.eu/press/key/date/2025/html/ecb.sp250320_1~41c9459722.en.html; Daniela Gabor, "Transatlantic faultlines: risks and opportunities EU-US macrofinancial relations" (European Parliament Think Tank 2025) [https://www.europarl.europa.eu/thinktank/en/document/ECTI_STU\(2025\)764372](https://www.europarl.europa.eu/thinktank/en/document/ECTI_STU(2025)764372)

field in information, apart from other delicate public policy issues. Speedier payments mean speedier runs on runnable (uninsured) deposits; especially instant-access deposits but perhaps others as well.

As financial evolution progresses, the never-ending challenges of banking regulation remain much the same. Regulation both adapts to and shapes financial evolution. While banks have always faced competition as lenders and liquidity providers, today's fierce competition in payments is new and quite disruptive. The long-established balance in the public-private partnership on which bank money traditionally rests is under pressure. The specific design of rCBDCs will be one important factor shaping the balance going forward. But new private nonbank players are far more critical. Perhaps banking on payments is not really outmoded, but nonbank payment service providers are using payments as their entry point into banking – as money issuance (and seigniorage) remain as attractive as ever; especially if one can hide from banking regulation as a new round in “shadow banking” with banking on payments is unfolding.

Globally, the evolution in payments is taking place within different national regulatory environments. China has marshalled its home-grown big techs to “revolutionize” its payment system, before turning their payments business into “narrow banks.” The EU keenly established a level playing field in an attempt to avoid fresh banking instabilities. Here the future may be pointing in the direction of a tokenized bank money-based monetary architecture. The US is taking a more adventurous approach that features a gamble on crypto. The US banking crisis of the spring of 2023 illustrated that the crypto universe and the dollar monetary system are already interconnected to a considerable degree.

Stablecoin positioning is the wild card in the game. Geostrategic considerations are at play. Global payments are now the subject of geopolitics. The Trump administration sees stablecoins as a way to reinforce dollar supremacy. Eurodollar (offshore) stablecoins promise both stability and connectivity – beyond sovereign reach. Fresh threats of vulnerability in weaker countries in the rest of the world seem likely. Even advanced economies may find their monetary sovereignty threatened, calling for adequate regulatory responses by the authorities.

1.4
Professional Insight

Early Warning Systems for Financial Contagion: A Network-Based Framework for Financial Supervisory Authorities

Alexandru Petrescu, Marius Acatrinei and Silviu Nistor



Authors' Bios



Alexandru Petrescu represents A.S.F. as a member of the Boards of Supervisors of the European Insurance and Occupational Pensions Authority (EIOPA) and the European Securities and Markets Authority (ESMA). Previously, he was a member of the Romanian Government, holding successive portfolios as Minister of Economy, Minister for Business Environment, Trade and Entrepreneurship, and Minister of Communications and Information Society. During his last ministerial mandate, he coordinated the European Digital Single Market agenda as President of the Transport, Telecommunications and Energy (TTE) Council during Romania's Presidency of the Council of the European Union. He holds a UK BSc in Business Administration and has extensive senior executive

experience in banking and financial services across the UK, Denmark, and Romania, including investment banking, payments, cybersecurity, and complex ICT infrastructures. He was a visiting scholar and is a research associate at the Levy Economics Institute of Bard College. He was a research fellow at the Hamburg Institute for Advanced Study, as well as a consultant at the United Nations Conference on Trade and Development. He received a bachelor's degree with honors in economics from the University of the Witwatersrand (Republic of South Africa), a diplom-volkswirt from the University of Hamburg (Germany), MA and Ph.D. degrees in economics from the University of Cambridge (UK), and Habilitation (post-doc) from the University of Hamburg (Germany).



Marius Acatrinei conducts econometric research on financial stability and systemic risk. He holds a PhD degree from Romanian Academy. His research focuses on network-based approaches to financial contagion and the application of quantitative methods to macroprudential surveillance.



Silviu Nistor monitors market developments, assesses financial stability, and identifies systemic risks in the non-bank financial sector. He holds a BA in International Relations and European Studies and an MSc in Business Intelligence. His research interests include financial stability, fintech regulation and the geopolitical drivers shaping global financial systems.

Abstract

Financial supervisory authorities increasingly recognise geopolitical instability as a structural driver of systemic risk, yet existing surveillance frameworks offer few transparent tools for measuring contagion as it emerges. This article develops such a tool: a real-time early warning framework combining nonlinear Granger-causal network analysis with spectral methods, applied to daily returns of 26 European stock indices over 2019–2025. Two positive results stand out. First, the European market network exhibits pronounced regime-switching between two structurally distinct states. In tranquil periods, the network is sparse and acyclic; the spectral radius is exactly zero in 244 of 337 rolling windows, whereas at the COVID-19 onset more than one third of all 650 possible directed predictive links become simultaneously significant (density 36.2%, spectral radius 10.36; a second spike of similar magnitude occurs in August 2025). Second, the transition is qualitative, not merely quantitative: contagion coincides with the emergence of directed cycles — the feedback loops through which shocks can amplify — which the spectral radius detects and edge-counting density cannot (178 windows contain edges but no cycle; the two measures are genuinely complementary, $R^2 = 0.785$). By contrast, an extensive robustness battery — overlap-corrected inference, bootstrap identification analysis, threshold and look-ahead sensitivity — shows that transmission patterns specific to geopolitical, trade-policy or economic-policy uncertainty cannot be statistically identified in this sample. The framework's contribution is transparent, real-time measurement of network fragility anchored by a documented crisis benchmark, with direct applications in macroprudential surveillance and early warning design.

JEL Classification: G01, G28, C32, C58, F36

Keywords: financial contagion, early warning systems, nonlinear Granger causality, spectral radius, geopolitical risk, network analysis, macroprudential surveillance

Early Warning Systems for Financial Contagion: A Network-Based Framework for Financial Supervisory Authorities

Introduction

When Russia invaded Ukraine in February 2022, European supervisory authorities confronted a question their existing stress-testing models were ill-equipped to answer: how rapidly would financial contagion spread across European markets, and which nodes in the financial system would prove most vulnerable? The weeks that followed demonstrated how quickly geopolitical shocks can transform isolated market movements into system-wide fragility. Across the major crisis episodes in our sample, including COVID-19, the Russia-Ukraine war, and Middle East escalation, network density, the proportion of the $26 \times 25 = 650$ possible directed predictive links that are statistically significant in a given window, rose from near-zero baselines. Only the COVID-19 episode reached more than a third of all possible links (36.2%), a near-complete breakdown of market segmentation; the Russia-Ukraine war and the Middle East escalation produced far more moderate peaks of 8.5% and 13.1% respectively.

This episode was not isolated. The COVID-19 pandemic onset in early 2020 triggered an even more dramatic network tightening, while the escalation of Middle East tensions in late 2024 produced a qualitatively similar but substantially smaller tightening. These events underscore a fundamental challenge for financial supervisors: geopolitical instability has evolved from an occasional external shock into a persistent, structural driver of systemic risk.¹ Traditional macrofinancial models, built primarily on growth, inflation, and interest rate dynamics, struggle to capture the anticipatory, nonlinear, and cross-market transmission mechanisms through which political events reshape financial interconnectedness.

This article addresses this supervisory gap by presenting a practical framework for detecting financial contagion in real time. The approach integrates nonlinear Granger-causal network analysis with spectral methods to produce a single, interpretable indicator of systemic fragility: the spectral radius of the network adjacency matrix. Mathematically, the spectral radius $\lambda_{\max}$ represents the largest eigenvalue of the adjacency matrix (formally defined in Section 2), an indicator that governs the speed and persistence of shock propagation through the network.² When this indicator rises sharply, it signals a regime transition from diversification to contagion, providing supervisors with an early warning signal and a window to implement precautionary measures.

The framework is applied to 26 European national stock market indices over the period 2019–2025, encompassing the COVID-19 crisis, the Russia-Ukraine war, ongoing US-China trade tensions, and multiple episodes of elevated policy uncertainty. Three categories of uncertainty are examined using the Caldara and Iacoviello³ indices for geopolitical risk (GPR) and trade policy uncertainty (TPU), and the Baker, Bloom, and Davis⁴ index for US economic policy uncertainty (EPU). Each exhibits distinct transmission dynamics, with important implications for how supervisors should interpret and respond to different types of uncertainty shocks.

The article makes three principal contributions. First, it introduces a nonlinear Granger-causal network approach using kernel-based regression that captures predictive linkages between markets beyond what linear correlation methods detect. Second, it links these networks to spectral analysis, using the dominant eigenvalue as a summary indicator of systemic fragility and documenting its regime-switching behaviour. Third, it subjects the shock-network relationship to an extensive robustness battery — threshold sensitivity, look-ahead-bias correction, overlap-corrected inference and bootstrap identification analysis — and reports transparently that channel-specific transmission claims do not survive it.

The remainder of this article is organised as follows. Section 1 situates the framework within the broader supervisory context. Section 2 presents the methodological framework, including the technical foundations. Section 3 reports the empirical findings. Section 4 presents robustness checks. Section 5 discusses implications for financial supervisory authorities. The article concludes with reflections on the trajectory of geopolitical risk in financial stability surveillance.

1 World Economic Forum, *The Global Risks Report 2025* (20th edn, WEF 2025)

2 D Acemoglu, A Ozdaglar and A Tahbaz-Salehi, 'Networks, Shocks, and Systemic Risk' (NBER Working Paper No 20931, 2015)

3 D Caldara and M Iacoviello, 'Measuring Geopolitical Risk' (2022) 112 *American Economic Review* 1194.

4 SR Baker, N Bloom and SJ Davis, 'Measuring Economic Policy Uncertainty' (2016) 131 *The Quarterly Journal of Economics* 1593.

01

Geopolitical Risk and Financial Stability: The Supervisory Challenge

The recognition that geopolitical factors pose material risks to financial stability is not new. However, the period since 2020 has fundamentally altered the supervisory landscape. The European Central Bank's Financial Stability Review identifies trade tensions, tariff shocks, cyber vulnerabilities, and supply chain fragmentation as central challenges for euro area markets.⁵ Three key vulnerabilities are highlighted: elevated valuations and liquidity mismatches among non-bank financial intermediaries; credit risks to export-oriented industries exposed to geopolitical fragmentation and fiscal vulnerabilities arising from increased defence spending and weak growth prospects.

The transmission channels through which geopolitical shocks propagate have become increasingly complex. Research demonstrates that markets react rapidly to political events through both financial channels, investor sentiment, liquidity stress, and risk premia adjustments, and real-economy channels, including commodity price dislocations, supply chain disruptions, and inflation volatility.⁶ Energy markets respond particularly sharply to geopolitical conflicts, with direct effects on inflation expectations, bond yields, and equity valuations.⁷ During such episodes, capital typically reallocates toward traditional safe-haven assets, generating correlated movements that supervisory models must capture.

The network structure of financial markets has emerged as a critical determinant of contagion dynamics. The connectedness framework of Diebold and Yilmaz⁸ provides the conceptual foundation by aggregating pairwise forecast error variance decompositions into system-wide spillover indices, enabling measurement of directional linkages across markets. Billio, Getmansky, Lo, and Pelizzon⁹ demonstrate that Granger-causal networks among financial institutions have predictive value for systemic crises, while Demirer, Diebold, Liu, and Yilmaz¹⁰ extend the connectedness approach to high-dimensional settings with hundreds of institutions. Theoretical work by Acemoglu, Ozdaglar, and Tahbaz-Salehi¹¹ demonstrates that network topology governs whether microeconomic shocks remain localised or cascade into systemic events. Their framework shows that nonlinearity and heterogeneity in network interactions can generate phase transitions between stable and fragile regimes, insights that map closely onto financial contagion. More recent contributions highlight how multilayer financial networks, incorporating both institutions and market infrastructures, fundamentally alter vulnerability assessments.

5 European Central Bank, *Financial Stability Review* (May 2025).

6 M Hodula, M Melecky and M Urban, *Geopolitical Risks and Financial Markets* (Czech National Bank 2024).

7 L Kilian, M Plante and AW Richter, 'Geopolitical Tensions and the Energy Market Response' (*Dallas Fed Working Paper*, 2024).

8 FX Diebold and K Yilmaz, 'Measuring Financial Asset Return and Volatility Spillovers, with Application to Global Equity Markets' (2009) 119 *The Economic Journal* 158; FX Diebold and K Yilmaz, 'Better to Give than to Receive: Predictive Directional Measurement of Volatility Spillovers' (2012) 28 *International Journal of Forecasting* 57; FX Diebold and K Yilmaz, 'On the Network Topology of Variance Decompositions: Measuring the Connectedness of Financial Firms' (2014) 182 *Journal of Econometrics* 119.

9 M Billio and others, 'Econometric Measures of Connectedness and Systemic Risk in the Finance and Insurance Sectors' (2012) 104 *Journal of Financial Economics* 535.

10 M Demirer and others, 'Estimating Global Bank Network Connectedness' (2018) 33 *Journal of Applied Econometrics* 1.

11 Acemoglu, Ozdaglar and Tahbaz-Salehi (n 2).

Despite these advances, a gap persists between academic network analysis and practical supervisory application. Existing approaches often require extensive computational resources, return scalar risk levels without an interpretable network topology that supervisors can act upon, or fail to distinguish between different types of uncertainty shocks. Supervisors require tools that are transparent, computationally tractable, and capable of providing actionable signals within operational decision-making timeframes. The framework developed in this article responds to these requirements.

02

A Network-Based Framework for Contagion Detection

The methodological framework proceeds in three stages: (i) kernel-based causality testing identifies directional predictive relationships between markets; (ii) significant relationships are encoded into time-varying adjacency matrices estimated over rolling windows; (iii) spectral analysis of these matrices produces a scalar systemic risk indicator (the spectral radius) that captures the network's amplification potential. Full mathematical derivations, estimation algorithms, and computational implementation details are provided in the article's companion Appendix.

2.1 Nonlinear Granger Causality via Kernel Regression

Standard linear Granger causality tests whether past values of one variable improve predictions of another but assumes linear relationships. During stress periods, market dynamics depart substantially from linearity and threshold effects, asymmetric responses, and regime-dependent behaviour become prevalent. Early nonparametric approaches, notably the Hiemstra and Jones test¹², demonstrated the importance of capturing nonlinear predictive relationships, though Diks and Panchenko¹³ showed that this test is oversized under short-run dependence and proposed a corrected statistic. The framework addresses this limitation by employing the Nadaraya–Watson kernel estimator, which allows the data to reveal predictive relationships without imposing functional form assumptions.

For each pair of the 26 European indices, the method tests whether lagged returns of market i improve predictions of market j beyond what j 's own history provides. A lag order of $L = 1$ is used, selected by the Schwarz Information Criterion. The test statistic compares in-sample mean squared errors from restricted (own lags only) and unrestricted (own lags plus cross lags) models, both fitted and evaluated on the same window:

$$S_{\text{obs}} = \text{MSE}_{\text{restricted}} - \text{MSE}_{\text{unrestricted}}$$

A positive value indicates in-sample predictive improvement, suggesting $i \rightarrow j$ causality. Because the kernel bandwidth is recomputed in each regressor space, the unrestricted model does not algebraically nest the restricted one, and S_{obs} can be negative in finite samples; the statistic has no autonomous interpretation, and

12 C Hiemstra and JD Jones, 'Testing for Linear and Nonlinear Granger Causality in the Stock Price–Volume Relation' (1994) 49 *The Journal of Finance* 1639.

13 C Diks and V Panchenko, 'A New Statistic and Practical Guidelines for Nonparametric Granger Causality Testing' (2006) 30 *Journal of Economic Dynamics and Control* 1647.

the inferential content resides entirely in the permutation distribution. The permutation test is one-sided (right tail), $p = \#\{\text{Sperm} \geq \text{Sobs}\}/B$, consistent with the alternative hypothesis $\text{Sobs} > 0$. The Gaussian kernel bandwidth is set to the median pairwise distance, a choice that adapts automatically to data dispersion and is robust to the extreme observations common in crisis periods. Statistical significance is assessed via permutation testing ($B = 500$ replications), with Benjamini–Hochberg false discovery rate correction ($\alpha = 0.05$) applied to control for the 650 pairwise tests conducted at each window. With $B = 500$, the Monte Carlo standard error of a permutation p-value near $\alpha = 0.05$ is approximately $\sqrt{(0.05 \times 0.95 / 500)} \approx 0.010$, so reported p-values should be interpreted with an implied 95% confidence interval of approximately ± 0.02 . For higher-precision applications, $B \geq 2,000$ is recommended. Indeed, a resolution constraint makes a larger B more than a refinement: admissible permutation p-values lie on a grid of spacing $1/B = 0.002$, while the Benjamini–Hochberg threshold at the lowest ranks is of order $\alpha/650 \approx 8 \times 10^{-5}$, so at $B = 500$ edge selection at those ranks is driven by ties at the grid floor rather than by resolved differences in evidence.

2.2 Time-Varying Directed Networks

Networks are estimated over 100-day rolling windows (step = 5 days), producing a sequence of directed adjacency matrices A_t . Edge weights are defined as $A_{ij} = 1 - p_{ij}$, where p_{ij} is the raw (unadjusted) permutation p-value of the pairwise test from market i to market j ; edges are retained only if significant under the Benjamini–Hochberg criterion (zero otherwise). Because retained p-values satisfy $p_{ij} \leq 0.018$ in this sample, all admitted weights lie in $[0.982, 1]$ and the adjacency matrix is effectively binary: the weight measures statistical confidence in a link's existence rather than its economic strength. Row i captures outgoing predictive influence; column j captures incoming predictive influence. This directed structure distinguishes shock transmitters from receivers, a distinction critical for identifying systemically important markets.

Crucially, the network is constructed entirely from return data, independent of any uncertainty measure. This design choice ensures that comparisons between different uncertainty types are not confounded by construction artefacts. The uncertainty indices enter only at the analysis stage, when network properties are related to shock occurrences. Figure 1 illustrates the contrast: during the tranquil window (February 2023), the adjacency matrix is nearly empty (density = 0.000), while during the crisis peak (August 2025), the matrix is densely populated (density = 0.363), with strong predictive links spanning virtually all market pairs.

2.3 The Spectral Radius as Early Warning Indicator

The central output of the framework is the spectral radius: the largest eigenvalue of the adjacency matrix, denoted $\lambda_{\max}(A_t) = \max|\text{eig}(A_t)|$. In network diffusion theory, the dominant eigenvalue governs the dynamics of shock propagation through a network.¹⁴ Specifically, if we model shock transmission as a linear process where each node's state depends on its neighbours' previous states, the spectral radius determines whether perturbations amplify or decay over time.

When $\lambda_{\max} < 1$, shocks decay exponentially and the network is stable and diversification benefits remain intact. When $\lambda_{\max} \approx 1$, the system is near a critical threshold. When $\lambda_{\max} > 1$, shocks can amplify as they propagate, potentially

14 JC Hua and others, 'Using Dynamic Mode Decomposition to Extract Cyclic Behavior in the Stock Market' (2016) 448 *Physica A: Statistical Mechanics and Its Applications* 172

generating cascading failures. In our empirical application, tranquil-period networks are typically sparse directed acyclic graphs, for which $\lambda_{\max}$ is exactly zero (244 of 337 windows); during crisis episodes $\lambda_{\max}$ exceeds 10. This zero-to-double-digits transition captures economically meaningful regime shifts and implies that the tranquil-period benchmark is zero rather than one.

Network density D_t provides a complementary measure: $D_t = (\text{number of FDR-significant directed edges})/650$, where $650 = 26 \times 25$ is the number of ordered pairs excluding self-links. It counts edges rather than summing their weights; because admitted weights all lie in $[0.982, 1]$, the weighted and counting versions differ by less than 0.2% on average. Density and the spectral radius are genuinely complementary: density counts links, while the spectral radius responds only to cyclic structure — in 178 of the 337 windows the network has edges but no directed cycle, so $\lambda_{\max}$ is exactly zero despite non-zero density. Across the 337 windows, a regression of $\lambda_{\max}$ on rescaled density yields $R^2 = 0.785$: the two indicators are correlated, as expected, but far from redundant. Early warning signals are triggered when the Z-score of $\Delta\lambda_{\max}$ exceeds 2 or when density surpasses its 90th percentile.

The framework possesses three properties essential for supervisory application. Nonlinearity: kernel regression captures complex dependencies that linear methods miss, particularly during crisis periods when market dynamics depart from normality. Directionality: the Granger-causal structure distinguishes markets with outgoing predictive influence from those primarily receiving it, providing a proxy for identifying systemically important markets. Aggregation: spectral analysis compresses 650 pairwise relationships into a single scalar indicator, facilitating real-time monitoring while preserving the network's global amplification properties.

03

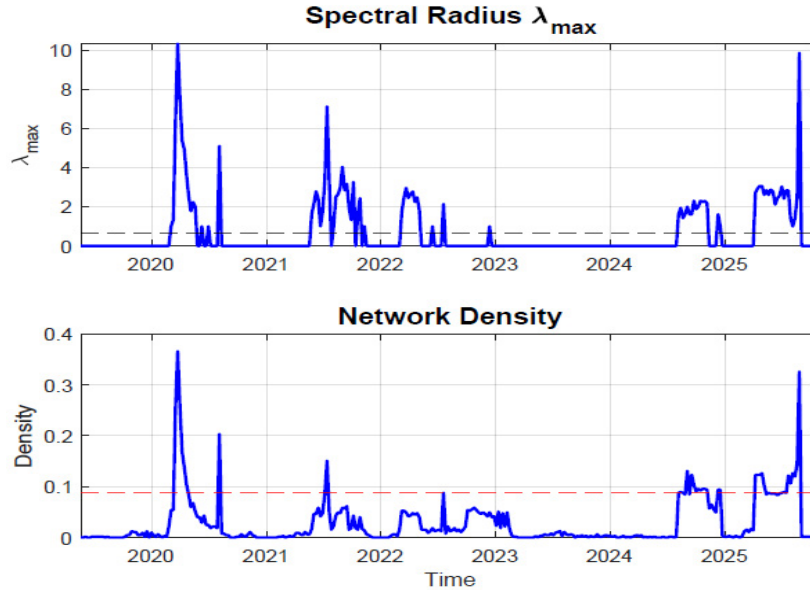
Evidence from European Markets (2019–2025)

The framework is applied to daily returns of 26 European stock market indices spanning January 2019 to October 2025. Geopolitical shocks are defined as 99th-percentile exceedances of each uncertainty index, applied separately to Geopolitical Risk, Trade Policy Uncertainty and Economic Policy Uncertainty to isolate distinct transmission channels. The shock-network relationship is assessed through: (i) two-sample t -tests comparing density in shock versus non-shock windows; (ii) cross-correlation analysis to identify optimal lead-lag structure; (iii) event studies tracking average density trajectories around shock dates; and (iv) predictive regressions of density changes on lagged shock indicators.

3.1 Regime Transitions in Network Connectivity

Figure 2 displays the evolution of the spectral radius and network density over the sample period. Both indicators exhibit pronounced regime-switching behaviour, with two dominant spikes corresponding to periods of extreme systemic fragility.

FIGURE 2: Spectral radius ($\lambda_{\max}$, upper panel) and network density (lower panel) over 337 rolling windows, January 2019–October 2025. Dashed lines show the sample mean (upper) and the 90th percentile early warning threshold (lower).



Source: Authors' own calculations

The COVID-19 pandemic onset (early 2020) produced a spectral radius of 10.36 (window ending 24 March 2020), the second-highest value in the sample; the sample maximum of 10.59 occurs in the window ending 26 August 2025. Network density simultaneously peaked at around 36%, indicating that more than one-third of all possible directed causal links became statistically significant. This represents a near-complete breakdown of market segmentation, where predictive relationships propagated across virtually all market pairs simultaneously.

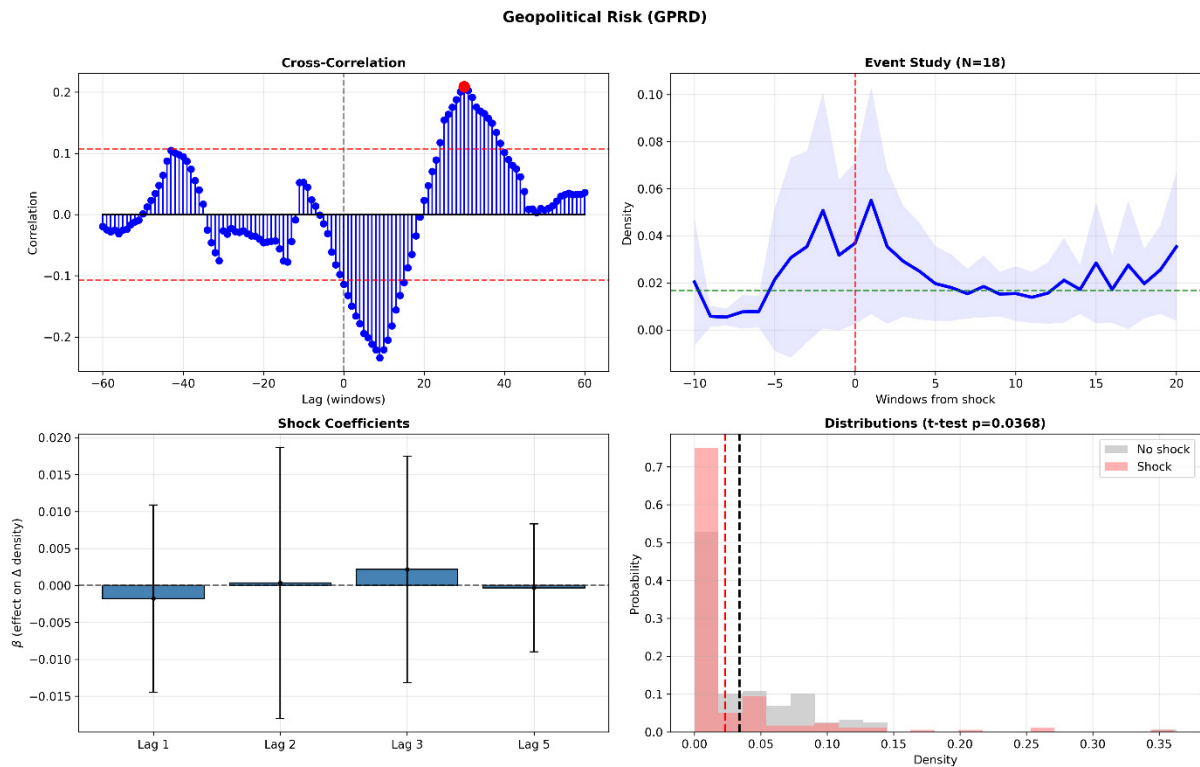
The Middle East escalation (late 2024–early 2025) generated a second, more moderate spike, with the spectral radius peaking at 3.38 (window ending 29 October 2024) and density reaching 13.1%. The second major spike of the sample occurs instead in August 2025 ($\lambda_{\max} = 10.59$, density 36.3%), an episode not associated with a named uncertainty event in our sample; its single-window morphology (edge counts of 93, 236 and 1 in consecutive windows) warrants caution in interpretation. During tranquil periods (notably 2023 through mid-2024), the spectral radius was exactly zero in every window — tranquil-period networks are sparse and acyclic — and network density hovered near zero (the modal value during the calmest stretches is approximately 0.2%, though the sample-wide non-shock mean is higher at approximately 3.4% due to the inclusion of post-crisis recovery windows). These baseline conditions reflect normal market functioning where diversification benefits remain intact.

The dashed line in the density panel (approximately 0.085) represents the 90th percentile threshold; exceedances trigger early warning signals. The early warning system was triggered in 35 out of 337 windows: 8 in 2020, 3 in 2021, none in 2022 or 2023, 9 in 2024 and 15 in 2025. Notably, no trigger occurs during the Russia-Ukraine escalation of 2022, whose density peak (8.5%) remains below the 90th-percentile threshold. Deviations above the sample mean, particularly when standardised Z-scores exceed 2, flag potential contagion onset.

3.2 Geopolitical Risk: Delayed but Persistent Transmission

Geopolitical risk shocks, defined as GPR index realisations exceeding the 99th percentile, are associated with a statistically significant difference in network density relative to non-shock windows. The two-sample t-test yields $p = 0.036$, though notably in the direction of lower contemporaneous density during shock windows (mean 0.023 versus 0.034 in non-shock windows). This contemporaneous contrast should be interpreted with caution: the shock indicator marks any window whose 100-day estimation sample contains at least one shock day (180 of 337 windows), so the comparison contrasts broad calendar regimes rather than isolated events, and the cross-correlation analysis reported below does not identify a lead-lag structure that could explain the sign.

FIGURE 3: Geopolitical Risk (GPR) shock analysis. Four panels: (a) cross-correlation between GPR shock indicator and network density (peak at lag +30 windows; location not statistically identified — see text); (b) event study of mean density trajectory around $N = 18$ shock events with 95% confidence bands; (c) regression coefficients for lagged shock counts predicting density changes; (d) density distributions in shock versus non-shock windows with Welch's t-test.



Source: Authors' own calculations

The cross-correlation function attains its maximum of approximately 0.209 at lag +30 windows. Two considerations preclude a directional interpretation. First, under the sign convention of the estimator, a peak at positive lag indicates that density leads the shock indicator, not the reverse. Second, and more fundamentally, the location of the peak is not statistically identified: a moving-block bootstrap (block length 20, 10,000 replications) yields a 95% confidence interval for the peak location of $[-87, +87]$ windows — virtually the entire admissible range — and

the peak height (0.209) falls below the overlap-corrected significance bound of ± 0.292 . We therefore report the cross-correlation function descriptively and attach no transmission-channel interpretation to it.

The baseline density (green dashed line) sits at approximately 0.017, the average over event windows -10 to -3 ; the reported $+227\%$ increase measures the post-shock peak (0.055) against this baseline and is sensitive to that choice (against the pre-shock mean over $-10..-1$ it is $+154\%$, and against a baseline outside the overlap-contaminated region, $-20..-11$, it is $+109\%$). The trajectory peaks at window $+1$ (0.055), immediately after the shock, and declines thereafter; the mean over windows $+5$ to $+15$ (0.018) lies below the value at window 0 (0.037). Density is already elevated before the shock date (mean 0.034 over $-5..-1$). An identification caveat applies to the whole profile: with a 100-day window advancing in 5-day steps, each shock day enters the estimation sample of 20 consecutive windows, spanning event-study offsets -10 to $+10$. Restricting the comparison to uncontaminated regions ($-20..-11$ versus $+11..+20$) eliminates the effect entirely for GPR (0.0261 versus 0.0258; paired $t = -0.02$, $p = 0.51$). The confidence bands, which use the cluster-corrected effective sample size, cover the baseline at every one of the 40 post-shock offsets when the event window is extended to $+40$.

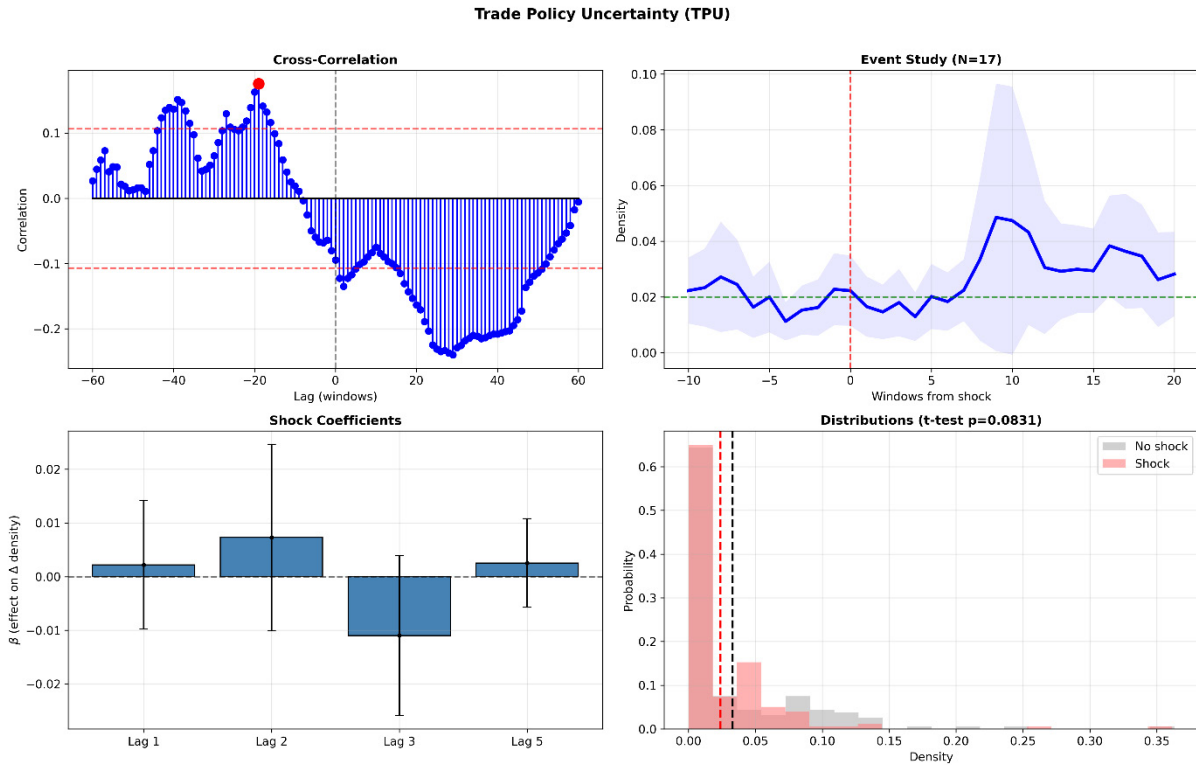
The event study therefore does not support a delayed-transmission reading for geopolitical risk: at lag $+30$, mean density (0.019) lies below the baseline (0.021), and no post-shock horizon is statistically distinguishable from it.

The histogram compares network density distributions between shock windows (red) and non-shock windows (gray). The two-sample t -test yields $p = 0.036$, indicating a statistically significant difference at the 5% level. Both distributions are right-skewed with most mass concentrated near zero, reflecting the generally sparse nature of the Granger-causal network. The heavier right tail in fact belongs to the non-shock distribution: 29.3% of non-shock windows fall in the 0.05–0.35 range against 15.0% of shock windows, consistent with the lower mean density in shock windows. We do not attach a mechanism to the direction of this difference; as shown in Section 4, the t -test significance does not survive block bootstrap correction for serial dependence. However, the wide confidence intervals in the event study and the insignificant individual lag coefficients suggest considerable heterogeneity across shock events, meaning that some GPR shocks may trigger strong network responses while others have more muted effects.

3.3 Trade and Economic Policy Uncertainty: Anticipation Effects

Trade policy uncertainty and economic policy uncertainty exhibit fundamentally different transmission dynamics compared to GPR.

FIGURE 4: Trade Policy Uncertainty (TPU) shock analysis



Source: Authors' own calculations

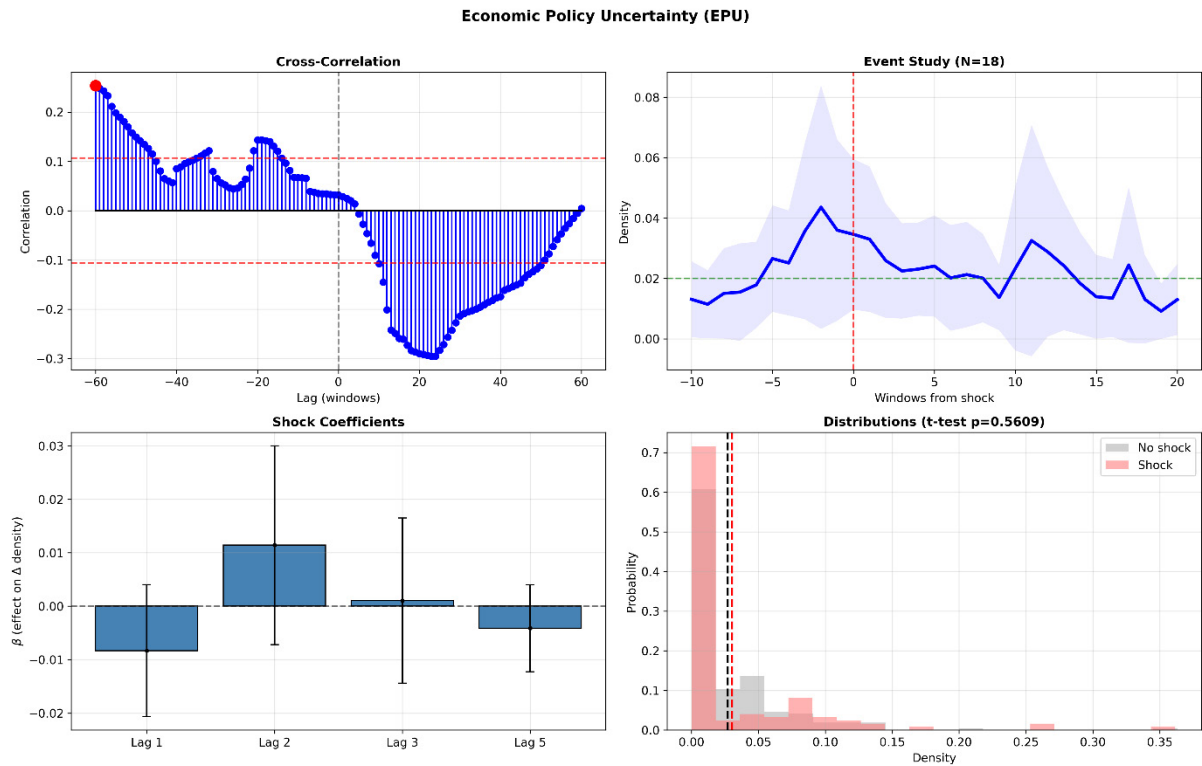
For TPU, the cross-correlation function peaks at lag -19 windows; for EPU, the extended analysis (maximum lag of 90 windows) places the peak of 0.320 at lag -66 windows. Under the estimator's sign convention, a negative lag means that the shock indicator leads density, not that markets anticipate the shock. As with GPR, however, the peak locations are not identified: block-bootstrap 95% confidence intervals span $[-85, +87]$ (EPU) and $[-86, +87]$ (TPU) windows, and the sign of each peak is preserved in only about half of the bootstrap replications. We therefore refrain from attaching horizons or directions to these estimates.

The peak location is stable as the maximum lag extends from 90 to 120 windows, so it is not an artefact of lag-range truncation. This stability, however, speaks only to the search grid: sampling uncertainty in the peak location, quantified in Section 4, remains dominant.

The t-test yields $p = 0.087$, marginally insignificant at the 5% level but significant at the 10% level. The distributions show that shock windows have lower mean density (0.024) than non-shock windows (0.033), the same direction as for GPR. We do not attach a mechanism to this contemporaneous difference.

We do not advance an expectations-channel interpretation. The EPU and TPU indices are constructed from newspaper coverage, so any market-moving anticipatory information is incorporated into the index contemporaneously; a mechanism in which markets systematically lead the index by many months is inconsistent with the construction of the index itself. Consistent with this, when the analysis is repeated on the level of the EPU index rather than its daily log-difference, the cross-correlation peak is essentially contemporaneous (lag +4 windows, correlation 0.390).

FIGURE 5: Economic Policy Uncertainty (EPU) shock analysis



Source: Authors' own calculations

The EPU event study provides particularly clear visual evidence: network density rises substantially in the windows before the formal shock date, reaching 0.036 at window -3 with a pre-shock maximum of 0.044 at window -2. At window 0, density has already begun to decline from its pre-shock peak.

This pre-shock elevation is, however, exactly the profile that mechanical window overlap generates: each shock day enters the estimation sample of the 20 surrounding windows (offsets -10 to +10), so density in the windows immediately preceding the mapped shock window already reflects the shock day itself. We therefore do not read the profile as evidence of anticipation.

The regression coefficients for lagged EPU shocks predicting Δ density have confidence intervals that cross zero, indicating no statistically significant short-term predictive power. The alternating signs suggest no systematic relationship between lagged shocks and density changes. The joint F-test for shock predictive power is also

non-significant for all three channels (GPR: $F = 0.06$, $p = 0.993$; TPU: $F = 0.71$, $p = 0.588$; EPU: $F = 0.70$, $p = 0.590$), confirming that lagged shock counts do not jointly predict density changes at conventional significance levels. The regression R-squared values are low across all channels (GPR: 0.064; TPU and EPU: 0.071), indicating that the short-term predictive relationship between shocks and density changes is weak.

As a direct check we compare, for each of the 18 EPU shock events, network density in the pre-shock window (event windows -5 to -1) against a baseline window (event windows -10 to -6). The paired t-test yields $t = 1.63$, $p = 0.060$ (one-sided). The result is fragile in two respects. First, the $-5..-1$ window lies inside the overlap-contaminated region, so its elevation partly reflects the shock day entering the estimation samples. Second, repeating the test at the horizon suggested by the cross-correlation peak ($-70..-62$ versus $-90..-82$) gives $t = 1.74$, $p = 0.051$, but shifting that baseline by five windows moves up to 0.22 — the outcome depends on essentially arbitrary window choices. On uncontaminated windows ($+11..+20$ versus $-20..-11$), EPU shows marginal post-shock elevation ($t = 1.67$, $p = 0.057$), a pattern of delayed rather than anticipatory response. We present these tests as descriptive; none supports a firm directional conclusion.

The t-test yields $p = 0.591$, which is clearly not statistically significant. This result is again consistent with the expectations channel. Our methodology classifies windows based on when EPU formally crosses the 99th percentile threshold. But if the market response occurs before this threshold is crossed, then “shock windows” do not capture the period of elevated interconnectedness.

Given the sign convention of the estimator and the non-identification of peak locations, we do not claim that network-based indicators lead to policy uncertainty. Any apparent long-horizon lead-lag pattern warrants careful interpretation. Alternative explanations include: (i) reverse causality, where periods of elevated market interconnectedness trigger policy responses that subsequently manifest as EPU spikes; (ii) common slow-moving confounders such as business cycle dynamics that drive both network density and policy uncertainty with different lags; and (iii) secular trends in both variables that create spurious long-horizon cross-correlations. The look-ahead bias analysis in Section 4 provides further reason for caution: under expanding-window thresholds, the EPU anticipation finding reverses entirely. Distinguishing true market anticipation from these alternative mechanisms requires further investigation beyond the scope of this framework.

Robustness Checks

To assess the sensitivity of the main findings, we conduct robustness checks across two dimensions: (i) the shock threshold used to define extreme uncertainty events (95th, 97.5th, and 99th percentiles), and (ii) the maximum lag range for cross-correlation analysis (30, 60, 90, and 120 windows). The network estimation itself is held fixed; only the downstream analysis (shock identification, cross-correlation, t-tests, and event studies) varies across specifications.

4.1 Shock Threshold Sensitivity

Table 1 reports the cross-correlation lag, peak correlation, and t-test p-value for each uncertainty channel at the 95th, 97.5th, and 99th percentile shock thresholds. The results reveal important differences in robustness across channels.

TABLE 1: Robustness to shock threshold

Cross-correlation lag, peak correlation, and t-test p-value for each uncertainty channel at the 95th, 97.5th, and 99th percentile shock thresholds. Baseline specification (99th percentile) shown in bold. Network estimation is held fixed; only shock classification varies.

Channel	Threshold	N shocks	t-test p	Sig.	Xcorr lag	Xcorr peak	Direction
GPR	95th	90	0.002	***	-33 (-165d)	0.177	Not identified
GPR	97.5th	45	0.006	***	+25 (+125d)	0.150	Not identified
GPR	99th	18	0.037	**	+30 (+150d)	0.209	Not identified
EPU	95th	90	0.244		-16 (-80d)	0.217	Not identified
EPU	97.5th	45	0.809		-18 (-90d)	0.230	Not identified
EPU	99th	18	0.561		-66 (-330d)	0.320	Not identified
TPU	95th	90	0.009	***	+65 (+325d)	0.151	Not identified
TPU	97.5th	45	0.814		+69 (+345d)	0.158	Not identified
TPU	99th	18	0.083	*	-19 (-95d)	0.176	Not identified

Note: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$ for the two-sample t-test with pooled variance (Student); Welch-corrected p-values differ materially only at the TPU 95th-percentile cell (0.079 vs 0.009). Bold marks the baseline specification: the 99th percentile (18 shock days, approximately 1% of the sample) defines the extreme-shock events used throughout the text, while the 95th and

97.5th percentile rows are reported for sensitivity only. Note that lowering the threshold raises the number of shock days without raising the number of independent event clusters (GPR 5 to 4, TPU 5 to 2 moving from the 99th to the 95th percentile), because the additional days fall within the same crisis episodes.

For EPU, the cross-correlation lag is negative at all three thresholds (lag = -16 at the 95th percentile, -18 at the 97.5th, and -66 at the 99th), and the t-test is consistently non-significant ($p = 0.24, 0.81, 0.56$). The stability of the sign across thresholds should not be over-read: the bootstrap analysis shows that the location of each peak carries a confidence interval spanning nearly the full lag range, so neither the individual peak locations nor their differences across thresholds are statistically identified.

The pattern for GPR (Geopolitical Risk) is sensitive to threshold choice. At the 99th and 97.5th percentiles, the cross-correlation lag is positive (+30 and +25 windows, respectively); at the 95th percentile (90 shock days), the lag turns negative (-33 windows). Given the width of the bootstrap confidence intervals for peak location, we do not attach an economic interpretation to this sign instability; we read it as further evidence that the peak location is not identified. The t-test remains significant across all thresholds ($p = 0.002, 0.006, 0.037$), confirming that the density difference between shock and non-shock windows is robust to the threshold, though its direction (lower density in shock windows) is as documented in Section 3.

The estimated lag for TPU (Trade Policy Uncertainty) is likewise threshold-sensitive. At the 99th percentile, the lag is -19 windows; at the 95th and 97.5th percentiles, it reverses to approximately +65 windows. We do not interpret this sensitivity as a severity-dependent transmission mechanism; with bootstrap confidence intervals for peak location spanning nearly the full lag range, sign instability across thresholds is the expected behaviour of an unidentified estimator.

4.2 Cross-Correlation Lag Range Stability

To verify that the reported cross-correlation peaks are not boundary artefacts, we re-estimate the cross-correlation function at progressively wider lag ranges (30, 60, 90, and 120 windows). For GPR, the peak remains stable at lag +30 across all specifications. For TPU, the peak remains at lag -19 across all specifications. For EPU, the peak shifts from lag -60 at $\text{max_lag} = 60$ (a boundary artefact) to lag -66 at $\text{max_lag} = 90$, where it stabilises and does not shift further at $\text{max_lag} = 120$. This establishes that the peak location is not an artefact of lag-range truncation; it does not address sampling uncertainty, which the block bootstrap shows to be dominant. All cross-correlation results reported here use a maximum lag of 90 windows; at a maximum lag of 60 the EPU peak is truncated at the grid boundary (-60, peak 0.254).

4.3 Event Study Sensitivity

The event study results show a consistent pattern across thresholds: the density increase relative to baseline is larger when shocks are defined more stringently. For GPR, the post-shock density increase ranges from +18% at the 95th percentile to +227% at the 99th. This is expected of point estimates. None of the nine channel-threshold combinations, however, yields a post-shock peak whose 95% confidence interval (using cluster-corrected effective sample sizes) excludes the baseline mean; the percentage changes describe statistically indistinguishable trajectories. Nor do independent clusters accumulate with the event count: moving from the 99th to the 95th percentile raises shock days from 18 to 90, yet the cluster count moves only from 5 to 4 (GPR), 5 to 2 (TPU) and 2

to 3 (EPU), because additional events fall inside the same crisis episodes. For EPU, the increase ranges from +53% to +73%, and for TPU from -8% to +143%. The negative TPU result at the 95th percentile (-8%) suggests that mild trade uncertainty is not associated with network tightening, consistent with the threshold-dependent transmission mechanism identified above.

4.4 Summary of Robustness Findings

The robustness analysis qualifies the baseline findings in three ways. First, the EPU cross-correlation peak is the only one to exceed the overlap-corrected significance bound, but its location is not identified and the sign of the estimate is preserved in only about half of the bootstrap replications. Second, the signs of the GPR and TPU cross-correlation lags change across thresholds; rather than evidence of severity-dependent transmission mechanisms, we read this — together with the bootstrap intervals — as confirmation that peak locations are not identified at this sample size and overlap structure. Third, the event-study percentage changes vary widely across thresholds, but none of the nine channel-threshold combinations is statistically distinguishable from baseline. The central message is accordingly modest: the framework measures network fragility transparently, but does not establish channel-specific transmission.

4.5 Look-Ahead Bias in Shock Threshold Construction

The baseline analysis defines shocks as exceedances of the 99th percentile computed over the full sample. This introduces a potential look-ahead bias: the threshold used to classify a day in 2020 incorporates information from 2024–2025. In a genuine real-time surveillance system, only data available up to the current date would be used. To assess the magnitude of this bias, we re-estimate all results using an expanding-window threshold, where the 99th percentile at each day t is computed using only observations from the start of the sample to day t (with a minimum of 100 observations before the first threshold is computed).

The expanding-window approach has a substantial effect on the number of identified shocks. For GPR, the number of shock days falls from 18 to 8 (the expanding threshold is higher early in the sample because extreme events have not yet been observed). For TPU, shocks fall from 18 to 12. For EPU, however, shocks increase from 18 to 41, because the expanding threshold is lower early in the sample (0.71 versus the full-sample value of 1.44), flagging many early observations as extreme that the full-sample threshold would not.

The impact on the main findings is channel-dependent. For GPR, the cross-correlation lag sign is preserved (lag = +30 under both approaches), so the sign of the point estimate is not an artefact of threshold construction (though its location remains unidentified); however, the t-test loses significance ($p = 0.48$ vs. 0.036) due to the reduced number of shock events. For TPU, the lag sign is also preserved (lag = -27 expanding vs. -19 full-sample), though again with reduced significance.

For EPU, the expanding-window approach produces a qualitatively different result: the cross-correlation lag reverses from -66 to +65, and the t-test becomes significant ($p = 0.02$). The expanding-window shock set is a strict superset of the full-sample set: all 18 full-sample shock days are retained and 23 further days are added, positioned earlier in the sample on average because the expanding threshold starts lower (0.71) before converging to the full-sample value (1.44). This finding represents an important caveat: the EPU anticipation channel interpretation is sensitive to whether shock thresholds are computed ex post (full sample) or in real time (expanding window).

The full-sample approach, which is standard in the academic connectedness literature, yields the negative-lag estimate. The expanding-window approach, which is more appropriate for operational surveillance, suggests that the EPU–network relationship may be more complex than a simple anticipation mechanism. We recommend that supervisory implementations use expanding-window thresholds, with the understanding that the resulting shock classification will differ from the ex post analysis and should be recalibrated as the sample grows.

TABLE 2: Full-sample vs. expanding-window threshold comparison

Comparison of results under full-sample 99th percentile threshold (standard, with look-ahead) versus expanding-window 99th percentile threshold (real-time, no look-ahead). The expanding-window threshold is computed at each day t using only data available up to day t (minimum 100 observations).

Channel	Method	N shocks	t-test p	Xcorr lag	Xcorr peak	Conclusion
GPR	Full-sample	18	0.037 **	+30 (+150d)	0.209	Not identified
GPR	Expanding	8	0.482	+30 (+150d)	0.260	Not identified
EPU	Full-sample	18	0.561	−66 (−330d)	0.320	Not identified
EPU	Expanding	41	0.021 **	+65 (+325d)	0.157	Sign reversal (not identified)
TPU	Full-sample	18	0.083 *	−19 (−95d)	0.176	Not identified
TPU	Expanding	12	0.345	−27 (−135d)	0.225	Not identified

Note: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The EPU channel shows a qualitative reversal under the expanding-window approach: the estimated lag reverses from −66 to +65 under the expanding threshold, whose shock set is a strict superset of the full-sample set (41 days, containing all 18 full-sample days plus 23 additional, on average earlier days).

4.6 Overlap Correction: Block Bootstrap and Effective Sample Size

The rolling window design ($W = 100$, $\text{step} = 5$) creates 95% overlap between consecutive windows, inducing severe serial dependence in the network statistics. Classical t-tests and cross-correlation significance bounds assume independence, which inflates the effective sample size. We estimate the effective sample size by computing the autocorrelation function of network density and applying the standard correction: $n_{\text{eff}} = n / (1 + 2 * \text{sum of autocorrelations})$. This yields an effective sample size of approximately 45, compared to the nominal 337 windows — a ratio of 0.13.

To account for this dependence, we re-assess the two-sample t-test using a block bootstrap with block size 20 (matching the overlap ratio of $100/5$) and 10,000 replications. The results are striking: the GPR t-test, which was significant under the classical assumption ($p = 0.036$), becomes non-significant under the block bootstrap ($p = 0.476$). The TPU t-test, which was marginally significant ($p = 0.087$), also becomes non-significant ($p = 0.483$). The EPU t-test remains non-significant under both approaches (classical $p = 0.591$, bootstrap $p = 0.835$).

For the cross-correlation analysis, we replace the standard Bartlett bound ($1.96/\sqrt{n} = \pm 0.107$) with an effective-sample bound ($1.96/\sqrt{n_{\text{eff}}} = \pm 0.292$). Under this corrected bound, only the EPU cross-correlation peak (0.320) remains statistically significant. The GPR peak (0.209) and TPU peak (0.176) fall below the corrected threshold.

These corrections substantially revise the interpretation of the main findings. Only the EPU cross-correlation peak (0.320) exceeds the corrected bound, and a moving-block bootstrap of the peak's location (block 20, 10,000 replications) yields 95% confidence intervals of $[-87, +87]$ (GPR), $[-85, +87]$ (EPU) and $[-86, +87]$ (TPU) windows, with the sign of each peak preserved in roughly half of the replications. Against a null in which density is resampled independently of the shock series, the peak heights yield $p = 0.60$ (GPR), $p = 0.81$ (TPU) and $p = 0.12$ (EPU). We conclude that no channel-specific lead-lag structure is statistically identified, and that the framework's contribution is the descriptive network indicator rather than transmission-channel inference.

4.7 Rolling Window Size Sensitivity

A potential concern is that the 100-day baseline window may attenuate the spectral radius during acute crises whose worst dynamics compress into 15–25 trading days. Re-estimating the full procedure with a 60-day window — all other parameters held constant — shows the opposite: the shorter window reduces rather than amplifies the crisis signal. The spectral radius ratio (60-day versus 100-day) is 0.45 for the COVID-19 peak (4.69 versus 10.36) and 0.89 for the Middle East escalation (3.02 versus 3.38). The reduction reflects lower statistical power in the kernel-based permutation test: fewer observations per window mean fewer edges survive FDR correction, producing sparser adjacency matrices. The sharper attenuation for COVID reflects its compressed morphology — a 15-day spike requires the longer window to stabilise the kernel bandwidth and recover the full edge structure. The composite early warning signal triggers on 35 windows under each specification, though only 16 trigger dates are common to the two; the 60-day window fires 7 trading days earlier for COVID at the cost of a severely attenuated signal magnitude. The lead-lag regression remains non-significant ($F = 0.19$, $p = 0.945$). The 100-day baseline is vindicated: it is the minimum window at which the nonparametric estimator has sufficient power to detect the full causal structure, and all qualitative conclusions are unaffected.

05

Implications for Financial Supervisory Authorities

The empirical findings carry direct implications for macroprudential surveillance, stress testing, and the design of early warning systems. This section translates the analytical results into operational recommendations.

5.1 Operationalising Real-Time Monitoring

The spectral radius provides a single, interpretable metric suitable for inclusion in supervisory dashboards. Its properties align well with operational requirements:

Interpretability: a sample median of zero — tranquil-period networks are typically acyclic — anchors the normal-functioning benchmark, while values approaching or exceeding 10 indicate crisis-level interconnectedness. Only

two windows in the sample exceed $\lambda_{\max} = 8$: the COVID-19 peak (10.36, March 2020) and the August 2025 window (10.59). Calibration therefore rests on two observations, one of which is not associated with a named uncertainty event; the Middle East escalation peaks at 3.38, well below crisis levels. Alert thresholds derived from these values should be treated as provisional pending out-of-sample validation.

Timeliness: the indicator can be updated on a rolling basis as new return data become available.

Complementarity: the spectral radius captures network-level fragility that correlation-based measures may miss. It complements rather than replaces existing systemic risk indicators such as CoVaR, SRISK, or composite stress indices.¹⁵ Supervisory authorities could establish a tiered alert system: (i) enhanced monitoring when $\lambda_{\max}$ exceeds its historical mean by one standard deviation; (ii) elevated surveillance when it exceeds two standard deviations or network density crosses the 90th percentile; (iii) crisis protocols when the spectral radius approaches historical crisis peaks ($\lambda_{\max} > 8$).

5.2 Incorporating Geopolitical Scenarios into Stress Testing

Current stress testing frameworks—including those administered by the EBA and national supervisory authorities—increasingly incorporate geopolitical scenarios.¹⁶ The network-based framework provides empirical grounding for such scenarios:

Calibrating correlation assumptions. Stress tests typically assume elevated correlations during adverse scenarios. The finding that network density can rise from near zero to over 36% (at the COVID-19 peak; other crisis episodes in the sample peak at 8.5–13.1%) provides empirical calibration for the magnitude of correlation breakdown during severe stress.

Distinguishing shock types. Different geopolitical scenarios may in principle warrant different temporal assumptions, but the cross-correlation analysis does not identify the horizons involved: bootstrap confidence intervals for the location of the channel-specific peaks span nearly the entire ± 90 -window range (Section 4). Scenario designers should therefore treat the horizon of network response as uncertain rather than calibrate it to channel-specific lags. For economic policy uncertainty, the cross-correlation peak is the only one to exceed the effective-sample significance bound, though its location is likewise unidentified and the estimate reverses under expanding-window shock thresholds.

Identifying transmission nodes. The directed nature of the Granger-causal network identifies which markets exhibit outgoing versus incoming predictive relationships during crisis episodes. While Granger-predictive influence is not equivalent to causal transmission, this directional structure provides a useful proxy for assessing concentrated exposures and potential cross-border spillover channels.

5.3 Alignment with Regulatory Frameworks

The framework aligns with several ongoing regulatory initiatives:

15 V Acharya and others, 'Measuring Systemic Risk' (2017) 30 Review of Financial Studies

16 M Behn, JH Lang and A Reghezza, 'Geopolitical Risk and Macroprudential Supervision' (2025) 28 ECB Macroprudential Bulletin.

Digital Operational Resilience Act (DORA). DORA requires financial entities to identify and monitor ICT-related risks and their potential for systemic propagation. Network-based contagion monitoring provides a quantitative complement to qualitative resilience assessments, particularly for assessing how operational disruptions might cascade across interconnected institutions.

ESRB systemic risk monitoring. The European Systemic Risk Board's surveillance mandate encompasses cross-border spillovers and network interdependencies. The spectral radius offers a tractable summary measure consistent with ESRB's analytical approach to macroprudential oversight.

ESMA market surveillance. ESMA's Trends, Risks and Vulnerabilities reports increasingly emphasise geopolitical risk channels. The framework's separate treatment of GPR, TPU and EPU shocks provides analytical structure for these assessments, though channel-specific transmission mechanisms are not statistically identified in our sample.

06

Limitations

Several limitations should be noted. First, the rolling window approach introduces serial dependence: with a window size of 100 days and a step size of 5 days, consecutive windows share 95% of their observations. This means the t-tests and regression standard errors, which assume independence, may be anti-conservative. Block bootstrap or Newey–West standard errors would provide more appropriate inference, at the cost of additional computational complexity. Second, the permutation test uses $B = 500$ replications, which provides a p-value resolution of $1/500 = 0.002$ and a Monte Carlo standard error of approximately 0.010 near the 5% significance level. For the GPR t-test ($p = 0.036$), the implied 95% Monte Carlo confidence interval is $[0.017, 0.057]$, which straddles the conventional 5% threshold. This means the precise significance classification is uncertain at this resolution. However, the overlap-corrected block bootstrap (which does not depend on permutation resolution) yields $p = 0.476$ for GPR, confirming that the classical significance was driven by the independence assumption rather than by marginal permutation resolution. For future applications, we will impose $B \geq 2,000$ to achieve Monte Carlo standard errors below 0.005. Third, as demonstrated in the robustness analysis, the EPU anticipation channel finding is sensitive to the choice of shock threshold construction (full-sample vs. expanding window). This suggests that the EPU–network relationship may be more complex than a simple anticipation mechanism, and further investigation with alternative threshold methods is warranted. Fourth, the framework is applied only to equity market indices and does not capture contagion through bond, foreign exchange, or credit default swap markets, which may exhibit different network dynamics. Fifth, the analysis does not include formal out-of-sample validation of the early warning signals; the spectral radius thresholds are calibrated in-sample and would need to be tested prospectively before operational deployment. Sixth, the event study inherits a mechanical identification limit from the rolling design: each shock day enters the estimation sample of 20 consecutive windows (event offsets -10 to $+10$), so short-horizon event-study contrasts partly reflect the shock day's own presence in the estimation samples; restricted to uncontaminated windows, the GPR post-shock effect disappears. Seventh, the location of the cross-correlation peaks is not statistically identified: moving-block bootstrap 95% confidence intervals span nearly the entire ± 90 -window range for all three channels; accordingly, no directional transmission labels are attached to these estimates. Eighth, the permutation grid at $B = 500$ (spacing 0.002) is coarse relative to the Benjamini–Hochberg thresholds at the lowest ranks ($\approx 8 \times 10^{-5}$), so edge selection at those ranks is resolution-limited; $B \geq 2,000$ should be regarded as a precondition for fine-grained FDR discrimination rather than a refinement.

Conclusion

The period 2019–2025 has confirmed that geopolitical instability is a structural component of financial risk, generating distinct contagion dynamics that traditional macrofinancial models struggle to capture. The framework's primary contribution is the spectral radius as a real-time systemic fragility indicator: it exhibits pronounced regime-switching, rising from zero during tranquil periods (tranquil-period networks are typically acyclic, making zero the modal value) to 10.36 at the COVID-19 onset and a sample maximum of 10.59 in August 2025, requiring no contested statistical inference.

The framework explores whether different uncertainty types operate through distinct transmission channels. The evidence is strongest for the descriptive regime-switching result: the spectral radius moves from zero during tranquil periods to crisis-level values exceeding 10, a pattern that aligns with the COVID-19 episode and requires no contested statistical inference. Regarding channel-specific mechanisms, the corrected analysis does not identify any: the EPU cross-correlation peak is the only one to exceed overlap-corrected significance bounds, but the location of all three peaks carries bootstrap confidence intervals spanning nearly the full admissible lag range, and their signs are preserved in only about half of the replications. The framework's primary value therefore lies in transparent, real-time measurement of network fragility rather than in transmission-channel inference.

For financial supervisory authorities, the primary operational contribution is the spectral radius itself: a single, interpretable metric that captures regime transitions in real time and complements existing systemic risk indicators. Channel-specific transmission patterns are not advanced as a basis for differentiating supervisory responses, since the underlying temporal parameters are not statistically identified (Section 4). Integration with stress testing frameworks, alignment with DORA requirements, and international coordination represent natural extensions of this work.

Looking ahead, the trajectory of geopolitical risk points toward continued relevance of such tools. Trade fragmentation, technological decoupling, cyber threats, and climate-related geopolitical tensions are likely to generate recurring episodes of elevated uncertainty. Supervisory authorities equipped with real-time contagion monitoring capabilities will be better positioned to navigate this increasingly complex risk environment.

Given the cross-border nature of geopolitical shocks, network-based indicators are most valuable when shared across supervisory authorities. Harmonised methodologies would facilitate consistent interpretation and coordinated response across jurisdictions.

Data Availability. Daily stock index data are sourced from Refinitiv LSEG. The Geopolitical Risk Index (GPR) and Trade Policy Uncertainty Index (TPU) are available at <https://www.matteoiacoviello.com/gpr.htm>. The Economic Policy Uncertainty Index (EPU) is available at <https://www.policyuncertainty.com>. Replication code is available from the authors upon request.

Conflict of Interest Statement. The views expressed in this article are those of the authors and do not necessarily represent the official position of the Financial Supervisory Authority of Romania (A.S.F.). The authors declare no conflicts of interest.

Technology, Innovation, and the Regulatory Perimeter



2.1
Academic Article

**Devolving Innovation Regulation to
Gatekeepers: Proportionality,
Co-regulation or Regulatory
Abdication in the UK's Regulation
of Crypto Asset Offers**

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Author's Bio



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Abstract

This article examines the UK Financial Conduct Authority's regulatory innovation in introducing a proportionate fund-raising regulation for crypto asset offers. The attempt at proportionality is reflected in the refrain from adopting mandatory registration and disclosure techniques like in securities regulation, but to co-opt crypto asset trading exchanges as gatekeepers to perform verification roles in order to underpin investor confidence in the market. The article examines the nature of these gatekeeping roles and frames them within the theoretical framework of co-regulation, in order to critically examine if the FCA would achieve its objectives: offering a form of cost-effective investor protection that can be trusted. The article argues that questions arise as to the aptness of the crypto asset trading exchange being enrolled as a gatekeeper, as the scope of verification can be expansive, and matters such as the veracity of disclosed code can better be audited by professional code auditors. The article argues for a proportionate reframing of exchanges' gatekeeper role as well as for the co-option of other suitable gatekeepers. Effective co-regulation ultimately depends on the identification of appropriate gatekeepers that are well-placed in terms of proximity and expertise, in order to underpin investor confidence.

Devolving Innovation Regulation to Gatekeepers: Proportionality, Co-Regulation or Regulatory Abdication in the UK's Regulation of Crypto Asset Offers

Introduction

Crypto asset offers are a form of fundraising for developmental blockchain-based business projects. Developers raise funds by the issuance of digital tokens programmed with smart contracts, subject to further development by code programming, for deployment in a permissionless blockchain environment. Crypto asset offers are often made when developers wish to produce a competing permissionless blockchain, such as becoming an alternative to the incumbent Ethereum blockchain or its main competitors such as Solana, Binance Chain, Algorand, Cardano, Polygon, Polkadot etc. Developers could also fundraise in this manner when they wish to develop an application to run on any of these permissionless blockchains.

Digitally programmed tokens could be issued for public fund-raising in order to finance the development of the project, which includes further code development of digital tokens, in order to realise their functionality as well as to attract network effects to the projects. As the projects are often decentralised and thrive on creating a shared community or commons, network effects are important for a project's future viability. In this manner, we have seen crypto asset offers made by developers for new blockchains, such as Solana in 2020 and for applications to be deployed on existing blockchains, such as a gaming application on Ethereum or a 'decentralised finance' application which facilitates holders of crypto assets to make yields on their assets by financialising them.¹ Token-holders both financially support the project as well as provide a critical mass for the network effects needed for such projects.

When crypto asset offers or otherwise known as 'initial coin offerings'² burst onto the scene in late 2016, regulators worldwide were rightly challenged with reckoning with them as an innovation as well as with the limitations of traditional securities regulatory regimes designed to regulate corporate fund-raising.³ Many securities regulators recognised the fund-raising nature of these endeavours, as tokens are not merely utility-conferring digital goods. Thus, the need for investor protection arises in an otherwise self-regulatory market that could be rife with mis-selling and scams,⁴ besides simply the high risk of investing in developmental projects that may fail.⁵ However, regulators do not often have a track record of responding with regulatory innovation to market innovation.⁶

After protracted observations of watching each other in regulatory divergence and competition,⁷ leading regulators finally made a move. The EU introduced its pioneering Markets for Crypto Assets Regulation (MiCAR) in 2023.⁸ There is significant academic literature critically examining the Regulation in respect of crypto asset offers, in terms of its somewhat derivative nature of traditional securities regulation⁹ while being pared down, and therefore

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- 1 *Professor of Corporate Law and Financial Regulation, UCL.
OICU-IOSCO, 'Final Report with Policy Recommendations for Decentralized Finance (DeFi)' (Dec 2023), <https://www.iosco.org/library/pubdocs/pdf/IOSCOPD754.pdf>; ESMA TRV Risk Analysis, 'Decentralised Finance in the EU: Developments and risks' (Oct 2023), https://www.esma.europa.eu/sites/default/files/2023-10/ESMA50-2085271018-3349_TRV_Article_Decentralised_Finance_in_the_EU_Developments_and_Risks.pdf.
 - 2 N Essaghoolian, 'Initial Coin Offerings: Emerging Technology's Fundraising Innovation' (2019) 66 UCLA Law Review 294; Dimitri Boreiko, *Understanding Initial Coin Offerings: A New Era of Decentralized Finance* (Cheltenham: Edward Elgar 2024).
 - 3 There is an abundance of academic literature in the US and EU on whether tokens were securities, P Hacker and C Thomale, 'Crypto-Securities Regulation: ICOs, Token Sales and Cryptocurrencies under EU Financial Law' (2018) European Company and Financial Law Review 645; P Maume and M Fromberger, 'Regulation of Initial Coin Offerings: Reconciling U.S. and E.U. Securities Laws' (2019) 19 Chicago Journal of International Law 548; TL Hazen, 'Tulips, Oranges, Worms, and Coins – Virtual, Digital, or Crypto Currency and the Securities Laws' (2019) 20 North Carolina Journal of Law and Technology 493; U Rodrigues, 'Semi-Public Offerings? Pushing the Boundaries of Securities Law' (2018), ssrn.com/abstract=3242205; MT Henderson and M Raskin, 'A Regulatory Classification of Digital Assets: Towards an Operational Howey Test for Cryptocurrencies, ICOs, and Other Digital Assets' (2019), ssrn.com/abstract=3269295; SEC, 'Report of Investigation Pursuant to Section 21(a) of the Securities Exchange Act of 1934: The DAO' (25 July 2017), www.sec.gov/litigation/investreport/34-81207.pdf.
 - 4 See <https://www.visualcapitalist.com/cp/ranked-dead-crypto-coins-by-year/> for 'dead' crypto coins including both business failures and scams.
 - 5 M Fromberger and L Haffke, 'ICO Market Report 2018/2019' (2020), ssrn.com/abstract=3512125.
 - 6 This more proactive position is urged by Cristie Ford, *Innovation-Framing Regulation* (Cambridge: CUP 2013).
 - 7 IH-Y Chiu, 'Decrypting the Trends of International Regulatory Competition in Crypto-finance' (2020) European Journal of Comparative Law and Governance 1-40.
 - 8 Regulation 2023/1114.
 - 9 P Maume, 'The Regulation on Markets in Crypto-Assets (MiCAR): Landmark Codification, or First Step of Many, or Both?' (2023) 20 European Company and Financial Law Review 243-275; M Lehmann, 'MiCAR – Gold Standard or Regulatory Poison for the Crypto Industry?' (EBI Working Paper 2024), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4692743.

giving rise to areas of uncertainty in terms of standards and compliance expectations.¹⁰ To date there are no reports of new headline crypto asset offers made in the EU adopting the MiCAR regime, and it can be questioned whether it has struck the right balance in appealing to business innovators/issuers and to investors.

The UK has followed on the heels of the EU's approach of tailor-making a regulatory regime for crypto assets broadly, including crypto asset offers, stablecoins and crypto asset intermediaries.¹¹ Its approach to regulating crypto asset offers differs from the EU and there is potential in such an approach, relying more heavily on market-based governance, to offer a more responsive and flexible regulatory environment for crypto asset issuers. The cost of making crypto asset offers within such a regulatory framework could also be more proportionate. This article focuses on this regime, discussing the co-regulatory approach adopted by the Financial Conduct Authority (FCA), considering whether this is a form of regulatory innovation that is well thought out. Hence this article is not a comparative discussion with the MiCAR. It critically examines not only the regulation of crypto asset offers as a novel form of fund-raising but also within the lens of co-regulation as an overarching framework. The FCA's delegation to, and partnership with, key gatekeepers in this landscape provides the framework for studying the specific regulation of crypto asset offers that could be made to the public in the UK.

Section B introduces the UK's regulatory regime in terms of the FCA's designation of crypto asset trading exchanges or platforms as key gatekeepers of crypto asset offers. Section C then situates the substantive discussion within the framing of the concept of co-regulation. In examining how crypto asset offers are to be regulated, market actors are devolved with substantive signalling, steering functions and bear responsibility for doing so. Furthermore, market actors' roles involve secondary rule-making that would be accountable to the meta-level regulatory framework. Section C critically examines whether the FCA's co-regulatory design for crypto trading exchanges as gatekeepers is well-thought and what the achievements and shortcomings are. Section D offers suggestions that the unique nature of crypto assets entail considerations for refining the co-regulatory design. In particular, the network of gatekeepers needs to be expanded, and greater clarity can be provided in terms of risk-sharing amongst them. This can also ultimately lead to a more proportionate regulatory compliance regime for crypto asset issuers and assuage investor protection in novel but effective ways. This Section also provides brief concluding remarks.

10 H Marjosola and M Salo-Lathi, 'Offer and Admission to Trading of Crypto Assets Other than ARTs and EMTs' in M Haentjaens, L Gullifer and I Kokorin (eds), *Markets in Crypto Assets Regulation: Law and Technology* (Oxford: Hart 2025), ch5.

11 The Financial Services and Markets Act 2000 (Cryptoassets) Regulations 2026.

01

Regulating Crypto Asset Offers: Trading Exchanges as Gatekeeper

The UK's regulation¹² of crypto asset offers take a somewhat different approach from MiCAR. It co-opts the crypto asset trading exchange as a gatekeeper in two capacities, in relation to supplying investor protection at the pre-sale stage, and in relation to the continuing needs for price formation to benefit investors and maintain efficient markets, in the post-admission stage. Arguably these two roles have been performed by public regulatory standards, and to an extent market intermediaries, in relation to securities offers. They would however be significantly delegated to crypto asset trading exchanges in a unique model of co-regulation as framed in Section C. This Section explains what the gatekeeping roles and obligations are for crypto asset trading exchanges, who would themselves be a new species of authorized financial intermediary under the UK's new rules.¹³

First we turn to crypto asset trading exchanges' gatekeeper role for investor protection at the pre-sale stage. The paradigm for regulating fund-raising, such as in securities regulation, is that investor protection is best served by investors being able to make an informed decision on the investment opportunity. To that end mandatory disclosure is required of the issuer in order to provide an optimal set of material information, and investors would benefit from regulatory standardization in that such information is not merely selective and would be comparable.¹⁴ The ex ante nature of mandatory disclosure fosters market confidence and efficient allocation, and is therefore superior to an ex post system of anti-fraud enforcement.¹⁵ The UK's design for crypto asset trading exchanges' gatekeeper role is that they play a part in determining the content of mandatory disclosure, in addition to a minimum level provided by regulatory standards for a public offer of crypto assets. They also offer an extent of merit vetting but not to the point of guaranteeing the performance of the crypto asset or viability of the issuer.

The institution of mandatory disclosure as a fundamental regulatory design for crypto asset offers is not surprising. Mandatory disclosure via a prospectus that contains comprehensive material information relevant to an investor coming to an informed decision, is a key underpinning in securities regulation. Mandatory disclosure is aimed to combat information asymmetry between investors and issuers which can result in mis-selling. However, crypto asset offers raise certain differences in context distinguishing them from securities offers. Crypto asset fund-raising is 'pre-development' in nature, as tokens are usually offered when a business idea is still to be technologically developed. Such business ideas are often premised upon a form of shared or platform economy which can only be built out *ex post*. This is a novel point in time for business fundraising as securities fundraising usually takes place at a point of relative maturity of the company. Even venture capitalists funding start-up companies are

12 *ibid*; FCA, *Regulating Cryptoassets: Admissions & Disclosures and Market Abuse Regime for Cryptoassets* (Policy Statement, June 2026), <https://www.fca.org.uk/publication/policy/ps26-9.pdf>.

13 Sect 40, The Financial Services and Markets Act (Cryptoassets) Regulations 2026, inserting s9N, 9S, 9T, 9W, 9Y and 9Z6 to the Financial Services and Markets (Regulated Activities) Order.

14 JC Coffee, 'Market Failure and the Economic Case for a Mandatory Disclosure System' (1984) 70 Virginia Law Rev 717.

15 JA Franco, 'Why Anti-Fraud Provisions are not Enough: The Significance of Opportunism, Candor and Signalling in the Economic Case for Mandatory Securities Disclosure' (2002) Columbia Business Law Review 223.

facing an already-incorporated company with perhaps some initial operations.¹⁶ Crypto asset offers necessarily take place with no or little track record for investors to observe, given the need to develop the project or platform. The informational environment for investors may be unprecedentedly thin. This is not necessarily an issue of information asymmetry typical in corporate fundraising paradigms, i.e. that issuers often hold more information than is accessible to investors. This is an environment of information anemia as both issuers and investors are wading into a speculative venture with much information yet to discover.

In this manner, it is arguable that pre-sale mandatory disclosure, which is the gold standard for securities offers, is not exactly a good fit for crypto asset offers, where issuers and investors are both discovering information through token development. The UK's approach does not rely excessively on *ex ante* mandatory disclosure as the key regulatory tool for investor protection. Crypto asset offers can only be made in the UK under a public offer regime, or as exempt from the public offer regime if conditional upon admission to an authorized trading platform, or as an otherwise exempt offer.¹⁷ Hence, one key avenue of fund-raising for crypto asset issuers is to seek admission to trading and therefore obtain an exemption from the default public offer regulation which resembles the MiCAR's. The crypto asset trading platform is the intermediary that bears the obligation to vet the crypto asset issuer in order to decide whether to admit to trading, and is obligated to carry out due diligence in order to avoid material harm to investors.¹⁸

It is expected that admission to trading would be the main means of crypto asset issuers coming to market as investors would likely only be attracted to an offer of crypto assets that are traded on a secondary market. UK regulators seem to have adopted a 'theoretical' maintenance of regulatory parity with the MiCAR, retaining a default public offer regulatory design based on *ex ante* mandatory disclosure that is very similar to the EU's in terms of disclosure items. This is perhaps for the purposes of hedging against regulatory competition. It is however arguable that the trading platform admission exemption would be substantively significant for issuers evaluating the options of market access, if they do not wish merely to market to qualified investors which would avail them of an exemption from public offer regulation.

The crypto asset trading exchange is designated as a key gatekeeper, by allowing or denying issuers to be admitted to a secondary market, therefore affecting whether they could come to market for fund-raising. This role is designed with investor protection in mind, a subject therefore for regulatory compliance and not just as private relations with investors. Regulators' expectations for the role of crypto asset trading platforms are not unwarranted since they have engaged to an extent with the 'Initial Exchange Offering' (IEO) model prior to the introduction of regulation. In a self-regulatory landscape, some initial coin offerings were made as IEOs rather than directly to investors, as a mechanism for reputational bonding that is appealing to investors. The initial coin offering hype did bring in lemons as well as innovators to market, and in order to sustain market confidence, some offerings were completely administered and distributed by a crypto asset exchange. It is envisaged that exchanges conduct an extent of vetting in order to protect their own reputation, and issuers benefit from the exchange's leverage of their user base and marketing visibility. However, while IEOs were voluntary, the UK's

16 B Zider, 'How Venture Capital Works' (Harvard Business Review, 1998), at hbr.org/1998/11/how-venture-capital-works on the relative rarity of venture capital funds investing in start-up and very young stages of companies. Furthermore, even investment in young companies is premised on some track record, like the company's patent applications, see D Engel and M Keilbach, 'Firm-level Implications of Early Stage Venture Capital Investment — An Empirical Investigation' (2007) 14 Journal of Empirical Finance 150.

17 Reg 10, and Schedule 1, The Financial Services and Markets Act (Cryptoassets) Regulations 2026.

18 FCA, *Regulating Cryptoassets: Admissions & Disclosures and Market Abuse Regime for Cryptoassets* (June 2026), , para 2.29-2.38.

regulatory design would enrol authorised crypto asset exchanges into this role of gatekeeping. Arguably, crypto asset trading exchanges can decide to avoid taking on this role and limit their access to qualified investors. In this manner, they can list tokens without vetting them as required by the FCA, as these can be marketed exclusively to qualified investors being an exempt category. However, besides not attracting the retail market and affecting business growth, the unwillingness to undertake verification for admissions of crypto assets can be perceived negatively. In this manner, the regulatory design does not make it easy for crypto asset trading exchanges to be both successful and able to avoid the delegated governance of gatekeeping crypto asset issuers.

Crypto asset trading platforms are expected to conduct due diligence on crypto asset offers in order to admit or otherwise to trading.¹⁹ This process is intended to result in a form of verification of issuers' disclosures, in order to avoid detriment to investors.²⁰ Crypto asset issuers intending to be admitted to trading are expected to produce disclosures that exchanges require, but it is likely that the minimum mandatory disclosure specified in regulation would apply. Similar to the EU, the UK provides mandatory disclosure items that are broadly-framed, such as the characteristics of the crypto asset to be offered, the governance mechanisms of the platform for its deployment, the underlying technology and protocols, conflicts of interest and risk information.²¹ These are not exhaustive as a general materiality standard underpins the disclosure obligation.²² A 2-page non-technical summary is also mandated for disclosure.²³ Furthermore, the disclosure document must identify the responsible persons for the disclosure, whether the issuer, third party or the person seeking admission to trading, so that investors clearly know where to seek recourse.²⁴ Crypto asset issuers are also encouraged to make forward-looking statements of a financial or intentional nature. This caters for the developmental nature of crypto assets as statements of plans, developmental milestones or intentions can be framed as forward-looking disclosure, and issuers can be incentivized to disclose these appropriately without undue fear of legal risk from ex post litigation.²⁵

Crypto asset trading platforms can add to the minimum mandatory disclosure, in order to be able to flexibly provide for the salient information needed on the part of investors. This provides more scope for exchanges to compete towards investor protection, and incorporate other information that may matter in a pre-developmental context. Empirical research insights show that information about token retention by project developers is an important tenet of investor protection for crypto asset sales. The retention of tokens by founder-developers is often seen in a positive light by investors, as founder-developers would have skin in the game and signal commitment and confidence in their development project.²⁶ Commentators find that token retention bears a positive relationship to

19 Ibid, paras 2.34-2.36.

20 Ibid.

21 Ibid, paras 2.58, 2.66 Regulation 13, The Financial Services and Markets Act 2000 (Cryptoassets) Regulations 2026.

22 FCA (June 2026), para 2.43, 2.49.

23 Ibid, 2.73.

24 Ibid, paras 2.98, 2.107.

25 Discussed shortly, and see Ibid, para 2.108-2.118.

26 S Adhami, G Giudici and S Martinazzi, 'Why Do Businesses Go Crypto? An Empirical Analysis of Initial Coin Offerings' (2018) 100 *Journal of Economics and Business* 64, but contrary findings see L Ante, P Sandner and I Fiedler, 'Blockchain-Based ICOs: Pure Hype or the Dawn of a New Era of Startup Financing?' (2018) 11 *Journal of Risk and Financial Management* 80; R Amsden and D Schweizer, 'Are Blockchain Crowdsales the New "Gold Rush"? Success Determinants of Initial Coin Offerings' (2019), at papers.ssrn.com/sol3/papers.cfm?abstract_id=3163849.

funding success and project completion.²⁷ Howell et al's²⁸ and Blaseg's²⁹ empirical research also finds that token retention subject to lock-ups as well as a vesting schedule are important. Lock-ups refer to periods of prohibition from disposal of tokens by founder-developers. A vesting schedule refers to an incentive mechanism where tokens may be reserved in a pool and vested in founder-developers in stages. The vesting schedule provides an incentive mechanism for performance on the part of founder-developers while also 'locking up' the pool during the period of development. However, token retention can be designed in a number of ways and these affect investors' agency risk. For example, if tokens are retained but can be sold off quickly in a secondary market, the impression of 'skin in the game' would be only skin-deep. Furthermore, there are also governance hazards with founder-developers' retention of large volumes of tokens, as they would be able to exercise disproportionate power over the governance of the project and may disincentivise investment by other investors. Trading exchanges can consider whether token retention levels and policies should be disclosed, and to what extent.

Other information that trading exchanges could consider relevant would be whether pre-sales to qualified investors should be discussed, and what the 'tokenomics' policies are for the developmental project, such as in relation to token supply. Presales are arguably important to the development team in terms of securing financial backing ahead of the crowd sale. The existence of professional financial backing is also a favourable signal for the developmental project, as Adhami et al find that presales are attractive to crypto asset investors for reasons of positive signaling.³⁰ Stastny³¹ also finds that presales to professional investors result in less underpricing in the tokens listed on secondary markets than if such a presale had not been carried out. However, crucial information such as discounts at pre-sales and how this may have benefited the first investors should be disclosed, as the early buyers often make a significant gain in the secondary market after the listing of the crypto assets.³²

Token supply is also an important issue as uncapped token supply policies means that project developers can make subsequent rounds of fund-raising and potentially dilute the value of tokens held by initial subscribers.³³

Crypto asset exchanges' discretion to impose other disclosures would be guided by the materiality standard. It is questioned if exchanges may be unincentivized to add to minimum mandatory disclosure as expanding these requirements add to their due diligence burdens to verify disclosure documents. However, the imposition of the materiality standard may mean that they are delegated with the requirement to ascertain what other salient information is needed by investors on an offer-by-offer basis, and simply defaulting to the minimum specified information would be insufficient.

27 T Davydiuk, D Gupta and S Rosen, 'De-crypto-ing Signals in Initial Coin Offerings: Evidence of Rational Token Retention' (2020), at papers.ssrn.com/sol3/papers.cfm?abstract_id=3286835.

28 S Howell, M Neissner and D Yermack, 'Initial Coin Offerings: Financing Growth with Cryptocurrency Token Sales' (2019), at ssrn.com/abstract_id=3201259; C Fisch, 'Initial Coin Offerings (ICOs) to Finance New Ventures' (2019) 34 *Journal of Business Venturing* 1.

29 D Blesag, 'Dynamics of Voluntary Disclosure in the Unregulated Market for Initial Coin Offerings' (2018), www.researchgate.net/profile/Daniel_Blesag/publication/326849740_Dynamics_of_voluntary_disclosure_in_the_unregulated_market_for_initial_coin_offerings/links/5b696802a6fdcc87df6d6a39/Dynamics-of-voluntary-disclosure-in-the-unregulated-market-for-Initial-Coin-Offerings.pdf.

30 (2018).

31 P Stastny, 'Underpricing in ICOs' (2018), at ssrn.com/abstract=3206323.

32 OECD, *Initial Coin Offerings for SME Financing* (2019), at www.oecd.org/finance/ICOs-for-SME-Financing.pdf, 15–16.

33 WA Kaal and M Dell'Erba, 'Initial Coin Offerings: Emerging Practices, Risk Factors, and Red Flags' in F Möslin and S Omlor (eds), *Fintech Handbuch* (CH Beck, 2019), at papers.ssrn.com/sol3/papers.cfm?abstract_id=3067615.

It is important to examine the nature of the obligation to verify and whether this introduces potential exchange liability to investors. Exchange liability would be the *ex post* component of gatekeeper responsibility in relation to the *ex ante* obligation to conduct verification. It is arguable that the FCA's enumerations are not entirely clear and this will be critically discussed in section C below.

First, it is arguable that the FCA does not set out an absolute verification obligation. The FCA's expectation is that a crypto asset exchange should undertake its own due diligence for the purposes of verification of disclosures. It is uncertain to what extent this would be similar to underwriters' roles in initial public offers, in terms of line-by-line reviews, which can be demanding in terms of resources and effort. The purpose of verification is to prevent material harm or detriment to investors, so it can be surmised that such verification would likely involve due diligence in relation to potential harm causing signals. These could be arguably found in relation to a number of different items in minimum mandatory disclosure, and if an exchange stipulates additional disclosure for admission, arguably the exchange would have to verify against those additional disclosure.

If potential adverse signals may be found in relation to the developer team's integrity, such as adverse records in relation to criminal convictions or professional disciplinary actions, the due diligence needed would be similar to that needed for ascertaining fitness and propriety for the FCA's individual authorization regime for working in the financial services industry.³⁴ Fitness and propriety diligence has been found to be relatively resource-consuming.³⁵

There also seems an expectation that crypto asset exchanges would verify matters in relation to the nature of the crypto assets, underlying protocols and technological functions. These require the vetting of the smart contract code for crypto assets, and it may not be sufficient for crypto asset issuers to merely disclose code and make it open source. Indeed, one study has found that code interrogation, although useful in discovering bugs and inconsistencies in many self-regulatory crypto asset offers, can be a resource-demanding exercise.³⁶

One must ask if crypto asset exchanges are on the hook to investors if negligent verification is alleged after the failure of an issuer? The FCA's initial proposals for exchanges to report their due diligence findings to investors have been withdrawn, seeming to indicate that there is no explicitly constructed statutory duty to investors. However, the FCA requires that exchanges should only admit to trading where they are satisfied that issuers' disclosures are in their view not untrue or misleading, whether or not exchanges are able to perform complete verification. This may suggest that it remains open for investors to allege that exchanges have failed, perhaps a common law duty of care, to discharge their verification to the standard stated.³⁷

Nevertheless, in view of the provision of a responsible disclosure in the disclosure document to crypto asset investors,³⁸ it is arguable that investors should first seek recourse against the responsible discloser for primary liability where disclosure defects cause loss. However, could exchanges be susceptible to secondary liability for negligence in verification? Crypto asset exchanges' liability, if any, would be secondary, or gatekeeper liability, and

34 FCA Handbook FIT 2.

35 Eleanore Hickman and Alan Brener, 'The Senior Managers and Certification Regime in UK Practice and Global Context' (2025) 26 *Journal of Banking Regulation* 326.

36 S Cohny, D Hoffman, J Sklaroff and D Wishnick, 'Coin-operated Capitalism' (2019) 119 *Columbia Law Review* 591.

37 FCA (June 2026), paras 2.36-2.38.

38 Regulation 12, The Financial Services and Markets Act 2000 (Cryptoassets) Regulations 2026.

it is important to bear in mind both the appropriateness/fairness as well as proportionality of gatekeeper liability that may cause disincentives to their carrying out of their gatekeeper functions.³⁹

Even with the publication of the FCA's final policy statement on exchanges' obligations, the legal risk for exchanges is not clarified. Arguably, it is not appropriate for the FCA to pre-empt possible civil litigation against exchanges, even for secondary liability, as investors' seeking of private remedies is an essential tenet of investor protection. Although UK legislation⁴⁰ explicitly states that the person named as responsible for mandatory disclosure is liable to pay compensation where disclosure liability entails, it is uncertain if this means an exclusive identification of the liable person so that no one else could be liable. Exchange liability, even in respect of secondary liability, is not foreclosed as it is up to the court in dispute resolution to determine if there is a breach of statutory duty on the part of the gatekeeper and to what extent this is causative of loss. Where an action is not taken by an individual investor who could avail of the action for breach of statutory duty,⁴¹ courts are arguably also not prevented from finding a common law duty of care between the gatekeeper and investor.⁴² Exchanges' legal risk may however be circumscribed by the negligence standard, where claimants have to prove that the exchange cannot reasonably be satisfied that issuers' disclosures are true and not misleading.

Where forward-looking statements are concerned, the responsible discloser for crypto assets offers benefits from a higher threshold of liability for mis-disclosure, i.e. the dishonesty or reckless standard.⁴³ In this manner, would crypto asset exchanges benefit from a higher threshold for secondary liability as well? It would be first questioned if they are required to verify forward-looking statements, being speculative in themselves and more susceptible to being opinions which may not be objectively verified. The FCA also does not list forward-looking statements within the example list articulated for verification.⁴⁴ If, on the other hand, exchanges are expected to conduct verification anyway, it is arguable that such verification liability should be subject to the same threshold for disclosure liability. In this manner the legal risk for such verification would be proportionately reduced, especially if forward-looking statements comprise a large proportion of investor-facing disclosure due to the pre-developmental nature of such fund-raising.

Next, crypto asset exchanges also act as gatekeepers to maintain the post-admission information efficiency environment of crypto assets in order to facilitate price formation and prevent insider dealing. The UK regulatory regime envisages that issuers, offerors of crypto assets and crypto asset trading exchanges would be responsible to update inside information to the market, using wide channels for information publication and dissemination in order to prevent market abuse.⁴⁵ Furthermore, these same persons have the obligation to draw up and maintain a current list of 'insiders', i.e. a list of persons regarded as having access to price sensitive information regarding

39 Assaf Hamdani, 'Gatekeeper Liability' (2003) 77 Southern California Law Review 53.

40 Reg 14, The Financial Services and Markets Act 2000 (Cryptoassets) Regulations 2026.

41 Section 138D, Financial Services and Markets Act 2000.

42 Although that would be much more challenging given the requirements of proximity under *Caparo Industries plc v Dickman* [1990] UKHL 2.

43 FCA (June 2026), paras 2.108-2.118.

44 See FCA's earlier consultation paper, *Admissions & Disclosures and Market Abuse Regime for Cryptoassets* (Dec 2025), para 2.52, <https://www.fca.org.uk/publications/consultation-papers/cp25-41-regulating-cryptoassets-admissions-disclosures-market-abuse-regime-cryptoassets>.

45 FCA (June 2026), paras 3.15-3.22.

crypto assets, because of their position or connection to the issuer, offeror or the crypto asset trading exchange.⁴⁶ This position is not dissimilar to the EU's. This regime does not impose periodic ongoing disclosure on crypto asset issuers like under securities regulation but imposes ad hoc disclosure of price sensitive information as a form of ongoing disclosure.

In this manner, crypto asset trading exchanges are not merely gatekeepers to facilitate or compel *ad hoc* disclosure but are themselves subject to the disclosure obligation where relevant, i.e. where the exchange or its personnel may be named within the insider list. This may also be a means of mitigating the conflicts of interest where exchanges admit their own issued token. Their insider status would compel the timely disclosure of price sensitive information to prevent other investors from being taken advantage of on the market.

Different from the verification role of exchanges for admission to trading, which is similar to underwriters for securities offers, the role of crypto asset trading exchanges for ongoing informational transparency and efficiency is one of co-compliance with the issuer or offeror of crypto assets. This is supported by regulatory requirements for them instituting systems and controls for surveillance and monitoring purposes, including onchain monitoring, not only to detect suspicious behaviour but arguably for the purposes of compliance with anti-market abuse measures which include ad hoc ongoing disclosure of price sensitive information.⁴⁷ In view of the potential regulatory liability for the failure to disclose inside information in a timely manner where legitimate delay is not available,⁴⁸ crypto asset trading exchanges could be in line for primary liability where the delay of material new information takes place, even if the issuer or offeror is expected to be the ones to release such information. Nevertheless, the FCA clarifies that an insider on a list is only obliged to disclose what the insider has access to, and whether exchanges are in a privileged position regarding issuers' inside information would very much depend on factual closeness to issuers, such as in relation to business connections.⁴⁹

In sum, the FCA's regulatory design involves the crypto asset trading exchange as being a co-provider of investor protection, as well as co-complier along with the issuer (where there is one) in the post-admission stage. These expectations are of an intense nature although the exchange is not the primary fundraiser, especially where new issues of crypto assets are concerned. The expectations for secondary market transparency may be designed based on the need to ensure that already-existing crypto assets without a clear issuer, such as Bitcoin, that are admitted by a crypto asset trading exchange would be supported by ongoing transparency based on the responsibility of the admitting exchange which benefits from this trading business. However, this scope of primary liability may be excessive where new issues of crypto assets with an identifiable developer/issuer are concerned.

We next turn to the high-level framing of co-regulation, especially in financial services regulation, in order to situate the FCA's reforms regarding crypto asset trading exchanges as gatekeepers. The next Section critically questions the nature and expectations of co-regulation before turning to proposals in Section D.

⁴⁶ Ibid, paras 3.59-3.63.

⁴⁷ Ibid, paras 3.42-3.50.

⁴⁸ Ibid, para 3.22.

⁴⁹ Ibid, para 3.22.

A Paradigm for Examining Gatekeeper Fit

The FCA's regulatory design for crypto asset trading exchanges as gatekeepers is arguably a form of co-regulation, broadly defined. Co-regulation can be regarded as an umbrella term⁵⁰ where non-state governance capacity is 'enrolled' or co-opted,⁵¹ in relation to public interest objectives the regulator is seeking to achieve, such as investor protection. Such co-option can cynically be regarded as a manifestation of regulators' neo-liberal or light touch tendencies,⁵² but can also be regarded as an inevitable development due to the limitation of regulatory resources.⁵³ Where the polycentric landscape of actors is usefully leveraged upon by policy makers in order to supply or influence governance actions in efficient and comprehensive ways,⁵⁴ co-regulation is achieved, in sometimes optimal ways.

It is arguable that where governance actors have expertise or information that facilitates easier monitoring than a public regulatory authority, a delegated form of governance can be more proximate and effective. This is subject to the private sector actors' incentives, which may require managing in terms of being bonded to or regulated by the regulator.⁵⁵ This can especially be the case where regulatory supervision involves assessing novel forms of technology that regulators do not yet have equivalent expertise.⁵⁶ For this reason, crypto asset trading exchanges can be viewed as having an appropriate form of expertise to verify crypto asset offers as they offer an intermediary service that engages with on-chain activity, accessing and being versed in navigating permissionless blockchains. However, it is queried if this is a correct perception of expertise and ease of monitoring.

Black argues that co-regulatory governance can involve experts in relation to assurance, accreditation, compliance, calculability and rating, as well as standard-setting, such as for markets.⁵⁷ These are different types of expertise positions. In the FCA's co-regulatory design, it is queried if a crypto asset trading exchange is overburdened with expertise expectations. Verification may involve (a) assuring in relation to technological veracity; (b) facilitating compliance with investor protection, such as in determining the interpretation of what amounts of material investor

50 T Prosser, 'Self-regulation, Co-regulation and the Audio-Visual Media Services Directive' (2008) 31 J Consum Policy 99–113.

51 'Enrolling' is a term used by Black to depict the leveraging upon of governance capacity of a variety of potential governance actors including non-state actors, see J Black, 'Mapping the Contours of Contemporary Financial Services Regulation' (2002) 2 Journal of Corporate Law Studies 253.

52 J-C Le Coze, 'The Unfolding Regulator-Regulatee Relationship' in J-C Le Coze and B Journé (eds), *The Regulator-Regulatee Relationship in High-Hazard Industry Sectors* (Springer 2024), ch1.

53 Such as risk-based regulation, see J Black, 'The Emergence of Risk-Based Regulation and the New Public Risk Management in the United Kingdom' (2005) Public Law; H Rothstein, O Borraz, M Huber, 'Risk and the Limits Of Governance: Exploring Varied Patterns of Risk-Based Governance across Europe' (2013) 7 Regulation and Governance 215.

54 J Black, 'Decentring Regulation: Understanding the Role of Regulation and Self-Regulation in a 'Post-Regulatory' world' (2001) 54 Current Legal Problems 103; PrH. Lindøe, 'The Tripartite System: A Key in Polycentric Risk Governance: Lessons from Norwegian Offshore Industry' in J C Le Coze and B Journé (eds), *The Regulator-Regulatee Relationship in High-Hazard Industry Sectors* (Springer 2024), Ch5.

55 Black (2003).

56 C Marsden, 'Internet Co-regulation and Constitutionalism?' in Christopher Marsden, *Internet Co-regulation* (Cambridge: CUP 2011), ch2.

57 J Black, 'The Role of Third Parties in Regulatory Systems: Examples from Financial Services Regulation' in J C Le Coze and B Journé (eds), *The Regulator-Regulatee Relationship in High-Hazard Industry Sectors* (Springer 2024), ch3.

harm; (c) standard-setting for markets, in terms of determining what material information is necessary beyond minimum mandatory disclosure. If exchanges develop scoring systems for verifiability, this may also evolve into a rating and signalling system. In other words, exchanges are subject to a 'bundled' set of co-regulatory expectations and need to supply various forms of expertise. The FCA's 'bundled' expression of exchanges' gatekeeping responsibility is actually a number of different gatekeeping services when viewed against the more granular taxonomy offered in Black's article. It is questioned if the sum of these gatekeeping services is overly demanding.

For crypto assets already in existence, and since the UK's framework does not provide for a grandfathering regime for existing crypto assets, it is arguable that exchanges that wish to admit a crypto asset to trading, regardless of whether they secure the initial issuer's cooperation to make disclosure, should take on the responsibility of both disclosure and verification. The 'bundled' expectations in verification means that the cost of such verification may be significant, whether exchanges undertake their own performance or outsource such verification. For already existing crypto assets, exchanges would need up-to-date information regarding the functionalities, governance and tokenomics of the crypto asset in question, and may need to consult wide ranging resources on the technological, financial and business risks relating to the network for which the crypto asset is deployed. The admission decision, which is a business decision based on exchanges' likely revenues from the crypto asset's secondary market trading volume, would need to be balanced against the cost of producing such disclosure to the 'verified' standard. This may also mean that exchanges are unlikely to admit anything but the most popularly traded crypto assets in view of their possibly broader information footprint and the recoverability of verification cost from future trading revenue. If crypto asset trading exchanges converge upon offering only a limited set of popular tokens, then market diversity may be affected and the liquidity of other tokens would not be improved by the FCA's regulatory design, which entails consequent effects for exchanges' incentives.

For newly issued crypto assets, which the market should serve in order to support innovation and productivity in this area, it is arguable that the FCA's regulatory design would impose strenuous burdens or costs upon crypto asset trading exchanges. This could adversely affect this fund-raising avenue option for issuers. Exchanges' verification roles can be challenging in view of the limited fit with their expertise, as explained below, and this is exacerbated by the bundled nature of the verification responsibilities.

It is arguable that some types of information, such as conflicts of interest information for the issuer, may not be hard to verify. Conflicts of interest verification can be more factual and descriptive in nature, and entails a compliance-based type of verification. However, it is queried if checking that a crypto asset is compatible with the protocol blockchain it purports to be designed for, or its technological properties, or tokenomics, may require coding expertise. Does the verification expertise required of exchanges mean coding expertise to verify and perhaps test disclosed code?⁵⁸ In this respect there are dedicated code auditing companies that may be better placed than exchanges,⁵⁹ and would there be a good reason for regulators to demand that they internalize this outsourcing cost? Furthermore, verifying the nature and rights of tokens or governance mechanisms is likely also a code-based verification exercise. This means that much of the verification needed is technologically-based, and it can be questioned if this expectation is a good fit with exchanges' perceived governance capacity.

58 FCA (Dec 2025), para 2.52 but see industry feedback in paras 2.47-2.48. This issue is not explicitly clarified in FCA (June 2026).

59 Such as Consensus Diligence, Certik, Hacken etc.

Furthermore, verification in relation to risks may deal with: technological risks such as bugs in code; business risk, in terms of the promise and market potential of the developmental project; or financial risk, in relation to the crypto asset which such as market sentiment analyses. The expectation for exchanges to verify risk disclosures can be expansive. It is arguable that voluntary market actors such as ICO rating services have been performing this role, albeit not without criticism.⁶⁰ Do exchanges have this governance capacity or is it reasonable for them to internalize this cost, even if they may outsource such verification, say, to an ICO rating service provider?

Based on the concerns above, it is questioned if enrolling crypto asset exchanges to take on an umbrella of verification roles in the 'bundled' manner discussed, would deliver on one key rationale for co-regulation, which is that governance can be more cost-effectively provided and flexibly designed for market actors.⁶¹ The cost-effectiveness of market access for crypto asset issuers was important to the FCA's regulatory thinking, hence avoiding highly prescriptive mandatory disclosure standards. However, if devolving disclosure standard-setting and verification to exchanges is not likely to be cost-effective after all, the proportionality of the regulatory design for gatekeeping needs to be revisited. Arguably, there is already a pattern of regulatory design that shifts cost away from small or start-up issuers seeking to raise funds, to the platforms or markets that host their fund-raising. The regulation of online equity crowdfunding in the UK⁶² is an example. Nevertheless, the cost shifting strategy away from issuers to platforms or market operators would need to be consistent with their incentives, expertise or proximity to information so that there is efficient leverage upon their capacity and resources. Where regulators impose on market operators obligations that are not a natural fit with their business models or operations, market operators would likely raise the barriers to entry for fundraisers.

This article argues that the FCA may be incorrect in assuming that crypto asset exchanges possess the bundled range of expertise required for disclosure standard-setting, compliance verification, technological/code verification and business risk assessment. Out of the four above aspects, exchanges may be best placed to administer standard-setting for disclosure as part and parcel of formulating admission policies, as well as compliance verification. This is because exchanges can leverage upon their own compliance and control capacities, and extend to vetting issuers. It may be the case that the exchange has to expend significant resources to comply with technological/code vetting, which this article argues would form the bulk of crypto asset offer disclosures, as well as business risk vetting, which is in the province of corporate finance consulting or research analysis (undertaken by investment banks in the conventional securities fund-raising sphere).

If third party outsourcing is used by exchanges to fulfil the verification roles, the costs incurred by exchanges are likely to be passed on as increased cost for both issuers and investors. Furthermore, the exchange may not be able to fully be responsible for the areas of third-party verification that it lacks expertise in, such as code auditing or business rating. It is open to question whether the exchange is best placed to coordinate all these needs of verification under its umbrella. Code auditors or ICO rating services do not affiliate themselves with exchanges as

60 T Bourveau, ET De George, A Ellahie, D Macciocchi, 'The Role of Disclosure and Information Intermediaries in an Unregulated Capital Market: Evidence from Initial Coin Offerings' (2022) 60 J. Account. Res.129-167. <https://doi.org/10.1111/1475-679X.12404>; D Florysiak and A Schandlbauer, 'Experts or Charlatans? ICO Analysts and White Paper Informativeness' (2022) 139 Journal of Banking and Finance 106476.

61 Prosser (2008).

62 There is no disclosure standardisation for investment-based equity crowdfunding but crowdfunding platforms have to undertake investor appropriateness tests and create frictions to entry for first-time investors with adequate warnings and cooling off times, see FCA, 'Strengthening our Financial Promotion Rules for High-Risk Investments and Firms Approving Financial Promotions' (2022), <https://www.fca.org.uk/publication/policy/ps22-10.pdf>.

a matter of current practice, so specialized contracting is likely needed for exchanges to buy into their expertise. Furthermore, an exchange that potentially bears the responsibility for 'bundled' compliance and is susceptible to liability for negligent verification would need to enter into fine details of private contracting with third parties in order to manage its own legal risk. It is arguable that investor protection could become a costly affair for market participants, and a reputational hazard generally for the market.

This gives rise to the question whether the regulatory design would disincentivize exchanges from admitting new crypto asset offers, focusing them only on admitting existing crypto assets. Arguably this would not support a pro-innovation objective where new forms of productivity and economic activity may potentially be generated by new crypto asset issues that fundraise for new projects.

Given the demands of compliance with the bundled verification required, it is also possible that crypto asset exchanges could take an approach of performing this role in a minimalist or superficial manner in order to minimise cost while providing a veneer of gatekeeping. Exchanges could take proceduralised approaches to due diligence and establish lists for box-ticking. Such performance by exchanges of verification would undermine substantive usefulness to investors, making the delegated governance paradigm questionable in its effectiveness for securing an optimal level of investor protection and confidence. However, as the FCA has ultimately demanded that exchanges perform verification to the standard of being satisfied that issuers' disclosures are true and not misleading, it is arguable that the risk of minimal and cosmetic verification can be mitigated. However, as long as investors do not suffer unexpected losses and turn to scrutinise exchanges' roles, how exchanges discharge their verification roles may remain opaque. In this respect, exchanges' meaningful compliance with the verification role may depend on how intensely they perceive the FCA to engage in supervising their roles and holding them to accountability.

The ambiguity regarding exchanges' liability to investors can also support exchanges in quietly maintaining an expectations gap in relation to their verification role.⁶³ Commentators have pointed out that gatekeeper liability is key to affecting how intensely gatekeepers perform their functions in signalling substantive veracity for the market.⁶⁴ The FCA's regulatory design has been arguably reluctant to clarify gatekeeper liability, as there is emphasis on identifying *ex ante* responsible disclosing persons so that liability is consensually taken upon. Furthermore, the FCA's earlier proposal to ask exchanges to report their due diligence findings to investors, which could result in a relationship of accountability and proximity to investors, has been dropped. Although it cannot be foreclosed that courts could find either breaches of statutory duty by exchanges in discharging their verification roles to individual claimants, or a breach of a common law duty of care if a relationship of proximity is indeed found between the gatekeeper and investor which is breached and is causative of loss, neither point is clarified in the FCA's policy statement. Hence this article argues that exchanges as gatekeepers are certainly not strictly liable for mis-disclosures unless named as responsible in disclosure documents. At best, a negligence-based liability regime may apply for verification failures. However, where a forward-looking statement is concerned, it is uncertain if such liability may apply at all as the standard for liability for primary disclosers is based on dishonesty or recklessness. Unless there is a clear case of exchanges clearly abetting such mis-disclosure, it may be challenging to establish exchanges' liability.

63 Akin to that for corporate compliance gatekeepers, see A Eckstein and R Shapira, 'Compliance Gatekeepers' (2024) 41 Yale Journal on Regulation 469.

64 S Roychowdhury & S Srinivasan, 'The Role of Gatekeepers in Capital Markets' (2019) 57 Journal of Accounting Research 295; J Johnson, 'Secondary Liability for Securities Fraud: Gatekeepers In State Court' (2011) 36 Delaware Journal of Corporate Law 464.

However, it can be argued that exchanges' primary disclosure obligations for inside information can act as a compliance reinforcer for its verification role at the admission stage. Exchanges' liability for ongoing disclosure of inside information to the market is arguably framed as a strict responsibility. This regime of strict liability may entail a behavioural orientation towards information diligence, creating positive spillovers for the efforts needed for admission verification. However, it can equally be argued that the strict responsibility for inside information disclosure is a responsibility to disseminate, which is a different expectation from verification of information at hand. The dissemination duty does not include independent or objective verification, and is premised upon promptness. In this manner, exchanges' ongoing monitoring could be complemented by big data and artificial intelligence capacities to scrape for relevant off chain and on chain information in order to provide dissemination. This is not the same as carrying out verification, which usually entails expending efforts to be independently or objectively satisfied as to the extent of veracity.

In essence, the gatekeeping expectations for crypto asset trading exchanges are bundled in a 'convenient' form of regulatory delegation, which can be a 'bad' form of co-regulation. The gatekeeper is 'enrolled' due to its convenient location as an essential intermediary for crypto asset fund-raising, but based on a mis-perceived sense of regulatory expertise or capacity. In this way the regulatory design induces a false sense of proportionality in representing its enrollment of market-based governance. The framing of co-regulation enables us to critically consider the appropriateness of delegated governance, in terms of the nature of fit for delegated governance which then circumscribes what can be optimally delegated. The next Section turns to argue that the FCA's regulatory design can be adjusted to retain the co-regulation ethos of enrolling gatekeepers, but in a manner that is more limited but focused. This can also pave the way for designing appropriate accountability on the part of market actors who have been delegated governance as gatekeepers.

03

Proposals for Limited but Focused Gatekeepers – Refining a Broad Co-regulatory Blueprint

This Section argues that it is not unwarranted for the FCA to look for a co-regulatory regime, relying on the governance capacity of market-based actors. They may have incentives aligned with investor protection while keeping the cost of regulatory standardisation and compliance low for both regulators and issuers. The crypto asset trading exchange is not necessarily the optimal gatekeeper for all investors' information needs, as it may not be well-placed to carry out the bundled verification the FCA expects, and may implement such gatekeeping in a manner that would only perpetuate an expectations gap.

Where the exchange is seeking to admit a crypto asset to trading on its own volition, it is a discloser and subject to primary disclosure liability. Where it is in the position of operating a marketplace for an issuer, especially for new issues of crypto assets, it is not necessarily in a position of information parity with the issuer, or more relevantly, in a position of equivalent information expertise due to the overwhelmingly technological nature of information relating to crypto assets. The factual information relating to crypto assets relating to functionalities, rights, governance, security, tokenomics and compatibility with protocol blockchains, are all likely to be code-based. The forward-looking information would also largely be code-based, but may also be business-based in terms of projected

network effects or market share, or finance-based, in terms of revenue or cost.

It is suggested that investors' key information needs lie in technological verification. Non-technologically savvy investors would need the bridging of the gap between technical representations of information, such as in code, and lay but intelligent understanding. The Section proposes that the FCA could require crypto asset offers, whether existing assets or new assets, to be accompanied by an independent third-party code audit, whose audit report is to be made publicly available. Code auditors are a new gatekeeper industry, arising to provide services for a range of needs including companies commissioning code products and investors in blockchain-based opportunities etc. They include Consensys Diligence,⁶⁵ Certik,⁶⁶ Hacken,⁶⁷ Hashlock⁶⁸ etc. There are a number of possible co-regulatory designs co-opting code auditors as gatekeepers.

First, the issuer or other person seeking to admit crypto assets to an exchange can be responsible for the cost of code audit, and a competitive market may provide for reasonable cost options. In such an issuer-pays model, old problems such as conflicts of interest on the part of the gatekeeper can arise.⁶⁹ However, lessons drawn from regulatory history can apply. There is the option of letting the market work to ascertain market failure if any. If market failure occurs, a regulatory option can be brought in for code auditors, drawing analogies with regulating credit rating agencies, or ESG rating agencies. The public regulation of auditors is also a relevant lesson, which although accelerated after the Enron debacle,⁷⁰ has consistently faced pushback from the accounting industry.⁷¹ In principle, however, regulated gatekeepers can be faced with regulatory accountability and liability, consistent with Black's exhortation that co-opted gatekeepers into regulatory governance should either be supported by direct regulatory accountability or accountability to their users.⁷² Other than regulatory accountability and liability, regulation can also clarify the civil liability that gatekeepers owe to those who rely on them. Ambiguity in gatekeeper liability is often justified in order to prevent overdeterrence but lessons from gatekeeper failures such as the auditing industry have shown that this can culminate in a form of 'veneer' gatekeeping which ultimately offers insufficient investor protection.

Second, to mitigate the conflicts of interest problem and to boost gatekeeping veracity, one can consider Lynch's proposal⁷³ for the regulator to manage the verification work assigned to gatekeepers. This ensures that code auditors are under no uncertain impressions that they serve the public interest in providing fair and accurate signals for investor confidence. The regulator would assign code auditors for each crypto asset offer, to be paid out of a

65 <https://diligence.security/>.

66 <https://www.certik.com/>.

67 <https://hacken.io/audits/>.

68 <https://hashlock.com>.

69 J Payne, 'The Role of Gatekeepers' in N Moloney et al (eds), *The Oxford Handbook of Financial Regulation* (Oxford:OUP 2015), ch9; IH-Y Chiu, 'Regulatory Governance of Credit Rating Agencies in the EU: The Perils of Pursuing the Holy Grail of Rating Accuracy' (2013) *European Journal of Risk and Regulation* 199 and citations therein.

70 resulting in the Sarbanes-Oxley Act and creation of the Public Company Accounting Oversight Board in the US.

71 Such as the resistance of the auditing industry to the implementation of audit reforms in the UK after the collapse of listed company Carillion, although championed by independent reviews, see <https://www.gov.uk/government/collections/audit-and-corporate-governance-reform>.

72 Black (2003).

73 TE Lynch, "Deeply And Persistently Conflicted: Credit Rating Agencies In The Current Regulatory Environment" (2009) 59 *Case Western Reserve Law Review* 227.

fund maintained by the regulator from industry subscription. Crypto asset trading exchanges and intermediaries can be made to subscribe to such a fund in order to support crypto asset financialisation. Code auditors would not have a contractual or business relationship directly with issuers, and can be made subject to accountability to regulators as well as civil liability to their users.

Such a limited but focused form of gatekeeping, through code auditing, may provide more salient information for investors, based on the unique technological nature of crypto assets. This is aligned with code auditors' expertise and incentives to promote their reputations in an emerging competitive market. Although this is not an all-encompassing form of verification, it may be neither proportionate nor practicable to try to achieve an equivalent form of comprehensive review that resembles what underwriters do for securities offers. In this manner, investors are also educated as to the unique nature of the risks in this form of investment, while the investor protection supplied may arguably be salient and cost effective from both issuers' and regulators' points of view.

Malta has instituted a system of regulated code auditors, known as 'systems auditors' to report on blockchain-based organisations that wish to register as an 'Innovative Technological Arrangement' (ITA) to obtain legitimacy for its organisational form.⁷⁴ The ITA Act creates a new body of gatekeepers, the systems auditors, to verify the technical functionalities of the software and code for the ITA's smart contracts. In implementing the Act,⁷⁵ Malta has developed eligibility criteria based on IT qualifications for systems auditors. It has also developed two assurance levels providing type 1 and type 2 reports. A type 1 report relates to whether the description of the innovative arrangement is fairly represented, while a type 2 report deals with operational effectiveness as well. Transposing this to the context of code auditing for crypto assets, a type 1 assurance may relate to whether the disclosed code is fairly represented while a type 2 report would test for the code's operations and functionality. Although the author was unable to access the Maltese systems auditor register,⁷⁶ it remains to be seen if Malta's early mover regime could offer regulatory innovation lessons elsewhere.

This article does not oppose the FCA's designation of crypto asset exchanges as gatekeepers too, but the regulator should consider what best fits with their business models, incentives and operational capacities. As argued above, crypto asset exchanges could perform compliance verification for issues of crypto asset offers, and standard-setting for admission is part and parcel of their business models. Furthermore, they are well-placed to administer ongoing dissemination of price-sensitive information, although their primary responsibility for disclosure may need to be refined according to whether they are proximately located to the source of relevant inside information.

Where gatekeepers are appropriately designated, regulators should keep them accountable through a suitable accountability design. This can be by way of soft law, i.e. by a code of best practice, or by hard law, in the form of regulatory standards, which can be principles-based or a mixture of principles and rules. For code auditors, the emerging competitiveness of the industry provides a context for market-based discipline, as firms desire to build up their reputations. For crypto asset exchanges, although the market is competitive, the market is also dominated by some large, multi-business-line exchanges such as Binance, Coinbase etc. Regulators would already subject them to authorisation and regulation for their activities, and arguably, their relevant gatekeeping roles should also be regulated by hard law.

74 S8, Innovative Technology Arrangements and Services Act, <https://legislation.mt/eli/cap/592/eng/pdf>.

75 <https://mdia.gov.mt/services/system-auditors/>.

76 https://portal.data.gov.mt/en_GB/data-service/list-of-system-auditors.

A spectrum of soft or hard public governance of gatekeepers can be adopted depending on their market positions, the nature of market failures and the needs for aligning them with public regulatory objectives. Proxy advisers as corporate governance intermediaries for capital markets are mostly governed by soft law,⁷⁷ although securities benchmarks are regulated by principles-based hard regulation.⁷⁸ Auditors are governed by professional standards,⁷⁹ while credit rating⁸⁰ and ESG rating agencies⁸¹ are governed by hard regulation. Lessons from the spectrum of co-regulatory governance adopted with different gatekeepers can offer lessons learnt.

The FCA's co-regulatory design for crypto asset exchanges subjects them to compliance but how intensely this will be supervised or enforced remains to be seen. In light of the ambiguity of civil liability, it is queried if the FCA has sufficiently considered how gatekeepers are themselves to be governed. The 'new governance' of polycentric and co-regulatory designs ultimately need to be supported by dynamic and responsive regulatory accountability.⁸² This article not only argues for a better co-regulatory design but also for its ultimate accountability.

04

Conclusion

This article examines the UK Financial Conduct Authority's regulatory innovation endeavors in introducing a proportionate fund-raising regulation for crypto asset offers. The attempt at proportionality is reflected in the refrain from adopting mandatory registration and disclosure techniques like in securities regulation, but to co-opt crypto asset trading exchanges as gatekeepers to perform verification roles in order to underpin investor confidence in the market. This article examines the nature of the gatekeeping roles and frames these within the theoretical framework of co-regulation, in order to critically examine if the FCA would achieve its objectives: offering a form of cost-effective investor protection that can be trusted. This article argues that questions arise as to the aptness of the crypto asset trading exchange being enrolled as a gatekeeper for the purposes of verification as required by the FCA. A suggestion is offered for a more limited but focused co-option of code auditors, but is not opposed to enrolling crypto asset exchanges in appropriate positions of gatekeeping. They must however be underpinned by well-designed accountability regimes.

77 The UK The Proxy Advisors (Shareholders' Rights) Regulations 2019.

78 UK Benchmarks Regulation, onshoring Regulation 2016/1011, but poised to move to regulation only for systemically important benchmarks, likely leaving other benchmarks to be potentially self-regulatory or subject to soft law.

79 Enforced by the Financial Reporting Council, UK.

80 EU Regulation 1060/2009, onshored The Credit Rating Agencies Regulations 2010.

81 EU Regulation 2024/3005, and The Financial Services and Markets Act 2000 (Regulated Activities) (ESG Ratings) Order 2025.

82 J Black, 'Paradoxes and Failures: 'New Governance' Techniques and the Financial Crisis' (2012) 75 Modern Law Review 1037.



2.2
Professional Insight

How can AI Improve Risk-Based AML Supervision and Financial Inclusion

Marica Ciantar



Author's Bio



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Av. Ciantar continues to contribute to research in criminal law and technology, both independently and through her work with the Office of the Attorney General. Her academic interests include cybercrime and the intersection of emerging technologies with criminal justice.

Cover Proposal and Confirmations

This article examines whether artificial intelligence (AI) can be used to strengthen the Financial Action Task Force's (FATF) risk-based approach to anti-money laundering (AML) supervision whilst addressing the challenges of de-risking and financial exclusion. Whilst the risk-based approach intends to promote proportionality and effectiveness, its implementation has often resulted in defensive compliance practices which prioritise risk avoidance over risk management. This article argues that AI has the potential to improve risk differentiation, monitoring and supervisory confidence thus enabling a financial institution to manage higher-risk relationships more effectively rather than excluding them.

This article conceptualises the interaction between AI, the risk-based approach and financial inclusion as a governance and supervisory challenge rather than solely a technological issue. It demonstrates how AI may reduce de-risking by enabling better assessment of customer and transactional risk, which is consistent with FATF principles. Finally, it examines the pertinent technical and regulatory challenges associated with AI adoption in anti-money laundering to analyse how AI can support both supervisory effectiveness and financial inclusion.

This article is original, has not been published elsewhere and is not under consideration by another journal.

Abstract

The FATF's risk-based approach aims to promote proportionality yet, in practice, its implementation has frequently resulted in de-risking and financial exclusion. The aim behind this article is to examine whether AI can enhance risk-based anti-money laundering supervision while supporting financial inclusion. AI can improve risk differentiation, monitoring and supervisory confidence thus enabling a financial institution to manage higher-risk relationships more effectively rather than excluding them. Nevertheless, the benefits of AI are conditional on governance safeguards such as explainability, human oversight and regulatory clarity. This article demonstrates how, when aligned with FATF principles, AI can support both anti-money laundering effectiveness and financial inclusion as mutually reinforcing objectives.

Introduction

According to a 2025 Europol report, the United Nations Office on Drugs and Crime has estimated that between 2% and 5% of the global gross domestic product, which amounts to €715 billion and €1.87 trillion, is laundered annually worldwide. This scale of illicit activity underscores the continuing importance of the FATF framework and the necessity of robust anti-money laundering efforts by financial institutions.¹

The Financial Action Task Force (“FATF”) is an inter-governmental body mandated to set international standards and promote the effective implementation of legal, regulatory, and operational measures to safeguard the integrity of the international financial system. In furtherance of its mandate, the FATF has promulgated Forty Recommendations, which constitute the principal global framework for the prevention and suppression of money laundering, terrorist financing, and proliferation financing. These Recommendations require states to adopt frameworks and strategies for mitigating financial crime risks, whilst imposing preventative obligations upon financial institutions. Financial institutions shall comply with obligations such as: the undertaking of customer due diligence, the maintenance of adequate records, the submission of suspicious transaction reports, and the identification and verification of beneficial owners of legal persons. The Recommendations further emphasise the necessity of effective supervisory and enforcement mechanisms, including proportionate, dissuasive, and effective sanctions for non-compliance and emphasise the importance of international cooperation which help give full effect to the mission of the FATF.²

A foundational principle of the FATF framework is the risk-based approach, which underpins efforts to safeguard the integrity of the financial system. Whilst the risk-based approach operates on the idea that resources should be allocated according to priorities, ensuring that the most significant risks receive the most attention,³ financial institutions often err excessively on the side of caution when applying the risk-based approach, particularly given the practical challenges it presents. Unlike rule-based compliance, the risk-based approach requires institutions to exercise judgement and calibrate controls to varying levels of risk, a process that can be complex, resource-intensive, and costly. As a result, institutions often adopt overly restrictive policies or avoid customers perceived as higher risk, even where risks could be managed through proportionate mitigation measures. Such overly cautious practices contribute to financial exclusion, undermining access to financial services and conflicting with the FATF’s emphasis on proportionate, risk-sensitive measures,

“It is not the intention of the FATF to impose rigid standards or to mandate a single operating process that would negatively affect the payment system or financial inclusion.”⁴

1 Europol, ‘Criminal Finances and Money Laundering’ <<https://www.europol.europa.eu/crime-areas/criminal-finances-and-money-laundering>> accessed 31 January 2026.

2 Financial Action Task Force (FATF), ‘International Standards on Combating Money Laundering and the Financing of Terrorism and Proliferation: The FATF Recommendations’ <<https://www.fatf-gafi.org/en/publications/Fatfrecommendations/Fatf-recommendations.html>> accessed 24 January 2026.
Hereinafter referred to as ‘The FATF Recommendations’

3 FATF, ‘Guidance on the Risk-Based Approach to Combating Money Laundering and Terrorist Financing: High-Level Principles and Procedures’ <<https://www.fatf-gafi.org/en/publications/Fatfrecommendations/Fatfguidanceontherisk-basedapproachtocombatingmoneylaunde ringandterroristfinancing-highlevelprinciplesandprocedures.html>> accessed 24 January 2026.
Hereinafter referred to as ‘The FATF High Level Principles and Procedures’

4 The FATF Recommendations (n2)

New technologies and technological developments, including contemporary applications of artificial intelligence ('AI'), offer the potential to assist financial institutions in meeting their anti-money laundering obligations and complying with the FATF Recommendations, supporting financial inclusion objectives.

The need for AI based solutions stems from the vast amounts of data which financial institutions must process, which data may be both structured and unstructured and can be used to identify patterns and predict whether financial transactions may be associated with illicit activities.⁵ AI further enables financial institutions to carry out real-time monitoring of transactions, have more comprehensive and dynamic risk assessments and strengthen governance and oversight.⁶

In light of the above, this article examines how financial institutions can advance financial inclusion under a risk-based approach to anti-money laundering, while leveraging AI to enable the onboarding of higher-risk individuals in a controlled and proportionate manner.

01

The Risk Based Approach

Recommendation 1 on 'Assessing risks and applying a risk-based approach' of the International Standards on Combating Money Laundering and the Financing of Terrorism and Proliferation, The FATF Recommendations ('The FATF Recommendations') establishes the obligation of States to assess risks and apply a risk-based approach. FATF Recommendation 1 positions the risk-based approach as a foundational principle underpinning the broader anti-money laundering framework established by the FATF Recommendations.⁷

The risk-based approach operates at both national and institutional level. States are required to identify, assess and understand the risks affecting their financial system via National Risk Assessments and ensure that their anti-money laundering frameworks respond to the identified risks, whilst financial institutions must assess and manage the financial risks arising from their own business relationships and activities and take measures to mitigate such risks.

The principle behind the risk-based approach is that measures taken by States shall be proportionate to the risks identified with resources allocated according to the amount of risk presented. Hence, the resources allocated should be proportionate to the risk assessed and the application of the recommendations shall also follow this

5 M Brewczyńska, 'Combating Financial Crime with AI at the Crossroads of the Revised EU AML/CFT Regime and the AI Act' (2026) New Journal of European Criminal Law <<https://doi.org/10.1177/20322844251408680>> accessed 1 February 2026.
Hereinafter referred to as, 'M Brewczyńska 2026'

6 FATF, 'Opportunities and Challenges of New Technologies for AML/CFT' (July 2021) <<https://www.fatf-gafi.org/en/publications/Digitaltransformation/Opportunities-challenges-new-technologies-for-aml-cft.html>> accessed 27 January 2026.
Hereinafter referred to as, 'FATF New Technologies Report'

7 The FATF Recommendations (n2), Recommendation 1

risk-based approach.⁸ Proportionality requires that, where multiple measures are capable of effectively mitigating financial crime risks, the option that is least burdensome – while taking financial inclusion considerations into account – should generally be preferred. This may include, for example, the application of simplified measures in lower-risk scenarios, such as simplified due diligence.⁹

According to the FATF Guidance on the Risk-Based Approach to Combating Money Laundering and Terrorist Financing - High Level Principles and Procedures ('FATF Guidance on the Risk Based Approach (RBA)'),¹⁰

*"There are no universally accepted methodologies that prescribe the nature and extent of a risk-based approach. However, an effective risk-based approach does involve identifying and categorizing money laundering risks and establishing reasonable controls based on risks identified."*¹¹

Financial institutions adopt a combination of practices to ensure that their anti-money laundering regimes are in line with the risk posed and these typically include measures such as, customer due diligence, monitoring of transactions and record-keeping. The fundamental principle underpinning the risk-based approach is that compliance measures should not be implemented in a uniform manner across all individuals or entities but are systematically adjusted – either intensified or relaxed – based on the specific level of risk posed by each customer. This tailored application allows financial institutions to allocate resources more efficiently and effectively, ensuring enhanced oversight where higher risks are identified, such as with politically exposed persons or complex financial transactions, while allowing for simplified procedures in lower-risk scenarios.

In emphasising the importance of an appropriate and effective control structure for managing money laundering risks, the FATF Guidance on the RBA acknowledges both the value and the inherent limits of risk-based compliance. It recognises that a risk-based approach should be reasonably designed and effectively implemented, so that controls are proportionate to the risks identified and resources are allocated where they are most needed. At the same time, FATF accepts that even a well-calibrated risk-based framework does not eliminate the risks relating to financial crime altogether, describing it as not a "zero failure" approach.¹² Money laundering methods, typologies, and enabling technologies continue to evolve, meaning that regulated entities and supervisory authorities are unlikely to detect every illicit transaction or misuse of the financial system.

The FATF recognises that anti-money laundering measures should focus on reducing identifiable risks, not on eliminating all risk. Hence, financial institutions should maintain a high degree of flexibility and adapt their preventative, detective, and monitoring controls in response to evolving threats.¹³ In doing so, financial institutions

8 Ibid

9 FATF, 'Guidance: Financial Inclusion and Anti-Money Laundering and Terrorist Financing Measures' (June 2025) <<https://www.fatf-gafi.org/content/dam/fatf-gafi/guidance/Guidance-Financial-Inclusion%20-Anti-Money-Laundering-Terrorist-Financing-Measures.pdf.coredownload.pdf>> accessed 25 January 2026
Hereinafter referred to as 'FATF, Guidance on Financial Inclusion'

10 The FATF High Level Principles and Procedures (n3)

11 Ibid

12 FATF, 'Guidance for a Risk-Based Approach, The Banking Sector' (October 2014) < <https://www.fatf-gafi.org/content/dam/fatf-gafi/guidance/Risk-Based-Approach-Banking-Sector.pdf.coredownload.pdf> > accessed 25 January 2026
Hereinafter referred to as 'FATF Guidance for The Banking Sector'

13 FATF, High Level Principles and Procedures (n3)

are expected to adopt more stringent measures when the risk is higher and less stringent measures when the risk is low. It is imperative that the risk-based approach is not to be interpreted as exempting financial institutions from mitigating risks when the risk is low but to apply measures such as simplified due diligence measures.¹⁴

02

The Risk-Based Approach and Financial Exclusion

The risk-based approach, as previously outlined, is not without its consequences as for financial institutions to implement this approach effectively, increased operational costs may be incurred, and improper adoption can result in substantial fines. At times, this leads financial institutions to adopt stricter rules for certain customers, leading to financial exclusion and de-risking of legitimate businesses and consumers.¹⁵ Whilst the FATF has tried to mitigate these risks, de-risking and financial exclusion remain a challenge.¹⁶

De-risking occurs when institutions terminate or restrict customer relationships to avoid perceived risk rather than manage it through proportionate controls. Although de-risking is inconsistent with the proper application of the risk-based approach, it remains strongly associated with it in practice, particularly where financial institutions adopt an overly cautious interpretation of anti-money laundering obligations. Financial institutions may engage in de-risking for a range of interconnected reasons, including profitability concerns, rising compliance and operational costs, fear of supervisory or enforcement action, reduced institutional risk appetite, and reputational considerations. In turn, such practices may result in unfair exclusion, as entire groups of customers—often including vulnerable or underserved individuals—can be denied access to financial services on the basis of broad assumptions and generalised risk indicators rather than an individualised and proportionate assessment of their actual risk.¹⁷

De-risking is a significant driver of financial exclusion, as it may result in customers being denied access to, or removed from, the formal financial system. Financial exclusion can arise from a range of socio-economic and structural factors, including limited access to financial services and concerns relating to trust, privacy, and the security of personal data.¹⁸ Moreover, as financial services increasingly transition online, individuals with limited digital literacy may face additional barriers to participation. This can be more pronounced among older persons, who may be less familiar with digital platforms and therefore more likely to rely on cash-based transactions rather than engaging with electronic payment systems.

It may be argued that de-risking, by excluding certain customers from the formal financial system, safeguards financial integrity by reducing exposure to money laundering risks. However, this reasoning is flawed, as it confuses

14 FATF Guidance for The Banking Sector (n12)

15 FATF, Guidance on Financial Inclusion (n9)

16 FATF, 'Mitigating the Unintended Consequences of the FATF Standards' (October 2021)
 <<https://www.fatf-gafi.org/en/publications/Financialinclusionandnpoissues/Unintended-consequences-project.html>> accessed 24 January 2026
 Hereinafter referred to as 'FATF, Mitigating unintended consequences'

17 ibid

18 ibid

risk avoidance with risk management and undermines the proportionality that the risk-based approach is intended to achieve. Furthermore, financial exclusion should not be seen as an indicator of a lower money laundering risk. Rather, financial exclusion can push illicit financial activity outside the formal banking system, where transactions are less visible and therefore more difficult for authorities and financial institutions to detect and monitor.

Malta's National Risk Assessment of 2023 on Money Laundering, Terrorist and Proliferation Financing and Targeted Financial Sanctions¹⁹ has found that in August 2021, the 'high-risk' legal persons for concealment of beneficial owners for money laundering purposes were those that, inter alia, lacked a Maltese IBAN account and only an estimated 42% of all legal persons registered in Malta are deemed to be in possession thereof, resulting in the lack of visibility of financial activities.

The FATF has categorically held how de-risking does not comply with its Standards,

*"Financial exclusion not only harms individuals and businesses but can also represent a real risk to achieving effective implementation of FATF Standards by driving financial activity into unregulated channels."*²⁰

In discouraging financial exclusion and hence promoting financial inclusion, the FATF Recommendations recognise that, in limited circumstances, and where money laundering risks have been assessed as low, countries may decide not to apply certain Recommendations to specific categories of financial institutions. The FATF framework further clarifies that such exemptions should be confined to narrowly defined and justified situations, including instances where the relevant risks are demonstrably low or where a financial activity is conducted only on an occasional or limited basis.²¹ The flexibility provided by the Recommendations allows states to adjust their policies in the interest of financial inclusion.²²

03

Financial Inclusion, the FATF Recommendations and Anti-Money Laundering

Financial inclusion and anti-money laundering are not mutually exclusive, rather, they can be mutually reinforcing. Greater access to regulated financial services reduces the extent to which individuals and businesses are compelled to rely on cash-based transactions or unregulated payment channels. By encouraging participation in the formal financial system, financial inclusion increases the traceability of transactions and enhances transparency, thereby strengthening the capacity of both financial institutions and competent authorities to

19 National Coordinating Committee on Combating Money Laundering and Funding of Terrorism (December 2023), 'National Risk Assessment' <https://ncc.gov.mt/wp-content/uploads/2024/10/PublicNRA_Dec2023-1.pdf> accessed 1 February 2026

20 FATF, Guidance on Financial Inclusion (n9)

21 The FATF Recommendations (n2), Interpretive Note to Recommendation 1

22 FATF, Guidance for the Banking Sector (n12)

detect suspicious activity and mitigate the risk of financial crime.²³

Reliance on unregulated financial services may increase the vulnerability of legitimately unserved or underserved individuals and entities, exposing them to heightened risks of becoming victims of financial crime, unintentional facilitators, or even coerced participants. For example, individuals who resort to informal lenders, such as loan sharks, may face exploitative debt arrangements that can lead to serious forms of abuse, including coercion into criminal activity, forced labour, human trafficking, or acting as money mules to launder illicit funds.²⁴

Financial inclusion is recognised as an important driver of economic growth and sustainable development, including under the United Nations Sustainable Development Goals. It has also remained a priority for the G20 since the creation of the Global Partnership for Financial Inclusion and continues to feature prominently in the work of institutions such as the International Monetary Fund, the World Bank and the United Nations.²⁵

Financial inclusion refers to, *“both access to and active use of an adequate suite of regulated, appropriate, safe, convenient and affordable financial services by individuals (including households) and entities that would benefit from such services.”*²⁶ According to a FATF report published in June 2025 titled, ‘FATF Guidance, Financial Inclusion and Anti-Money Laundering and Terrorist Financing Measures’ (“the 2025 FATF Guidelines”), financial inclusion increased significantly between 2011 and 2021, with global account ownership rising by approximately 50%. Nevertheless, an estimated 1.4 billion adults worldwide still lack access to formal banking services or a mobile money account. Moreover, account ownership does not necessarily translate into meaningful usage, as in some cases new account holders continue to rely primarily on unregulated financial services for their day-to-day transactions.²⁷

Financial inclusion initiatives seek to address the needs of individuals and entities who lack access to regulated financial services (“unserved”) or whose access remains limited (“underserved”). For example, an individual may be considered underserved where; despite having formal access to financial services, they do not meaningfully use them due to factors such as cost, limited financial or digital literacy, lack of trust, or a perceived lack of utility. An individual may also be underserved should a financial institution go completely digital. The Malta Financial Services Authority’s (‘MFSA’) ‘Dear CEO’ letter highlighted this issue holding that certain demographics may be slower to adapt to digital services and cultural preferences for face-to-face interaction require financial institutions to embrace multiple channels when transitioning from traditional services to digital ones.²⁸

The concept of financial inclusion was initially understood primarily in terms of access to regulated financial services. However, it has since developed into a broader concept that also encompasses the effective and appropriate use of financial products and services, as well as the level of financial literacy needed to engage with

23 FATF, Guidance on Financial Inclusion (n9)

24 *ibid*

25 *ibid*

26 *ibid*

27 *ibid*

28 Malta Financial Services Authority, ‘Dear CEO Letter: Digitalisation Thematic Review’ (11 February 2025) < <https://www.mfsa.mt/wp-content/uploads/2025/02/Dear-CEO-Letter-Digitalisation-Thematic-Review.pdf> > accessed 1 February 2026
Hereinafter referred to as ‘MFSA, ‘Dear CEO’

them. Financial inclusion is therefore not solely concerned with access, but also with ensuring that individuals can meaningfully participate in the formal financial system through informed decision-making and an understanding of available financial products and services.²⁹

Financial inclusion may be promoted through the expansion of digital financial services. The FATF's 2025 guidance highlights that the digitalisation of payments, particularly government-to-person ('G2P') payments, can significantly enhance financial inclusion and strengthen payment integrity by requiring recipients to maintain a regulated account to receive electronic deposits. In this context, the FATF encourages digital financial inclusion and supports the use of non-face-to-face onboarding methods when these make sense according to the risk profile of the country and where these measures are proportionate to the risks associated with the relevant business relationship or activity. Nevertheless, digital financial services may not be accessible to all individuals, particularly considering persistent disparities in digital literacy and access. In response, governments have increasingly promoted financial literacy initiatives, which may improve consumer engagement with financial products and, in turn, support broader financial inclusion objectives.³⁰

04

Digital Financial Inclusion

In a March 2025 communication to the public, the MFSA found that 60% of clients are enrolled in mobile or internet banking thus, the use of digital services has increased nevertheless, although this shift is clear, a considerable number of persons still prefer face-to-face interactions, especially for complex financial matters; thus, a balance between digital innovation and traditional banking services must be maintained. Furthermore, in its 'Dear CEO' letter the MFSA has acknowledged how financial inclusion may be enhanced by digital means,

*"Data and digitalisation are rapidly transforming economies and communities, promoting inclusive growth, addressing inequities, and improving public service delivery, thus enabling the achievement of the Sustainable Development Goals (SDGs) which are part of the UN 2030 Agenda for Sustainable Development."*³¹

Digital financial inclusion may include business relations formed through non-face-to-face methods such as the onboarding of customers via the use of customer identification or verification measures relying on digital documents. To this end, the FATF Guidance on Digital Identity requires such identification and/or verification measures are done through *"reliable, independent digital ID systems, with appropriate risk mitigation measures in place, may pose a standard level of risk, or may even be lower risk"*, hence, it is necessary to adopt methods that provide an appropriate level of confidence that the system produces accurate and reliable results.

29 FATF, Guidance on Financial Inclusion (n9)

30 ibid

31 MFSA, 'Dear CEO' (n28)

Such digital ID systems could facilitate onboarding and customer due diligence measures and support ongoing due diligence and aid transaction monitoring.³²

In accordance with Recommendation 15 of the FATF Recommendations, countries and financial institutions shall assess the business environment of the day and identify and evaluate the developments in technology which affect the integrity of the financial system. Emerging technologies are not inherently beneficial or harmful but are frequently characterised as ‘dual-use’, hence, their impact depends on the manner in which they are deployed.

Financial services going digital and/or online helps modernise the industry, putting it up to par with the modern business environment of today, however, this does not come without its consequences. In fact, a rising trend in financial crime is using AI and deepfake technology to create accounts with financial institutions using deepfake technology to create pictures and documents of persons who do not exist (‘synthetic persons’) or else commit identity theft to open bank accounts in others’ names. To address these challenges, financial institutions may adopt measures such as cross-checking customer data against reliable sources and monitoring the behaviour of customers through behavioural profiling and location changes. The risk-based approach also allows financial institutions the flexibility to add post-transaction controls in case suspicious activity gets flagged.³³

The FATF’s 2025 guidance provides an illustrative example of how a Brazilian bank mitigates the risks associated with non-face-to-face services through a layered set of controls applied across the customer lifecycle. At the onboarding stage, the bank strengthens identity verification through facial biometrics, including liveness checks, and undertakes data and document validation by cross-referencing information against internal and external databases. These measures are complemented by Know Your Customer procedures designed to verify customer information, ensure consistency, and resolve any discrepancies. Risk mitigation is further supported through real-time transaction monitoring and post-transaction review mechanisms. Real-time monitoring may include enhanced user authentication measures, such as two-factor authorisation, behavioural profiling based on a customer’s digital habits and associated metadata, and customer communication to confirm anomalous activity. Artificial intelligence and machine-learning models are used to support the assessment of transaction risk by analysing variables such as transaction value, timing, and customer characteristics. Post-transaction monitoring may involve additional AI-enabled risk analysis, typology-specific controls, the identification of indicators associated with remote transactions, and the application of structured risk-classification tools to support ongoing customer profiling and risk management. Crucial to this multi-layered approach is continuous review requiring rules and thresholds to be adjusted to align with emerging trends in financial crime.³⁴

32 FATF, ‘Guidance on Digital ID’ (March 2020) <<https://www.fatf-gafi.org/content/fatf-gafi/en/publications/Financialinclusionandnpoissues/Digital-identity-guidance.html>> accessed 26 January 2026

33 FATF, Guidance on Financial Inclusion (n9)

34 *ibid*

Artificial Intelligence and the Detection of Money Laundering

The growing adoption of AI highlights the dual-use character of technological innovation, particularly as AI is being extensively used both by businesses and by the public. Advances in computing power and big data have significantly expanded the capabilities and accessibility of AI systems. AI may support financial institutions by enhancing transaction monitoring capabilities, strengthening risk detection, and enabling more efficient compliance processes. On the other hand, it may also introduce new vulnerabilities and facilitate more sophisticated forms of financial crime, including through the increased use of deepfakes and other forms of synthetic media.

Prior to the more widespread adoption of AI, financial institutions typically relied on a combination of automated, yet largely static, analyses based on predefined risk factors which were rule-based and then supplemented by human judgement. These approaches often included defensive box-ticking approaches to risk and could only provide a historical view of risk, rather than real-time insight. Furthermore, the lack of more sophisticated technology at the time led to the dependence on humans to analyse large amounts of data which limited the potential to see the more fine-grained picture of risks. Consequently, identification of risk was often delayed, or in some cases undetected, leading to the loss of critical information and limited effectiveness in responding to money laundering threats.³⁵ The rigidity posed by traditional compliance systems created a gap between what the law and FATF recommendations hold and the actual effectiveness of compliance by financial institutions.³⁶

Processing of data and analysis of risk can be aided by AI systems, allowing financial institutions to have an insight into the business relationship quicker and possibly make it easier to identify new risks and emerging methods of money laundering. According to the FATF report of 2021 on 'Opportunities and Challenges of New Technologies for AML/CFT' ('2021 FATF New Technologies Report'), even if conclusions generated by AI systems are the same as those reached by human agents, the combination of human judgement and technological validation of results can enhance institutional confidence in the assessment outcomes. Furthermore, automated risk assessment tools may offer greater objectivity and be more readily auditable by supervising authorities. In the 2021 FATF New Technologies Report, the FATF highlighted how,

*"New technologies were furthermore described as allowing the information held in internal systems to be more accurate, although a few respondents stressed the importance of constant review and the fact that machine learning implies learning from human actions and decisions, and from existing institutional practices."*³⁷

The prevention of money laundering is a key responsibility and challenge for financial institutions especially with the rising number of digital transactions and complex financial systems. AI is capable of analysing vast amounts of data, identifying patterns and predicting money laundering with high accuracy.

35 FATF, New Technologies Report (n6)

36 C Nie et al, 'AI Application in Anti-Money Laundering for Sustainable and Transparent Financial Systems' <<https://www.arxiv.org/abs/2512.06240>> accessed 30 January 2026

37 FATF, New Technologies Report (n6)

According to the European Union's Artificial Intelligence Act ('EU AI Act'), AI is a "*fast evolving family of technologies*"³⁸ which significantly improves industries as it enhances predictive capabilities, enabling more sophisticated data analysis, and optimising operational processes. AI can support more effective risk identification, transaction monitoring, and customer due diligence, thereby facilitating the application of proportionate, risk-based measures. Therefore, AI can significantly improve the effectiveness of anti-money laundering frameworks and access to regulated financial services. Nevertheless, AI may also expose individuals to risks through biased decision-making, lack of transparency, or the automation of exclusionary outcomes.³⁹

An 'AI system' may be defined as a machine-based system capable of operating with varying degrees of autonomy, implying a degree of independence from direct human control, and of exhibiting adaptiveness following deployment. Designed to pursue explicit or implicit objectives, an AI system processes input data and draws inferences in order to generate outputs. Such outputs may take the form of predictions (for example, risk forecasting), content (such as the generation of text or images), recommendations, or decisions. These outputs are capable of influencing both physical and virtual environments, thereby producing real-world effects.⁴⁰

AI techniques such as machine learning, deep learning and natural language processing ('NLP') allow for the detection of suspicious transactions in real time, which data may aid financial institutions in the detection, prevention and mitigation of money laundering.

Machine learning is a subset of AI which focuses on the development of algorithms, allowing systems to learn from data, recognise patterns and make predictions with minimal to no human intervention. Machine learning can aid in tracking international financial flows and support international mutual legal assistance to reduce international crime – such benefits of AI systems are already being leveraged by Europol and Interpol.⁴¹

Machine learning can be supervised or unsupervised. Supervised machine learning is when data is labelled and categorised hence, for supervised machine learning, the input data is paired with the correct output.⁴² Supervised learning models like decision trees and neural networks learn from historical data and distinguish between legitimate and illegitimate transactions. Decision trees work by making decisions based on the input data; hence they may identify suspicious transactions based on amount, location and time. Neural networks aim to mimic the brain's processes and are useful in detecting non-linear relationships and interactions between features.⁴³

38 Regulation (EU) 2024/1689 (Artificial Intelligence Act), Recital 4, <<https://eur-lex.europa.eu/eli/reg/2024/1689/oj/eng>> accessed 30 January 2026
Hereinafter referred to as the 'EU AI Act'

39 Ibid, recital 5

40 Ibid, article 3

41 S Lyeonov, Z Kubaščíková, V Draskovic and V Fenyves, 'Artificial Intelligence and Machine Learning in Combating Illegal Financial Operations: Bibliometric Analysis' (2024) *Human Technology* 20(2) 325 <https://www.researchgate.net/publication/386198197_Artificial_intelligence_and_machine_learning_in_combating_illegal_financial_operations_Bibliometric_analysis> accessed 31 January 2026

42 B Olufemi, O Bello and K Olufemi, 'Artificial Intelligence in Fraud Prevention: Exploring Techniques, Applications, Challenges and Opportunities' (2024) 5 *Computer Science and Information Technology Research Journal* 1505 <https://www.researchgate.net/publication/383264952_Artificial_intelligence_in_fraud_prevention_Exploring_techniques_and_applications_challenges_and_opportunities> accessed 30 January 2026
Hereinafter referred to as 'B Olufemi et, AI in Fraud Prevention'

43 ibid

Unsupervised machine learning works with unstructured data and is useful in detecting new trends in financial transactions, helping improve anomaly detection. Clustering, such as '*K-Means*' and '*DBSCAN*', is a type of unsupervised machine learning wherein similar data is grouped together and transactions which do not fit in a cluster can be flagged by the AI system for further investigation due to being different from the norm. The benefit of this is that suspicious transactions are generally inconsistent with other regular transactions.⁴⁴

A subset of machine learning is deep learning. Architectures such as convolutional neural networks ('CNN') and recurrent neural networks ('RNN') enhance the detection of fraud by learning complex financial patterns and user behaviour.⁴⁵ CNNs can detect fraud patterns that may remain undetected by traditional detection methods whereas RNNs can handle sequential data and conduct time-series analysis. These types of neural networks are capable of retaining information from previous inputs and improving their outputs as a result. An example given is in fraud detection wherein fraudulent behaviour is flagged in a series of transactions over different time periods.⁴⁶

NLP is a subset of AI which aims to understand, interpret and manipulate human language hence, it may analyse data such as emails, chats and transaction descriptions to detect suspicious language, keywords and phrases which may indicate money laundering. According to the 2021 FATF New Technologies Report, machine learning and NLP are very beneficial to the detection, prevention and mitigation of money laundering.⁴⁷ NLP may also be used to conduct global internet research through web-scraping tools, enabling the collection of publicly available information relevant to a financial institution's risk assessment and compliance activities.⁴⁸

AI has proven results in the detection of money laundering. There have been various studies as to how AI technologies can help in detection of money laundering, such as the study by Bi et al., which found that a multi-layered approach combining both supervised and unsupervised machine learning was able to enhance detection accuracy whilst maintaining efficiency. The dataset comprised two million financial transactions collected from multiple financial institutions over a 24-month period. In their analysis, Bi et al. reported that the proposed systems achieved a 22.3% improvement in recall while maintaining false positive rates below 3%.⁴⁹

Banks around the world, including Standard Chartered Bank in the UK, are also leveraging AI to track transactions in real time and block any suspicious transactions before completion. CitiBank uses AI to facilitate risk management via transactional and behavioural pattern analysis to flag business relations which require further investigation. Whilst some financial institutions refrain from adopting new technologies such as AI due to the costs of such systems, HSBC has proven that AI technologies decrease time and staff requirements for regulatory procedures which, via AI systems, become more effective and cost-saving. Danske Bank's Estonian branch was charged

44 Ibid

45 O Iguodala and A Oyiborhoro, 'AI-Powered Anti-Money Laundering (AML) and Fraud Detection: Enhancing Financial Security through Intelligent Fraud Detection' (2025) *World Journal of Advanced Research and Reviews*, <https://www.researchgate.net/publication/392235964_AI-Powered_Anti-Money_Laundering_AML_and_fraud_detection_-_enhancing_financial_security_through_intelligent_fraud_detection> accessed 30 January 2026
Hereinafter referred to as, 'O Iguodala et, 2025'

46 B Olufemi et, AI in Fraud Prevention (n42)

47 FATF, New Technologies Report (n6)

48 B Olufemi et, AI in Fraud Prevention (n42)

49 W Bi, TK Trinh and S Fan, 'Machine Learning-Based Pattern Recognition for Anti-Money Laundering in Banking Systems' (2024) 4(11) *Journal of Advanced Computing Systems* 30 <https://www.researchgate.net/publication/389037445_Machine_Learning-Based_Pattern_Recognition_for_Anti-Money_Laundering_in_Banking_Systems> accessed 31 January 2026

with laundering more than €200 billion between 2007 and 2015 due to facilitating high-risk clients' access to the American financial system in Estonia and other former Soviet States. After this scandal, Danske Bank adopted AI technologies to identify suspicious patterns such as, through enhanced transaction monitoring systems using machine learning to spot anomalies, the integration of advanced data analytics, regression-based analytical models to understand money laundering indicators and predict behaviour which points to money laundering and automated reporting and compliance.⁵⁰

AI may help financial institutions in meeting the requirements of anti-money laundering detection, prevention and mitigation even through the adoption of proactive measures. For example, predictive analytics may help financial institutions predict which accounts are more susceptible to money laundering or financial crime risks, enabling the financial institution to intervene at an earlier and possibly more opportune stage. Interventions may include increased monitoring of accounts, more detailed customer due diligence and overall better supervision of the accounts.⁵¹

The deployment of AI can enhance the quality and quantity of customer information, reduce false positives through behavioural and pattern analysis, improve the accuracy and timeliness of reporting to financial intelligence units, and facilitate the identification of emerging threats through large-scale data correlation. Continuous monitoring across the customer lifecycle enables the AI system to support the development of more dynamic and granular customer risk profiles and allow for the detection of risk in real time.⁵² Real-time and large-scale monitoring constitutes a significant advantage of AI-based systems, as it enables financial institutions to promptly identify anomalies—such as unusual transaction values, atypical transaction locations, or transaction patterns that deviate from expected customer behaviour. This, in turn, allows institutions to respond swiftly by blocking transactions where necessary or verifying their legitimacy with the customer, thereby enhancing both the effectiveness of risk mitigation measures and the overall customer experience, while safeguarding the integrity of the financial system.⁵³

Whilst AI tools may automate and facilitate compliance for financial institutions, AI tools should not replace human actors and judgement and should be kept as complementary to the financial institution's systems.

50 AMLWatcher, '7 Use Cases of Artificial Intelligence in Anti-Money Laundering' (2024) < <https://amlwatcher.com/blog/7-use-cases-of-artificial-intelligence-in-anti-money-laundering/> > accessed 31 January 2026

51 B Olufemi et, AI in Fraud Prevention (n42)

52 FATF, New Technologies Report (n6)

53 B Olufemi et, AI in Fraud Prevention (n42)

Technical Challenges in Adopting AI Systems

Whilst AI systems pose significant opportunities in detecting, analysing and mitigating money laundering, adopting such systems is not without its challenges. To strengthen their anti-money laundering initiatives by leveraging the power of AI, financial institutions must update their internal operations and traditional systems to adapt to more sophisticated AI systems and train their staff on the use, benefits and consequences of AI systems.

Challenges which may be posed by the use of an AI system include the output of false, inaccurate and biased results, the training of the AI system with poor quality and quantity of data, clarity and transparency and data security and confidentiality. The output of the AI system is determined by its training data; hence, it is crucial to ascertain that data is of the quality and quantity required. This signifies the importance of retaining a human in the loop and sampling the output of the AI system to ensure the accuracy of the output along with retaining explainable AI systems.

Explainability and transparency are critical in ensuring that the outcome can be explained, understood and accounted for. It is imperative that, in addition to detecting and analysing transactions, the AI system is also capable of providing an explanation as to why such a transaction was flagged as fraudulent and how this conclusion was reached.⁵⁴ In fact, Crisanto et al., have held that,

*"AI also offers unprecedented levels of automation and accuracy in regulatory compliance, including fraud detection and AML/CFT. By analysing vast amounts of structured and particularly unstructured data, AI holds the promise of enhancing customer experiences and contributing to a more inclusive financial system."*⁵⁵

Explainable AI systems and retaining a human in the loop is crucial for financial institutions or third-party AI system providers to be able to demonstrate how the AI system came to its conclusion both to authorities and the affected persons.⁵⁶

The requirements put on financial institutions may deter them from having an in-house AI system due to the costs and complexities which might go into it. However, third-party AI system providers may not be able or willing to provide information into the workings of the AI system thereby increasing the 'black box' paradox which financial

⁵⁴ ibid

⁵⁵ JC Crisanto, CB Leuterio, J Prenio and J Yong, 'Regulating AI in the Financial Sector: Recent Developments and Main Challenges' (2024) *FSI Insights* No 63 <<https://www.bis.org/fsi/publ/insights63.pdf>> accessed 31 January 2026

⁵⁶ N Horobets, O Reznik, V Maliyk, I Vyhivskiy and L Bobrishova, 'Artificial Intelligence Technologies in Banking: Challenges and Opportunities for Anti-Money Laundering in the Context of EU Regulatory Initiatives' (2025) *Journal of Money Laundering Control* <https://www.researchgate.net/publication/392468677_Artificial_intelligence_technologies_in_banking_challenges_and_opportunities_for_anti-money_laundering_in_the_context_of_EU_regulatory_initiatives> accessed 1 February 2026

institutions might face.⁵⁷ In addition to this, third-party AI system providers may not be able to demonstrate the integrity of the training data being used and might expose the financial institutions to cyber risks and vulnerabilities.⁵⁸

07

Regulatory Challenges in Adopting AI Systems

In addition to the technical challenges involving AI systems, there are also regulatory ones. Financial institutions making use of AI systems are to adhere to the numerous laws which apply to their operations and the use of the AI system itself, potentially making such use a regulatory burden.

The use of AI is also envisaged in laws and regulations. Regulation (EU) 2024/1624 on the prevention of the use of the financial system for the purposes of money laundering or terrorist financing recognises this in Article 76 which requires that 'obliged entities' may adopt decisions influenced by AI systems as long as the data processed is obtained in the course of performing due diligence on customers, due diligence measures are subject to meaningful human intervention to ensure accuracy and appropriateness and the customer obtains an explanation of the decisions reached and may challenge such decisions, unless decisions concern suspicious transaction reporting. On this, Brewczyńska explicitly notes how,

*"...it would be rather naïve to believe that Article 76(5)(c) of the AML Regulation will unexpectedly bring a considerable change and lead to transparency of AML/CFT policies and procedures developed by obliged entities."*⁵⁹

Brewczyńska argues that Article 76(5) and its corresponding recital 150 of Regulation 2024/1624 are often in conflict with each other due to the restrictive wording of Article 76(5) in relation to how AI systems may be used in decision-making processes and the broader wording of the recital which implies that AI systems may be used in a freer manner. This inconsistency is another challenge for financial institutions as whilst the intention of the legislator, as shown in the recital, suggests a broad interpretation, the actual law is quite limiting thus potentially creating risk to the business of the financial institution. Furthermore, given that Article 76 only applies to information obtained during due diligence checks, information obtained otherwise, such as through financial intelligence units is left out.⁶⁰

Article 75 of Regulation 2024/1624 on exchange of information in the framework of partnerships for information sharing wherein the human in the loop ideal is echoed in sub-article 4 (g) holds that any information generated through AI, machine learning or algorithms may only be shared when such are subject to adequate human

57 U Turksen, V Benson and B Adamyk, 'Legal Implications of Automated Suspicious Transaction Monitoring: Enhancing Integrity of AI' (2024) 25(4) *Journal of Banking Regulation* 359
<https://www.researchgate.net/publication/378009404_Legal_implications_of_automated_suspicious_transaction_monitoring_enhancing_integrity_of_AI> accessed 1 February 2026

58 Basel Committee on Banking Supervision, 'Newsletter on AI and Machine Learning' (2022),
< www.bis.org/publ/bcbs_ni27.htm > accessed 1 February 2026

59 M Brewczyńska, 2026 (n5)

60 Ibid

oversight.⁶¹ Although well-intentioned, these articles may leave financial institutions/obliged entities in a bit of a loop given that ‘adequate human oversight’ and ‘meaningful human intervention’ remain undefined and without a minimum procedural baseline, potentially leading financial institutions to take a more defensive approach to compliance and supervision, potentially leading to de-risking. Brewczyńska further suggests that these phrases are applicable to derisking and determining the applicable degree of due diligence measures does not prejudice AI use in other compliance areas.⁶² Referring to the EU AI Act, Brewczyńska notes how under Article 14 thereof, high-risk AI systems are required to be designed in a manner which allows effective oversight by humans whilst in use. Brewczyńska analyses how the wording between the EU AI Act and Regulation 2024/1624 do not align, consequently making the meaning behind these two concepts dissimilar. The concept of ‘intervention’ is further analysed which, in contrast with oversight, may require that financial institutions have a more active and direct involvement in each decision.

The EU AI Act aims to improve the functioning of the internal market and promote the uptake of human-centric and trustworthy AI whilst protecting fundamental rights against the harmful effects of AI systems and supporting innovation. Taking a risk-based approach, the AI Act seeks to establish rules binding on persons involved in the lifecycle of the AI system to ensure that, throughout its lifecycle, an AI system complies with the subject matter of the Regulation.⁶³ Taking the definition of ‘AI system’ under the Act – as discussed above – and the abovementioned articles from Regulation 2024/1624, Brewczyńska argues that the legislation is unclear as to whether financial institutions/obliged entities can rely on AI-generated decisions or only use AI-generated predictions or recommendations as input for human-made decisions. Whilst the former interpretation complements Recital 150, the latter retains the human as the dominant player.

The risk-based approach of the EU AI Act classifies certain AI practices as prohibited. Particularly relevant is Article 5 of the Regulation which prohibits the use of AI systems to carry out risk assessments of natural persons for the purpose of assessing or predicting the likelihood that an individual will commit a criminal offence, where such assessments are based solely on profiling or on the evaluation of personal characteristics or personality traits. Therefore, AI systems must be designed to focus on transactional behaviour, objective risk indicators and contextual factors as a whole. This is particularly important for financial inclusion as the use of AI for risk assessments based solely on profiling or personality characteristics or traits could entrench bias and lead to unfair exclusion from the formal financial system. Nevertheless, as Recital 42 holds that AI systems using risk analytics to assess the likelihood of financial fraud based on suspicious transactions are not covered, also not covered are AI systems supporting human assessments based on objective and verifiable facts linked directly to criminal activity.⁶⁴

61 Regulation (EU) 2024/1624 of the European Parliament and of the Council of 31 May 2024 on the prevention of the use of the financial system for the purposes of money laundering or terrorist financing, < <https://eur-lex.europa.eu/eli/reg/2024/1624/oj/eng>> accessed 1 February 2026

62 M Brewczyńska, 2026 (n5)

63 EU AI Act (n38), Articles 1 and 2

64 Ibid, Article 5

The prohibition of Article 5(1)(d) of the EU AI Act is mainly aimed at law enforcement entities however, in its Guidelines on prohibited AI practices under the EU AI Act⁶⁵ the European Commission has clarified that it may also apply to private actors such as financial institutions if AI is used for predicting whether a person might commit a crime. The Guidelines hold that if an obliged entity's risk assessment relies only on data prescribed by law – which data is assumed by the legislator as being objective – then such is not a prohibited practice, however the prohibition applies should data be based solely on individual profiling or personal characteristics. Furthermore, the Guidelines suggest that assessments carried out by private entities/financial institutions in the ordinary course of business do not constitute a prohibited practice under Article 5(1)(d), provided they are not based on disallowed forms of profiling. However, this approach complicates compliance for financial institutions, as it may be difficult to determine ex ante whether an AI-based anti-money laundering tool will be regarded as a lawful risk-assessment mechanism or as a prohibited practice under the AI Act. An additional burden on financial institutions is the fact that the Commission Guidelines are interpretative and non-binding hence the way forward by the enforcers of the law may not completely align with what the Guidelines hold.

A final challenge which will be discussed is on the autonomy and adaptiveness of the AI system and the retention of a human in the loop. Retaining a human in the loop is essential however, the legislators and decision makers must accept that, in line with the defining of 'AI System' under the EU AI Act, AI systems have various degrees of autonomy thus it cannot be excluded that certain decisions are made by it. Furthermore, the EU AI Act also recognises the adaptiveness of AI systems thus, marking them as effective and efficient in learning and alerting financial institutions to illicit money flows and predicting suspicious financial activity which requires further investigation. Legislators and decision makers should take a balanced approach in the use of AI systems for anti-money laundering measures. While the retention of human oversight remains essential in order to ensure a human-centred approach to the use of AI systems, consistent with the protection of fundamental rights, AI should be assessed in a holistic manner that takes account of both its benefits and its limitations. In this context, the deployment of AI tools should be aligned with the FATF Recommendations and the principles of the risk-based approach. Accordingly, both the outputs generated by AI systems and the internal processes of financial institutions should be designed and applied in a manner that is proportionate to identified risks and consistent with the risk-based approach of the FATF.

65 European Commission, 'Guidelines on Prohibited Artificial Intelligence Practices under Regulation (EU) 2024/1689 (AI Act)' <<https://digital-strategy.ec.europa.eu/en/library/commission-publishes-guidelines-prohibited-artificial-intelligence-ai-practices-defined-ai-act>> accessed 1 February 2026

Conclusion

It may be argued that the relationship between AI, the FATF risk-based approach and financial inclusion is better framed as a governance problem rather than a regulatory one. Although the FATF framework should be understood in a risk-based and proportionate manner, its practical application has frequently resulted in de-risking and financial exclusion due to information asymmetries, compliance uncertainty, and enforcement risk.

AI has the potential to realign regulatory practice with underlying principles by enhancing risk differentiation, supervisory visibility, and institutional confidence in managing higher-risk relationships. Hence, AI reframes the risk-based approach from one characterised by risk avoidance and de-risking to one grounded in proportionate risk management. Financial inclusion should thus not be a competing policy objective, but rather, as a functional outcome of effective anti-money laundering supervision, as inclusion strengthens transaction traceability and reduces reliance on informal and unregulated channels.

The effect of AI on the financial institutions' risk appetite is conditional rather than automatic. While AI systems may enable financial institutions to tolerate higher levels of risk through improved monitoring and earlier intervention, regulatory ambiguity, as discussed above, may reinforce defensive compliance and de-risking. Requirements such as "meaningful human intervention" should therefore be understood as governance variables the design and interpretation of which have direct consequences for proportionality and inclusion.

Risks commonly associated with AI, including bias, opacity, and cybersecurity vulnerabilities,⁶⁶ are shaped both by the technology itself and the regulatory design and supervisory expectations placed on financial institutions. Without clear legal standards and consistent supervisory signalling, safeguards intended to protect fundamental rights may inadvertently undermine both anti-money laundering effectiveness and financial inclusion.

When deployed in a manner consistent with the FATF risk-based approach and supported by clear governance frameworks, supervisory trust, and proportionate oversight mechanisms, AI can enhance the effectiveness of anti-money laundering frameworks while supporting financial inclusion. Rather than replacing human judgement, AI should function as an enabling tool—strengthening supervisory capacity, reducing reliance on blunt exclusionary practices, and allowing financial institutions to manage risk more effectively in an increasingly complex and digitalised financial system.

66 O Iguodala et, 2025 (n45)

2.3
Professional Insight

**From PSD2 to PSD3/PSR:
Will Europe's Open
Payments Rails Truly Power
Embedded Finance?**

Franklin Cachia



Author's Bio



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Abstract

This article examines whether the European Union's post-PSD2 regulatory architecture is capable of supporting scalable embedded finance. It argues that PSD2 established the legal basis for embedded payments through third-party access to payment accounts, but did not create the conditions for frictionless, legally certain and operationally resilient platform-based finance. The article analyses the PSD3/PSR compromise texts published in April 2026 alongside Regulation (EU) 2024/886 on instant payments, DORA, and the proposed Financial Data Access Regulation (FiDA). It advances two claims. First, the EU is moving from an access-based open banking model to a broader regime of governed interoperability in which liability allocation, fraud prevention, consent architecture and third-party risk management are as important as connectivity itself. Secondly, that transition may strengthen trust and supervisory coherence while simultaneously increasing user-friction and compliance costs in embedded-finance journeys. The article therefore proposes a proportionate supervisory framework for Malta and the wider EU based on functional distribution, interface control, and operational dependency. In doing so, it seeks to bridge the gap between the legal design of open finance and the practical realities of platform-based financial intermediation.

From PSD2 to PSD3/PSR: Will Europe's Open Payments Rails Truly Power Embedded Finance?

Introduction

The Second Payment Services Directive (PSD2)¹ fundamentally reshaped the European payments landscape by mandating that banks grant regulated third parties access to customer payment accounts via secure application programming interfaces (APIs), subject to user consent. This “access-to-account” (XS2A) regime, operationalised through the introduction of Account Information Service Providers (AISPs) and Payment Initiation Service Providers (PISPs), created the legal foundation for open banking and, by extension, embedded finance, that is to say, the integration of financial functions directly into non-financial digital environments.

¹ Directive (EU) 2015/2366 of the European Parliament and of the Council of 25 November 2015 on payment services in the internal market, amending Directives 2002/65/EC, 2009/110/EC and 2013/36/EU and Regulation (EU) No 1093/2010, and repealing Directive 2007/64/EC (OJ L 337, 23.12.2015, pp 35–127).

However, PSD2 should not be understood in isolation. As Arner, Buckley and Zetsche argue, Europe's transition from open banking to open finance has been driven not by a single legislative act, but by the interaction of multiple regulatory pillars, including PSD2, GDPR, digital regulatory reporting and digital identity. Embedded finance is therefore best understood not simply as a payments-law development, but as part of a broader EU architecture of data-driven finance in which access rights, data governance, identity infrastructure and competition concerns interact.² By codifying third-party rights to initiate payments and aggregate account data, PSD2 dismantled the exclusive control banks had over customer interfaces, allowing fintechs and platform companies to embed financial services into everyday consumer journeys such as in-app payments, e-commerce checkouts, and balance-aware offers.³

However, the directive's practical implementation revealed several constraints that limited embedded-finance scale and uniformity across the EU. First, the absence of a harmonised API standard led to inconsistent API quality and reliability, with variable performance, authentication flows, and downtime across institutions and Member States.⁴ Second, Strong Customer Authentication (SCA) rules, though enhancing security, introduced user-experience friction—particularly in recurring or low-risk embedded-payment contexts where repeated authentication interrupts seamless platform journeys.⁵ Third, PSD2's scope remained narrowly confined to “payment accounts”, excluding savings, credit, insurance, and investment data needed for richer embedded-finance use cases.⁶ Finally, liability allocation among ASPSPs, AISPs, PISPs, and host platforms was often ambiguous, creating uncertainty that discouraged wider commercial participation.⁷

Consequently, while PSD2 successfully “opened the doors” to embedded finance by legalising third-party API access, its structural and operational limitations constrained the depth and scale of embedded-finance adoption, paving the way for the PSD3/PSR reform package and the forthcoming Financial Data Access Regulation (FiDA), which together aim to resolve these legacy frictions. The EU is moving from an “access mandate” model under PSD2 to a “governed interoperability” model under PSD3/PSR, the Instant Payments Regulation, DORA and FiDA; the real determinant of embedded-finance growth is no longer whether access exists, but whether liability, fraud controls, consent architecture and third-party governance are designed proportionately enough to preserve platform-level usability.

2 Arner DW, Buckley RP and Zetsche DA, 'Open Banking, Open Data and Open Finance: Lessons from the European Union' [2021] UNSWLRS 69, forthcoming in Linda Jeng (ed), *Open Banking* (OUP 2021) ch 8.

3 Directive (EU) 2015/2366 of the European Parliament and of the Council of 25 November 2015 on payment services in the internal market (PSD2) [2015] OJ L 337/35, arts 66–67 (AISP and PISP provisions); European Commission, *Q&A: Payment Services Directive (PSD2)* (2023).

4 European Credit Research Institute, *Study on the Application and Impact of PSD2* (2023) <https://www.ecri.eu/sites/default/files/a-study-on-the-application-and-impact-of-directive-ev0423061enn.pdf> accessed 1st June 2026.

5 European Banking Authority, *Opinion on the Elements of Strong Customer Authentication under PSD2* (EBA/Op/2022/10).

6 European Financial Services Round Table, *PSD2 and Open Finance: Unleashing Europe's Data Economy* (EFR Paper 145, 2023)

7 European Parliament Research Service, *Payment Services Framework – Briefing* (EPRS 775891, 2025).

In this respect, the incoming PSD3⁸ and PSR⁹ package, together with the Instant Payments Regulation¹⁰ (VoP/"confirmation of payee"), DORA¹¹ and the forthcoming Financial Data Access Regulation (FiDA)¹², aims to tighten fraud defences, harmonise supervision, and widen data access beyond payments, potentially unlocking safer, more interoperable embedded journeys. The PSD3/PSR reform package should now be analysed by reference not merely to the Commission's 2023 proposals, but to the final compromise texts published by the Council on 23 April 2026 following the political agreement reached in trilogue in November 2025.¹³ This matters because the legal and policy assessment of embedded finance must now be anchored in the settled architecture of the co-legislators' compromise, rather than in earlier consultation-stage debates.

However, post-implementation assessments indicate that the effectiveness of PSD2 as an enabler of embedded finance has been constrained by practical and structural limitations. Most notably, the absence of a fully harmonised API framework has resulted in fragmented technical standards and inconsistent service quality across Member States, reducing the reliability required for seamless embedded-finance journeys. In addition, recurring authentication requirements, while justified from a security perspective, can interrupt user experiences that depend on low-friction interactions. The directive's scope is also limited to payment-account data, restricting the development of more sophisticated embedded-finance propositions involving credit, savings, investments or insurance products. Together with divergent supervisory approaches and continuing uncertainty regarding liability allocation among participants in the open-banking ecosystem, these factors have limited the scalability of PSD2-enabled business models. The European Parliament has therefore recognised that, while PSD2 materially increased competition and innovation, significant barriers remain to the creation of a fully integrated open-finance environment. This recognition provides much of the policy rationale behind PSD3 and the FiDA, both of which seek to address these shortcomings through broader data access, improved harmonisation and clearer governance arrangements.

8 Directive: Proposal for a Directive of the European Parliament and of the Council on payment services and electronic money services in the Internal Market (amending Directive 98/26/EC and repealing Directives 2015/2366/EU and 2009/110/EC) (COM (2023) 366 final) {2023/0209 (COD)}.

9 Regulation: Proposal for a Regulation of the European Parliament and the Council on payment services in the internal market and amending Regulation (EU) No 1093/2010 (COM (2023) 367 final) {2023/0210 (COD)}.

10 Regulation (EU) 2024/886 of the European Parliament and of the Council of 13 March 2024 amending Regulations (EU) No 260/2012 and (EU) 2021/1230 and Directives 98/26/EC and (EU) 2015/2366 as regards instant credit transfers in euro (Text with EEA relevance) (OJ L 886, 19.3.2024).

11 Regulation (EU) 2022/2554 of the European Parliament and of the Council of 14 December 2022 on digital operational resilience for the financial sector and amending Regulations (EC) No 1060/2009, (EU) No 648/2012, (EU) No 600/2014, (EU) No 909/2014 and (EU) 2016/1011 (Text with EEA relevance) (OJ L 333, 27.12.2022, pp 1-79).

12 Proposal for a Regulation of the European Parliament and of the Council on a framework for Financial Data Access and amending Regulations (EU) No 1093/2010, (EU) No 1095/2010 and (EU) 2022/2554 and Directive (EU) 2019/1937 (COM (2023) 360 final) {2023/0209 (COD)}.

13 <https://data.consilium.europa.eu/doc/document/ST-8220-2026-INIT/en/pdf> accessed 1st June 2026.

01

How Does PSD2 Enable Embedded Finance?

PSD2 is widely recognised as the foundational regulatory enabler of embedded finance in the EU. By introducing the regulated categories of AISP and PISP, PSD2 established, for the first time in Union law, a legal right of access to payment accounts by authorised third-party providers. Under Article 66, PISPs were granted the right, with the payer's explicit consent, to initiate a payment order directly from a payment account held with another payment service provider (the account-servicing PSP or ASPSP). Complementarily, Article 67 created the category of AISPs, empowering them to access consolidated account information held by one or more ASPSPs, again only with the payment service user's consent.

To facilitate these new services, PSD2 obliged account-servicing PSPs to ensure secure, non-discriminatory technical access to payment accounts, (XS2A) framework through dedicated interfaces defined under Articles 66(4), 67(3) and detailed in Commission Delegated Regulation (EU) 2018/389 (the Regulatory Technical Standards on Strong Customer Authentication and Secure Communication).¹⁴ Together, these provisions provided a stable regulatory foundation for open banking, reducing structural barriers to market entry by enabling non-bank entities to perform regulated payment-initiation and account-information services.

It follows that PSD2 transformed the EU payments landscape: services such as account-to-account checkout, in-app payment initiation, and data-driven financial recommendations became both technically feasible and legally authorised within non-bank digital platforms. By mandating secure interoperability between banks and licensed third parties, PSD2 effectively opened the pathway toward embedded-finance models, in which financial functionality is integrated directly into non-financial customer journeys. Having said that, PSD2 should not be viewed only as a legal access regime; it is better understood as a regulatory intervention in industry architecture, reallocating control over customer data and customer-interface ownership. Subsequent reforms under PSD3/PSR and FiDA therefore concern not merely technical performance, but the governance of a platformed financial ecosystem.¹⁵ The strategic significance of open banking lies not merely in third-party access to accounts, but in the way open APIs reduce transaction costs, facilitate modular service integration, and enable financial functions to be incorporated into broader digital platforms. The resulting transformation was therefore not simply one of increased competition, but of altered bargaining power across banks, fintechs and digital platforms.

¹⁴ Commission Delegated Regulation (EU) 2018/389 of 27 November 2017 supplementing Directive (EU) 2015/2366 with regard to regulatory technical standards for strong customer authentication and common and secure open standards of communication [2018] OJ L 69/23.

¹⁵ Markos Zachariadis and Pinar Ozcan, *The API Economy and Digital Transformation in Financial Services: The Case of Open Banking* (SWIFT Institute Working Paper No 2016-001, 15 June 2017). Markos Zachariadis and Pinar Ozcan, explain open banking not merely as a compliance obligation, but as part of a broader shift towards API-based platform business models, "banking-as-a-platform", modularity, interoperability, complementor ecosystems, and the reallocation of customer-interface power. The paper explicitly discusses open APIs, digital platforms, transaction-cost economics, network effects, and "banking-as-a-platform" as the strategic logic behind open banking. Zachariadis and Ozcan provide an early but still useful account of open banking as an API-enabled platform transformation in financial services, highlighting the roles of modularity, interoperability, transaction-cost reduction, customer-interface control, and complementor ecosystems. Their analysis is relevant here because embedded finance can be understood as a later and more operationally mature manifestation of the same platform logic, albeit now shaped by a denser post-PSD2 regulatory environment.

From an economic-theory perspective, PSD2 supported the emergence of embedded finance as an extension of platform economics: digital platforms increasingly act as orchestrators of multi-sided ecosystems, and financial services become a complementary functionality that increases engagement, reduces transaction friction and strengthens the platform's role as the primary consumer-interface layer. Embedded finance, therefore, represents a strategic shift in the locus of customer ownership—away from traditional financial institutions and toward platform operators.¹⁶

In addition, inconsistent supervisory practices and the reliance on fallback mechanisms in parts of the market limit service continuity and scalability, while unresolved liability allocation across ASPSPs, AISP/PISPs and hosting platforms creates legal uncertainty—weakening commercial incentives for non-financial firms to embed regulated services. The European Parliament therefore observes that PSD2 has delivered significant technical and competitive transformation, yet its benefits remain uneven and constrained by persistent structural barriers.¹⁷

Accordingly, PSD2 is increasingly characterised as a necessary but insufficient precursor to the integrated open-finance ecosystem required for fully mature embedded finance. This view is consistent with broader scholarship treating PSD2 as one element of a wider EU transition toward data-driven finance.¹⁸

02

What Changes Under PSD3/PSR (and Why it Matters to Embedded Finance)?

The European Commission's PSD3 and Payment Services Regulation (PSR) constitute a targeted response to structural and operational limitations that constrained embedded-finance adoption under PSD2. Central to the reform is the transition from a directive to a regulation for primary payment-services rules, facilitating direct applicability and reducing national divergences that previously led to fragmented consumer protection, inconsistent interface standards, and dispersed supervisory practices. This greater legal uniformity is vital for embedded-finance providers, which depend on cross-border scalability and consistent technical conditions across Member States.

A key priority of the reforms is enhancing open-banking functionality and access to bank accounts. The PSR and PSD3 proposals introduce clearer obligations on banks to ensure stable API availability and prohibit “unjustified refusals” to provide payment accounts for licensed payment institutions, addressing widespread “de-risking” practices that hinder platform onboarding of embedded-service providers. Strengthening API performance, consent management and bank-nonbank connectivity directly benefits embedded-finance models that rely on continuous data access and seamless account-to-account initiation inside non-financial platforms.

16 A study on the application and impact of Directive (EU) 2015/2366 on Payment Services (PSD2) FISMA/2021/OP/0002 www.ecri.eu accessed 30th October 2025.

17 European Parliamentary Research Service (EPRS), *Payment Services Framework – Revision of EU Rules on Payment Services* (EPRS Briefing 775891, 29 August 2025).

18 Ibid no,15

The package also places major emphasis on fraud-mitigation and consumer-protection, reflecting rising concerns over impersonation, social-engineering and authorised push-payment (APP)-style scams in digital environments. The reforms introduce strengthened transaction-monitoring requirements, enhanced data-sharing obligations among payment-service providers (PSPs), and clearer reimbursement models for victims—currently being refined in trilogue negotiations. For embedded-finance journeys, this implies tighter pre-transaction risk checks and more explicit scam-education interventions within hosted user experiences. In parallel, Verification of Payee (VoP)¹⁹ obligations under Regulation (EU) 2024/886, payment service providers in euro-area Member States have been required since 9 October 2025 to offer a VoP service for both standard and instant euro credit transfers, while later implementation dates apply in non-euro-area Member States and to certain payment and e-money institutions. The significance for embedded-finance design is therefore no longer prospective: hosted payment journeys must now be capable of presenting and operationalising VoP outcomes as part of live payment execution logic.²⁰

Operational-resilience reforms further reinforce trust and safety in embedded finance. Since 17 January 2025, the Digital Operational Resilience Act (DORA)²¹ has applied across the EU financial sector, meaning that embedded-finance analysis can no longer treat ICT-risk governance as an emerging overlay. It is now part of the operative legal baseline against which platform-based financial distribution arrangements must be assessed.

Embedded-finance ecosystems frequently rely on multiple external technology providers, making DORA's third-party risk controls and incident-management rules particularly consequential for platforms offering embedded financial services.

Collectively, these reforms represent a regulatory evolution from the foundational but incomplete open-banking architecture of PSD2 toward a more resilient, secure, and inclusive framework capable of supporting scalable embedded-finance ecosystems. PSD3 and the PSR aim to shift embedded finance from fragmented pilot deployment to a trusted, harmonised, and infrastructure-integrated component of EU digital markets. The April 2026 compromise texts make clear that the reform package is not simply a clean-up exercise. It represents a rebalancing of the payments framework around four priorities: stronger anti-fraud architecture, more coherent open-banking functionality, a more level relationship between banks and non-bank PSPs, and greater legal harmonisation through the use of a directly applicable regulation for core conduct rules. From an embedded-finance perspective, the package is therefore significant not because it “creates” platform-based finance, but because it redefines the legal conditions under which embedded customer journeys can remain scalable and trustworthy.

19 Regulation (EU) 2024/886 (the “Instant Payments Regulation” or IPR) for a “verification of payee” service (often called VoP). 6.

20 https://www.ecb.europa.eu/paym/retail/instant_payments/html/instant_payments_regulation.en.html accessed 1st June 2026.

21 Regulation (EU) 2022/2554 of the European Parliament and of the Council of 14 December 2022 on digital operational resilience for the financial sector (OJ L 333, 27.12.2022, p. 1–79).

03

Beyond Payments Data: FiDA and Open Finance

Rather than constituting a discrete regulatory initiative, open finance can be understood as the next stage in the EU's broader effort to facilitate the secure and consent-based sharing of financial data across sectors. FiDA is not conceptually a stand-alone innovation, but the latest legislative expression of a longer transition from payment-account access toward customer-controlled financial data mobility across sectors.

While the reforms under the PSR and PSD3 significantly strengthen the embedded-finance ecosystem within payments and account-data domains, the concept of open finance moves the frontier beyond payments data alone. The proposed Financial Data Access Regulation (FiDA)²² explicitly seeks to extend standardised, consent-based data-sharing obligations into broader financial-services realms, including insurance, investments, credit, pensions and more. By doing so, FiDA aims to power richer embedded-finance propositions, for example, personalised credit or insurance offers triggered at the point of sale, or savings and investment modules appearing contextually within a retail app.

FiDA remains a pending legislative proposal rather than enacted EU law. Its significance for embedded finance is therefore twofold: first, as an indicator of the direction of travel from open banking to open finance; and second, as a site of unresolved policy choices concerning scheme governance, market access, compensation, and the treatment of potential gatekeepers.

Current regulatory debates encompass critical questions regarding platform eligibility (which types of non-financial platforms may become data holders or data recipients), and whether large technology firms ("Big Tech") should gain access to such financial-data ecosystems on equal footing with banks and fintechs. These discussions are material for embedded-finance providers because they define the future architecture of data-flows, value-shares, and competitive gatekeeping in embedded-financial services.

From an embedded-finance viewpoint, FiDA could transform user experiences: rather than limiting integration to payment initiation and account-balance checks, platforms could embed deeper financial-services layers—credit scoring, personalised investment nudges, insurance bundling—triggered at precise behavioural or purchase moments. The richer data context (for example, investment holdings, pension accruals, insurance gaps) enables targeted, real-time offers within the host platform's user journey. This shifts embedded finance from "payments inside an app" toward "full-stack finance inside the platform". The regulatory clarity FiDA proposes (consent regime, data-provider obligations, standardised APIs) reduces friction for non-banks and platforms aiming to embed these advanced financial services.

FiDA should be analysed less as imminent positive law than as the EU's most explicit attempt to generalise the logic of customer-controlled data sharing beyond payment accounts. Although the proposal remains pending and

22 Proposal for a Regulation of the European Parliament and of the Council on a framework for Financial Data Access and amending Regulations (EU) No 1093/2010, (EU) No 1094/2010, (EU) No 1095/2010 and (EU) 2022/2554, COM(2023) 360 final, 2023/0205 (COD), <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52023PC0360> accessed 1st June 2026.

trilogue discussions have not yet culminated in adoption, its policy significance already lies in the questions it forces the legislator to answer: which data sets should become portable, on what commercial terms they should be shared, how scheme governance should be organised, and whether access should be conditioned to prevent new gatekeeping dynamics. For embedded finance, those questions are decisive because they determine whether the next phase of integration will produce genuinely contestable “open finance”, or simply a broader but still highly intermediated market for platform-shaped financial distribution.

04

Supervisory View on Embedded Finance Risks

National supervisors have increasingly flagged the emerging risks inherent in embedded-finance models, particularly where non-financial platforms distribute financial services with a financial-institution partner. In its 2024 analysis, DNB²³ observes that embedded-finance value chains exhibit heightened complexity and interdependencies, for example when a licensed financial institution is responsible for regulatory compliance while the partnering non-financial platform manages customer relationships and sales processes. Such structures generate conduct risk, outsourcing and third-party risk, and potential concentration risk, especially if large platforms become dominant distributors of financial products.

The supervisory significance of embedded finance lies precisely in the mismatch between legal responsibility and interface control. The regulated institution retains ultimate accountability, yet the platform may shape customer acquisition, user choice architecture, data prompts and transactional context. This separation is what makes embedded finance legally distinctive and why conventional outsourcing analysis is not always sufficient.

4.1 Conduct, AML & Outsourcing Risks

DNB emphasises that *“the partnering financial institution bears ultimate responsibility and accountability for the risks, while the non-financial partner often manages the sales process and customer relationships.”*²⁴ This division of roles can create gatekeeper-failures, where high-risk customers are accepted via the platform partner, or weak customer due diligence (CDD) is exercised. The supervisory focus thereby encompasses AML obligations, consumer-protection requirements and clear governance of intermediary (platform) conduct.

From an outsourcing perspective, DNB notes that the high degree of automation and digitalisation in embedded-finance value chains may complicate resolution tools, such as transaction freezes, because dependencies span licensed institutions and non-financial affiliates. The result is elevated operational-resilience risk, but also liability-allocation risk: when a platform intermediary fails, clarity on which party is accountable becomes blurred.

²³ https://www.dnb.nl/en/sector-news/supervision-2024/embedded-finance-striking-a-balance-between-convenience-and-risk-in-the-digital-economy/?utm_source=chatgpt.com accessed 1st June 2026.

²⁴ Ibid.

4.2 Concentration and Interconnectivity Risks

Beyond individual conduct and outsourcing concerns, supervisors worry about systemic implications of embedded-finance proliferation. DNB warns that as platforms scale, business-model dependencies and narrow banking or product-specialist models may emerge, increasing interconnectivity and potential fragility in the system. Although DNB assesses that embedded finance “does not currently appear to pose a direct risk to the safety and soundness of financial institutions” (largely because the scale remains modest), it emphasises that “it is crucial to keep an eye on the ball” as the market evolves.²⁵

4.3 Implications for National Supervisory Recommendations (e.g., for the Malta Financial Services Authority (MFSA))

For jurisdictions like Malta, which seek to oversee platforms embedding financial services or hosting financial-services features, supervisory guidance can be shaped by these risk observations:

4.3.1 Conduct and AML: Supervisors should ensure that platform-financial-institution partnerships allocate clear responsibilities for CDD, customer suitability, transparency, and monitoring of embedded-product distributions. Platforms should not simply act as distribution channels without proper oversight.

4.3.2 Outsourcing / Third-party Risk: Given the layered value chain, supervisors should require firms to map their outsourced service providers, monitor concentration of services (e.g., cloud, API providers) and ensure business-continuity/resolution plans cover the platform relation.

4.3.3 Concentration Risk: Supervisors should monitor growth of dominant platform-financial-institution arrangements, assess whether approvals/licences or oversight frameworks adequately capture distribution risk, and consider whether thresholds or reporting obligations should apply when embedded-finance volumes expand materially.

4.3.4 Governance & Liability: Supervisory frameworks should clarify accountability across the chain: the licensed institution remains responsible, but platforms must be subject to supervision where they materially contribute to the provision of financial services.

4.3.5 Resolution and Interconnectivity: Even where embedded finance is currently small-scale, supervisors should proactively require scenario-analysis, stress-testing and exit strategies for platform-related arrangements given the potential for rapid scale-up.

²⁵ Ibid.

Conclusion and Policy Recommendations

The evolution from PSD2 to PSD3 and the PSR, complemented by the forthcoming VoP and FiDA, signals a decisive regulatory transition: embedded finance is no longer a peripheral innovation but a core architectural feature of Europe's digital-market strategy. Moreover, embedded finance in the EU is no longer limited by the legal existence of access rights; it is now limited by how the regulatory framework allocates friction, control, liability and governance across increasingly platformised financial ecosystems.

However, as national authorities such as De Nederlandsche Bank emphasise, embedded-finance ecosystems introduce heightened conduct, operational and systemic risks that must be governed proactively. Building on these developments and supervisory insights, Malta can advance an innovation-supportive yet risk-sensitive regulatory stance that aligns with EU priorities while preserving customer trust and financial stability.

Accordingly, the undersigned proposes five policy recommendations for the Maltese and EU supervisory context:

5.1 Proportionate VoP UX design

As payee-verification obligations roll in, embedded-checkout journeys should support tiered VoP responses (e.g., “close match” risk warnings paired with scam-education messaging) rather than universal hard-stops—reserving friction for high-risk patterns. This balances conversion and fraud mitigation while maintaining user awareness.

5.2 Standardised API diagnostics

PSPs should be required to publish reliable uptime and error telemetry for open-banking interfaces, enabling platforms to detect and mitigate hidden frictions that impair embedded access-to-account workflows. This operational transparency aligns with the PSR objective of improving open-banking functioning.

5.3 DORA-proofed outsourcing governance

Supervisors should mandate clear end-to-end accountability maps when financial services are embedded in non-financial platforms, including operational-resilience exercises (e.g., API-failure simulations, data-leak scenarios). This ensures that third-party interdependencies in embedded-finance stacks are consistent with DORA's ICT-risk and incident-reporting expectations.

5.4 Fraud-data collaboration

Payment institutions and third-party providers in Malta should participate in secure fraud-intelligence exchange mechanisms under PSR legal bases, prioritising mule-account detection for embedded payout models. This enhances collective defence against social-engineering and impersonation fraud while safeguarding user trust.

5.5 FiDA-ready consent frameworks

Regulators should pilot interoperable consent receipts and cross-platform revocation UX, anticipating multi-sector data portability (e.g., across credit, insurance, pension data) under FiDA. This prepares embedded-finance providers for the next phase of open-finance interoperability.

Embedded finance should be supervised according to functional influence rather than formal legal labels. Where a platform materially shapes customer decision-making, data use, or operational execution, the law should recognise that the platform forms part of the regulated distribution architecture, even if the authorised institution remains the licensed provider. The analysis in this article suggests that embedded finance should not be supervised solely through the formal lens of licensing perimeter and outsourcing classification. Where a platform materially influences customer decision-making, controls user-interface architecture, intermediates key data flows, or creates operational dependency for the regulated provider, it forms part of the functional distribution chain and should be treated as such for supervisory purposes.

Embedded finance holds significant promise for Malta's digital-services economy, strengthening platform competitiveness, supporting SME access to financial tools, and improving consumer convenience. Realising this potential requires policy that recognises embedded finance as both financial distribution and digital infrastructure, governed proportionately, resiliently, and with user-trust at its core.

Europe's next challenge is therefore not to "open" finance in the abstract, but to decide what kind of openness it wants: openness that disperses innovation and customer agency, or openness that is formally accessible yet substantively dominated by a small number of platforms. The answer will depend on whether the post-PSD2 framework can calibrate interoperability, security, liability and data power in a way that preserves both trust and contestability. For smaller, innovation-oriented jurisdictions such as Malta, that question is not theoretical; it is central to how platform-based financial intermediation will be supervised in practice over the coming years.

Supervisory Practice and Prudential Effectiveness





3.1
Academic Article

The MFSA's Outcomes-Based Approach to Supervision: The Importance of Outreach

Christopher P. Buttigieg and Benjamin Ellul



Authors' Bios



Prof. Buttigieg has over 25 years of experience in financial regulation and supervision. He is the Chief Officer Supervision at the Malta Financial Services Authority (MFSA), where he oversees the Authority's supervisory and regulatory strategy across all sectors. He chairs the MFSA's Regulatory and AML/CFT Committees and is a member of its Executive and Risk Committees. Between 2020 and 2021, he served as the MFSA's Interim CEO.

At the European level, Prof. Buttigieg sits on the Boards of Supervisors of both ESMA and the EBA. He previously chaired ESMA's Data Standing Committee and currently chairs the Proportionality and Coordination Committee.

He holds multiple degrees in commerce, accountancy, law, and EU studies, including a PhD in law from the University of Sussex. He is an Associate Professor at the University of Malta and a visiting lecturer at the Academy of European Law (ERA), where he also serves on the Board of Trustees. An active researcher, he has published widely in leading journals. He is also the Editor-in-Chief of the Journal of Financial Supervisors Academy (JFSA).



Benjamin Ellul is an Economics and Policy graduate from the University of Malta and holds a Master of Science in Finance and Economics from the University of London. Benjamin is a Senior Analyst within the Office of the Chief Officer Supervision at the Malta Financial Services Authority. He assists the Chief Officer Supervision in the oversight and coordination of the Supervisory Directorate, mainly by ensuring supervisory effectiveness through the effective management of supervisory interactions data. He also works in close collaboration with the Supervisory Directorate to deliver some of the MFSA's milestone projects and yearly publications. In addition, Benjamin also holds the role of secretary in the Risk-Based Supervision Forum and is a member of the internal Sustainable Finance Working Group. Benjamin is a member of the Board of Studies of the Post Graduate Diploma in Financial Regulation and Compliance, launched by the MFSA and the University of Malta. He is also the Managing Editor (Editorial Strategy) of the MFSA's Journal of Financial Supervisors Academy.

Abstract

This article examines the MFSA's compliance outcomes based supervisory framework and the use of sector wide "Dear CEO" letters as a supervisory tool. It argues that these letters amplify supervisory impact by extending lessons from inspected firms to an entire sector and that their effectiveness depends on measurable outcomes. Using a three tier assessment framework covering transmission, remediation, and outcomes, the paper shows how regulatory expectations can drive sector wide behavioural change. It concludes that structured outreach provides financial supervisors with a scalable and cost effective way to strengthen supervision, market integrity, and regulatory compliance.

The MFSA's Outcomes-Based Approach to Supervision: The Importance of Outreach

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Introduction

The efficacy of financial supervision is fundamentally determined by its capacity to deliver public interest outcomes, focused primarily on financial stability, financial system integrity (including market integrity), and consumer protection.¹ The statutory mandate of the Malta Financial Services Authority (MFSA), established under the Malta Financial Services Authority Act (Cap. 330), explicitly aligns with these core objectives which are achieved through its functions of authorisation, ongoing supervision, and enforcement. To fulfil this mandate, the MFSA has executed a strategy since 2019² to augment its regulatory capacity and deepen supervisory engagement. Over a baseline seven year period, the MFSA's human resource capacity expanded by 160% up to 575 employees in 2025³. When coupled with specialised technical training delivered via the MFSA's Financial Supervisors Academy⁴, this capacity building catalysed a 350% increase in overall supervisory engagements, up over 1800 in 2025⁵. Alongside traditional supervisory methods such as inspection and supervisory meetings, the Authority has placed growing emphasis on structured outreach, including industry guidance, circulars, technical conferences, and "Dear CEO" letters⁶, as formal mechanisms to articulate supervisory expectations and shape corporate compliance cultures.

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- 1 Buttigieg, Christopher P., Effectiveness of Financial Supervision (May 05, 2024). Times of Malta, 26 May 2024, Available at SSRN: <https://ssrn.com/abstract=4850678> or <http://dx.doi.org/10.2139/ssrn.4850678>
 - 2 Malta Financial Services Authority, MFSA Vision 2021 (Strategic Statement, January 2019) <<https://www.mfsa.mt/wp-content/uploads/2019/01/MFSA-Vision-2021.pdf>> accessed 10 July 2026.
 - 3 Malta Financial Services Authority, MFSA Annual Report 2025 (Annual Report, June 2026) <<https://www.mfsa.mt/wp-content/uploads/2026/06/MFSA-Annual-Report-2025.pdf>> accessed 10 July 2026.
 - 4 Malta Financial Services Authority, 'Financial Supervisors Academy' <<https://www.mfsa.mt/fsa/>> accessed 10 July 2026.
 - 5 Malta Financial Services Authority, 'MFSA's Supervisory and Enforcement Effectiveness Dashboard' <<https://www.mfsa.mt/publications/mfsas-supervisory-and-enforcement-effectiveness-dashboard/>> accessed 10 July 2026.
 - 6 Malta Financial Services Authority, 'Dear CEO Letters' <<https://www.mfsa.mt/publications/corporate-publications/dear-ceo-letters/>> accessed 10 July 2026.

While the MFSA applies a risk-based approach to supervisory engagement and resource allocation⁷, it established a formal methodology in 2024 to implement a complementary “compliance outcomes-based” supervisory framework⁸. This approach systematically shifts the focus of supervision from mechanical rule adherence to assessing the tangible results achieved by supervised entities against predetermined compliance outcomes, thereby introducing a structural metric for supervisory effectiveness. This paper examines the MFSA's structured outreach as an essential mechanism for securing market-wide compliance. This paper advances two central propositions, that: [1] “Dear CEO” letters convert empirical findings from sampled entities into sector-wide expectations binding on boards and senior leadership, including firms not directly subject to the relevant supervisory engagement; and [2] the ultimate efficacy of these communications depends on structural measurability, requiring clear objective formulations and empirical feedback loops that connect outreach to subsequent supervisory verification.

Crucially, this paper addresses an apparent lacuna within contemporary regulatory scholarship. Indeed, while legal and economic literature extensively addresses prudential policy design and the substance of financial legislation, academic literature focusing specifically on the methodology and operational mechanics of financial supervision remains sparse and limited.⁹

The remainder of this article is organised as follows: Section 1 delineates the theoretical foundations of outcomes-based supervision within the MFSA's triennial architecture. Section 2 evaluates the operational design of “Dear CEO” letters as a scalable tool within that cycle, contextualised via comparative international approaches. Section 3 synthesises thematic evidence from published MFSA letters across governance, conduct, sustainability, digital assets, and artificial intelligence. Section 4 examines the specific policy implications for financial supervisors generally, followed by concluding remarks.

01

The Architecture of Compliance Outcomes-Based Supervision

An outcomes-based approach to financial supervision emphasises the achievement of specific and measurable goals in the financial supervisor's activities. By adopting this approach, the financial supervisor customises its supervisory engagement to effectively mitigate risks to the stability and integrity of the financial system, employing a wide array of supervisory tools. It targets systemic issues within sectors through thorough analysis of supervisory engagement findings, complemented by regulatory outreach, remediation plans, and enforcement

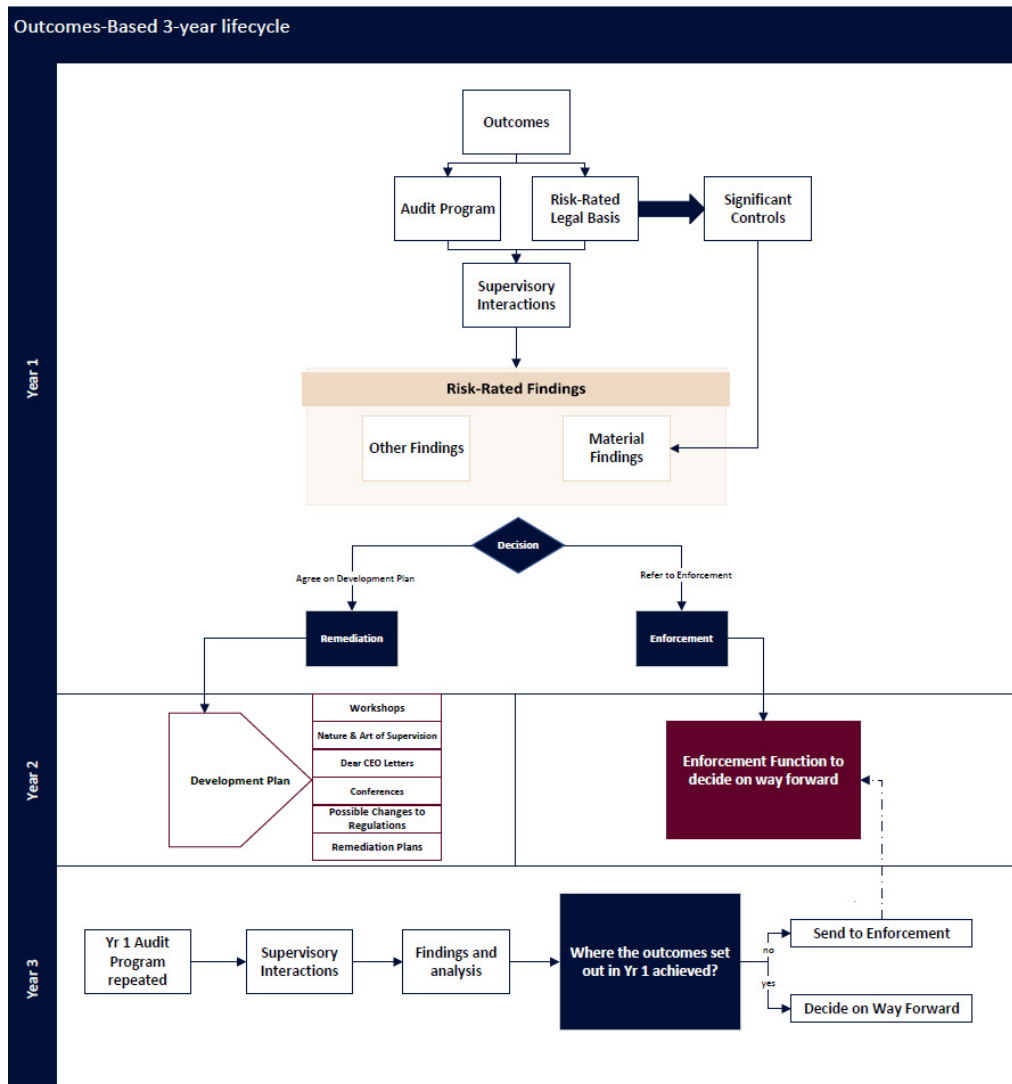
7 Malta Financial Services Authority, Risk-Based Supervision – Strengthening Our Supervisory Approach (June 2020) <<https://www.mfsa.mt/wp-content/uploads/2020/06/Risk-Based-Supervision-Stenghtening-Our-Supervisory-Approach.pdf>> accessed 10 July 2026.

8 Malta Financial Services Authority, MFSA Supervision Priorities 2024 (Report, February 2024) <<https://www.mfsa.mt/wp-content/uploads/2024/02/MFSA-Supervision-Priorities-2024.pdf>> accessed 10 July 2026.

9 One of the authors has written various papers covering financial supervision, nonetheless the academic material on this topic remains limited. See amongst others: Christopher Buttigieg, ‘The Nature and Art of Financial Supervision: Reflections on a 25-Year Journey’ (2026) 9(4) *Journal of Financial Compliance* 392 <https://doi.org/10.69554/MKBC9941>.

actions as needed.¹⁰

Outcomes-based models address the limitations of “box-ticking” or purely formalistic compliance, seeking to diminish the gap between formal legal rule-adherence and the mitigation of risks to the financial system. The operational reality of this model is demonstrated by the triennial compliance outcomes-based supervisory approach piloted within the MFSA's 2024 supervisory priorities¹¹. This approach establishes a distinct chronological progression:



¹⁰ The characteristics of an outcomes-based approach to supervision while not specifically set in regulation may be derived from various documents published by different regulators across Europe including ESMA, see by way of example: V Ross, 'ESMA – Driving forward high-quality supervision and transparency in a single EU capital market', ECMI / CEPS Webinar 20.04.2022 available [esma80-187-945_verena_ross_speech_at_ecmi-ceps_webinar.pdf \(europa.eu\)](#) and C Randell, 'Outcomes-focused regulation: a measure of success?' Speech at the Building Societies Association 06.05.2021 available [Outcomes-focussed regulation: a measure of success? | FCA](#) both accessed 16.04.2024

¹¹ MFSA (n 10).

In terms of this structural cycle, outreach is not a discretionary or merely public-relations-driven activity; it is an architectural necessity. If the final phase (Year 3) is to rigorously measure progress, the intermediary phase (Year 2) must deploy interventions capable of actively shifting firm behaviour and governance architectures across an entire sector. The MFSA's supervisory design explicitly positions its outreach tools, specifically technical training initiatives, industry roundtables, and sector-targeted “Dear CEO” letters¹², to perform this heavy lifting during the Year 2 remediation window.

The framework was further refined within the MFSA's 2025 supervisory priorities¹³, which transitioned the pilot into a comprehensive “compliance outcomes-based supervision” model across all financial sectors. This iteration explicitly links qualitative supervisory findings to formalised quantitative risk assessments, by requiring that compliance outcomes are directly linked back to statutory goals and verified through structured data, documentation and other evidence, collected across subsequent supervisory interactions, thereby preventing the framework from devolving into abstract rhetoric.

02

Outreach and the Function of “Dear CEO” Letters

To critically evaluate how structured communication shapes market behaviour, the operational mechanics of the “Dear CEO” letter must be analysed from theoretical, international, and evaluative standpoints. This section deconstructs this supervisory instrument across three interrelated dimensions: [1] its grounding within the tripartite, evidence- and judgment-based supervisory matrix; [2] its alignment with international benchmarks on governance and proactive supervision; and [3] the structural metrics required to empirically validate its efficacy throughout the regulatory cycle.

2.1 Theoretical Foundations Within the Supervisory Matrix

The foundational architecture of financial supervision is analytically structured around three distinct pillars, each designed to mitigate specific forms of market friction and safeguard discrete public interest objectives. The first of these dimensions, prudential supervision, focuses primarily on the financial soundness, capital adequacy, and institutional resilience of individual entities, alongside the broader stability of the macro-financial framework, to mitigate the risk of systemic failure.¹⁴ This includes operational risk and cyber resilience, which have today become a key pillar of prudential supervision. In contrast, conduct of business supervision governs the market behaviour of financial market participants, targeting structural information asymmetries and principal agent dilemmas to guarantee transparency, fair treatment, and consumer protection.¹⁵ This includes the supervision of product governance, product marketing, disclosure and distribution, conflicts of interest, best execution, and value for

12 MFSA (n 5).

13 Malta Financial Services Authority, MFSA Supervisory Priorities 2025 (Report, February 2025) <<https://www.mfsa.mt/wp-content/uploads/2025/02/MFSA-Supervisory-Priorities-2025.pdf>> accessed 10 July 2026.

14 Buttigieg, C. P., & Meglioli, F. (2026). The Macroprudential Approach to Systemic Risk. FSA Regulatory and Compliance Insights, Retrieved from <https://www.mfsa.mt/wp-content/uploads/2026/04/The-Macroprudential-Approach-to-Systemic-Risk.pdf>.

15 Buttigieg, C. P., & Pulis, S. (2024). Supervision of conduct of business : ensuring a fair deal for clients in Europe's smallest member state. Law and Financial Markets Review, 10.1080/17521440.2024.2372478.

money.¹⁶ Completing this matrix is the supervision of the integrity of the financial system, including anti-money laundering, countering terrorism financing and sanctions monitoring, and the supervision of market integrity, which safeguards the orderly functioning, efficiency, and transparency of trading venues and financial ecosystems, primarily through the prevention of market abuse, insider dealing, and financial crime vectors.¹⁷ Various supervisory tools are used for this purpose.

Supervisory tools serve as the primary mechanisms through which supervisory authorities assess whether regulated entities are achieving the desired prudential and conduct outcomes, rather than merely demonstrating technical compliance with regulatory requirements. This approach is underpinned by risk-based supervision, whereby supervisory resources and intensity are allocated according to an assessment of both the probability of an institution's failure or misconduct and the potential impact such an event could have on consumers, market integrity, and financial stability. Consequently, entities presenting a higher risk profile are subject to more frequent and intensive supervisory engagement. To support this process, the MFSA employs a broad suite of supervisory tools, including supervisory inspections, supervisory meetings, thematic reviews, the Supervisory Review and Evaluation Process (SREP), regulatory return analysis, desk-based reviews, and mystery shopping exercises. Collectively, these tools enable the MFSA to develop a holistic understanding of an entity's governance, risk management, financial resilience, operational effectiveness, and treatment of customers. By applying these tools in a risk-based and proportionate manner, the MFSA can identify emerging risks, challenge weaknesses, benchmark practices across the sector, and implement corrective measures where necessary, thereby promoting sound outcomes for consumers, firms, and the wider financial system.

Fundamentally, the contemporary execution of these three dimensions is both evidence- and judgment-based.¹⁸ It operates as an evidence-based discipline by requiring the systematic submission and granular empirical analysis of vast quantities of regulatory data from supervised entities to diagnose emerging vulnerabilities (data-driven supervision).¹⁹ Concurrently, it demands a judgment-based position, wherein supervisors must extrapolate from these empirical findings to make forward-looking, qualitative decisions and interventions explicitly calibrated to protect the overarching best interests of the financial system and consumers of financial services.²⁰ While these three dimensions rely on distinct statutory mechanisms, their operational efficacy within contemporary regulatory scholarship is increasingly understood to be interdependent and unified through mechanisms of market engagement.²¹

16 Buttigieg et al (n 17).

17 Buttigieg, C. P. (2016). A critical examination of the regulation of capital market integrity and the supervisory architecture in Europe's smallest Member State. *Journal of the Academy of European Law*, 17(1), 5-30.

18 Pierre Schammo, 'EU Day-to-Day Supervision or Intervention-Based Supervision: Which Way Forward for the European System of Financial Supervision?' (2012) 32 OJLS 771. >accessed 21 July 2026

19 Gentilini, Andrea, Data-Driven Supervision and the Reduction of Supervisory Burden. A Conceptual and Operational Framework for National Competent Authorities (March 01, 2026). BAFFI Centre Research Paper No. 271, Available at SSRN: <https://ssrn.com/abstract=6619578> or <http://dx.doi.org/10.2139/ssrn.6619578>

20 European Central Bank Banking Supervision, 'Supervisory measures' <<https://www.bankingsupervision.europa.eu/framework/approach/measures/html/index.en.html>> accessed 10 July 2026.

21 Buttigieg, C. P., Consiglio, J. A., & Sapiano, G. (2020). A Critical Analysis of the Rationale for Financial Regulation Part II: Objectives of Financial Regulation. *European Company and Financial Law Review*, 17(5), 437-477.

Consequently, within this supervisory methodology, outreach is properly conceptualised as a strategic mechanism designed to optimise regulatory outcomes²². By embedding structured communication channels directly into the supervisory cycle, a supervisory authority can translate empirical findings from the supervisory engagement with selected entities into market corrections. This structural approach systematically shifts regulatory compliance from a purely reactive, ex-post enforcement model to a proactive framework. Indeed, through this mechanism, the supervisor actively shapes the compliance landscape by deploying communication as a formal intervention tool, ensuring that statutory goals are realised across diverse market sectors simultaneously.

Analytically, this approach contributes to the achievement of regulatory objectives by executing four interconnected functions within the financial sector. First, structured outreach minimises persistent information asymmetries between the supervisor and the market, thereby aligning industry risk awareness with common compliance findings. Second, it clarifies the precise perimeter of supervisory expectations, providing definitive interpretive guidance where legislative frameworks are not sufficiently detailed. Third, it recalibrates internal corporate governance incentives by forcing boards of directors and executive leadership to substantively internalise a compliance culture rather than executing formalistic, box-ticking responses. Finally, it induces proactive, ex-ante remediation before consumer detriment or systemic vulnerabilities materialise, thereby operationalising a highly responsive and preemptive supervisory regime.

2.2 Alignment with International Governance and Peer Comparative Paradigms

The MFSA's approach aligns directly with international standards articulated by the Basel Committee on Banking Supervision (BCBS)²³ and the Financial Stability Board (FSB)²⁴, which collectively emphasise that supervisory efficacy relies on early, high-level engagement with boards of directors regarding risk appetite, corporate culture, and the exercise of preemptive supervisory judgment. Specifically, in its foundational *Core Principles for Effective Banking Supervision*²⁵, the BCBS mandates that robust corporate governance frameworks and active supervisory communication are essential criteria for preventing structural degradation within licensed entities. The Committee explicitly notes that supervisors must have the mandate to challenge a firm's board-level strategies, corporate culture, and risk management architecture before such elements trigger institutional distress. Parallel to this, the FSB's Supervisory Intensity and Effectiveness group²⁶ has consistently advanced the regulatory paradigm beyond formalistic compliance tracking. In its *Progress Report on Enhanced Supervision*²⁷, the FSB emphasises that effective supervisory interactions require a shift toward qualitative, forward-looking dialogues with corporate boards, focusing specifically on the operational reality of an institution's risk appetite framework and risk culture.

22 Dalvinder Singh and Oana Ștefan, 'The "Supervisory Effects" of the ECB Soft Law as a Dialogue Tool in the Field of Banking Supervision: Reimagining Soft Law Effects' (2026) Yearbook of European Law. >accessed 21 July 2026

23 Basel Committee on Banking Supervision, 'The Basel Committee – overview' <<https://www.bis.org/bcbs/index.htm>> accessed 10 July 2026.

24 Financial Stability Board, 'Financial Stability Board' <<https://www.fsb.org/>> accessed 10 July 2026.

25 Basel Committee on Banking Supervision, Core Principles for effective banking supervision (Standards, April 2024) <<https://www.bis.org/bcbs/publ/d573.htm>> accessed 10 July 2026.

26 The Financial Stability Board's (FSB) Supervisory Intensity and Effectiveness (SIE) group was established post-2008 to ensure national authorities apply rigorous oversight to Systemically Important Financial Institutions (SIFIs). Financial Stability Board, Increasing the Intensity and Effectiveness of SIFI Supervision: Progress Report to the G20 Ministers and Governors (Progress Report, November 2012) <https://www.fsb.org/uploads/r_121031ab.pdf> accessed 10 July 2026.

27 Financial Stability Board, Supervisory Intensity and Effectiveness: Progress Report on Enhanced Supervision (Progress Report, April 2014) <https://www.fsb.org/uploads/r_140407.pdf> accessed 10 July 2026.

This policy direction was subsequently codified in the FSB's *Principles for an Effective Risk Appetite Framework*²⁸, which establishes that a resilient supervisory approach demands continuous, iterative testing of how governance incentives are cascaded down through an organisation.

Communications directed to executive management are increasingly recognised as critical intermediate mechanisms within the regulatory enforcement hierarchy.²⁹ The MFSA's framework aligns closely with the long-standing practices of peer European and international regulators. For instance, the Central Bank of Ireland (CBI) systematically deploys "Dear CEO" letters as a primary tool to broadcast granular sectoral feedback and mandate explicit corporate governance rectifications across its licensed population.³⁰ The CBI's structured use of these instruments demonstrates how a European Supervisor of an international financial centre can leverage centralised executive communications to drive horizontal compliance and shape risk appetites across financial sectors simultaneously.

Similarly, the Bank of England's Prudential Regulation Authority (PRA) frequently utilises formal thematic correspondence addressed to executive management and boards to target structural systemic deficiencies.³¹ A notable example includes the PRA's targeted interventions regarding the reliability of regulatory returns, where the supervisor utilised thematic letters to establish explicit, market-wide expectations for remediation, warning of heightened supervisory intensity for non-aligned firms.³² Furthermore, the UK Financial Conduct Authority (FCA) extensively employs sectoral "Dear CEO" or "Portfolio" letters to outline specific conduct risks, clarify the perimeter of acceptable market practice, and demand formal board-level attestations of compliance.³³ Cumulatively, these comparative international precedents confirm that sectoral executive communications occupy a pivotal strategic position between ongoing desk-based or onsite supervision and the triggering of formal, adversarial administrative sanctions. By functioning as an authoritative, public warning mechanism, they provide a structured opportunity for industry-wide *ex-ante* remediation, validating the MFSA's conceptualisation of the "Dear CEO" letter as a core, scalable instrument of compliance outcomes-based supervision.

The MFSA structurally embeds these international benchmarks and peer paradigms within its core supervisory and stakeholder engagement infrastructure. From a functional perspective, "Dear CEO" letters operate as sophisticated, high-level supervisory instruments deployed directly within the executive governance matrix of supervised entities. Typically catalysed by empirical data generated from targeted thematic reviews, mystery shopping

28 Financial Stability Board, *Principles for an Effective Risk Appetite Framework* (Principles, November 2013) <https://www.fsb.org/uploads/r_131118.pdf> accessed 10 July 2026.

29 Jakob Schemmel, 'The ESA Guidelines: Soft Law and Subjectivity in the European Financial Market—Capturing the Administrative Influence' (2016) 23 *Indiana Journal of Global Legal Studies* 455.>accessed 21 July 2026

30 Central Bank of Ireland, *Dear CEO Letter: Key Regulatory and Supervisory Priorities 2026* (Regulatory Circular, 2026) <<https://www.centralbank.ie/docs/default-source/publications/regulatory-and-supervisory-outlook-reports/dear-ceo-letter-key-regulatory-and-supervisory-priorities-2026.pdf>> accessed 10 July 2026.

31 Prudential Regulation Authority, *Dear CFO Letter: Thematic feedback on accounting for IFRS 9 expected credit losses (ECL)* (Regulatory Letter, 30 September 2025) <<https://www.bankofengland.co.uk/prudential-regulation/letter/2025/thematic-feedback-on-accounting-for-ifs-9-ecl>> accessed 10 July 2026.

32 Prudential Regulation Authority, *Dear CEO Letter: Thematic findings on the reliability of regulatory returns* (Regulatory Letter, 10 September 2021) <<https://www.bankofengland.co.uk/-/media/boe/files/prudential-regulation/letter/2021/september/thematic-findings-on-the-reliability-of-regulatory-returns.pdf>> accessed 10 July 2026.

33 Financial Conduct Authority, 'Supervisory correspondence' <<https://www.fca.org.uk/about/how-we-regulate/supervision/supervisory-correspondence>> accessed 10 July 2026.

exercises and compliance inspections, these instruments fulfil a dual analytical purpose. First, they aggregate and synthesise pervasive, adverse findings, thereby minimising systemic informational asymmetries by exposing recurring operational vulnerabilities. Second, they articulate the explicit, actionable remedial expectations of the MFSA, transforming raw diagnostic data into clear compliance benchmarks. Beyond this immediate corrective function, these letters are increasingly leveraged as mechanisms for forward-looking supervisory alignment. By signalling impending structural shifts, most notably complex, incoming European Union regulations such as the Digital Operational Resilience Act (DORA) or the Markets in Crypto-Assets Regulation (MiCAR), they provide market participants with the necessary lead time to execute preemptive, *ex-ante* governance and compliance recalibrations.

The architectural sophistication of this mechanism was formally refined in 2024, when the MFSA restructured its communication strategy to separate direct supervisory feedback from broader market guidance. Under this dual-channel framework, individual deficiencies are communicated privately to entities subject to supervisory engagement via specific supervisory letters, while systemic, cross-firm trends are disseminated publicly to the wider financial ecosystem through collective “Dear CEO” letters. Crucially, by addressing these instruments to all licensed entities within a given sector, irrespective of whether they were included in the empirical inspection sample, the MFSA achieves a significant regulatory scaling effect. This structural approach effectively transmits a localised, sample-based supervisory exercise into a binding, market-wide behavioural signal. By shifting the baseline compliance expectations of the entire market population simultaneously, the framework drives industry-wide remediation without requiring the operationally resource-intensive expenditure of executing individualised inspections across every licensed market participant.³⁴

Consequently, as codified within the Authority's supervisory priorities documents, these collective communications function as the primary operational lever for sustaining the integrity of the compliance outcomes-based cycle.³⁵ Positioned within the intermediary phase (year 2 of the Compliance Outcomes-Based Process) of the triennial supervisory framework, “Dear CEO” letters serve as the active interface through which the MFSA *enforces* widespread corrective actions. By establishing a public benchmark of adequacy, the issuance of these letters initiates a formal remediation window. This ensures that the broader industry is compelled to align its internal controls and corporate culture with the stated regulatory outcomes immediately prior to the commencement of the final phase (year 3), which is dedicated to empirical verification, trend reassessment, and targeted re-testing.³⁶

2.3 Evaluative Frameworks for Assessing Supervisory Efficacy

Within an integrated, compliance outcomes-based framework, the regulatory efficacy of “Dear CEO” letters cannot be assumed a priori. It must instead be systematically quantified across three sequential tiers of analysis.³⁷ The first tier, transmission effectiveness, will assess whether the communication successfully influences the executive governance of a firm and is formally integrated into board-level agendas. Given that these instruments are explicitly

34 This is inline with the MFSA's risk based approach, which mirrors the approach taken by the majority of financial supervisors internationally.

35 MFSA (n 15).

36 See diagram on page 4

37 The pilot compliance outcomes-based supervision initiated in 2024 is currently in its third year of the supervisory cycle. The measured extent of supervisory effectiveness will be clear at the end of this year.

addressed to chief executives, the formal recording of the letter within internal board minutes and corporate risk registers serves as the primary baseline metric, establishing accountability at the highest tier of corporate fiduciary responsibility.

Building upon successful transmission, the second tier will evaluate remediation effectiveness, analysing whether market participants have executed concrete, measurable internal reforms within the structural timeline of the supervisory cycle. Within the MFSA's triennial architecture, this dimension of effectiveness is optimised by shifting away from passive reliance on industry goodwill. Instead, the issuance of the letter is synchronised with targeted evidence requests, ad-hoc reporting mandates, or mandatory follow-up supervisory meetings that legally compel firms to demonstrate explicit alignment with the stated expectations. This active operational stance ensures that the letter functions as an enforceable regulatory catalyst that disrupts status quo non-compliance across the horizontal market population.

The ultimate validation of the mechanism resides in the third tier, outcome effectiveness, which measures whether the overarching prudential or conduct objectives are substantively achieved when the sector is re-tested in the final phase of the cycle. The sophistication of the MFSA's methodology lies in its ability to embed measures of compliance in subsequent supervisory engagement rendering the impact of the intervention (at year 3) fully testable. Consequently, the precise drafting and structural design of these letters remain paramount; communications that articulate the specific evidence to be tested, the precise metrics of adequacy, and the formal escalation path for non-delivery are inherently more effective than letters relying on vague, high-level principles, thereby proving that regulatory clarity is the ultimate driver of supervisory efficiency.

03

Thematic Evidence from Supervisory Analytics

An evaluation of published MFSA “Dear CEO” letters³⁸ demonstrates how the Authority uses structured outreach to address the complex thematic risks prioritised within its regulatory agenda. By analysing these interventions across distinct regulatory domains, ranging from traditional corporate governance to fintech, this section demonstrates how the MFSA systematically converts findings into binding, market-wide behavioural adjustments.

3.1 Prudential Supervision: Corporate Governance and Internal Control Functions

Reflecting the global consensus that weak internal cultures and compromised corporate governance drive systemic compliance failures, the MFSA frequently targets internal control architectures to enforce structural accountability. This strategy is demonstrated by the MFSA's February 2026 “Dear CEO” letter issued following an extensive thematic review on the Compliance and Internal Audit functions of Alternative Investment Fund Managers (AIFMs)

38 Malta Financial Services Authority, Dear CEO Letters <<https://www.mfsa.mt/publications/corporate-publications/dear-ceo-letters/>> accessed 4 August 2026.

and UCITS Management Companies.³⁹ This communication aggregates highly granular empirical findings to expose structural vulnerabilities across asset management entities, notably identifying that nearly half of the inspected management companies completely omitted core business activities and critical regulatory obligations from their active compliance monitoring programmes. Furthermore, the review exposed widespread deficiencies regarding the operational independence of control functions, inadequate conflict of interest logs, a lack of formalised escalation procedures for compliance breaches, and an absence of structured compliance reviews concerning marketing materials and corporate websites.

The analytical substance of this intervention lies in its deep, intrinsic link to the core objectives of prudential supervision. Experience in financial supervision⁴⁰ suggests that institutional resilience and financial soundness are fundamentally contingent upon the integrity of an entity's internal governance and controls. A failure to execute comprehensive compliance risk assessments or maintain independent internal audit functions creates opaque operational risks that may directly erode a financial entity's capital buffers and balance sheet stability. By failing to detect underlying operational failures, legal non compliance, or structural conflicts of interest, an institution becomes highly susceptible to rapid capital degradation, reputational damage, and, in a worst case scenario, eventual insolvency.

Consequently, by utilising the "Dear CEO" letter to mandate that all fund management companies adopt documented, granular compliance risk assessments to underpin their Compliance Monitoring Programmes (CMPs), the MFSA actively safeguards financial stability. Within a highly interconnected financial ecosystem, the failure of localised internal control structures within asset management vehicles may trigger rapid contagion vectors into the wider banking and investment infrastructure. By enforcing uniform thresholds for governance and risk management across the entire market population simultaneously, the MFSA's proactive outreach prevents the build up of correlated micro-prudential vulnerabilities.

3.2 Conduct Risk and Consumer Protection

In contemporary regulatory theory, conduct of business supervision focuses intensely on correcting structural information asymmetries, mitigating principal agent conflicts, and eliminating systemic market conduct failures that lead to consumer detriment.⁴¹ The MFSA's strategic deployment of the "Dear CEO" modality within this arena demonstrates how targeted, post diagnostic outreach translates empirical findings from supervisory exercises into enforceable, sector-wide conduct standards, thereby advancing the core statutory objective of consumer protection.

This mechanism is illustrated by three consecutive, interventionist communications issued between 2025 and 2026. The Authority's April 2026 "Dear CEO" letter regarding complaints handling by investment firms explicitly targets

39 Malta Financial Services Authority, Dear CEO Letter: Thematic Review on Compliance and Internal Audit Functions of Management Companies of AIFs and UCITS funds (Regulatory Letter, 23 February 2026) <<https://www.mfsa.mt/wp-content/uploads/2026/02/Dear-CEO-Letter-Thematic-Review-on-Compliance-and-Internal-Audit-Functions-of-Management-Companies-of-AIFs-and-UCITS-Funds.pdf>> accessed 10 July 2026.

40 One of the authors has more than two six years of supervisory experience, including in high-level positions at the MFSA.

41 Buttigieg et al (n 17).

the operational integrity of redress mechanisms.⁴² Arising from thematic reviews, this letter exposes critical failures across the sector, notably highlighting a pervasive lack of clear internal ownership over the complaints process, structural bottlenecks in resolution timelines, a failure to register or track verbal expressions of dissatisfaction, and inadequate root cause analyses by compliance functions. By failing to systematically assess whether individual complaints indicate broader, recurring product or process flaws, firms effectively perpetuate consumer harm. To counteract this, the Authority's letter establishes explicit expectations: [a] boards must actively oversee complaints handling metrics; [b] mandate that verbal complaints are integrated into formal tracking frameworks; and [c] implement rigorous, iterative root cause methodologies to ensure that grievances drive systemic internal remediation.

The structural protection of vulnerable consumers within complex retail markets is addressed in the February 2026 "Dear CEO" letter concerning the Insurance Distribution Directive⁴³ (IDD) client suitability assessment process for Insurance Based Investment Products (IBIPs).⁴⁴ Operating in a domain characterised by information asymmetry, the MFSA's thematic investigations revealed widespread, severe deficiencies in how intermediaries execute advisory sales. The main findings exposed that a significant proportion of distributors utilised generic, overly simplistic questionnaires that failed to granularly capture retail clients' financial vulnerabilities, risk appetites, or specific investment objectives. Furthermore, the review identified a critical failure to document the substantive rationale underpinning suitability recommendations and a lack of formalised internal controls to prevent aggressive cross-selling. In response, the MFSA used the "Dear CEO" letter to impose rigid, market-wide operational boundaries, demanding that all distributors implement objective, multi-dimensional suitability algorithms, maintain audit trails of the advisory rationale, and explicitly demonstrate how their governance structures prevent conflicts of interest from distorting product recommendations.

Finally, the evolution of conduct supervision into qualitative, value driven outcomes is exemplified by the May 2025 "Dear CEO" letter detailing expectations under the Markets in Financial Instruments Directive⁴⁵ II Sustainability Requirements.⁴⁶ Here, the MFSA addresses the emerging conduct risk of "greenwashing"⁴⁷ and the misaligned allocation of retail capital. The supervisory findings indicated that while investment firms integrated superficial sustainability disclosures into their client documentation, they routinely failed to substantively assess clients' specific sustainability preferences or map those preferences accurately onto the complex Environmental, Social, and Governance (ESG) features of financial instruments. The letter transforms these findings into a proactive

42 Malta Financial Services Authority, Dear CEO Letter: Outcomes-Based Supervision – Investment Firms: Complaints Handling (Regulatory Letter, April 2026) <<https://www.mfsa.mt/wp-content/uploads/2026/04/Dear-CEO-Letter-Outcomes-Based-Supervision-Investment-Firms-Complaints-Handling.pdf>> accessed 10 July 2026.

43 Directive (EU) 2016/97 of the European Parliament and of the Council of 20 January 2016 on insurance distribution (recast) Text with EEA relevance

44 Malta Financial Services Authority, Dear CEO Letter: IDD Suitability Requirements – client suitability assessment process in the context of advisory sales of IBIPs (Regulatory Letter, 20 February 2026) <<https://www.mfsa.mt/wp-content/uploads/2026/02/Dear-CEO-Letter-IDD-Suitability-Requirements-Client-Suitability-Assessment-Process-in-the-Context-of-Advisory-Sales-of-IBIPs.pdf>> accessed 10 July 2026.

45 Directive 2014/65/EU of the European Parliament and of the Council of 15 May 2014 on markets in financial instruments and amending Directive 2002/92/EC and Directive 2011/61/EU (recast) Text with EEA relevance

46 Malta Financial Services Authority, Dear CEO Letter: MFSA Expectations in the Context of MiFID II Sustainability Requirements (Regulatory Letter, 21 May 2025) <<https://www.mfsa.mt/wp-content/uploads/2025/05/Dear-CEO-Letter-MFSA-Expectations-in-the-Context-of-MiFID-II-Sustainability-Requirements.pdf>> accessed 10 July 2026.

47 Buttigieg, C.P., Pulis, S. Strategic initiatives to address greenwashing. *ERA Forum* 25, 327–337 (2024). <https://doi.org/10.1007/s12027-024-00815-7>

compliance mandate, outlining that the consumer protection objective cannot be satisfied by formalistic disclosure alone. The MFSA explicitly expects firms to structurally overhaul their suitability assessment frameworks, train front-line advisory staff to decode complex sustainability preferences, and establish metrics-based verification protocols to ensure that green product distribution matches the empirical intent of the retail investor.

Cumulatively, these three letters demonstrate that within a compliance outcomes-based conduct regime, the “Dear CEO” instrument serves as an essential mechanism for elevating market conduct. By broadcasting aggregate deficiencies and outlining clear, metric-based criteria of adequacy, the Authority effectively neutralises informational imbalances, forces boards to dismantle extractive sales cultures, and guarantees that consumer protection is operationalised as a tangible, verifiable regulatory outcome.

3.3 Supervision for Market Integrity

The preservation of market integrity stands as a foundational pillar of financial supervision, essential for maintaining public trust, preventing systemic distortions, and ensuring the orderly functioning of trading venues and investment ecosystems. In contemporary regulatory scholarship, the enforcement of market integrity is explicitly framed as a protection against asymmetrical information exploitation and manipulative conduct.⁴⁸ The MFSA's strategic deployment of the “Dear CEO” modality in this specialised area is demonstrated by its June 2025 communication⁴⁹, which synthesised systemic findings stemming from comprehensive supervisory inspections held with investment services providers between 2020 and 2024 concerning the EU Market Abuse Regulation (MAR)⁵⁰.

The empirical findings detailed in this review exposed structural vulnerabilities in the market integrity defence architectures of licensed firms. Chief among these was a widespread failure to maintain effective, automated trade surveillance systems capable of detecting insider dealing and market manipulation, with many firms relying on manual, ad-hoc oversight completely unsuited to modern trading velocities. Furthermore, the Authority identified critical deficiencies regarding the adequacy of suspicious transaction and order reports (STORs), a systemic lack of granular employee training on localised market abuse typologies, and a failure to establish robust internal escalation protocols. Crucially, the inspections revealed that many entities failed to maintain compliant, up-to-date insider lists or securely restrict access to inside information, thereby directly escalating the risk of unlawful disclosure and structural market distortion.

The overarching picture painted by this communication reveals that the MFSA conceptualised the “Dear CEO” letter as an instrument of perimeter alignment. To safeguard market integrity, the MFSA used this letter to translate complex statutory MAR requirements into rigid, market-wide operational boundaries. The supervisory expectations articulated are explicit and proactive: all investment services providers must execute a comprehensive, documented market abuse risk assessment that directly maps onto their specific business model, trading volumes,

48 Buttigieg, C. (2006). Investor protection from market abuse. Third Quarter 2006 - The Economic Update, 1-3.

49 Malta Financial Services Authority, Dear CEO Letter: Market Abuse Regulation (EU) No 596/2014 ('MAR' or the 'Regulation') – Findings stemming from the supervisory inspections held with Investment Services Providers between 2020 and 2024 (Regulatory Letter, 9 June 2025) <<https://www.mfsa.mt/wp-content/uploads/2025/06/Dear-CEO-Letter-Market-Abuse-Regulation-EU-No-5962014-%E2%80%98MAR-or-the-%E2%80%98Regulation-Findings-Stemming-from-the-Supervisory-Inspections-Held-with-Investment-Services-Providers-between-2020-and-2024.pdf>> accessed 10 July 2026.

50 Regulation (EU) No 596/2014 of the European Parliament and of the Council of 16 April 2014 on market abuse (market abuse regulation) and repealing Directive 2003/6/EC of the European Parliament and of the Council and Commission Directives 2003/124/EC, 2003/125/EC and 2004/72/EC Text with EEA relevance

and asset classes. Boards of directors are commanded to abandon passive reliance on legacy systems, implement sophisticated, independent post-trade surveillance technologies, and enforce strict insider-list governance.

By disseminating these findings collectively to all licensed entities, regardless of whether they were part of the historical 2020–2024 inspection sample, the “Dear CEO” letter functioned as a scalable implementation catalyst. It signalled that market integrity cannot be treated as a compartmentalised back-office compliance checkbox, but must be operationalised as an active, board-led corporate culture. Ultimately, this intervention proves that for the market integrity objective to be achieved, the supervisor must use structured outreach to weaponise historical compliance metrics, forcing a simultaneous, market-wide elevation of defensive barriers to insulate the financial ecosystem from manipulation and systemic reputational degradation.

3.4 Financial Crime Compliance: Counter-Terrorist Financing, Counter-Proliferation Financing, and Sanctions Evasion

Within the architecture of financial supervision, financial crime compliance represents the critical frontier where regulatory oversight intersects with national security and global financial system integrity. While anti-money laundering (AML) frameworks primarily address the stabilisation of systems against the integration of illicitly acquired capital, countering the financing of terrorism (CFT), counter-proliferation financing (CPF), and enforcing targeted financial sanctions (TFS) are designed to disrupt the flow of funds to malicious actors, irrespective of the funds’ initial legality.⁵¹ The MFSA’s June 2026 “Dear CEO” letter issued to credit institutions, synthesising a comprehensive thematic review on mitigating TF, PF, and TFS evasion risks.⁵²

The empirical findings from this thematic exercise brought to light critical vulnerabilities across the banking sector. Chief among these was a structural deficiency in how institutions conceptualise and segregate risk typologies. The review indicated that a significant portion of institutions failed to provide distinct, standalone consideration to TF and PF vectors within their internal methodologies, frequently incorporating them under broader, generalised AML risk metrics. Furthermore, while strong baseline alignment with the National Risk Assessment⁵³ (NRA) was observed, operational vulnerabilities emerged in customer screening and real-time transaction monitoring, particularly regarding the identification of sophisticated circumvention tactics utilised by sanctioned entities. A crucial, forward-looking finding focused on technological adoption: banks increasingly utilise artificial intelligence (AI) and automated algorithmic screening to handle massive transaction volumes, yet many failed to demonstrate an adequate technical understanding of the underlying model designs, leading to unmitigated model risks and untracked alert clearance decisions.

51 Buttigieg, C. P., & Micallef, E. (2026). The Money Laundering Reporting Officer: Some Reflections from Malta. *Journal of Financial Compliance*, 9(3), 273-286.

52 Malta Financial Services Authority, *Dear CEO Letter: Mitigating Terrorist Financing, Proliferation Financing and Targeted Financial Sanctions Evasion Risks in Credit Institutions* (17 June 2026) <https://www.mfsa.mt/wp-content/uploads/2026/06/Dear-CEO-Letter-Mitigating-Terrorist-Financing-Proliferation-Financing-and-Targeted-Financial-Sanctions-Evasion-Risks-in-Credit-Institutions.pdf> accessed 20 July 2026.

53 National Coordinating Committee on Combating Money Laundering and Funding of Terrorism, *Money Laundering, Terrorist and Proliferation Financing and Targeted Financial Sanctions: Malta's National Risk Assessment 2023* (December 2023) https://ncc.gov.mt/wp-content/uploads/2024/10/PublicNRA_Dec2023-1.pdf accessed 20 July 2026

To address these vulnerabilities, the MFSA utilised the “Dear CEO” letter to delineate explicit, non-negotiable supervisory expectations aimed at institutionalising an adaptive, forward-looking financial crime defense. First, credit institutions are expected to decouple TF, PF, and TFS evasion risks from general money laundering metrics, integrating dedicated risk assessments that account for the unique convergence of traditional banking channels and emerging digital assets. Second, regarding the deployment of AI-driven compliance tools, the MFSA established a clear prudential boundary: boards and management must possess an explicit understanding of algorithmic functionality and limitations, mandating the maintenance of comprehensive, unalterable audit trails for all automated alerts and subsequent human clearance decisions. Finally, institutions are required to institutionalise role specific, risk sensitive training regimes to ensure that front-line compliance personnel can recognise complex, modern sanctions-evasion typologies.

From an overarching perspective, this specific intervention reveals that the “Dear CEO” modality in financial crime compliance operates as a mechanism for dynamic calibration. Because geopolitical landscapes and illicit financing techniques evolve at high velocity, static legislative frameworks cannot provide the real-time adjustments required to defend the financial perimeter. By issuing this “Dear CEO” letter, the MFSA effectively leverages empirical supervisory data to bridge the gap between high-level international mandates (such as FATF standards) and the day-to-day operational realities of credit institutions. The “Dear CEO” letter thus acts as a mechanism of implementation, converting an assessment of weaknesses into a mandatory, market-wide elevation of defensive barriers necessary to secure the jurisdiction against reputational damage and systemic financial crime infiltration.

3.5 Technological Supervision: Digital Operational Resilience

In contemporary financial regulation, the paradigm of institutional safety has permanently expanded beyond traditional financial solvency metrics to encompass digital operational resilience. Under this framework, the capacity of a financial entity to withstand, respond to, and recover from severe information and communication technology (ICT) disruptions is treated as an essential component of macro prudential stability.⁵⁴ With the implementation of the Digital Operational Resilience Act⁵⁵ (DORA), European financial supervisors have been tasked with transitioning from localised cybersecurity checklists to systemic operational testing. The MFSA's September 2025 “Dear CEO” letter⁵⁶, summarising its 2024 supervisory engagements, provides a primary empirical window into this transition by offering granular insights through the lens of the Authority's newly deployed compliance outcomes-based supervision model.

The empirical observations compiled by the Authority's Supervisory ICT Risk and Cybersecurity function unmasked substantial, uneven preparedness across the jurisdiction, despite a strong directional commitment from the pilot phase where a majority of assessed controls were achieved. Critical vulnerabilities were exposed across the core pillars of the DORA framework, beginning with structural gaps in the formulation of comprehensive ICT risk

54 European Systemic Risk Board, *Systemic Cyber Risk* (February 2020) https://www.esrb.europa.eu/pub/pdf/reports/esrb-report200219_systemiccyberrisk~101a09685e.en.pdf accessed 20 July 2026.

55 Regulation (EU) 2022/2554 of the European Parliament and of the Council of 14 December 2022 on digital operational resilience for the financial sector and amending Regulations (EC) No 1060/2009, (EU) No 648/2012, (EU) No 600/2014, (EU) No 909/2014 and (EU) 2016/1011 (Text with EEA relevance)

56 Malta Financial Services Authority, *Dear CEO Letter: Supervisory Engagements and Digital Operational Resilience 2024 - General Observations Report* (26 September 2025) <https://www.mfsa.mt/wp-content/uploads/2025/09/Dear-CEO-Letter-Supervisory-Engagements-and-Digital-Operational-Resilience-2024.pdf> accessed 20 July 2026

management frameworks and inconsistent alignment with recognised international industry standards. Furthermore, severe deficiencies were identified in localised incident response capabilities, where a significant portion of licence holders struggled with precise incident classification methodologies and lacked resilient communication channels during operational disruptions. The most acute implementation lags emerged in digital operational resilience testing, where a vast majority of firms remained in the primitive stages of developing formalised testing programmes, alongside a persistent failure to manage downstream ICT third-party sub-outsourcing concentrations and contractually secure executable exit strategies.

To compress these implementation gaps ahead of full verification cycles, the Authority utilised the “Dear CEO” letter to issue prescriptive remediation parameters that demand a permanent restructuring of corporate governance incentives. Corporate boards are explicitly expected to transition from passive, technology-isolated oversight to direct, active accountability for ICT risk management, meaning that directorates must substantively understand the risk parameters underpinning their operational infrastructure rather than delegating these duties entirely to external technical specialists. Furthermore, firms are required to implement objective, multi-dimensional incident classification systems that guarantee real-time regulatory escalation, while concurrently overhauling third party service level agreements to secure unhindered auditability and explicit, legally sound exit paths.

When contextualised within the central theme of this article, the structural efficacy of the “Dear CEO” modality, the communication reveals a profound evolution in the mechanics of responsive financial supervision, demonstrating how an outreach channel can function as an active mechanism for continuous accountability. This letter operates as the formal interface through which the regulator enforces widespread corrective action. By embedding centralised executive communication within the intermediate phase of the triennial supervisory framework, the supervisor can broadcast the aggregated metrics of adequacy to the entire market population, effectively peer benchmarking data to drive compliance across firms that were not part of the initial onsite inspection sample.

Ultimately, this intervention confirms that in highly complex, technologically volatile domains like digital operational resilience, the “Dear CEO” letter acts as a vital regulatory bridge that shifts industry psychology away from periodic compliance toward an enduring state of operational readiness. By explicitly signalling a mandatory twelve month remediation window followed by a structured phase of targeted re testing, the communication eliminates the ambiguity of regulation. For resource-constrained regulators, this model proves to be an indispensable tool for maximising efficiency. It allows the financial supervisor to convert diagnostic data from an empirical sample into a market-wide expectation for operational and cultural transformation, thereby safeguarding the collective financial architecture from systemic technological shocks.

3.6 Technological Supervision: Prudential Expectations on Artificial Intelligence

The frontier of emerging technology regulation highlights a sophisticated evolution in how the MFSA deploys its structured outreach framework, as exemplified by the issuance of the specialised “Dear CEO” letter on Artificial Intelligence (AI) Governance, Risk, and Prudential Expectations.⁵⁷ In high-velocity, technologically fluid domains where formal, static legislative frameworks often lag behind market adoption, the “Dear CEO” letter transitions from an ex-post diagnostic synthesis of supervisory findings which also sets supervisory expectations, into an

⁵⁷ Malta Financial Services Authority, *Dear Chief Executive Officer: Artificial Intelligence (AI) – Governance, Risk and Prudential Expectations* (4 June 2026) <https://www.mfsa.mt/wp-content/uploads/2026/06/Dear-CEO-letter-Artificial-Intelligence-AI-Governance-Risk-and-Prudential-Expectations.pdf> accessed 20 July 2026.

ex-ante, anticipatory boundary-setting instrument.⁵⁸ Rather than waiting for widespread technological failures or algorithmic harms to materialise, the MFSA leverages this modality to proactively insert clear governance and prudential perimeters directly into the corporate boardrooms of supervised entities.

This specific regulatory intervention signals that the MFSA conceptualises AI adoption not merely as an isolated operational or IT choice, but as a core component of institutional risk appetite and board-level fiduciary accountability. By utilising the “Dear CEO” modality in this emerging space, the regulator achieves three distinct strategic objectives. First, it establishes immediate baseline parameters for risk management and algorithmic accountability, demanding that boards maintain active oversight over AI deployments, data lineage, and model validation. Second, it minimises information asymmetries by clarifying how existing prudential, operational resilience, and conduct of business standards apply to automated, data driven decision systems. Third, it serves as a soft law signalling mechanism that bridges the gap before the full implementation of supranational architectures, such as the EU AI Act and the adoption of EU prudential standards in the field. Consequently, the MFSA's deployment of this letter confirms that for cutting edge technological shifts, the “Dear CEO” instrument functions as an agile, responsive mechanism designed to shape industry culture and enforce proactive risk mitigation at the earliest stages of the adoption curve.

In the final analysis, the “Dear CEO” letters are not just standard administrative updates or public relations exercises. Instead, they serve as a highly effective tool that helps a financial supervisor to do more with less. By inspecting a sample of firms and sharing the aggregated findings and clear expectations with the entire market, the financial supervisors create a ripple effect. This approach forces all companies within a sector to fix their internal issues at the same time, without requiring the financial supervisor to spend time and resources conducting individual inspections at every single firm. Ultimately, this model bridges the gap between abstract laws and real-world compliance. It provides a practical, cost-effective blueprint for financial supervisors who need to maintain strict oversight and global market confidence while operating with finite resources.

04

General Policy Implications for Financial Supervisors

The structural integration of the MFSA's compliance outcomes-based framework offers vital policy insights for financial supervisors globally. Jurisdictions routinely confront a distinct structural asymmetry, especially international financial centres, as they manage large, highly complex, and cross-border financial sectors, particularly within specialised domains like FinTech and digital assets, while operating with finite supervisory staff and budgetary resources. In such environments, traditional, exhaustive firm-by-firm inspection models for the entire financial sector are operationally unsustainable and structurally incapable of keeping pace with risks in the financial system.

The MFSA's architecture demonstrates a viable alternative blueprint. By positioning structured outreach via “Dear CEO” letters as a formalised, post-evidential phase within a triennial cycle, financial supervisors can effectively

58 Heikki Marjosola, ‘Shadow Rulemaking: Governing Regulatory Innovation in the EU Financial Markets’ (2022) 23 German Law Journal 186. >accessed 21 July 2026

maximise the utility of their limited resources. This approach allows the supervisor to convert resource-intensive analytical work from a representative sample of firms into an immediate, enforceable behavioural signal across the entire market population. It yields a powerful scaling effect, raising baseline compliance standards and driving industry-wide remediation without requiring an unfeasible expansion of the supervisory headcount.

Furthermore, this model emphasises that for resource-constrained financial supervisors, clarity is the ultimate tool for efficiency. When supervisory communications move away from high-level, ambiguous principles and instead articulate explicit, metrics-based criteria of adequacy, the compliance burden on firms becomes predictable, and the supervisor's subsequent verification phases become highly structured and less resource depleting. Ultimately, the MFSA's experience suggests that a robust compliance outcomes-based model, anchored by targeted, sector-wide outreach, allows financial supervisors to achieve supervisory convergence, preserve international market confidence, and maintain robust regulatory oversight in a highly scalable and cost-effective manner.

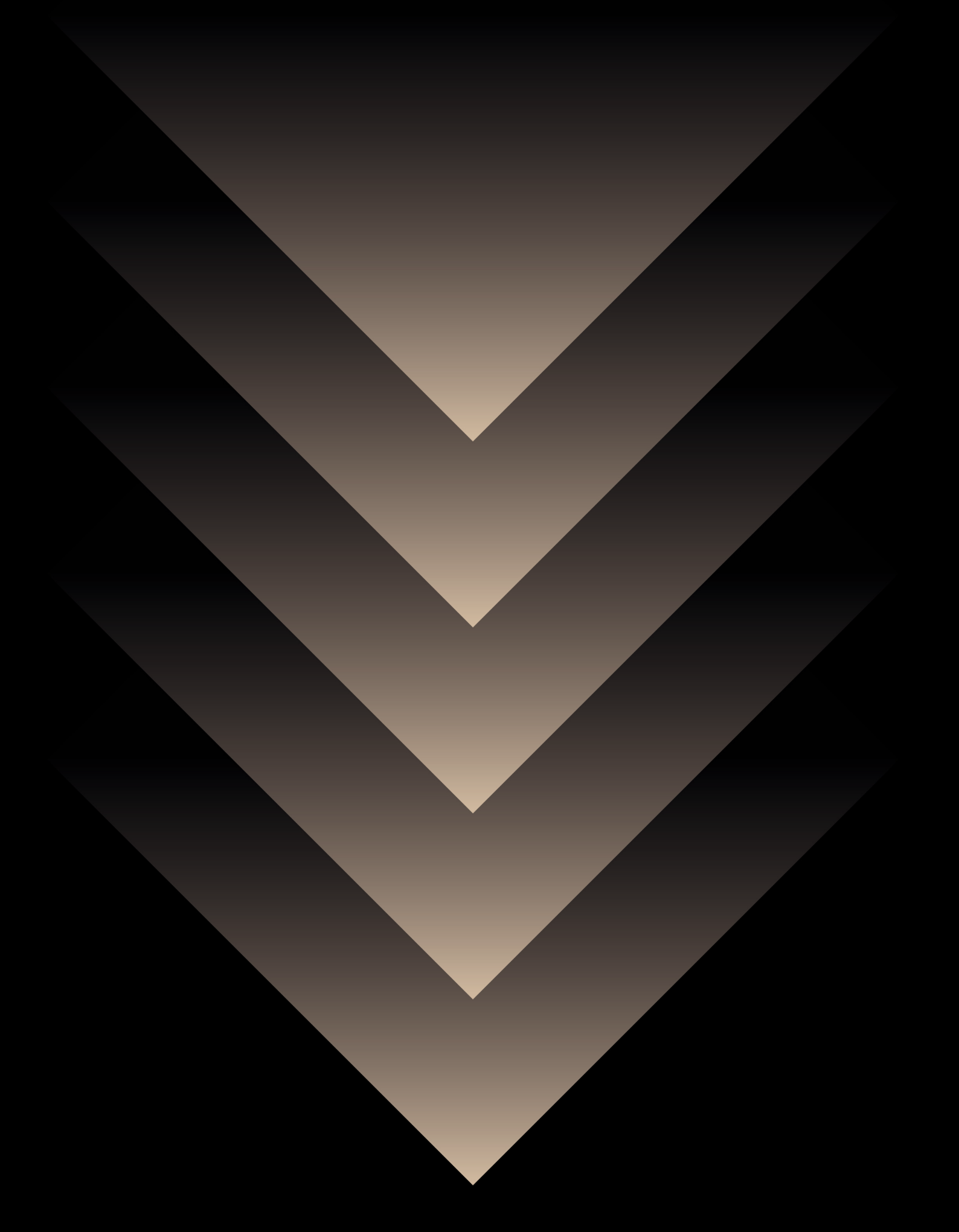
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Conclusion

This article has critically evaluated the architectural paradigm shift within contemporary financial supervision from formalistic, rule-adherent models to an integrated, compliance outcomes-based framework. By focusing on the structural integration of the MFSA triennial supervisory architecture, the analysis demonstrates that the efficacy of contemporary regulation relies on a systematic fusion of evidence-based data analytics and judgment based qualitative interventions. The central contribution of this paper lies in its conceptualisation of structured market outreach, specifically the deployment of collective "Dear CEO" letters, not as an auxiliary administrative exercise, but as an endogenous, supervisory potent mechanism of responsive regulation. The empirical and thematic analysis across diverse domains, including sustainable finance, digital assets, and artificial intelligence governance, confirms that these high-level instruments successfully convert localised, sample-based diagnostic findings into binding, market-wide behavioural adjustments. By targeting the executive boardroom directly, this dual channel communication strategy effectively reshapes institutional risk appetites, mitigates systemic information asymmetries, and establishes clear parameters of adequacy across an entire financial ecosystem.

Beyond validating the theoretical mechanics of the outcomes-based cycle, this study offers a distinct contribution to the international literature on supervisory effectiveness by establishing a multi-tiered framework for empirical validation. The paper establishes that the regulatory utility of supervisory outreach must be rigorously measured across three sequential dimensions: [a] transmission, [b] remediation, and [c] ultimate outcome effectiveness. This methodology demonstrates that for a supervisory intervention to remain testable, it must embed explicit, quantitative criteria, such as regulatory return timeliness and data validation metrics, directly within its qualitative soft-law communications. Comparative analysis with the long-standing frameworks of peer international institutions, including the Central Bank of Ireland, the UK Financial Conduct Authority, and the Bank of England's Prudential Regulation Authority, confirms that the strategic positioning of these letters acts as a vital bridge within the supervisory action hierarchy. They provide a structured, *ex ante* opportunity for sector-wide remediation, maximising institutional alignment prior to the triggering of formal administrative sanctions or subsequent retesting phases.

Ultimately, the policy implications derived from this study extend vital insights to small state financial supervisors operating under structural resource constraints. Faced with the asymmetric challenge of supervising complex, cross-border financial sectors and fast velocity technology markets with inherently finite human and budgetary assets, financial regulators cannot sustain exhaustive, firm-by-firm inspection methodologies for the entire financial sector. The MFSA model provides a highly scalable alternative blueprint, proving that targeted, high-level executive communication can serve as a primary operational lever to achieve convergence and maintain robust market oversight. By establishing unambiguous, metrics-based guidance, resource-constrained authorities can drive market-wide behavioural correction from a limited diagnostic sample, drastically lowering the long-term resource drain on subsequent verification phases. In an era marked by rapid technological mutation and heightened geopolitical risk, this outcomes-based methodology ensures that financial supervisors can efficiently preserve international market confidence, operationalise a pre-emptive supervisory posture, and achieve systemic resilience in a highly cost-effective and scalable manner.





3.2
Academic Article

Testing Resilience in Turbulent Times: Prudential Tools for Financial Services Supervision

Stavros Pantos



Author's Bio



Stavros Pantos is a PhD researcher in banking law and financial regulation from the School of Law, at the University of Reading. His research interests lie in financial regulation and risk management, especially about scenario analysis where he has published prior studies on fintech, climate change, operational risk scenarios, and regulatory stress testing.

He is also a risk management practitioner having worked in risk within the UK financial services and consulting sector for the past decade. He has focused on prudential risk management, leading work on stress testing and the Solvency II Own Risk & Solvency Assessment within general insurance.

Abstract

The risk management tool of stress testing has been widely used by financial services supervisors in the post Global Financial Crisis (GFC) world. Regulatory prescribed stress tests have been developed and deployed for different risks, remaining a key supervisory tool of prudential nature, for systemic financial institutions and financial services from a sectoral perspective. In the UK, the Prudential Regulation Authority (PRA) of the Bank of England has been designing stress tests for banks, insurers, and asset managers, based on its overarching stress testing framework. Despite the focus on emerging risks, such as pandemics in the aftermath of Covid-19, geopolitical risks are yet to have been stress tested in a dedicated scenario by prudential authorities. This paper discusses the characteristics of a stress test to address political tensions, volatility, and instability, as a resilience tool. It describes how to develop a severe but plausible scenario capturing geopolitical risks for financial services, as well as highlighting its associated challenges, using the UK bank stress testing framework from the Bank of England and the PRA as the regime in context. Recognising the amplified uncertainty in an interconnected financial system, practical insights for banks, insurers, and asset managers are included in examining this scenario, embedded in prudential risk requirements, towards advances to stress testing approaches.

Testing Resilience in Turbulent Times: Prudential Tools for Financial Services Supervision

Introduction

Scenario analysis has been widely used as an analytical tool in strategic risk management.¹ Scenarios and scenario planning are a useful exercise to understand future pathways, navigate through uncertain times, and prepare for challenging conditions, with the goal becoming resilient.² Developing severe but plausible scenarios is an essential component of stress testing and a core risk management activity of financial services, starting from banks and systemic institutions.³ Recognising the importance of stress testing, different requirements for its application are embedded into regulatory regimes (i.e., Basel III, Solvency II) for financial institutions. Financial services regulators have intensified the utilisation of stress and scenario tests in the post 2008/09 GFC, as a key tool of prudential supervision.⁴ Stress and scenario tests are developed by financial institutions for different uses and purposes, as explained in their stress testing framework, and are aligned to supervisory objectives.⁵

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- 1 Torben Andersen and Peter Schrøder *Strategic risk management practice: How to deal effectively with major corporate exposures* (Cambridge University Press 2012) ch 7 146, 161-6.
 - 2 Panayiota Georgiou and Stavros Pantos 'A critical analysis on the use of scenario planning as a policy making tool for resilience' (2022) *Sentio* 4, 80.
 - 3 John Hull *Risk Management and Financial Institutions* (6th ed.) (Wiley 2023) ch 16 387-404.
 - 4 Stavros Pantos "'Feeling Stressed?'" A Critical Analysis of the Regulatory Prescribed Stress Tests for Financial Services in the UK' (2025) *J. Risk Financial Manag.* 18(5), 246.
 - 5 Ibid Fig. 1.

A special category of stress tests are the ones developed and prescribed by regulators of macroprudential nature and usually for systemic institutions, covering the entire market or a large proportion of it.⁶ For instance, the Bank Capital Stress Test of the Bank of England at UK level, with the financial and macroeconomic regulatory stress tests targeting financial resilience.⁷ Stress testing has evolved in terms of supervisory objective and scope, looking at other types of resilience of the financial system, such as cyber.⁸ In the post Covid-19 world where operational risks have been exacerbated, regulatory scenarios examine operational and digital resilience, as well as new and emerging risks.⁹ There have been pandemic-related scenarios linked to the recent Covid-19 outbreak¹⁰ and of course there is a plethora of climate scenarios, like the CBES¹¹ from the NGFS¹² which have been well established, with climate scenario analysis an integral requirement for banks and insurers in managing their climate-related risks and exposures.¹³ However, there is yet to be a geopolitical regulatory stress test or a set of scenarios at UK level to prompt financial institutions to examine and quantify risks arising from political volatility and uncertainty.

This paper aims to provide insights into how political shocks and global tensions influence the structure of financial services supervision, with a case study applied to the UK regulatory landscape. Therefore, the underlying research question is how to develop a severe but plausible scenario capturing geopolitical risks for financial institutions. The natural subsequent questions answered in this paper cover the following: Should a macroprudential geopolitical stress test be developed, under exploratory stresses? And given the uncertainty and unpredictability, is a specific scenario sufficient or is a set of scenarios required instead? Would these be at macroprudential level, or is the microprudential angle key, requiring a combination of both? Effectively, how should stress testing frameworks evolve to address political volatility and the associated geopolitical risks? Therefore, this paper adds to advances to the financial supervision and resilience as a response to geopolitical risks and political volatility, after discussing the application of regulatory stress testing within the UK regime. Building on the scenarios from political risks that are part of the Lloyd's of London annual realistic disaster scenario (RDS)¹⁴ as a key example from insurance supervision, considering its role in underwriting those risks, towards the creation of a market-wide stress. The geopolitical reverse stress test of the European Central Bank (ECB) planned for 2026 as the first EU macroprudential stress test capturing geopolitical risks is the inspiration.¹⁵

6 Ibid.

7 Bank of England 'The Bank of England's approach to stress testing the UK banking system' (2024) 29 November 2024, BoE.

8 Nathanaël Benjamin 'Joining the dots' (2025) speech by Nathanaël Benjamin Given at The City UK, BoE.

9 *For the exploratory scenarios, looking at climate, liquidity, and cyber risks for instance, based on the UK scenarios developed by the Bank of England and the PRA.* Pantos (n4) Fig. 2.

10 Jakob Thomä 'Stress testing Covid-19: an exploratory stress-test scenario for the next 36 months' (2020) 2^o Investing Initiative discussion paper

11 *The Climate Biennial Exploratory Scenario:* Bank of England 'Key elements of the 2021 Biennial Exploratory Scenario: Financial risks from climate change' (2021) BoE; Bank of England 'Results of the 2021 Climate Biennial Exploratory Scenario (CBES)' (2022), BoE.

12 *For more detail, please see the dedicated guidance developed, accompanied by technical documentation and an online scenario tool/portal:* Network for Greening the Financial System 'NGFS Scenarios for central banks and supervisors' (2022) September 2022, NGFS.

13 Prudential Regulation Authority 'Enhancing banks' and insurers' approaches to managing climate related risks' (2025) supervisory statement SS5/25, December 2025, PRA, Bank of England ch 3 21-28.

14 *The political risk scenarios are detailed in a separate publication from Lloyd's, the specification document, which is not publicly available. Political risk scenarios have been part of the Lloyd's Realistic Disaster Scenarios (RDS) in all previous lists of RDS since 2015.* Lloyd's 'RDS 2026' (2026) Realistic Disaster Scenarios, Scenario Specification, January 2026, EM 568 v1.0, Lloyd's of London 60.

15 European Central Bank 'ECB to assess banks' stress testing capabilities to capture geopolitical risk' (2025) Press Release, 12 December 2025, ECB.

01

Stress Testing, Risk Assessments, and Prudential Supervision

Stress testing is a key supervisory tool of prudential nature. It is utilised by the Bank of England and the PRA in the UK as part of their supervision of financial services.¹⁶ Scenarios for a range of risks are employed throughout the PRA's Risk Element Framework, covering both financial and operational resilience,¹⁷ as also reflected in the PRA Rulebook. The use of stress testing is applied to evaluate financial resilience in a forward-looking manner, covering capital and liquidity risks for deposit takers.¹⁸ It is an integral component of the Internal Capital Adequacy Assessment Process (ICAAP) and the Supervisory Review and Evaluation Process (SREP) for banks and building societies,¹⁹ including the small domestic deposit takers.²⁰ Developing a framework for stress testing and capital management is required at bank level, with the approach to stress testing and the relevant documentation reviewed by regulators.²¹ The same applies to insurers (within Solvency II) in relation to examining a range of severe but plausible stress tests,²² with a framework for stress testing and solvency assessment is required under the Own Risk and Solvency Assessment (ORSA) process.²³ For re-insurance undertakings, there are insurance-specific stress tests, either for life insurers (LIST), the latest completed in 2025, or for general insurers (GIST), with the current dynamic scenario, running as a crisis exercise simulating a market-wide event for a 3-week period, the Dynamic General Insurance Stress Test (DyGIST), planned for (May) 2026.²⁴ For investment firms, scenarios are considered within the Internal Capital Adequacy and Risk Assessment (ICARA) process, focusing on capital management and resources, under the Investment Firms Prudential Regime.²⁵ Stress testing requirements for investment firms also cover the scenarios for wind-down planning.²⁶

16 *Primarily by the Bank of England and the PRA, and less so by the Financial Conduct Authority (FCA). However, in certain regulatory prescribed scenarios, the FCA is also involved, since often these are jointly developed by both the prudential (PRA) and the conduct (FCA) supervisor.*

17 Prudential Regulation Authority 'The Prudential Regulation Authority's approach to banking supervision' (2023) July 2023, PRA, Bank of England Fig. 1; Prudential Regulation Authority 'The Prudential Regulation Authority's approach to insurance supervision' (2023) July 2023, PRA, BoE Fig. 1.

18 Charlotte Gerken and Laura Wallis 'UK Deposit Takers Supervision: 2026 Priorities' (2026) Dear CEO Letter, 15 January 2026, PRA, BoE.

19 Prudential Regulation Authority 'The Internal Capital Adequacy Assessment Process (ICAAP) and the Supervisory Review and Evaluation Process (SREP)' (2025) Supervisory Statement SS31/15, December 2025 (Updating February 2025), PRA, BoE ch 3.

20 Prudential Regulation Authority 'The Internal Capital Adequacy Assessment Process (ICAAP) and the Supervisory Review and Evaluation Process (SREP) for Small Domestic Deposit Takers (SDDTs)' (2026) Supervisory Statement SS4/25, January 2026, PRA, BoE 26.

21 Prudential Regulation Authority 'The Prudential Regulation Authority's approach to banking supervision' (2023) July 2023, PRA, BoE par. 79, par. 128.

22 Prudential Regulation Authority 'Solvency II: ORSA' (2024) Supervisory Statement SS19/16, November 2024 (Updating November 2016), PRA, BoE par. 8.1-4.

23 Prudential Regulation Authority 'The Prudential Regulation Authority's approach to insurance supervision' (2023) July 2023, PRA, BoE par. 84, par. 108.

24 Gareth Truran and Shoib Khan 'Insurance Supervision: 2026 Priorities' (2026) Dear CEO Letter, 15 January 2026, PRA, BoE.

25 Financial Conduct Authority 'Implementation of Investment Firms Prudential Regime' (2021) Policy Statement PS21/17, November 2021, FCA.

26 Financial Conduct Authority 'The Wind-down Planning Guide' (2026) Sourcebook, WDPG, FCA.

A special stress test category is reverse stress testing, which involves looking at extreme and adverse scenarios, for banks initially, which result in the financial institution failing.²⁷ Reverse stress tests are used by regulators²⁸ with the PRA defining them as ‘shocks that would render the business model unviable or financial position fragile’.²⁹ They could be applied to understand threats to financial stability, based on structural or cyclical risks, when evaluating the banking system as a whole, exploring a combination of assumptions.³⁰ A reverse stress test exercise, in a macroprudential setup, focusing on major banks was conducted by the Financial Policy Committee in 2020, confirming the resilience of the sector.³¹ Banks are required to perform reverse stress tests based on business model vulnerabilities in their ICAAP, with reverse stress tests often linked to recovery and resolution planning.³² Small domestic deposit institutions are required to examine a reverse stress test in their ICAAP at least every two years, which could be of qualitative nature, capturing the risk drivers, remedial actions, and mitigation.³³ Reverse stress tests are captured in the ORSA process, where insurers are required to define failure and the underlying conditions leading to this.³⁴ Reverse stress tests identifying events making an investment firm no longer viable are considered under wind-down planning scenarios.³⁵

In addition to the idiosyncratic scenarios considered by banks, insurers, and asset managers, part of their regulatory requirements, there are stress and scenario tests developed by regulatory authorities. There are different types of stress and scenario tests developed for financial services, looking at a range of risks, both financial and non-financial, for systemic institutions or the majority of the market, and usually examined on a sectoral basis. Regulatory prescribed stress tests at UK level are segmented into three broad categories; the macroeconomic scenarios for banks (Bank Stress Tests), the Insurance Stress Tests (IST) for general and life insurers, and the Exploratory Scenarios.³⁶ Insurance stress tests examine underwriting risks with market conditions and (macro) economic implications, such as inflation, as well as extreme events specific to the (Lloyd’s of) London insurance market under the annual RDS exercise.³⁷ Exploratory scenarios cover additional risks, such as climate and cyber, and usually different financial institutions are invited to participate simultaneously, comprising of banks, insurers, and asset managers,³⁸ such as the system-wide exploratory scenario (SWES) more recently.³⁹ After four different exploratory scenarios, the climate, liquidity, cyber, and system-wide exercises, the Bank of England formalised these types of stresses as a distinct category in its updated approach to stress testing.⁴⁰ Exploratory scenarios

27 Hull (n 3) ch 16 392-4.

28 Benjamin (n 8).

29 *For each bank in isolation, based on the PRA Rulebook*. BoE (n 7) 34.

30 Ibid 31-32.

31 Financial Policy Committee ‘Financial Stability Report’ (2020) August 2020, FPC, BoE 45, 48-51.

32 PRA (n 19) par. 4.2-8.

33 PRA (n 21) par. 4.1-3.

34 PRA (n 22) par. 8.2.

35 FCA (n 26) WDPG 3.3.3.

36 Pantos (n 4) Table 1.

37 Ibid 4.1-4.3.

38 *For the list of the participating institutions of the CBES and the SWES, please see Tables A3 and A4 respectively*. Ibid 5.1-5.4.

39 Bank of England ‘The Bank of England’s system-wide exploratory scenario exercise final report’ (2024) published on 29 November 2024, BoE.

40 *Please see Fig. 1 which provides a summary of the three types of bank stress tests, with their associated components and characteristics*. BoE (n 7) 7.

will continue to be developed for the assessment of structure and emerging risks,⁴¹ but not strictly biennial and every two years, as confirmed by Nathanaël Benjamin, the Bank of England's Financial Stability Strategy and Risk Executive Director, at a speech introducing the new approach to stress testing.⁴²

Therefore, stress tests and specifically the scenarios led by regulators as part of their supervisory programmes, focus primarily on financial resilience, covering solvency and financial risks, such as capital and liquidity, capturing adverse macroeconomic conditions and prior financial crises events. Operational resilience complements this, since the digitalisation of financial services have led to the increase and amplification of operational risks, based on the experience from the recent Covid-19 pandemic, resulting in the introduction of different scenarios covering information, digital, and cyber risks.⁴³ In the exploratory scenarios other risks have been considered within the supervisory objectives and targeting the resilience of the financial system. However, an exploratory scenario on geopolitical risks has yet to be developed, or at least publicly disclosed, by the Bank of England and the PRA.

02

Geopolitical Risks and Scenarios

Geopolitical risk is defined as *'the threat, realization, and escalation of adverse events associated with wars, terrorism, and any tensions among states and political actors that affect the peaceful course of international relations'* according to Caldara and Iacoviello⁴⁴, with this being the adopted definition used in this paper, consistent with regulatory publications from the ECB. The risk of significant escalation in geopolitical tensions is highlighted in the latest World Economic Outlook of the International Monetary Fund (IMF).⁴⁵ Those domestic and/or international tensions and escalations introduce new layers of uncertainty, disrupting the global economy, and amplify existing financial risks.⁴⁶ Geopolitical instability, with interlinked cyber threats, is considered a top risk under society, politics, and regulation, both at global and regional level.⁴⁷ It remains a key concern and an emerging risk of organisations as highlighted by risk management practitioners, driven by geopolitical tensions between major economies, trade policies with sanctions, fragmented geopolitical order, as well as escalated regional conflicts, resulting in an overall transformation of associated risks.⁴⁸ Global disruptions characterised by increased complexity, unpredictability, and frequency of developments, require the shift towards long-term resilience against uncertainty, putting the

41 Ibid 32.

42 Benjamin (n 8) 7.

43 Please see Table 2 and Figure 1 for the list of scenarios and stress tests focused on operational risk management, such as the CBEST, the CQUEST, the STAR-FS (Simulated Targeted Attack & Response for Financial Services), and the Cyber Stress Test (which has now been updated into the 'Cyber and operational resilience stress test', noted as 'CORST') among others. Stavros Pantos 'Defining resilience: Developing operational risk scenarios for UK insurance companies' (2025) Journal of Risk Management in Financial Institutions, 18(3) 281.

44 Dario Caldara and Matteo Iacoviello 'Measuring Geopolitical Risk' (2022) *American Economic Review*, 112(4) 1195.

45 International Monetary Fund 'Global Economy: Steady amid Divergent Forces' (2026) World Economic Outlook Update 7.5 pt, 19 January 2026, IMF 6.

46 Ibid 1, 7.

47 AXA 'Future Risks Report' (2025) 2025 Edition, AXA 7, 25-26, 32.

48 Based on the results of the IRM's survey. The Institute of Risk Management 'Risk Trends 2025' (2025) the IRM 2, 5.

emphasis on Enterprise Risk Management adaptation.⁴⁹ The shifting geopolitical landscape is recognised as a key emerging trend by the Chief Risk Officer's (CRO) Forum, noting the economic trade conflicts and sanctions, and the geopolitical conflicts and military build-up as two high-impact risks, where significant impact is already observed.⁵⁰ This originates from an unstable and unpredictable geopolitical landscape, supported by the ongoing geopolitical order transformation, in a contested and fragmented world, disrupting trade, energy, financial systems and economies, challenging resilience.⁵¹ Geopolitical is a key category of risks captured in the Global Risks Perceptions Survey (GRPS) as detailed in the Global Risks Report produced by the World Economic Forum.⁵² Geoeconomic confrontation and state-based armed conflict are the top two responses in the latest GRPS, followed by societal polarisation as number four, with those three geopolitical risks underlining the increased probability of conflict, heightened protectionism, reduced trust and threat to international relations and trade which describe the current global landscape.⁵³ Geopolitical tensions, accompanied by economic displacement and other factors, such as cost of living, discrimination, misinformation and the global pandemic have led to the retreat into insularity, starting from polarisation, and grievance,⁵⁴ overall amplifying political risks and uncertainty. Inter-state conflicts, sanctions and tariffs, the cancellation of trade licences, and expropriatory actions, from current and prior years, impact trade, rising geopolitical risks.⁵⁵

Scenario planning and horizon scanning are considered key tools to support the preparation against the crystallisation of geopolitical risks.⁵⁶ Specifically, shortlisting scenarios for key associated risks, embedded in the business planning process to support setting strategy after evaluating stress tests.⁵⁷ Focusing on the options and planning as opposed to predicting actual outcomes in the current 'low-likelihood environment'⁵⁸ which probably challenges the 'severe but plausible' mantra of stress tests for financial services. Therefore, recognising the importance of scenarios for geopolitical risks, as certain case studies already examined could form the basis and background of regulatory stress tests for financial services.⁵⁹

49 Ibid 3.

50 *Other risks associated with that trend (either in isolation or linked to other trends too) as highlighted in the latest version of emerging risk radar of the CRO Forum from 2025, are the following: collective redress, critical infrastructures failures, critical resource management, cyber risks, evolving terrorism, global debt crisis, legal and regulatory uncertainty, social fragmentation and disorder, space risk, supply chain complexity.* CRO Forum 'Emerging Risks Initiative' (2025) Major Trends and Emerging Risk Radar, July 2025, The CRO Forum.

51 Ibid 5.

52 World Economic Forum 'The Global Risks Report 2026' (2026) 21st Edition, Insight Report, WEF.

53 *The rest geopolitical risks are intrastate violence and the biological, chemical or nuclear weapons or hazards, though these are noted with lower likelihood to present a material crisis on a global scale in 2026, with increased impact in the long-term (10-year) horizon.* Ibid, 7-8 and 15, Fig. 2 and Fig. 11.

54 Edelman Trust Institute '2026 Edelman Trust Barometer' (2026) Global Report, Trust Amid Insularity, Edelman Trust Institute 4.

55 *Airmic's twelve questions provide a toolkit allowing organisations to understand more about political risks and their management.* Airmic 'Political Risk: Preparing for Threats, Seizing the Opportunities Perfecting Governance' (2024) Airmic guide 2024, Airmic in association with McGill and Partners.

56 Hoe-Yeong Loke and Gavin Hayes 'Navigating geopolitical risk: Building resilience demands collaboration in a challenging world' (2023) February 2023, Chartered Institute of Internal Auditors and Airmic in partnership with AuditBoard 4.

57 Ibid 4, 8, 25.

58 Ibid 9.

59 *Referring to the "economic meltdown: a global crisis on the horizon?", the "conflict involving China: Taiwan and the South China Sea", "war in Ukraine: global implications", "climate change and geopolitics", "US politics and democracy: challenges to global stability", and "cyber security and geopolitics" as detailed in the Appendix of: Ibid 31-45.*

Further cases explored and scenarios already developed could be adopted by financial services supervisors to support the development of dedicated regulatory prescribed scenarios to test geopolitical risks. Different geopolitical risk scenarios have been developed by the Cambridge Centre for Risk Studies, with industry collaborators from the insurance industry primarily, considering the role of that sector in providing cover for certain of those risks. Despite the fact that they might be outdated, not remaining relevant anymore, these scenarios are quite comprehensive, and constitute a good starting point for the development of regulatory stress tests for financial services. The first example is the hypothetical scenario assuming an armed conflict between China and Japan over disputed islands in the East China Sea.⁶⁰ That scenario comprises seven phases, categorising the anticipated consequences into economic, political, and social categories.⁶¹ This was further extended under a different China-Japan conflict scenario where military strikes are carried out without any allies becoming involved.⁶² Three variants of that scenario are examined based on the assumed duration, starting with the standard scenario, lasting 9 months, followed by the scenario lasting 2 years, with the extended conflict scenario of 5 years.⁶³ A particularly helpful scenario for insurance undertakings, as it provides indicative losses across different types of risk, covering underwriting, operational, and market exposures.⁶⁴ The structural modelling methodology presented, defines the scenario and estimates the losses, as well as the macroeconomic modelling and impact assessment, allows the development of a coherent scenario, and could be transferred across other scenarios as a prudent approach to stress testing geopolitical risks.⁶⁵ Another example in the area of political volatility and uncertainty, is the global social unrest scenario, based on the uprising of the millennial generation.⁶⁶ It is based on four levels of social unrest, “social unrest”, “civil disorder”, “mob rule”, and “rebellion”.⁶⁷ However, it shares many common characteristics with the China-Japan conflict in terms of its likelihood (a 1-in-100-year event return period), modelling methodology, and scenario variants for its application and examination.⁶⁸ Lloyd’s of London in partnership with the Centre for Risk Studies expanded those scenarios, identifying ten core geopolitical themes which will shape the geopolitical risk landscape over the next decade.⁶⁹ These are the (1) impact of Covid-19 on geopolitical relationships, (2) greater power rivalry, (3) localism vs. globalism, (4) multinationals at risk, (5) terrorism and armed conflict, (6) cyber, technology, and the new tech arms race, (7) social discontent and local conflicts, (8) political change, (9) politics vs. economics of climate change, and (10) migration and demographics.⁷⁰

60 *The return period of that hypothetical scenario is assumed to be a 1-in-100-year event. As supporting background, a catalogue of historical events is reviewed and analysed, also helpful to generate other scenarios covering those risks.* Joshua Wallace et al. ‘Profile of a Macro-Catastrophe Threat Type: Geopolitical Conflict’ (2013) *Cambridge Centre for Risk Studies Working Paper Series*, Paper 201308.02, Cambridge Risk Framework, Centre for Risk Studies, University of Cambridge.

61 *The seven phases are: 1) escalating tensions, 2) diplomacy and preparation for war – 8 days, 3) acts of war – 11 days, 4) collateral damage – 12 days, 5) escalation of war – 12 days, 6) global intervention – 25 days, 7) aftermath.* Ibid 43–8.

62 Gary Bowman et al. ‘Stress Test Scenario: China-Japan Geopolitical Conflict’ (2014) *Cambridge Risk Framework series*, Centre for Risk Studies, University of Cambridge.

63 *For each scenario variant, there are differences in the associated implications and assumed quantifiable impact, such as the monetary value of insured losses and the macroeconomic factors.* Ibid 4.

64 Ibid 5.

65 *In particular the scenario definition which covers the timeline, footprint, sectoral impact, and contagion mechanisms, and then the loss estimation, by category and risks.* Ibid 9.

66 Gary Bowman et al. ‘Stress Test Scenario: Millennial Uprising Social Unrest Scenario’ (2014) *Cambridge Risk Framework series*, Centre for Risk Studies, University of Cambridge.

67 Ibid 18.

68 *It has six phases: 1) underlying tensions, 2) trigger, 3) escalation and disruption, 4) violent run, 5) dispersal, 6) end.* Ibid 18–9.

69 Lloyd’s of London ‘Shifting powers: meeting the challenges of the geopolitical landscape’ (2021) Lloyd’s emerging risk report 2021, Lloyd’s Futureset, Lloyd’s of London in association with the Centre for Risk Studies, University of Cambridge Judge Business School.

70 Ibid 06.

High-level scenarios for each of the ten core geopolitical themes were identified, covering different risks, noting their probability and impact.⁷¹ Scenario planning is regarded as the key methodological approach to understand more about those risks, explore their impact, and quantify it, for insurers in this case, given their direct exposure.⁷² Cybersecurity and cyber risks are highlighted within geopolitical risks, and that is why physical cyber scenarios are developed.⁷³ These are the asymmetric attack exchange, with a ransomware on critical infrastructure (scenario #1), the offensive cyber retaliation, with a cyber-physical sabotage of critical infrastructure (scenario #2), and the symmetric attack exchange (scenario #3).⁷⁴ Similar scenarios are included in the Lloyd's RDS annual exercise, covering cyber risks, and political risks.⁷⁵ Those scenarios are essential for insurers considering their exposure to the pure risks, providing the underwriting against war⁷⁶ and nuclear, chemical, biological, and radiological (NCBR) classes.⁷⁷

Beyond the insurance-focused scenarios from Lloyd's and the RDS exercise, there is no regulatory prescribed stress test by the Bank of England and the PRA for banks, asset managers, and the financial services industry as a whole. However, at EU level, the ECB is conducting a geopolitical reverse stress test this year, assessing 110 directly supervised banks, planning to communicate the key findings in aggregate format in the summer of 2026.⁷⁸ This exercise aims to evaluate how geopolitical risks impact banks' business models, and how stress-testing capabilities reflect those risks.⁷⁹ The geopolitical reverse stress tests will become part of the 2026 ICAAP exercise of the participating banking institutions, feeding also into the SREP.⁸⁰ It is linked to the previous macroeconomic scenario of the ESRB/EBA/ECB as part of the 2025 exercise, where it was assumed that the aggravation of geopolitical tensions led to depressed global growth.⁸¹ Highlighting the adverse implications of geopolitical risks, in terms of magnitude and manifestation, via economic shocks and financial market disruption, as well as being detrimental to digital and operational resilience.⁸² This builds on the ECB's supervisory priority one to strengthen

71 Three scenarios are documented for each theme driven by the key risk capturing, covering the following: (1) inflation, (2) trade sanctions, (3) trade dispute, (4) sovereign debt crisis, (5) supply chain disruption, (6) cyber attack, (7) social unrest, (8) democratic backsliding, (9) tariff war, (10) migration crisis. Ibid 07-17.

72 Ibid 20.

73 Lloyd's of London 'Shifting powers: physical cyber risk in a changing geopolitical landscape' (2022) Lloyd's Futureset, Lloyd's of London in association with the Centre for Risk Studies, University of Cambridge Judge Business School.

74 According to the Lloyd's specifications, scenario #1 assumes a rudimentary cyber power sponsors non-state ransomware attacks by cybercriminals targeting another nation's critical infrastructure, with scenario #2 capturing regional tensions over nuclear development programmes spillover into cyber-physical sabotage of critical infrastructure, and scenario #3 based on two sophisticated cyber powers engaging in an escalation of destructive cyber attacks on critical infrastructure. Ibid 03, 13-25.

75 Lloyd's (n 14) 39-51, 60.

76 Based on the Lloyd's bulletin Y4972 the perils included are war, civil war, invasion, act of foreign enemies, hostilities, rebellion, revolution, insurrection, military or usurped power, but not terrorism or strikes, riots and civil commotion (SRCC). Tom Bolt 'War and NCBR Exposures' (2016) Market Bulletin Y4972, Lloyd's of London.

77 Lloyd's of London 'War & NCBR 2025' (2024) Guidance and Instructions, July 2024, EM 504 V1.0, Lloyd's of London.

78 ECB (n 15).

79 Ibid.

80 Ibid.

81 European Systemic Risk Board 'Macro-financial scenario for the 2025 EU-wide banking sector stress test' (2025) 28 February 2025, ESRB 2-3.

82 European Central Bank 'Interview with Sharon Donnery, Member of the Supervisory Board of the ECB, conducted by Sarah Collins on 29 January 2026' (2026) 9 February 2026, Interview with the Business Post, ECB. <<https://www.bankingsupervision.europa.eu/press/interviews/date/2026/html/ssm.in260209~1669236a42.en.html>> accessed 10 February 2026.

resilience to immediate macro-financial threats and severe geopolitical shocks for both 2024-26⁸³ and 2025-27 periods⁸⁴. As part of the efforts to establish the framework for assessing geopolitical risk, cognisant of its idiosyncrasies and characteristics.⁸⁵ In that direction, and looking at the European banking sector, the joint ESRB/ECB study of 2026 documented a comprehensive analysis of geopolitical and geoeconomic risks, capturing their relationship with financial stability and uncertainty, providing an assessment toolkit and framework.⁸⁶

The exact scenario specification has not been made available yet, but once this is released, it could be adapted and adopted by UK prudential authorities. Perhaps the next exploratory scenario of the Bank of England in 2027 and first exercise after updating its framework covers geopolitical risks and replicates ECB's geopolitical RST of 2026.⁸⁷ In addition to the ECB 2026 geopolitical RST, the Reserve Bank of New Zealand included a geopolitical-related economic stress in its 2025 solvency stress test exercise.⁸⁸ This bank regulatory stress test was based on the International Monetary Fund geoeconomic fragmentation.⁸⁹ These are additional examples which could be utilised by the Bank of England and the PRA in developing the geopolitical stress test for UK financial institutions.

There are different factors interconnected to geopolitical risks which should be considered when examining stress and scenario tests for financial services.⁹⁰ This is linked to the transmission channels of geopolitical tensions, capturing the macro-financial impact on banks after it cascaded into the financial market, real economy, and safety and security channels.⁹¹ Geopolitical risk affects financial stability via different transmission channels, and could adversely impact the global economy from the real and financial side, impacting both non-banks and banks, though vulnerabilities are conditional on the actual bank-specific exposure.⁹² Therefore, it is important to factor these transmission channels and risks for stress and scenarios, considering the international financial architecture

83 *Capturing shortcomings in credit risk and counterparty credit risk management frameworks, as well as shortcomings in asset and liability management frameworks for liquidity and funding risk, and interest rate risk on the banking book (IRRBB)*. European Central Bank 'ECB Banking Supervision: SSM supervisory priorities for 2024-2026' (2023) Banking Supervision, ECB 3.

84 *To address deficiencies in credit risk management frameworks, as well as deficiencies in operational resilience frameworks regarding IT outsourcing and IT security with cyber risks, under operational risk. In relation to multiple risk categories, the focus is placed on incorporating the management of geopolitical risks in supervisory priorities*. European Central Bank 'Supervisory priorities 2025-276' (2024) Banking Supervision, ECB 3.

85 *The key characteristics of geopolitical risk drivers are low predictability, high interdependencies, difficult quantification, high ambiguity, and high range of outcomes*. Claudia Buch 'Global rifts and financial shifts: supervising banks in an era of geopolitical instability' (2024) Keynote speech by Claudia Buch, Chair of the Supervisory Board of the ECB, at the eighth European Systemic Risk Board (ESRB) annual conference on "New Frontiers in Macroprudential Policy" Frankfurt am Main, 26 September 2024, ECB Table 1.

86 European Systemic Risk Board 'Financial stability risks from geoeconomic fragmentation' (2026) January 2026, ECB/ESRB workstream on financial stability risks from geoeconomic fragmentation.

87 Bank of England (n 7); Benjamin (n 8).

88 Ken Nicholls et al. 'Assessing banks' resilience to geopolitical risks: Results from the 2025 Solvency Stress Test' (2025) 3 November 2025, Reserve Bank of New Zealand Bulletin Vol 88, No 11 November 2025 7.

89 *Different scenarios are also captured in the IMF discussion note*. Shekhar Aiyar et al. 'Geoeconomic Fragmentation and the Future of Multilateralism' (2023) IMF Staff Discussion Notes, SDN/2023/001, Research Department and Strategy, Policy, & Review Department, IMF.

90 *According to Airmic's guide, these are political instability (at regional, national, and state level), the regulatory environment, government relations, economic conditions, corruption and bribery, geopolitical events (both regional and global), social and cultural factors*. Airmic (n 53) 5.

91 *Please see the ECB's diagram for further detail on the mapping and transmission channels for banks' key risks implications, covering*. European Central Bank 'Addressing the impact of geopolitical risk' (2026) ECB. < <https://www.bankingsupervision.europa.eu/framework/priorities/shared/geopoliticalshock.en.pdf> > accessed 10 February 2026; also explained and graphically depicted in Table 2 of: Buch (n 85).

92 Daniel Dieckelmann et al. 'Turbulent times: geopolitical risk and its impact on euro area financial stability' (2024) Financial Stability Review, May 2024, ECB Figure A.1.

with the global financial safety net in a geopolitically fragmented world.⁹³ This is irrespective of whether geopolitics are perceived as a risk, a theme, or collection of events, since the most important angle is their identification and understanding of their dynamics, in terms of how these are translated into quantifiable (and modelled) impact for financial services.⁹⁴

After describing certain existing geopolitical scenarios with their characteristics, as above, the proposed approach for UK financial services stress testing should be discussed. Regulators should either select an already developed scenario from an existing list, such as the ECB's 2026 RST, with modifications, or develop their own geopolitical stress test. Considering the high level of uncertainty with low predictability⁹⁵, under both options the scenario is merely a tool to provide a set of hypothetical conditions which could be translated into risks and impact. Geopolitical events could emerge unexpectedly, with a rapid escalation, thus the timeframe is key, with this covered under different potential scenarios, since these could vary.⁹⁶ Therefore, linked to those characteristics describing political volatility, it is important to introduce phases, with clear timelines, duration of the event and the velocity of escalation. This element should describe different scenarios, covering plausible outcomes, such as "likely" and "possible" scenarios, but also "remote" and "unlikely" scenarios, towards a reverse stress test territory in relation to likelihood and probability of occurrence. A range of outcomes under different scenarios adds to the robustness of the geopolitical stress test. Multiple scenarios are needed, since one scenario is simply not enough to adequately cover geopolitical risks.⁹⁷ Then, in terms of the quantification and interdependencies that is where this stress becomes more challenging. Recognising that it is difficult to quantify and model accurately due to underlying uncertainty,⁹⁸ a systematic approach to assessment is necessary. This involves identifying the risk transmission channels to understand the correlations, contagion, and amplification effects. Starting with a qualitative risk assessment to map the direct risks impacted, followed by the indirect risks and the corresponding risk drivers, supports the background preparation for the quantitative risk assessment. This systematic approach allows to adequately capture the risk implications, which should be mapped against the key risks of the financial institution within the scope of the geopolitical stress. For instance, showing how the geopolitical shock and exact scenario event impact the financial (market, credit, liquidity) and non-financial (operational, strategic, reputational) risks of a bank, explaining the magnitude and direction of implications (negative vs. positive).⁹⁹ This enhanced qualitative and quantitative risk assessment should be guided by financial services regulators as a starting point, providing guidance, and to ensure consistency of the exercise, as top-down. However, the bottom-up component is equally important and enriches the exercise, since each financial institution performing the geopolitical stress test should explain the underpinning risk thinking for the mapping and risk considerations. Therefore, combining the top-down and bottom-up views in the geopolitical stress testing is essential, as it assists with the decryption of the associated risks. Especially considering the complex, interconnected, and interdependent relationship between

93 Anusha Chari et al. 'Geopolitical tensions and international financial fragmentation: Evidence and Implications' (2025) General Reports on the World Economy 28, International Center for Monetary and Banking Studies (ICMB) and Centre for Economic Policy Research (CEPR) 101-21.

94 Hoe-Yeong Loke and Gavin Hayes (n 54) 7.

95 Buch (n 85).

96 Ibid.

97 Til Schuermann 'Mix Me the Perfect Stress Test' (2026) 2nd February 2026, , Systemic Risk Centre, Finance Markets Group, London School of Economics. <<https://www.systemicrisk.ac.uk/mix-me-perfect-stress-test>> accessed 10 February 2026.

98 Buch (n 85).

99 *Building from ECB's depiction of how geopolitical shocks are transmitted to the macro-financial environment and banks, impacting their risks: credit, liquidity and funding, market, business model, operational, governance.* ECB (n 91).

geopolitical shocks and implications for financial services.¹⁰⁰ This adds a layer of complexity to the modelling and quantification of risks and losses. This exemplifies the role of management actions and risk mitigation which are perhaps more helpful in this supervisory assessment, as opposed to the exact financial impact. The geopolitical stress test for UK financial services is a macroprudential stress, inviting for participation the largest banks, insurers and asset managers, for the top-down approach. But at the same time, it has microprudential foundations, for the bottom-up approach of this stress testing. Combining the internal, own scenarios, and supervisory model of with the regulatory prescribed stress test.¹⁰¹ Cognisant of the ambiguity of geopolitical risks and scenarios,¹⁰² the assumptions should be clear and sufficient for the quantification. However, that might not be sufficient for their quantification. An alternative could be using existing stress tests, part of the ICAAP, the ORSA, or the ICARA respectively, as a proxy for the anticipated implications. Meaning that a recession macroeconomic stress, or a supply chain disruption stress already considered as part of internal risk assessment and prudential requirements, could be utilised in the modelling geopolitical scenarios. Effectively, linking geopolitical scenarios with outcomes already assessed and examined, since financial institutions are familiar with the impact and management responses. Because as geopolitical scenarios touch different risks, and in a way threaten financial resilience but also digital and operational resilience, combining existing stresses might be prudent. For instance, looking at the aggregation of impact from a financial risk stress (e.g., inflation stress) and an operational risk stress (e.g., cyber-attack), either happening at the same time or sequentially, with an accumulation of losses. This “contagion” set-up with stresses being overlayed could be considered as a reliable approximation of the geopolitical stress impact. This sequential approach could be linked to the phases of the geopolitical stress. For example, the initial impact could be an economic downturn impacting investment performance, followed by underwriting losses at the escalation phase of the geopolitical shock, with increased cybersecurity vulnerabilities in the last phase. This recommendation has been inspired by the PRA’s 2019 Insurance Stress Test (IST) exercise for the largest general and life insurers respectively, where scenario combinations are examined, in isolation and superimposed.¹⁰³ Overlaying regulatory stress tests covering different risks as in the PRA’s 2019 IST¹⁰⁴ should be considered in defining the regulatory prescribed geopolitical stress test. The sequential set-up with the different stages replicates PRA’s IST for life insurers, the LIST 2022.¹⁰⁵ Combining already examined or known stress tests might not be the best solution, since this raises questions about the plausibility of the geopolitical stress tests, though could provide helpful insights. At least, when comparing the results, they could be used as a benchmark, with the indicative geopolitical stress test output presented relative to it. This dynamic setup of the geopolitical stress test incorporates the logic of the PRA’s

100 Buch (n 85).

101 *In a way what is described in option 4 under options for the way forward of EU stress tests. Plus, partially aligned to recommendation #8 about running top-down supervisory models under static and dynamic approaches.* Fernando de la Mora ‘EU Stress Tests: How can they be improved?’ (2026) 6th February 2026, Systemic Risk Centre, Finance Markets Group, London School of Economics Fig 5.

102 Buch (n 85).

103 Prudential Regulation Authority ‘General Insurance Stress Test 2019’ (2019) Scenario Specification, Guidelines and Instructions, 18 June 2019, PRA, Bank of England; Prudential Regulation Authority ‘Life Insurance Stress Test 2019’ (2019) Scenario Specification, Guidelines and Instructions, 18 June 2019, PRA, Bank of England.

104 *In the LIST 2019, scenario A is the deterioration in the economic environment, which is coupled with 3 life insurance specific scenarios (one each) as scenario B. Ibid 4; In the GIST 2019, scenario A is the deterioration in the economic environment (the same as in the LIST 2019), accompanied by four liability shock scenarios, as each covering a natural catastrophe occurring against the backdrop of deteriorating economic conditions, as scenario B. Ibid 4.*

105 *PRA’s LIST 2022 comprises four stages: Stage 1 – initial market shock, Stage 2 – developing market shock, Stage 3 – protracted market shock, Stage 4 – protracted market and longevity shock.* Prudential Regulation Authority ‘Life Insurance Stress Test 2022’ (2022) Scenario Specification, Guidelines and Instructions, 4 May 2022, PRA, Bank of England 6.

DyGIST.¹⁰⁶ The live exercise component of the DyGIST evaluates participating insurers against a sequential set of adverse events of a three-week period.¹⁰⁷ Once the exact specifications of the DyGIST are published in 2026, more insights could be extracted from its dynamic components.¹⁰⁸

03

Stress-Testing Frameworks to Address Political Volatility

Geopolitical risks are not new but as highlighted by regulatory authorities and bodies globally (i.e., IMF) they are exacerbated and remain a key priority. This confirms the need to develop and conduct a geopolitical risk stress test for UK financial services. The Bank of England and the PRA have different options to select from regarding geopolitical scenarios. Perhaps waiting for the ECB's 2026 RST, or even looking at other regulators across the globe (i.e., Reserve Bank of New Zealand as mentioned above), and collaborating with Lloyd's of London to capture the insurance risk angle. Regulatory collaboration is key, on the basis of the idiosyncrasies of geopolitical risk, and consequently that stress test. Ideally that could be at global level, with convergence on the scenario definition and themes, but UK market specific parameterisation.¹⁰⁹ Targeting consistency between geopolitical stress testing approaches and objectives.¹¹⁰

The geopolitical stress test of the Bank of England and the PRA should be embedded in the exploratory scenarios category becoming part of its stress testing framework.¹¹¹ In terms of its set-up, it should be conducted as a hybrid macroprudential top-down exercise, complemented by the bottom-up granularity with microprudential foundations for the risks and modelling at financial entity level.¹¹² This regulatory prescribed stress test should cover a range of geopolitical shocks, perhaps three scenarios,¹¹³ as a "baseline", an "adverse",¹¹⁴ and a "reverse stress test",¹¹⁵ like the ECB's exercise, to differentiate the likelihood and return period, capturing multiple options and future pathways.

106 Prudential Regulation Authority 'Prudential Regulation Authority (PRA) statement on the design of the dynamic general insurance stress test (DyGIST) 2025' (2024) 15 July 2024, PRA.

107 Ibid.

108 Prudential Regulation Authority 'Update on the 2026 Dynamic General Insurance Stress Test (DyGIST)' (2025) 18 July 2025, PRA. <<https://www.bankofengland.co.uk/prudential-regulation/publication/2025/july/update-on-2026-dygist>> accessed 10 February 2026.

109 *As per recommendation #16, but applied within the geopolitical regulatory stress test context.* de la Mora (n 101).

110 Patrizia Baudino et al. 'Stress-testing banks – a comparative analysis' (2018) FSI Insights on policy implementation, November 2018, Financial Stability Institute, Bank for International Settlements 23 par. 76.

111 *Perhaps named as the "Geopolitical Risk Exploratory Scenario", the "GRES" of 2027.* Bank of England (n 7); Benjamin (n 8).

112 *Stress tests are described as "baseline" or "adverse" from a severity perspective, "macroprudential" vs. "microprudential" from a policy objective, and "top-down" vs. "bottom-up" based on whether the regulators or the entity performing them, and "dynamic" vs. "static" regarding the balance sheet projection.* Baudino et al. (n 110) 6-7 par. 14.

113 *As in the stress tests part of the Cambridge Risk Framework, published by Centre for Risk Studies, including three scenarios, as explained in section 3 above.*

114 Baudino et al. (n 110) 6.

115 Ibid 9 par. 26.

Stress testing frameworks of financial institutions should be updated to explain how geopolitical risks are considered within their adjusted modelling approach. That should be reflected in the ICAAP, the ORSA, and the ICARA processes respectively, showing qualitatively and quantitatively their examination of geopolitical risks. Testing for geopolitical risks should be incorporated into business-as-usual scenarios, and in terms of severity considered as a standardised reverse stress test.¹¹⁶ A risk materiality assessment should accompany stress tests for geopolitical shocks and political volatility implications, in alignment to stress testing principles.¹¹⁷ These stress tests should be severe enough to provide meaningful risk management insights.¹¹⁸ The challenges associated with geopolitical risks will lead to advances to stress testing techniques. These should become part of the wider enterprise risk management framework, within quantitative risk management.¹¹⁹ For smaller financial institutions, not participating in regulatory-led stress tests, a proportionate and pragmatic approach is recommended, incorporating geopolitical risks as part of their internal scenario analysis and risk assessments.

Stress testing for geopolitical risks triggers the revision of scenario thinking, posing the question whether within prudential supervision we move from the “severe but plausible” to “unknown and possible” stresses. It would be interesting to extend these recommendations for the UK supervisory regime once the ECB 2026 RST is completed, while also looking at other regulatory-led exercises, such as the PRA’s DyGIST. Then, focusing on exact dynamics of the geopolitical risk stress test in relation to modelling using geopolitical risk indicators¹²⁰ via a dynamic balance sheet approach.¹²¹ In terms of the quantification, expanding this to factor resilience tools and measures.¹²²

116 Basel Committee on Banking Supervision ‘Principles for sound stress testing practices and supervision’ (2009) May 2009, BCBS, Bank for International Settlements 14-5.

117 *Principle #4 stipulating that ‘stress testing frameworks should capture material and relevant risks and apply stresses that are sufficiently severe’*: Basel Committee on Banking Supervision ‘Stress testing principles’ (2018) October 2018, BCBS, Bank for International Settlements 6.

118 *Principles #3 and #4*. Ibid, 5-6.

119 *For measurement and management, as in Insurance Core Principle (ICP) #16*. International Association of Insurance Supervisors ‘Insurance Core Principles and Common Framework for the Supervision of Internationally Active Insurance Groups’ (2024) IAIS ICPs and ComFrame, December 2024, IAIS 191 par. 16.2.

120 Caldara and Iacoviello (n 44) 1223.

121 Baudino et al. (n 110) 6.

122 *Referring to the contingent measures of*: Enrico Perotti ‘Resilience as a Guide for Regulatory Reform’ (2026) 28th January 2026, Systemic Risk Centre, Finance Markets Group, London School of Economics; Enrico Perotti ‘Financial resilience as flood containment’ (2024) *CEPR Policy insight* 136, December 2024, Centre for Economic Policy Research 1.

3.3
Academic Article

From Passive Financial Monitoring to Intrusive Supervisory Engagement: A Case Study

Christopher P. Buttigieg and Daphne Micallef



Authors' Bios



Prof. Buttigieg has over 25 years of experience in financial regulation and supervision. He is the Chief Officer Supervision at the Malta Financial Services Authority (MFSA), where he oversees the Authority's supervisory and regulatory strategy across all sectors. He chairs the MFSA's Regulatory and AML/CFT Committees and is a member of its Executive and Risk Committees. Between 2020 and 2021, he served as the MFSA's Interim CEO.

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Abstract

In the wake of the pandemic, many financial firms rushed to change their business strategies, at times exposing deep structural weaknesses. This article examines an insurance company that attempted a change in business model and growth without the necessary governance and competence. The study details how supervisors shifted from passive monitoring to intrusive engagement, ultimately halting new business to force a rebuild of internal controls. This study bridges the gap between abstract theory of regulation and the applied day-to-day mechanics and challenges of supervising the implementation of regulation in practice to achieve the desired consumer protection and financial system integrity outcomes. It reaffirms that where critical situations arise a financial supervisor must quickly shift supervisory approach from a passive monitor to intrusive supervisory engagement.

Keywords: Governance, Intrusive Supervision, MFSA, Regulation, Solvency II, Supervision,

Disclosure of Interest: The authors are officials of the Malta Financial Services Authority with respect to which the mentioned case study relates.

Use of Generative AI: The authors used Gemini 3 for language refinement and to prepare diagrams.

From Passive Financial Monitoring to Intrusive Supervisory Engagement: A Case Study

Introduction

In the wake of the global pandemic, the insurance and financial services sectors faced unprecedented pressures, forcing many firms to reconsider business strategies rapidly.¹ However, such shifts at times expose underlying structural weaknesses. This article examines a specific case of an insurance undertaking (“the company” or “the firm”) that attempted a radical business plan modification without the requisite infrastructure. The subsequent intervention by the Malta Financial Services Authority (MFSA), serves as an example of how in such circumstances financial supervisors shift from a routine passive approach to intrusive and outcomes focused supervision.² The objective of this analysis is to evaluate how targeted supervisory intervention can remediate systemic governance failures. By examining the interplay between identified deficiencies, ranging from weak governance structures and lack of independent oversight to capital adequacy, and the MFSA’s escalating response, this study reaffirms that where critical situations arise a financial supervisor must quickly shift supervisory approach from a passive monitor to intrusive supervisory engagement.

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- 1 Buttigieg, C. P., Sapiano, G., Consiglio, J., & Brunelli Zimmermann, B. (2024). COVID-19 Pandemic: lessons from the European system of financial supervision. *European Law Review*, 49, 338-356.
 - 2 Buttigieg, Christopher P., Effectiveness of Financial Supervision (May 05, 2024). *Times of Malta*, 26 May 2024, Available at SSRN: <https://ssrn.com/abstract=4850678> or <http://dx.doi.org/10.2139/ssrn.4850678> accessed 24.12.2025.

This case concerns the company's swift strategic reorientation, wherein the entity attempted to mitigate pandemic-induced losses by expanding into specialised business lines, such as the delegation of underwriting authority³, without the requisite technical competencies, operational infrastructure and robust product oversight and governance frameworks. This strategic misalignment was further exacerbated by a manifest failure in sound and prudent management and a dysfunctional risk management apparatus. Crucially, these deficiencies were anchored in a structural conflict of interest, which resulted from the concentration of power within a Chairman who simultaneously held executive powers and was also the ultimate beneficial owner (UBO). This governance arrangement effectively reduced the Board's capacity for independent challenge, facilitating the adoption of strategic decisions that significantly amplified the firm's risk exposure without the implementation of commensurate mitigating controls.

These deficiencies were not isolated operational gaps but were indicative of serious systemic institutional weaknesses. Indeed, the firm had a weak compliance function and other key and critical functions mandated under the Solvency II (SIID) Directive.⁴ In addition, operationally, the firm was compromised by acute 'key person' risk within the claims department, a consequence of high staff attrition that threatened the integrity of the firm's institutional memory. Furthermore, the firm's approach to capital adequacy proved fundamentally flawed, with persistent operating losses being superficially mitigated by shareholders injecting capital through opaque intercompany loan structures rather than through high-quality capital instruments. The central argument of this article is that intrusive supervision, including an MFSA's supervisory expectation to cease new business activities pending full remediation, proved to be an effective mechanism to address the weaknesses within this firm without resorting to enforcement action.

Drawing on the authors' forty years of collective experience in financial supervision and benefiting from direct exposure to this particular case, this article analyses the application of intrusive supervision to resolve critical situations. It first diagnoses the governance failure, where a rushed business decision exposed structural conflicts and a weak compliance culture. It then details the regulatory intervention, specifically the use of a supervisory expectation to halt new business and rebuild internal controls. Finally, the study explores the verification phase, showing how continuous oversight ensures that proposed changes are implemented in practice and result in genuine operational stability. Ultimately, this case demonstrates that financial supervision requires the capacity to identify institutional vulnerabilities and the courage to intervene decisively⁵, ensuring that proper governance and internal controls are reflected in operational reality rather than just formalistic documentation.

This article draws from a series of lectures delivered by the authors within the framework of the Postgraduate Diploma in Financial Regulation and Compliance at the University of Malta.⁶ It is designed to provide readers, specifically students, with an empirical case study that bridges the gap between theoretical frameworks

3 Delegation of underwriting (often called Delegated Authority or "giving the pen") is an arrangement where an insurance company (the carrier) provides, a third party who is a specialised type of insurance intermediary, with underwriting authority and the authority to manage claims. The principal and the insurance intermediary enter into an agreement referred to as the binder agreement which defines the authority limits delegated to the insurance intermediary. The said intermediary can accept/refuse a risk on behalf of the insurer, issue policy documents, collect premiums and handle claims. They can also be co-manufacturers of insurance products.

4 Directive 2009/138/EC of the European Parliament and of the Council of 25 November 2009 on the taking-up and pursuit of the business of Insurance and Reinsurance (Solvency II) (recast) (Text with EEA relevance).

5 Buttigieg, Christopher P., *The Nature and Art of Financial Supervision: Reflections on a 25-Year Journey* (July 29, 2025). Available at SSRN: <https://ssrn.com/abstract=5585470> or <http://dx.doi.org/10.2139/ssrn.5585470> accessed 24.12.2025.

6 Postgraduate Diploma in Financial Regulation and Compliance - L-Università ta' Malta

and the practical execution of supervisory mandates. By analysing the complex challenges faced by the MFSA with respect to this case, this study offers a nuanced exploration into the nature and art of financial supervision. Ultimately, it underscores the necessity of proactive and decisive intervention as a fundamental safeguard to prevent institutional failure and mitigate the risks of consumer detriment and market malpractice.

01

The Anatomy of Governance Failure

Prior to the global pandemic, the entity was categorised as a small insurance undertaking (below ten million of annual written premiums) and classified as ‘low impact’ under the MFSA’s risk-based supervisory framework⁷. This classification resulted in a low intensity level of supervisory engagement, based on the assumption that the firm’s activities posed minimal risk to the financial system. However, the onset of Covid-19 acted as a catalyst for rapid financial deterioration, as the entity’s inability to absorb pandemic-related shocks brought about a significant decline in its solvency position and operational stability. This financial erosion necessitated an immediate upward revision of the firm’s risk rating, triggering an automatic escalation in supervisory intensity. Consequently, the MFSA was forced to step up from a routine, passive monitoring based supervisory approach to an intrusive interventionist model to address the growing threats to the firm’s viability.⁸

Upping the level of intensity of supervisory engagement on the firm exposed a ‘paper-only’ compliance culture⁹ where the company’s Board of Directors functioned as a mere formality, devoid of the substantive oversight required of regulated entities. In this regard, it became evident that Board deliberations lacked the characteristic of sound and prudent management. In fact, the board minutes revealed a persistent absence of critical inquiry, with meetings characterised by a brevity that did not include robust executive challenge. This leadership vacuum facilitated the ratification of high-risk strategic expansions without the necessary prudential safeguards, such as a comprehensive business continuity plan (BCP)¹⁰, thereby leaving the institution acutely exposed to operational weaknesses. Furthermore, the supervisory engagement unmasked a fundamental erosion of accountability,

7 Malta Financial Services Authority, *Risk Based Supervision – Strengthening Our Supervisory Approach* (2020) <https://www.mfsa.mt/wp-content/uploads/2020/06/Risk-Based-Supervision-Stengthening-Our-Supervisory-Approach.pdf>, accessed 23 December 2025.

8 Since the firm’s licensing preceded the pandemic by over a decade, this case study suggests that there may have been opportunities to further strengthen supervisory engagement. Certain governance weaknesses had been evolving over time. A more proactive escalation of supervisory measures might have mitigated these issues before they were compounded by the challenges of COVID-19. Nonetheless, the firm was categorised as low impact, with an equivalent level of supervisory engagement in line with the MFSA’s risk-based approach to supervision.

9 In the financial sectors, a “paper-only” compliance culture (also known as a “tick box” or “check box” culture) describes an organisation that prioritises the appearance of following rules over the actual intent of those rules. In such a culture, compliance is treated as a bureaucratic obstacle to be cleared rather than a set of ethical principles that guide business decisions.

10 Delegated Regulation (EU) 2015/35, article 258 *inter alia* requires “an insurance undertaking to implement and maintain a business continuity policy aimed at ensuring, in the case of an interruption to their systems and procedures, the preservation of essential data and functions and the maintenance of insurance and reinsurance activities, or, where that is not possible, the timely recovery of such data and functions and the timely resumption of their insurance or reinsurance activities.” A BCP is a proactive strategy designed to ensure that a firm can continue to operate—even at a reduced capacity—during and immediately after a disruption.

exemplified by a total absence of performance appraisals for the Board and its sub-committees¹¹, a deficiency that signalled a broader collapse in the firm's internal governance and self-correction mechanisms.

The supervisory deep dive¹² further exposed a fractured operational core, characterised by substandard data governance and record-keeping frameworks that compromised the integrity of the firm's reporting. This was compounded by inadequate technical provisioning, where the failure to accurately reflect a 'best estimate' of future liabilities left the firm's past exposures dangerously under reserved. Central to this failure was the marginalisation of the Actuarial Function¹³, which had been systematically excluded from the calibration of case reserves and denied the opportunity to align internal methodologies with prevailing market practices.

This operational volatility was exacerbated by chronic staff attrition within the claims and risk management department and a deteriorating financial position marked by recurring, unmitigated expenses. Such personnel turnover was not a peripheral human resources issue, but a systemic threat to solvency. The absence of robust succession planning within the Claims and Risk Management functions signalled a possible breakdown in the System of Governance (SoG)¹⁴. This created an acute risk of institutional memory loss, further worsened by the omission of a business impact analysis (BIA)¹⁵. In addition, without identified recovery time objectives (RTO)¹⁶ or defined critical processes, the firm possessed no credible mechanism for operational resilience. Ultimately, the convergence of the Chairman, Executive, and UBO roles created a governance environment primed for 'groupthink'¹⁷. This effectively neutralised independent oversight, compelling the MFSA to initiate a more granular review of Board competencies¹⁸.

The MFSA's assessment also brought to light prudential deficiencies, specifically a failure to articulate a viable medium-term capital management strategy¹⁹ (as indicated in the introduction to the article, the firm's approach to capital adequacy proved fundamentally flawed, with persistent operating losses being superficially mitigated by shareholders injecting capital through opaque intercompany loan structures rather than through sustainable, high-

11 Directive 2009/138/EC (Solvency II Directive), article 41 *inter alia* requires: ... "all insurance and reinsurance undertakings to have in place an effective system of governance which provides for sound and prudent management of the business. ... The system of governance shall be subject to regular internal review."

12 A supervisory deep dive is an intensive, targeted review into a particular area of a firm's governance or operations. It goes beyond the review of high-level policies, and scrutinises the raw data, individual files, and the actual behaviour of a firm's staff.

13 The Actuarial Function is a critical governance pillar required by regulators (like SII in Europe) to ensure an insurance undertaking remains financially stable. While "actuarial science" is the field of study, the "Actuarial Function" is the official department or role responsible for the company's long-term survival. See Article 48 of Directive 2009/138/EC.

14 Delegated Regulation (EU) 2015/35, Chapter IX, Section 1, Elements of the system of governance.

15 BIA is a core part of business continuity management, a systematic process to determine what happens to the company if a disaster strikes (e.g., a flood at HQ, or a massive server failure).

16 RTO is the maximum amount of time a business process or IT system can be "down" before the consequences become unacceptable to the company.

17 Groupthink is a psychological phenomenon where a group's desire for harmony and "fitting in" becomes so strong that it overrides critical thinking. Instead of evaluating all options, the group rushes to a consensus to avoid conflict. The dangers of groupthink are significant because they can lead to failures in business and government, these may include: [a] suppression of dissent; [b] the illusion of invulnerability; and [c] moral and ethical blindness. Delegated Regulation (EU) 2015/35, article 268 *inter alia* requires functions of an insurance undertaking to act in an objective, fair and independent manner.

18 The assessment of competence in line with the MFSA's fit and proper test is an ongoing test. [GUIDANCE ON THE FITNESS AND PROPERNESS ASSESSMENT APPLIED BY THE AUTHORITY](#)

19 Delegated Regulation (EU) 2015/35, article 297.

quality capital instruments) and a pervasive deficit in the Board's collective technical suitability²⁰. When assessing the Board's activity in practice the MFSA noticed that this exhibited a manifest lack of the specialised expertise essential for navigating the intricacies of the regulatory landscape, ranging from 'General Good' provisions and compliance mandates to insurance accounting and complex actuarial oversight. This intellectual deficit fundamentally impaired the Board's ability to provide the robust critical challenge necessary to hold executive leadership accountable.

This failure was not confined to the boardroom but pervaded all three lines of defence. The first-line Finance and Actuarial functions, alongside the second and third-line Risk, Compliance, and Internal Audit functions, were found to lack the operational independence required to discharge their mandates effectively.²¹ These systemic failures were further ingrained by a severe structural imbalance, a Board two-thirds comprised of executive directors who also held shareholding interests. This configuration enabled unofficial deliberations among the executive quorum, where substantive strategic decisions were formulated in private and presented to the plenary Board solely for perfunctory ratification. Such practices systematically dismantled collective accountability and transparency, reducing formal governance to a ceremonial exercise and reducing the Board's capacity and effectiveness for independent oversight and critical intervention.

The MFSA's review identified material systemic weaknesses within the entity's technical provisioning architecture²², most notably regarding the initial recognition, dynamic surveillance, and iterative recalibration of claims reserves. The underlying reserving methodologies lacked the actuarial robustness essential for sound prudential reporting. Furthermore, a prevalent documentary deficit precluded forensic transparency, effectively neutralising the capacity for independent auditability or substantive critical appraisal by external reviewers. Critical inputs remained devoid of empirical justification and were not subjected to rigorous periodic revision against shifting macroeconomic indicators or emerging loss experience. In aggregate, these failures engendered the estimation of risk, fundamentally compromising the evidentiary reliability of the reserve valuations. This systemic opacity ultimately raised broader concerns regarding the integrity of the firm's financial reporting and the veracity of its stated solvency position.

The transition from identifying these systemic vulnerabilities to actively neutralising them marks the turn from diagnostic oversight to executive action. The following section details how the MFSA deployed supervisory expectations tool (specifically to cease new business activities) to arrest the institutional direction and ensure the strengthening of governance, internal controls and prudential position.

20 Directive 2009/138/EC (Solvency II Directive), article 42, requires insurance undertakings "ensure that all persons who effectively run the undertaking or have other key functions at all times fulfil the following requirements: [a] their professional qualifications, knowledge and experience are adequate to enable sound and prudent management (fit); and [b] they are of good repute and integrity (proper).

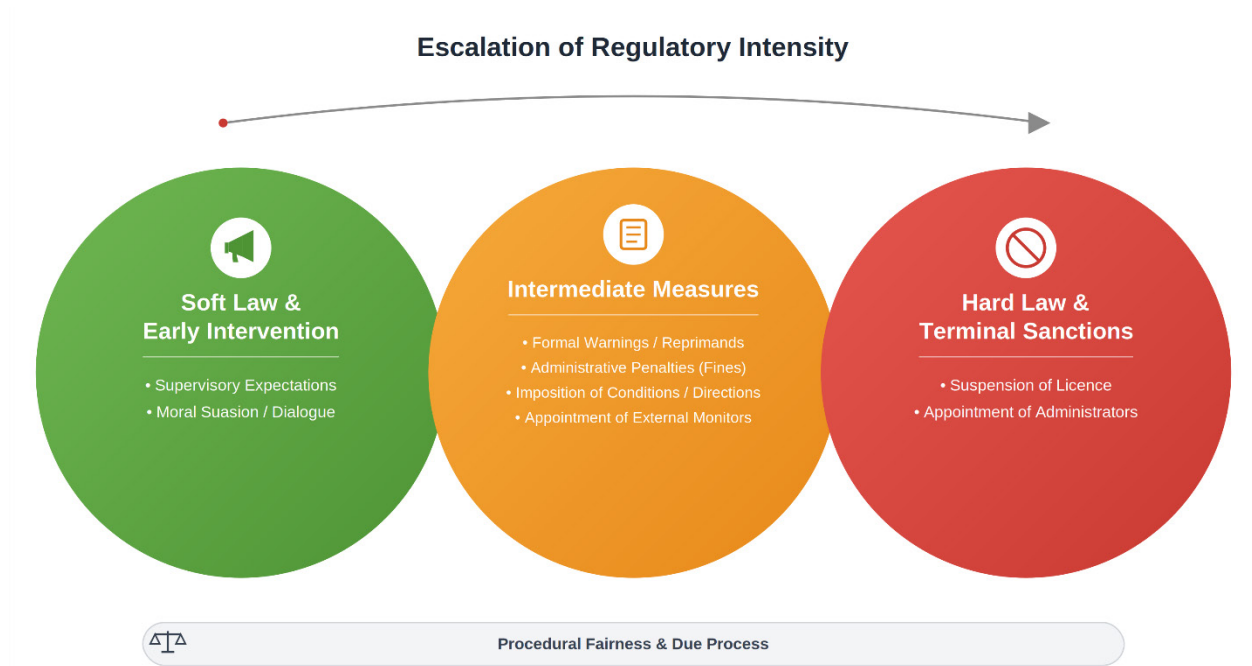
21 Delegated Regulation (EU) 2015/35, article 268.

22 Directive 2009/138/EC (Solvency II Directive), Chapter VI, Section 2, Rules relating to technical provisions.

The Strategy of Intrusive Intervention

Regulatory action operates along a sophisticated range of escalating intensity, anchored at one end by supervisory expectations. This is a soft law mechanism that functions as a form of moral suasion, exerting strategic pressure on a licensed entity to voluntarily remediate deficiencies and align with prudential standards without the immediate trigger of formal enforcement action. The opposite extremity of this scale is occupied by the revocation of authorisation, a terminal enforcement measure that effectively concludes the firm's corporate existence. Between these poles lies a set of hard law interventions, including the imposition of administrative penalties, the suspension of licenses, the removal and replacement of directors, and, in cases of severe insolvency or governance collapse, the appointment of administrators to assume control of the firm.

Diagram – Escalation of Regulatory Intensity²³



²³ This diagram was generated using an AI language model (Gemini 3) based exclusively on the conceptual framework provided by one of the authors.

In light of the systemic vulnerabilities identified during the intrusive engagement, the MFSA deployed a supervisory expectation to halt all new proposed business activities, including the suspension of the proposed new business model which involved delegation of underwriting authority. This compelled the firm to turn its financial and human capital away from expansion and toward the strengthening of its internal control frameworks and capital position. By applying the supervisory expectation, the MFSA ensured the firm's risk profile remained static, providing the necessary window to reconstruct its infrastructure without further endangering policyholder interests. Crucially, while this measure relied on the firm's cooperation, it was underpinned by the implicit threat of possible escalation. Indeed, had the entity failed to adhere to the MFSA's expectations, the Authority would have had to transition to formal supervisory action in the form of a formal directive to the company or enforcement action such as a suspension of licence. Throughout this process, the principles of due process remained paramount, ensuring the firm's right to be heard was respected, thereby maintaining the procedural fairness essential to the integrity of financial regulation.

The intervention followed a multistage trajectory, strategically prioritising institutional stability over immediate commercial expansion. This process was reinforced by a granular review of the Pillar I and Pillar II frameworks of SII, the dual cornerstones of prudential soundness and effective governance for insurance undertakings.²⁴ While Pillar I entailed an assessment of the entity's quantitative requirements, including the calibration of technical provisions and the adequacy of the Solvency Capital Requirement (SCR) and Minimum Capital Requirement (MCR), Pillar II necessitated an evaluation of SoG, which included implementing adequate segregation of duties and the "4-eye principle".

Central to this qualitative review was the Own Risk and Solvency Assessment (ORSA)²⁵ and the integrity of the firm's IT governance. Rather than maintaining a passive reliance on the entity's self-reported data, the MFSA adopted a cross-functional, multidisciplinary approach. By integrating the expertise of actuarial and conduct specialists, the MFSA was able to substantively challenge the firm's reserving methodologies and the recoverability of its assets. This synthetic analysis of quantitative and qualitative streams, specifically the cross-referencing of quarterly management accounts and quantitative reporting templates against the findings of MFSA's onsite inspections, was essential. It enabled the identification of significant valuation discrepancies, most notably regarding the treatment of intercompany loans, which had previously obscured the firm's true financial position.

While the supervisory strategy of intrusive intervention served to prevent further risk accumulation and neutralise immediate threats to solvency, its ultimate purpose was that of transitioning into a secondary phase of MFSA's oversight of remediation. This transition ensured that the "supervisory shock" resulting from the supervisory expectation to cease all new business activities, was converted into the appropriate governance culture and compliance with prudential requirements. As a result, setting the stage for the eventual verification by the MFSA of the firm's remediation and implementation of the Authority's expectations.

24 Directive 2009/138/EC (Solvency II Directive).

25 Directive 2009/138/EC (Solvency II Directive), article 45.

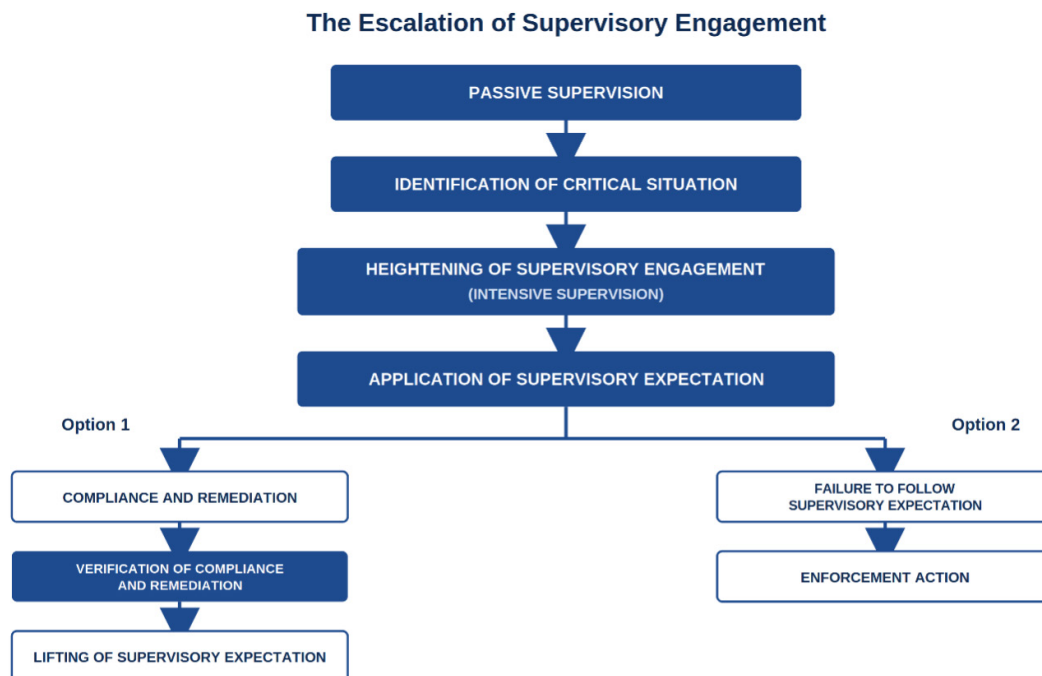
03

Verification of Remediation

The success of this supervisory engagement in achieving remediation was based on its focus on the firm's strengthening of the overall governance and prudential situation. Two years following the initial supervisory engagement, the MFSA conducted a secondary, on-site inspection to verify practical implementation of the firm's remediation plan. This follow-up engagement moved beyond mere policy review to evaluate the Board's capacity to manage the institution in a sound and prudent manner. The scope was purposefully broad, encompassing the operational efficacy of the Compliance and Risk Management functions and the robustness of the internal control environment.

Furthermore, the MFSA conducted a prudential review of technical reserves. This was complemented by an evaluation of the Investment Management function under the prudent person principle, ensuring that asset allocation remained consistent with the firm's risk appetite. This approach reinforces the supervisory philosophy that accountability is achieved not through passive rule-monitoring, but through an intrusive evaluation of a firm's actual governance substance and long-term resilience.²⁶

Diagram – Escalation of Regulatory Intensity²⁷



²⁶ Buttigieg, Christopher P., *The Nature and Art of Financial Supervision: Reflections on a 25-Year Journey* (July 29, 2025). Forthcoming in the *Journal of Financial Compliance*, Available at SSRN: <https://ssrn.com/abstract=5585470> or <http://dx.doi.org/10.2139/ssrn.5585470> accessed on the 24.12.2025.

²⁷ This diagram was generated using an AI language model (Gemini 3) based exclusively on the conceptual framework provided by one of the authors.

Through the issuance of post-inspection findings and ORSA feedback letters, combined with constant engagement, including exit interviews with key functionaries, and tripartite dialogues with external auditors and the Insurance Manager, the Authority fostered a continuous remedial dialogue. This oversight model ensured that all stakeholders were aligned with the MFSA's prudential objectives. Ultimately, the supervisory mandate was only fulfilled when supervisory expectations were evidenced in the firm's day-to-day decision-making, financial resilience, and cultural transformation, eventually allowing the MFSA to lift the said expectations as the firm returned to a state of compliance.

07

Conclusion

This case study confirms that the efficacy of supervision is predicated upon timely escalation and the strategic deployment of corrective levers. In this instance, the transitioning of the supervisory approach from passive engagement to intrusive supervision and the imposition of a supervisory expectation to halt new business served as the critical point. This acted as a catalyst for reform, effectively decoupling the firm's expansionary ambitions from its suboptimal operational base. Forcing the firm to prioritise the strengthening of its governance framework and prudential stability over business considerations. Ultimately, this study bridges the gap between abstract theory of regulation and the applied day-to-day mechanics and challenges of supervising the implementation of regulation in practice to achieve the desired consumer protection and financial system integrity outcomes. It reaffirms that where critical situations arise that threaten consumer protection and the integrity of the financial system, a supervisor must quickly shift supervisory approach from a passive monitor to intrusive supervisory engagement, thereby driving the necessary changes.

3.4
Professional Insight

Effective Risk-Based Supervision of EU Financial Markets

James Monaghan, Cristina Iudice and Dounia Shita



Authors' Bios



James Monaghan has been working at ESMA since 2023. He is a Seconded National Expert from the Central Bank of Ireland (CBI) and works in the Supervisory Convergence Team, a transversal ESMA function responsible for promoting supervisory convergence across NCAs. Before joining ESMA, James held a number of senior supervisory and risk analysis positions in the CBI and prior to that he held front office roles (trading & portfolio management) in an Irish investment firm. James holds a degree in Finance & Accounting and is also a Certified Financial Planner (CFP).



Cristina Iudice has been working at ESMA since 2011. She is the Team Leader of the Supervisory Convergence Team which is the transversal ESMA function responsible for promoting supervisory convergence across NCAs. She is the rapporteur of ESMA's Senior Supervisors Forum in its three configurations on Investment Management, Investment Services and Market. Previously, Cristina was part of ESMA's Investigation Unit and contributed to setting up ESMA's direct supervision since the establishment of the Authority. Before ESMA, Cristina has worked for the European Central Bank (Risk Management Directorate), the Irish Stock Exchange and Borsa Italiana & EuroTLX (Italian Stock Exchange and MTF). Cristina holds a Degree in Economics for Financial Markets from Bocconi University and is a Certified Fraud Examiner from ACFE.



Dounia Shita has been working at ESMA since 2023. She is a Senior Officer in the Supervisory Convergence Team which is the transversal ESMA function responsible for promoting supervisory convergence across NCAs. Before joining ESMA, Dounia held several positions in Legal, Policy and International relations at the Belgian Financial Services and Markets Authority (FSMA) and also built expertise by working at consultancy and law firms. Dounia holds a law degree and is a qualified lawyer admitted to the Brussels Bar (non-practising).

Abstract

This article examines the key elements and practical applications of risk-based supervision in EU financial markets. Using the European Securities and Markets Authority (ESMA) Principles on risk-based supervision as its primary reference, it examines how EU supervisory authorities can allocate resources proportionately to the most significant risks while maintaining effective market oversight in a rapidly changing macroeconomic, technological and regulatory environment. The article considers the organisational and governance structures that support the risk-based approach and subsequently the lifecycle of the risk-based process, including: risk identification, risk assessment and risk prioritisation and treatment. It also explores the role of supervisory judgement, cross-border cooperation and data in promoting supervisory effectiveness and argues that a common risk-based framework strengthens investor protection, financial stability and the integrity of EU financial markets.

Effective Risk-Based Supervision of EU Financial Markets

The views expressed in this article are privately held by the authors and cannot be attributed to the European Securities and Markets Authority (ESMA).

Introduction

In today's financial markets, supervisors operate in an environment defined by accelerating complexity, expanding risk channels, growing interconnectedness and rapid innovation. These evolutions require supervisors to keep pace with traditional risks alongside emerging vulnerabilities and growing links among participants, products and jurisdictions. This is fundamental to ensuring efficient and resilient markets, safeguarding investors and supporting a well-functioning economy.

Alongside threats and complexities, supervisors face persistent constraints in resources, whether human, analytical, or technological. These limitations make it imperative to adopt supervisory frameworks that optimise impact rather than attempt an unrealistic and ineffective breadth of coverage.

This article seeks to address how risk-based supervision (RBS) can offer a practical and sound approach to overcome these challenges, helping supervisory authorities to best serve the public interest when safeguarding investor protection, market integrity, financial stability, and orderly market functioning.

Risk-based supervision (RBS) traditionally represents, in many fields of application, a logical and sound approach to identify, assess and prioritise those areas that require the highest attention. A meaningful and sensible approach in general, effective RBS is imperative given the complexity of supervising modern day financial markets.

In this context, the European Securities and Markets Authority (ESMA) together with the relevant National Competent Authorities (NCAs) (for the purpose of simplicity in this article – collectively referred to as the ‘EU authorities’) has recognised RBS as a cornerstone for EU securities and markets supervision. In January 2026, it published on its website common Principles on Risk-Based Supervision¹ to support a supervisory framework that is consistent, proportionate, and effective across the Union.

Achieving consistent and effective risk-based approaches across EU authorities is both necessary and challenging. Supervisors of interconnected markets need to have a shared understanding of risks, and high-quality methods to prioritise work across the EU in order to prevent risks remaining unnoticed and propagating to other jurisdictions. Trust is a key component and objective in this process. Yet, each authority has traditionally developed its own approach tailored to national market specificities, capacities and practices. Advancing a consistent and sound risk-based approach is essential not only for comparability but more importantly to build a unified supervisory culture and ensure effective oversight of EU financial markets.

Proportionality, while conceptually separate, is closely intertwined with RBS. It fosters supervisory expectations and interventions that are calibrated to the scale and nature of the risks posed. This avoids unnecessary burdens while preserving the robustness of regulatory safeguards. In this context, RBS supports simplification, particularly by helping EU authorities reduce cumbersome processes while boosting supervisory efficiency and value.

ESMA’s approach to RBS is not about creating additional layers of process and procedures or building elaborate supervisory frameworks, but rather, it is about making conscious, transparent choices on where attention and resources are needed most. This reflects existing supervisory practices across the EU, where prioritisation, professional judgement and a focus on the most relevant risks is prevalent.

In this context, ESMA’s principles² on RBS offer a guiding tool to help EU authorities make existing ways of working clearer by offering a simple structure and common vocabulary for thinking about risk identification, assessment, prioritisation and treatment. As a result, ESMA’s principles³ allow EU authorities to build on established practices while strengthening the clarity and focus of their supervisory approach.

This article aims to share ESMA’s approach to RBS, based on the principles developed together with NCAs. It presents (i) the core concepts of a risk-based supervisory mindset; (ii) the structural elements that underpin the risk-based approach; (iii) different risk identification models and risk assessment methods, exploring the balance between quantitative approaches and supervisory judgement and the role of data and intelligence; (iv) how to translate risk assessments into supervisory priorities; and (v) measuring effectiveness and impact.

1 European Securities and Markets Authority (ESMA), Principles on risk-based supervision (ESMA42-1710566791-6326, 9 January 2026) <<https://www.esma.europa.eu/document/principles-risk-based-supervision>>

2 ESMA, Principles on risk-based supervision (n1)

3 ESMA, Principles on risk-based supervision (n1)

01**Risk-Based Supervisory Mindset: Core Concepts That Matter**

As a starting point, ESMA's principles⁴ articulate some key concepts that form the supervisory mindset necessary for effective RBS to foster robust, proportionate and forward-looking supervision.

First, RBS suggests a move from the traditional rule-based approach to a new paradigm: it looks at maximising supervisory effectiveness by focusing resources and supervisory attention on the most significant risks. This suggests an acknowledgement that “putting a cop on every corner” has become unrealistic in today’s supervisory environment and that certain degrees of risk tolerance and trade-offs are inevitable: markets are too big, too complex, entities and activities too numerous and diverse, and resources too scarce. A robust supervisory culture reflecting this consideration is the backbone of RBS that underpins the effectiveness of the approach. Tone from the top is key: senior figures in EU authorities should promote a culture that empowers staff to make informed judgements, recognise the trade-offs inherent in supervisory decision making, and facilitate clear communication to staff, notably on acceptable risk levels.

It is also essential to recognise that RBS does not seek to eliminate all risks but instead aims to establish a reliable framework that enables EU authorities to manage and address risks appropriately. While understanding that RBS cannot address all risks at all times, it is important to note that risks emerging from unlawful and harmful practices will not be overlooked given their adverse impact on markets and investors, as well as their potential to increase the vulnerability of the financial system and undermine trust. Equally, it is essential to maintain an appropriate level of supervisory coverage over the entire risk landscape to ensure that no risk persistently flies under the radar.

Ensuring flexibility and agility is another crucial consideration. Naturally, RBS requires a forward-looking attitude, as its aim is to identify and address risks before they materialise. In this context, risks are constantly evolving and EU authorities therefore need to shape their RBS approaches in such a way as to accommodate changes and adapt to emerging risks, in particular those arising from changing market structures and technological advancements. RBS is an inherently dynamic process which evolves and iterates and requires adjustments over time based on findings and learnings.

Importantly, RBS encourages a broader perspective by looking outward, fostering active engagement beyond boundaries and promoting external collaboration. As risks do not stop at borders but rather extend across sectors and countries, effective cooperation and information exchange with other authorities and regulatory bodies (both national and international) are imperative to inform the risk-based cycle. For the same reason, national and EU-wide risk assessments must inform and enrich one another.

RBS also acknowledges the heterogeneous nature of EU authorities’ mandates and the need to tailor their approach to sectoral specificities. Yet, it commonly relies on a consistent framework built around risk identification, assessment and prioritisation, which facilitates comparability and consistency across mandates.

4 ESMA, Principles on risk-based supervision (n1) 5

Alongside this, it is essential to recognise that the effectiveness of RBS relies on two pivotal elements that are complementary to one another. Data plays a critical role in every stage of the risk-based cycle and accessing high quality data (both quantitative and qualitative) is thus a focal point of the process. At the same time, RBS is not intended to function as a mechanical process exclusively driven by data analysis: supervisory judgement and experience remain paramount throughout the entire cycle. Relatedly, risk treatment should remain top of mind, and time dedicated to maintaining an adequate risk-based model should not come at the detriment of actual risk mitigation activities.

Last but not least, RBS is above all an opportunity. By embracing it, EU authorities can effectively and efficiently shape their strategic direction and convey their supervisory strategy and key priorities to the public. This reflects a strong commitment to accountability and transparency.

02

Structure In Focus: The Foundational Elements Underpinning The Risk-Based Approach

In addition to the above-mentioned supervisory mindsets, and before diving into the practical phases of RBS, ESMA's principles⁵ outline the importance of two structural elements that are key to ensuring that an EU authorities' organisational set up can support effective RBS.

2.1 Supervisory Strategy

A sound risk-based supervisory approach starts with a well-defined supervisory strategy. This strategy should align with EU authorities' broader goals and set out the supervisory landscape, priorities, and the methods that will be used to meet those goals. These elements anchor supervisory planning, prioritisation, and decision-making, ensuring that resources are allocated proportionately to the areas of greatest impact and potential harm.

The strategy should also drive the creation and maintenance of a clear risk tolerance or risk appetite statement. EU authorities need to understand the level of risk they are willing to accept, distinguishing between what are acceptable and unacceptable risks. Risk tolerance levels can help ensure a consistent approach across supervisory mandates, and facilitate decision making.

Ultimately, the authority's leadership is responsible for delivering the supervisory strategy and ensuring it is effectively communicated both internally and externally.

5 ESMA, Principles on risk-based supervision (n1) 8

2.2 Risk Assessment Framework

The second critical component found in ESMA's principles⁶ is the need to have a well-conceived risk-assessment framework that is characterised by appropriate people, processes, tools, scales and parameters. This offers a coherent structure that allows EU authorities to conduct their risk-based exercises efficiently and effectively. To this end, a robust risk assessment framework would typically include:

- **Governance arrangements** with senior, experienced individuals responsible for overseeing the risk-based process, ensuring consistency and accountability.
- **Common methods and risk models** for a standardised approach across the authority's supervisory work.
- **Clear metrics and parameters** to categorise entities, groups or sectors in terms of their supervisory importance, recognising that risk impacts vary depending on their size, scale, and complexity.
- **Methods to review and measure the impact of past supervisory actions**, ensuring lessons learned feed into future risk identification and assessment exercises.
- **Continuous reviews and adaptations** to the framework.

Having established the key concepts and mindsets needed for effective RBS and the overarching structural framework, ESMA's principles⁷ further detail the different phases of RBS.

03

Risk Identification: Understanding What Matters

Risk identification forms the analytical core of RBS in EU financial markets. Without a structured understanding of the risks to which entities are exposed and their potential consequences, supervisory prioritisation can be an arbitrary and reactive exercise by EU authorities. Without thorough risk identification, key threats may go unnoticed causing supervisory efforts to be misallocated to the detriment of stable and orderly markets.

ESMA's principles⁸ emphasise that effective supervision begins with a comprehensive, structured, and forward-looking identification of risks. This is not a one-off exercise, but a continuous process embedded within EU authorities' supervisory cycles. The purpose is not merely to identify and catalogue risks, but to distinguish between material and non-material risks and to identify emerging vulnerabilities before they crystallise into market

6 ESMA, Principles on risk-based supervision (n1) 8

7 Ibid 9

8 ESMA, Principles on risk-based supervision (n1) 9

disruptions or investor harm.

To achieve this, ESMA's principles⁹ promote a combination of industry-wide and entity-based models as well as transaction and product-based approaches, as appropriate.

3.1 Industry-Wide Risk Identification

Industry-wide risk identification focuses on vulnerabilities that affect broad segments of financial markets. ESMA's principles¹⁰ explain that this layer is essential for detecting systemic or structural risks that cannot be observed through the supervision of individual firms alone. It provides EU authorities with an understanding of the external risk environment in which firms under their supervisory responsibility operate. Examples of such risks include liquidity mismatches in investment fund markets, volatility affecting operations of market infrastructure firms or broad-based mis-selling of financial instruments arising from perverse market incentives.

Horizon scanning is a principal component of this process, allowing supervisors to anticipate how technological advancements, regulatory reforms, geopolitical shifts, and macroeconomic trends may influence risk profiles across the industry. This analysis can be supported through structured market research, collaborative workshops, and dedicated working groups focused on identifying both existing and emerging risks across the financial markets landscape.

3.2 Entity-Based Risk Identification

Entity-based risk identification shifts the analytical lens to individual supervised firms, such as investment firms, asset managers, and market infrastructures. As firms differ substantially in their business models, governance arrangements, risk management practices, and systemic relevance, a risk-based approach requires supervisors to form entity-specific risk profiles, with common parameters for comparability.

Entity based identification typically combines quantitative indicators, such as capital requirements, client asset holdings, complaints data, and transaction volumes with qualitative assessments of firms' governance arrangements, internal controls environment, business model and overall strategic direction.

ESMA's principles¹¹ recognise that performing individual risk identification exercises for a wide universe of firms may in some cases not be operationally feasible or efficient for EU authorities, depending on the size of the supervised population. Consequently, more granular assessments may be focused on certain firms displaying characteristics of scale and complexity, with broader risk identification carried out on a thematic or clustered basis for the remainder.

The final output of the entity-based risk identification process should be a clearly defined list of risks applicable to entities or clusters.

9 Ibid 9–10

10 Ibid

11 ESMA, Principles on risk-based supervision (n1) 10

3.3 Transaction And Product-Based Risk Identification

Other risk identification models target risks inherent in individual transactions and financial products. These models are particularly valuable for identifying (emerging) market-conduct risks, potential conflicts of interest, or shortcomings in product governance arrangements.

ESMA's principles¹² emphasise that EU authorities should avoid adopting a rigid, one-size-fits-all risk-identification model. Instead, the model selected can be tailored to their organisational set-up and the particular features of their sectors and market. As such, EU authorities can draw on entity-based (including clustering), product-based, or transaction-based models, selecting the approach that best fits the sector and its risk-identification needs.

04

Risk Assessment: Measuring What Matters Through Probability And Impact

Identification alone is insufficient; in the second phase, risks must also be assessed in terms of their likelihood of materialisation and their potential impact on supervisory objectives. ESMA's principles¹³ describe the risk assessment phase as the process of taking identified risks and understanding their criticality, using probability and impact variables to calculate (usually the product) the risk score.

Probability assessment involves evaluating how likely it is that a particular risk will materialise within a given time horizon. In the industry-wide model, the assessment of probability may include, for instance, analysing historical data to uncover the frequency of occurrence in the past to forecast its potential occurrence in the future.

Under an entity-based model, assessing probability involves the consideration of multiple factors, including overall market conditions, the quality of firms' internal control environment and the frequency of past occurrences.

Impact assessment, by contrast, considers the severity of consequences should the risk materialise.

In an industry-wide model, the impact assessment should consider factors such as investor protection, market functioning, and financial stability, as well as broader potential harms, including disruptions to critical operations or the creation of unfair market conditions.

When determining impact under the entity-based model, EU authorities are encouraged to consider such factors as consequences for their supervisory objectives, market functioning and the entity's own regulatory compliance. This should take into account entities' nature, scale and complexity as well as their dependencies, both domestically and cross-border. The latter is of particular relevance in the EU single market where materialisation may quickly

¹² Ibid

¹³ ESMA, Principles on risk-based supervision (n1) 11

propagate across borders and sectors. In this context, developing a shared understanding among EU authorities on interconnectedness and potential cross-border impacts, and respective perceptions of risk can significantly improve the quality of individual supervisors' risk assessments.

The intersection of probability and impact forms the basis of risk ranking and prioritisation. These scores can be used for further risk ratings, using a defined scale such as High, Medium-High, Medium and Low. ESMA's principles¹⁴ underscore that this structured approach enhances consistency in supervisory decision making, allowing EU authorities to justify why certain areas receive greater scrutiny than others.

05

Risk Prioritisation And Supervisory Treatment: How To Translate Risks Into Structured Actions

Once risks have been identified, assessed, and aggregated, supervisors can develop the risk prioritisation and treatment phases. This involves ranking risks and subsequently determining appropriate actions to address and mitigate them. This phase enables EU authorities to define their supervisory priorities, which will ultimately be reflected in their supervisory plans.

At this stage, senior management has a pivotal role to play in fostering a supervisory culture that ensures both a proper understanding of the authority's risk tolerance and supervisory strategy while empowering staff to make decisions and appropriate trade-offs. This aspect is particularly important in the context of prioritisation across sectors where conflicting priorities may arise and where the steer of senior management can play an important role in supporting prioritisation across specific sectors or risks which may rank equally.

5.1 Prioritisation Framework

maintain consistency throughout this phase and ensure its integrity, prioritisation should be directed by clearly established criteria and parameters, complemented by supervisory judgement.

ESMA's principles¹⁵ provide a representative list of criteria and parameters that EU authorities may take into consideration for their assessments, such as:

- **Severity:** this criterion aims at supporting an approach that seeks to prioritise risks appearing as high-impact and high-probability. For example, high-probability, high-impact risks command immediate supervisory attention, while low-probability, low-impact risks may be monitored with minimal or ad-hoc intervention. Severity can be calculated using the impact and probability score of a risk (as for the risk assessment phase), considering both domestic and cross-border implications.

¹⁴ Ibid 12

¹⁵ ESMA, Principles on risk-based supervision (n1) 13

- **Coverage:** to ensure that all areas within its supervisory remit receive appropriate attention over time, an authority may wish to focus on certain risk areas regardless of their severity based on appropriate frequency, considering available resources and workload in relation to other risk areas.
- **Emerging and new risks:** this parameter enables EU authorities to prioritise risks that address the emergence of new or innovative products, services or entities. The fundamental objective is to anticipate and mitigate potential future risks associated with nascent products and services and prevent their materialisation.
- **Urgency:** This criterion is designed to identify risks that require prompt and effective intervention to prevent imminent adverse outcomes.
- **Strategic direction:** with this concept, the prioritisation of certain risks is decided in line with the strategic priorities of the authority and risks are prioritised according to their potential detrimental impact on the authority's strategy and main objectives (e.g. promoting retail market participation by addressing risks like market manipulation or excessive fees).

5.2 Reprioritization

RBS is inherently a dynamic process as risks continually evolve throughout the supervisory cycle. It is therefore crucial that EU authorities establish and maintain continuous monitoring processes to ensure that the situation is properly overseen.

Agility is of the essence as new risks and events can emerge or the conditions associated with pre-existing risks can change over time requiring EU authorities to reassess the situation and ensure the timely reprioritisation of certain risks, if necessary. To facilitate this process, EU authorities are encouraged to use a wide range of information sources and to consider applying specific tools such as alert mechanisms to automate the process.

5.3 Risk Treatment

As outlined above, the risk prioritisation phase enables EU authorities to translate their priorities and corresponding timelines into supervisory work plans, while ensuring an efficient resource allocation in line with the authority's risk tolerance and defined goals.

When establishing supervisory plans for the actual risk treatment, proper attention should be devoted to the use of tools to address the identified risks. In this regard, a right balance needs to be struck between desk-based ongoing supervision and targeted on-site inspections which will be contingent upon entities' specific conditions, the nature of the identified risks and the overall risk environment.

Regular monitoring of the execution of supervisory work plans should be performed to assess progress and alignment with the defined objectives and anticipated timelines. Senior management information as well as agreement on and documentation of changes made to supervisory plans are key components of the system.

5.4 Evaluating Our Performance

Measuring supervisory impact is fundamental to promoting accountability and transparency in the oversight of financial markets. When supported by clear evidence, such measurement enables EU authorities to demonstrate their contribution to market integrity and stability, which reinforces trust and credibility with the public and market participants.

Despite its importance, the task of assessing supervisory impact is intrinsically complex. Determining causality between supervisory actions and market outcomes is rarely straightforward as they can be asymmetric, indirect, and highly sensitive to timing. Broader macroeconomic and geopolitical influences frequently shape market conditions in ways that obscure supervisory improvements. For example, during periods of rapid monetary tightening or heightened geopolitical uncertainty, market indicators such as bid-ask spreads, asset-price volatility, and breaches of firms' internal limits may deteriorate regardless of supervisory intervention. In such circumstances, stronger oversight, such as enhanced analysis of liquidity risk may successfully prevent disorderly firm failures or forced fire-sales, yet these 'non-events' remain unseen. The very success of supervision, in preventing harm before it materialises, is often overshadowed by an adverse external environment.

Nevertheless, EU authorities should strive to measure their effectiveness by tracking changes in key firm-level metrics, such as governance quality, internal controls effectiveness, and the speed with which remediation actions are implemented, which can be a proxy for strong governance and high supervisory effectiveness.

Measuring impact in this way also supports future risk-identification efforts by revealing how risks evolve and the extent to which mitigation measures are effective over time. This feedback loop enhances supervisory intelligence, enabling supervisors to refine their risk-identification models so that they focus on the most relevant and meaningful risks in subsequent risk-based exercises.

06

Conclusion: Rethinking Risk-Based Supervision As Smart Regulation In Practice

As this article outlines, the shifting landscape in recent years has made it necessary for EU authorities to rethink how supervisory work is prioritised and delivered, ensuring that the most significant sources of harm are identified and addressed effectively.

RBS represents the practical embodiment of smart regulation within the EU supervisory framework. It offers a structured, forward-looking method to deploy supervisory resources with a focus and intensity that is aligned with the magnitude of potential harm. This not only supports robust oversight but enhances the overall effectiveness and coherence of the EU supervisory approach, particularly in a decentralised supervisory environment that has to cope with cross-border and interconnected risk elements.

ESMA's common principles¹⁶ on RBS, for use by EU authorities, provides a structured framework for identifying, assessing, prioritising and addressing risks and supports a supervisory approach that is consistent, proportionate and effective across the Union.

This work further supports ESMA in its efforts towards regulatory simplification and burden reduction. Traditional compliance-based approaches, which rely on exhaustive and standardised checks, often generate unnecessary administrative pressure on both regulators and market participants. By contrast, risk-based methods and mindsets streamline supervisory focus and eliminate activities that do not materially contribute to mitigating risks, thereby supporting simplification without compromising the quality of supervisory outcomes.

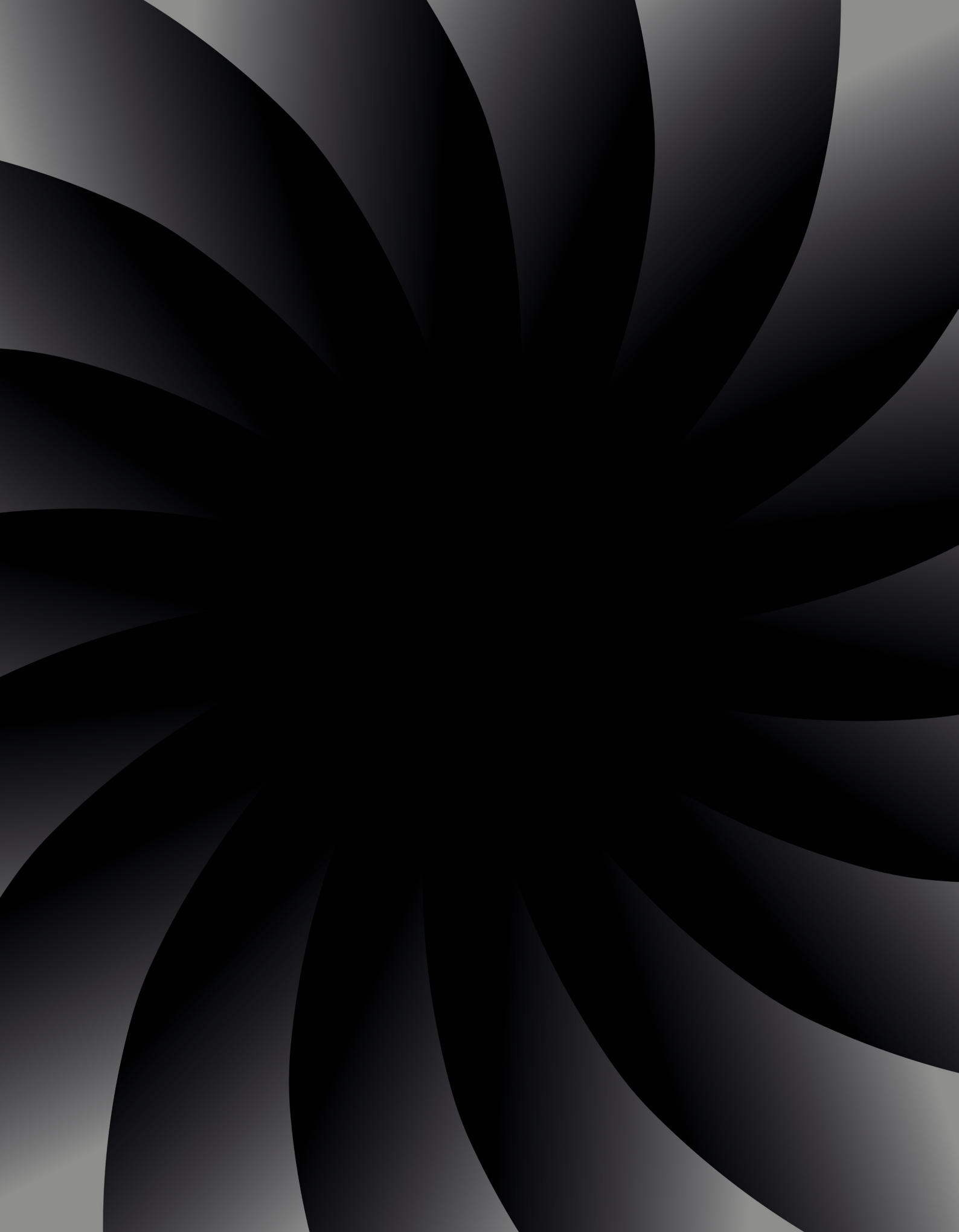
ESMA will continue working to advance the practical implementation of effective RBS in EU authorities' day-to-day work and to foster high-quality supervisory outcomes for market participants.

For ESMA and NCAs as supervisors, this will mean developing and maintaining a deep understanding of evolving market structures, emerging risks and entity-specific vulnerabilities. It will also involve building methods and approaches allowing for the comparability of outcomes and coordinated supervisory responses.

For market participants, a more targeted supervisory model encourages firms to understand and manage their risks proactively, incentivising improved governance, internal controls and transparency, and reinforcing firms' accountability for their own risk profiles. At the same time, reduced emphasis on low-impact areas can lessen unnecessary administrative burdens, allowing firms to focus on substantive compliance rather than procedural formality. The clarity and predictability embedded in risk-based approaches also support more constructive and timely engagement between supervisors and firms, strengthening trust and reinforcing the shared objective of safeguarding investor protection, financial stability, and market integrity.

As financial markets and the supervisory architecture continue to evolve, RBS provides a resilient and adaptive framework capable of sustaining effective supervision, supporting the mission to build a more integrated, stable and efficient EU financial system.

16 ESMA, Principles on risk-based supervision (n1)



Simplification, Deregulation, and Financial Inclusion

4.1
Academic Article

**Financial Literacy and
Financial Education initiatives
by the Hellenic Capital Market
Commission (HCMC)**

Vassiliki Lazarakou



Author's Bio



Vassiliki Lazarakou is Chair of the Hellenic Capital Market Commission (HCMC) since September 2019. She is also a Member of the Board of Supervisors of the European Securities and Markets Authority (ESMA), and she has been a Member of the Management Board of ESMA for two terms, from 2020 to 2025. Until December 2024, she was chairing the European Supervisory Authorities' Joint Committee Securitisation Committee (JCSC). Vassiliki Lazarakou is a member of the Board of the International Organisation of Securities Commissions (IOSCO) since October 2022 (term until May 2026), as a representative of the European Regional Committee (ERC) to the IOSCO Board. She is also chairing the newly established (2024) Diversity Network of IOSCO.

She has been a member of the Bureau of the Corporate Governance Committee of the OECD since November

2022. Vassiliki was also elected as the Vice Chair of the Mediterranean Partnership of Securities Regulators for 2025 and 2026. She is a Member of Women Climate Leaders Network (WCLN) of the European Investment Bank Group (EIB Group). Dr. Lazarakou has a Doctorate in Law (JSD) from New York University School of Law, New York, U.S.A. and an LLM in International Legal Studies from the same University as well as a Bachelor in Law from the Athens University, School of Law. She is a lawyer admitted at both the Athens Bar and the New York Bar Association with expertise on capital markets, M&As, privatizations, corporate and commercial law and other similar issues. She has worked for more than 20 years as a Partner at several law firms and for more than 10 years she was heading the relevant Banking, Capital Markets and Finance Department of such firms. From 2012 -2015 she was also a First Vice-Chair of the HCMC.

Financial Literacy and Financial Education

Financial literacy and financial education constitute the foundation upon which effective investor protection is built. Effective investor protection in the twenty-first century depends not only on sound regulation and effective supervision, but also on financially literate investors. As financial markets become increasingly digital, interconnected and complex, financial education has evolved from a desirable public policy objective into a strategic regulatory priority that complements traditional investor protection tools by equipping individuals with the knowledge and skills to understand financial products, assess risks and make informed investment decisions. By empowering citizens to participate confidently in financial markets, financial education strengthens trust in the financial system and contributes to the efficiency and resilience of markets. Against this background, this article examines the evolving international policy framework, the role of the OECD and IOSCO, the implementation of Greece's National Strategy on Financial Literacy, and the initiatives undertaken by the Hellenic Capital Market Commission (HCMC) to promote informed investor participation.

Today's financial landscape is evolving rapidly. Digital trading platforms, crypto-assets, influencer-driven financial advice, and artificial intelligence-based tools are creating new opportunities but also introducing new risks. In this environment, financial education must evolve accordingly. It must increasingly incorporate elements such as digital literacy, awareness of online scams, behavioral insights, and the ability to critically assess financial information circulated through digital channels. Moreover, financial education initiatives must reach individuals in the environments where they live and interact—schools, workplaces, and digital platforms.

Across Europe, meaningful progress has been made in promoting financial literacy. Nevertheless, significant gaps remain, underscoring the importance of continued international cooperation among regulators and public authorities.

For the Hellenic Capital Market Commission (HCMC), the promotion of financial literacy—and financial education in particular—is not merely a complementary initiative; it is a strategic necessity. Informed investors are protected investors, and protected investors are essential for dynamic, stable, and integrated European capital markets.

Recognizing this importance, the HCMC has included Financial Literacy as one of the five strategic priorities in its *Five-Year Strategic Plan 2023–2028*. Within this framework, investor protection remains a central priority. Particular emphasis is placed on safeguarding investors who may be more vulnerable or exposed to emerging and complex financial risks. Among the commitments set out in the Strategic Plan is the intensification of efforts to enhance financial literacy on capital market matters through targeted actions and initiatives.

Financial literacy—and financial education more specifically—equips investors with essential capabilities, including:

- understanding the relationship between risk and return;
- assessing diversification and long-term investment strategies;
- recognizing the impact of costs, fees, and compound interest;
- understanding investment planning and financial decision-making;
- critically evaluating marketing messages and digital financial content; and
- identifying fraud and scams, which is particularly important in the digital era.

When investors understand these fundamental principles, they are less vulnerable to mis-selling, unrealistic return expectations, and speculative market behaviour. They are also better able to interpret the disclosures required under European Union legislation and to make decisions aligned with their financial objectives and risk tolerance.

From a regulatory perspective, informed investors also enhance the effectiveness of existing safeguards, including suitability and appropriateness assessments under MiFID II. Financial education strengthens the practical impact of regulation by ensuring that required disclosures are not only provided, but also understood—an equally critical dimension of effective investor protection.

02

National Strategy on Financial Literacy and its Significance for the HCMC

In 2024, OECD, under the auspices of DG Reform of the European Commission, issued a report which recommends that the Greek government establish and implement a national strategy on financial literacy (hereinafter: the Strategy).¹

The Strategy identified seven priority areas: reducing over-indebtedness and increasing saving rates, promoting long-term financial planning, promoting a safe use of digital financial services, promoting an informed participation in capital markets, promoting tax education, and preventing gambling in particular among younger generations, and helping stakeholders implement effective financial literacy initiatives. Across these areas, the Strategy also presents a comprehensive yet flexible policy toolbox.

¹ OECD, *Financial Literacy in Greece: Evidence on Adults and Young People (2024)* https://www.oecd.org/content/dam/oecd/en/publications/reports/2024/01/financial-literacy-in-greece-evidence-on-adults-and-young-people_b0774415/07e4fbd9-en.pdf, accessed 30 July 2026

According to the Strategy paper, adults in Greece scored sixty-one percent on financial literacy. This was based on a set of basic financial knowledge concepts and financially prudent behaviors and attitudes, according to the OECD/International Network on Financial Education (INFE) methodology.² These results are similar to the average measured in other European Union member states that participated in recent data collections organized by the OECD,³ and they indicate plenty of room for improvement.

Adults in Greece also displayed an average digital financial literacy score of fifty four percent, suggesting that there is room for improvement in terms of knowledge, skills, attitudes and behaviors necessary to be aware of and safely use digital financial services and digital technologies. Higher levels of financial literacy are expected to make a positive contribution to the financial well-being of individuals and households in Greece, while also having positive effects on capital markets, financial stability and the overall economy. A new updated exercise is to be conducted by OECD/INFE for the year 2026.⁴

03

HCMC's Engagement with IOSCO and OECD with Regard to Financial Literacy/Education

As part of the HCMC Strategic Plan and on the basis of the findings of the OECD Report and in alignment with the national strategy, HCMC has implemented a series of initiatives aimed at strengthening financial literacy in Greece. In parallel, the HCMC contributes to and supports international initiatives in the field of financial education carried out by the International Organization of Securities Commissions (IOSCO) and the Organization for Economic Co-operation and Development (OECD), including the work of the OECD International Network on Financial Education (INFE), of which the HCMC has been a member since early 2025.

With regard to IOSCO, the international organization has progressively integrated investor education and financial literacy within its broader investor protection mandate.⁵ In 2014, IOSCO adopted its Strategic Framework for Investor Education and Financial Literacy,⁶ recognizing that education complements supervision and enforcement in strengthening retail investor protection.

2 Based on the OECD recommendation (2022), *Recommendation of the Council on Financial Literacy*, <<http://legalinstruments.oecd.org>> accessed 9 March 2026.

3 OECD, *OECD/INFE 2023 International Survey of Adult Financial Literacy* (2023) https://www.oecd.org/content/dam/oecd/en/publications/reports/2023/12/oecd-infe-2023-international-survey-of-adult-financial-literacy_8ce94e2c/56003a32-en.pdf, accessed 9 March 2026.

4 OECD, *OECD/INFE International Survey of Adult Financial Literacy, Inclusion & Well-Being 2026 (November 2025)* <https://www.oecd.org/content/dam/oecd/en/topics/policy-sub-issues/financial-education/OECD-INFE-adult-survey-flyer.pdf> accessed 9 March 2026.

5 IOSCO, *Strategic Framework for Investor Education and Financial Literacy* (2014) <https://www.iosco.org/library/pubdocs/pdf/ioscopd462.pdf>, accessed 19 February 2026.

6 IOSCO, *Strategic Framework for Investor Education and Financial Literacy* (2014) <<https://www.iosco.org/library/pubdocs/pdf/ioscopd462.pdf>> accessed on 19 February 2026.

In cooperation with the INFE, IOSCO published the Core Competencies Framework on Financial Education for Investors (2019), providing structured guidance on the knowledge, skills, attitudes and behaviors that retail investors should possess.⁷

Since 2017, IOSCO has coordinated World Investor Week (WIW), a global campaign promoting investor education and awareness across more than one hundred jurisdictions.⁸

IOSCO has also incorporated behavioral insights into its policy discussions, particularly in reports addressing digital engagement practices and online investment risks.⁹

On the other hand, OECD has played a leading role in shaping global financial literacy policy frameworks.¹⁰ The OECD defines *financial literacy as a combination of awareness, knowledge, skills, attitudes and behaviours necessary to make sound financial decisions and achieve financial well-being*.¹¹

A central pillar of its work is the INFE, as aforementioned, established in 2008 to coordinate international cooperation and support national strategies.

Beyond policy coordination, the OECD/INFE has become the main global platform for the development of evidence-based financial education policies. Through analytical reports, policy toolkits and international surveys, it assists governments and regulators in designing national strategies, measuring financial literacy levels and evaluating the effectiveness of educational initiatives. Participation in the OECD/INFE community also allows supervisory authorities to exchange best practices, compare policy outcomes and align their initiatives with internationally recognized standards. This international dimension is particularly important for capital market regulators, as retail investors increasingly interact with cross-border digital platforms and global financial products. Consequently, the work carried out within OECD/INFE contributes significantly to ensuring that national financial education initiatives remain consistent with international trends and regulatory priorities.

The OECD Recommendation on Financial Literacy provides governments with a structured, evidence-based framework integrating financial education with consumer protection and financial inclusion policies.

The OECD/INFE International Survey of Adult Financial Literacy and the PISA Financial Literacy Assessment generate internationally comparable data to inform policy making.

Global Money Week,¹² coordinated annually by the OECD, promotes financial education among children and young people worldwide.

7 IOSCO and OECD, *Core Competencies Framework on Financial Education for Investors* (2019).

8 IOSCO, 'World Investor Week' (2017–2025) <https://www.worldinvestorweek.org/>, accessed 19 February 2026.

9 IOSCO, *Investor Protection and Behavioural Insights Reports (2021–2024)*, <https://www.iosco.org/>, accessed 19 February 2026.

10 OECD, 'Financial Education and Literacy' (2023–2025) <https://www.oecd.org/en/topics/financial-education.html>, accessed 19 February 2026.

11 OECD, 'Financial Education and Literacy' (2023–2025) <https://www.oecd.org/en/topics/financial-education.html>, accessed 19 February 2026.

12 Global Money Week, 'GMW2027 - Dates are 15-21 March!', <https://globalmoneyweek.org/>, accessed 9 March 2026.

04

HCMC's Specific Initiatives

Apart from a dedicated section on its website, with updated information,¹³ the HCMC has undertaken the following initiatives over the last two years (2024 and 2025¹⁴).

A. During 2024

In April 2024, the HCMC published an informative leaflet titled “Do not invest with your eyes closed,” which aims to inform investors and, in general, citizens, about risks and capital markets. The informative leaflet explains key capital market concepts in simple words, raises awareness of the risks associated with investing, and provides practical guidance on specific enquiries to be made to investment firms approaching investors as well as where investors can obtain reliable information and seek assistance from competent authorities¹⁵. It also provides all information required for proper communication with the competent agencies that will assist in dealing with problems, risks, and challenges, and will also provide relevant information about the need for increased alertness regarding the risks inherent in investments made, mostly by inexperienced retail investors, through online transactions on digital platforms that operate across borders.

According to the Strategy report for Greece,¹⁶ objective 4 provides for promoting “an informed participation in capital markets, by raising awareness of the opportunities and risks linked to investments.” In this context, the HCMC cooperated with the Business Administration Department of the National & Kapodistrian University of Athens (NKUA), with the aim of working, through the Investment Applications Laboratory, towards the creation of investment simulators that can help investors understand how investments take place. We have already received two deliverables and the cooperation is ongoing.

In the past few years, the HCMC signed Memoranda of Understanding with all major Greek universities. In this context, in the first and second semester of the academic year 2024, HCMC's executives delivered lectures on capital market issues to National & Kapodistrian University of Athens students, as part of the course titled “Operation Framework of Financial Institutions and Capital Markets”¹⁷ and, similarly, a new round of lectures was scheduled for 2025 (co-operated with the Panteion University, and the University of Thrace).

13 HCMC, ‘Financial Literacy Initiatives’ http://www.hcmc.gr/en_US/web/portal/protoboulies-gia-chrematooikonomiko-alphabetismo, accessed 30 July 2026.(related information is also published regularly at the HCMC's social account with LinkedIn).

14 HCMC, ‘Financial Literacy Initiatives’ http://www.hcmc.gr/en_US/web/portal/protoboulies-gia-chrematooikonomiko-alphabetismo, accessed 30 July 2026.

15 HCMC, *Do Not Invest With Your Eyes Shut (January 2026)*, http://www.hcmc.gr/aweb/files/xrhma_alfavitismos/DO_NOT_INVEST_WITH_YOUR_EYES%20SHUT_ENG_322026.pdf, accessed 30 July 2026.

16 HCMC, *National Financial Literacy Strategy for Greece (January 2024)*, http://www.hcmc.gr/aweb/files/xrhma_alfavitismos/NATIONAL_STRATEGY_FOR_GR_en.pdf, accessed 30 July 2026.

17 HCMC, ‘Σχολή Οικονομικών και Πολιτικών Επιστημών - Πλαίσιο Λειτουργίας Χρηματοπιστωτικών Ιδρυμάτων και Κεφαλαιαγορών’ (16 October 2024), <http://www.hcmc.gr/vdrv/elib/a217e1078-a0b6-4708-a176-3dc4b3ecd7e3-948062075-0> accessed 30 July 2026

HCMC executives also participated in several institutional discussions, including a discussion at the DELPHI ECONOMIC FORUM, titled “Securing the Future through Financial Literacy,” together with representatives from the European Commission, the OECD, and the market intermediaries.¹⁸ My focus in this specific discussion was to explain to the audience the connection between the relevant research made by the OECD on the subject of Financial Literacy and the conclusions that led to the proposed actions included in the Strategy report for Greece.

In addition, the HCMC has sought to broaden the outreach of its financial education initiatives in order to reach a wider audience across the country. In this context, the HCMC strengthened its cooperation with major chambers of commerce in Greece. This effort began with the Athens Chamber of Commerce and Industry (ACCI)¹⁹, the largest chamber of commerce in the country, and was subsequently extended to the Chamber of Thrace, representing one of the most geographically remote regions of Greece.

The cooperation is aimed at the organization of training seminars and workshops addressing issues of current relevance for investors and businesses. These include, inter alia, financing through capital markets, protection against online fraud, trading in crypto-assets and related advertising practices, considering the new regulatory framework established by the Regulation on Markets in Crypto-Assets (MiCA).

Furthermore, in the context of the World Investor Week 2024 (7–14 October 2024), organized under the auspices of the International Organization of Securities Commissions (IOSCO), the HCMC informed the public, through its official account on LinkedIn, about two global online seminars held on 7 and 8 October 2024. This initiative aimed to facilitate the wider dissemination of relevant information and educational material among the Greek public.²⁰

Throughout 2024, senior representatives of the HCMC also highlighted the importance of financial literacy in numerous public events and conferences held in Greece and abroad. In these interventions, particular emphasis was placed on the role of financial education in strengthening retail investor confidence, promoting informed participation in capital markets, and supporting the further development of the Greek capital market.

In addition, members of the HCMC’s management and senior staff addressed specific topics related to capital markets and financial instruments, with the objective of improving public understanding of the relevant regulatory and market framework. These outreach and awareness-raising activities continued throughout 2025.

18 HCMC, ‘Announcement’ <http://www.hcmc.gr/vdrv/elib/a626ca3e5-0496-4e88-9575-ce99659f0616-92668751-0>, accessed 30 July 2026.

19 HCMC, ‘HCMC’s Announcement’, <http://www.hcmc.gr/vdrv/elib/a41320cd8-798e-4bc5-b4df-dfb4e5aec73c-92668751-0>, accessed 30 July 2026.

20 HCMC, ‘HCMC Press Release IOSCO WIW 2024 (September 2024)’, http://ssrapplserver:8080/aweb/files/xrhma_alfavitismos/%CE%94%CE%B5%CE%BB%CF%84%CE%AF%CE%BF_%CF%84%CF%8D%CF%80%CE%BF%CF%85_%20IOSCO_%CE%A0%CE%B1%CE%B3%CE%BA%CF%8C%CF%83%CE%BC%CE%B9%CE%B1_%CE%95%CE%B2%CE%B4%CE%BF%CE%BC%CE%AC%CE%B4%CE%B1_%CE%95%CF%80%CE%B5%CE%BD%CE%B4%CF%85%CF%84%CE%AE_2024.pdf, accessed 30 July 2026.

B. During 2025

The HCMC signed a cooperation agreement with the Central Bank of France on financial literacy²¹, which concerns the free provision and adaptation into Greek of the educational material entitled “ABC de l’économie” and is proceeding with the implementation of this agreement by adapting information material (brochures and videos) of the Central Bank of France for the Greek public. The brochures and the videos have been adapted for the Greek public.

The Hellenic Capital Market Commission (HCMC) has also undertaken initiatives aimed at providing accessible educational material to the public. In this context, the HCMC has prepared an informational brochure on investment funds, which will be made available on its official website²². The brochure provides an overview of investment funds, explaining their main characteristics, how they operate, and other relevant information intended to assist investors in better understanding this type of financial product.

In addition, the HCMC has translated into English its investor awareness brochure entitled “*Don’t Invest with your Eyes Shut*”, which has also been published on its website,²³ in order to facilitate wider access to this educational material

Furthermore, the HCMC has decided to broaden the scope of its financial education initiatives to include younger audiences, with the aim of fostering financial awareness from an early age. To this end, the Commission commissioned the preparation of a children’s book intended for readers aged approximately ten years old. The book, which is available on the HCMC’s website (in Greek only), uses storytelling and fairy-tale narratives to introduce basic financial literacy concepts and to support the development of fundamental financial skills at an early stage.²⁴

HCMC has also developed a series of educational audiovisual materials aimed at raising public awareness about investment fraud. In this context, HCMC has produced and published on its website four short videos addressing common types of investment scams that have been handled by HCMC. These include: “*From Facebook to Fraud*”, “*The High Price of Easy Profit*”, and “*Refund Scams by Fake Platforms*”, as well as a video message by the Chair of the HCMC on the risks associated with financial fraud. We consider that by describing in simple words to investors true stories of investment fraud, we may assist in understanding the risks associated with scams. The HCMC has also informed the International Organization of Securities Commissions (IOSCO) of these initiatives in the context of the World Investor Week 2025. The videos are also expected to be referenced in the IOSCO World

21 Banque de France and HCMC, ‘Joint Press Release: Banque de France and the Hellenic Capital Market Commission join forces to promote Financial Education’ (8 September 2025), <http://www.hcmc.gr/vdrv/elib/a7e65c6e3-9f1a-4ce2-be0b-f6df71fae692668751-0>, accessed 30 July 2026.

22 HCMC, Φυλλάδιο για Συλλογικές Επενδύσεις, http://ssrapplserver:8080/aweb/files/xrhma_alfavitismos/%CE%A6%CE%A5%CE%9B%CE%9B%CE%91%CE%94%CE%99%CE%9F%CE%93%CE%99%CE%91%CE%A3%CE%A5%CE%9B%CE%9B%CE%9F%CE%93%CE%99%CE%9A%CE%95%CE%A3%CE%95%CE%A0%CE%95%CE%9D%CE%94%CE%A5%CE%A3%CE%95%CE%99%CE%A3_FINAL.pdf, accessed 30 July 2026.

23 HCMC, , *Do Not Invest With Your Eyes Shut: Useful Information and Advice for Investors (Brochure, 2026)*, http://www.hcmc.gr/aweb/files/xrhma_alfavitismos/DO_NOT_INVEST_WITH_YOUR_EYES%20SHUT_ENG_322026.pdf, accessed 30 July 2026..

24 HCMC, , *Παραμύθια Χρηματοοικονομικής Παιδείας*, http://ssrapplserver:8080/aweb/files/xrhma_alfavitismos/%CE%A0%CE%91%CE%A1%CE%91%CE%9C%CE%A5%CE%98%CE%99%CE%91%CE%A7%CE%A1%CE%97%CE%9C%CE%91%CE%A4%CE%9F%CE%9F%CE%99%CE%9A%CE%9F%CE%9D%CE%9F%CE%9C%CE%99%CE%9A%CE%97%CE%A3%CE%A0%CE%91%CE%99%CE%94%CE%95%CE%99%CE%91%CE%A3/, accessed 30 July 2026.

Investor Week report for 2025, thereby contributing to the dissemination of investor education initiatives at the international level.²⁵

HCMC has continued to contribute to financial education initiatives through its participation in workshops co-organized by the Hellenic Investors Association and several universities. In this context, representatives of the HCMC delivered lectures and presentations addressed to university students and investors, focusing on key issues relating to capital markets and investor awareness.

In addition, the Director of Research of the HCMC participated in the International Conference on “*Governance, Risk, Compliance and ESG*”,²⁶ organized by the Malta Stock Exchange on 13–14 March 2025. During the conference, she delivered a presentation addressing the role of financial literacy initiatives in supporting the future development and resilience of capital markets.

Furthermore, the HCMC participated in the World Investor Week 2025 (6–12 October 2025), organized under the auspices of the International Organization of Securities Commissions.²⁷ The 2025 edition focused on key themes including *Technology and Digital Engagement*, *Artificial Intelligence*, and *Fraud and Scam Prevention*, reflecting the evolving challenges faced by retail investors in increasing digital financial markets.

C. Other Publication Initiatives

Looking ahead, HCMC plans to further expand its financial literacy initiatives through the use of digital tools and innovative communication methods. In particular, the development of digital tools and gamification elements is planned as a project of the HCMC's Public Relations Office for 2026, with the aim of enhancing engagement and improving the accessibility of educational content for a broader audience.

In addition, the HCMC intends to make use of targeted digital communication tools, including campaigns through Google Ads, in order to promote its financial education initiatives on social media. These campaigns will, inter alia, promote the HCMC investor awareness brochure “*Don't Invest with your Eyes Shut*” and other educational materials, with the objective of increasing public awareness and further strengthening traffic to the HCMC's website.

Furthermore, the HCMC has also assigned the preparation of a comprehensive glossary of terms and definitions relating to capital markets legislation and practice to a professor from the University of Piraeus. The draft glossary is currently under review by the HCMC's internal team and is expected to be soon published on the HCMC's website²⁸

25 IOSCO World Investor Week, 'Annual Report' <https://www.worldinvestorweek.org/?p=annual-reports> accessed 30 July 2026.

26 <https://www.linkedin.com/feed/update/urn:li:activity:7306647419016941568/>, accessed 30 July 2026.

27 HCMC, 'Δελτίο Τύπου: Ολοκλήρωση της Παγκόσμιας Εβδομάδας Επενδυτή 2025 (WIW 2025)' (12 October 2025), <http://www.hcmc.gr/vdrv/elib/a86339ea3-4824-4b78-b816-5e4d545fd012-92668751-0>, accessed 30 July 2026.

28 <https://heyzine.com/flip-book/d93dd6d8a6.html>, accessed 30 July 2026.

Last but not least, the HCMC organized an international Conference on Financial Literacy in March 2026, entitled “Ensuring Informed Citizens, Trust & Stronger Capital Markets” (<https://www.finedu.gr/>).

05

Conclusion

The HCMC remains firmly committed to advancing the initiatives described above. The overarching objective is clear: to contribute to a European environment in which individuals—regardless of age, experience, or background—possess the knowledge, confidence, and skills necessary to make informed financial decisions.

Financial education plays a fundamental role in empowering citizens. By improving understanding of how financial systems operate, how to save, invest, protect assets, and plan—individuals are better equipped to make responsible financial choices, thereby strengthening their personal resilience and contributing to the stability of the financial system. In this way, financial literacy supports not only individual well-being but also broadens market confidence and inclusiveness.

At the same time, the transformation of financial markets presents new challenges. Digital trading platforms, crypto-assets, and artificial intelligence-driven investment tools have significantly expanded access to financial markets while also increasing their complexity. In parallel, regulatory requirements relating to sustainability disclosures require investors to understand non-financial information and sustainability-related risks.

Regulators, including the HCMC, can establish transparency standards and define regulatory frameworks. However, these frameworks can achieve their intended purpose only if investors are able to understand and assess the information disclosed. This is where financial literacy becomes indispensable. Investors who lack the necessary knowledge and skills are more susceptible to exercise risk – taking in complex or highly volatile products, misleading sustainability claims (“greenwashing”), and reliance on unregulated or unreliable sources of financial advice, particularly through digital channels.

For these reasons, financial education must evolve in parallel with developments in financial markets. Modern financial literacy initiatives should therefore encompass, *inter alia*:

- digital financial literacy and the responsible use of online investment tools;
- understanding and critically assessing investment-related disclosures, including sustainability-related information where relevant;
- awareness of behavioral biases affecting financial decision-making; and
- knowledge of cybersecurity risks and the prevention of investment fraud.

These priorities are consistent with initiatives promoted at the international level by organizations such as the OECD, through the OECD International Network on Financial Education, the IOSCO, as well as recent policy

initiatives undertaken by the European Commission.²⁹

Against this background, HCMC continues to place particular emphasis on educational initiatives addressing the evolving needs of investors in increasingly digital and complex financial markets. The Commission's actions aim to strengthen financial resilience, foster informed participation in capital markets, and support the responsible channeling of household savings towards sound and well-understood investments.

Financial literacy is an essential asset in an increasingly digital and complex financial environment. The HCMC therefore remains committed to contributing actively to national and European efforts aimed at promoting financial education and strengthening investor capability.

29 Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on the Financial Literacy Strategy for the EU, COM/2025/681 final, < <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52025DC0681> > , accessed 9/3/2026.



4.2
Academic Article

The Case for Targeted Deregulation of Finance

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Author's Bio



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Prof. Zetzsche is the author of more than 400 publications, including some globally leading articles and treatises on FinTech/RegTech, corporate governance, sustainable finance as well as collective and alternative investment law and regulation. Prof. Zetzsche is a Director of the Society of Investment Law (Chicago, Illinois), a member of the consultative working group of ESMA's Investment Management Standing Committee (IMSC) and a member of the Financial Access Survey expert group of the International Monetary Fund. He also functions as independent director of financial institutions.

Abstract

The purpose of financial regulation is to benefit society and regulated financial institutions. If the benefits generated by a particular rule do not outweigh its costs, there is a case for deregulation. Bounded regulatory rationality and political influence have undermined the consistent application of this undisputed principle. As a result, regulators' mandates have gradually expanded such that financial regulation today often addresses matters beyond finance. This has made cost-benefit analysis more difficult and has, in turn, weakened regulatory accountability and acceptance of rules by regulated entities.

I argue that targeted deregulation in finance is both appropriate and desirable as it strengthens the implementation of accepted regulatory objectives. Targeted deregulation is part of any due regulatory process: just as enterprises must regularly optimise their operations, financial regulators should regularly optimise their regulatory framework. Targeted deregulation is utterly distinct from Romano's 'iron rule of financial regulation' which is that crises drive regulation, and in turn the polity must curtail regulatory overreach from time to time in deregulation cycles.

To foster targeted deregulation I suggest five principles: regulators should position themselves as beneficent parents of financial systems; avoid ambiguous regulatory language; accept regulatory competition; adopt 'sandbox thinking'; and favour proportionate risk-based approaches over outright prohibition.

Keywords: financial regulation, deregulation, simplification, competitiveness, bounded regulatory rationality, regulating innovation.

Regulators of financial markets must be capitalists. They must take the perspective of a well-meaning mother or father who is painfully aware of the deficiencies of her daughters and sons, but nevertheless wants their best in all they do.

Jacques de Larosière (2025)¹

01

Times Of Deregulation

Following persistent lobbying efforts by pro-business proponents, deregulation has come to dominate recent US elections and the early months of the new US administration.² In particular, through the Congressional Review Act (CRA)³ and executive orders,⁴ the financial deregulation agenda has led to: (1) the Federal Trade Commission's premerger notification requirements;⁵ (2) the Consumer Financial Protection Bureau's prohibition on the use of medical information in credit scoring;⁶ and (3) the Securities and Exchange Commission regulating crypto-assets through enforcement.⁷ The same trend is evident elsewhere.

In Europe, the shift toward deregulation began with EU Commission President von der Leyen's commitment in March 2023 to reduce administrative and reporting burdens and the outcome of the European Parliament elections in June 2024. Former ECB Chair Mario Draghi's influential report advocated enhanced competitiveness through regulatory simplification,⁸ and the Eurochambres proposed to eliminate up to 60 burdensome business regulations.⁹ In response, the European Commission released its 'Competitiveness Compass'¹⁰ and established a

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- 1 Former managing director of the IMF, governor of the Banque de France, and President of the European Bank for Reconstruction and Development; chair of the High Level Group on Financial Supervision in the EU that authored the de Larosière report. The citation relies on the entry statement of the keynote speech provided at the ESMA conference 'Shaping the Future of EU Capital Markets', 5 February 2025.
 - 2 See U.S. Chamber of Commerce, Regulatory Relief Among the U.S. Chamber's Top 2025 Priorities | U.S. Chamber of Commerce.
 - 3 5 U.S.Code § 801.
 - 4 The White House, Presidential Actions, 'Ensuring Lawful Governance And Implementing The President's "Department Of Government Efficiency" Deregulatory Initiative' (February 19, 2025) <https://www.whitehouse.gov/presidential-actions/2025/02/ensuring-lawful-governance-and-implementing-the-presidents-department-of-government-efficiency-regulatory-initiative/?utm_source=wh_social_share_button>
 - 5 U.S. Chamber of Commerce, <PDF-GOI-HSR-CRA.pdf>
 - 6 U.S. Chamber of Commerce, <PDF_GOI-Medical-Debt-CRA-01.pdf>
 - 7 U.S. Securities and Exchange Commission, 'Cyber, Crypto Assets and Emerging Technology' (02 april 2025) <<https://www.sec.gov/about/divisions-offices/division-enforcement/cyber-crypto-assets-emerging-technology>> (last visited 22 November 2025)..
 - 8 European Commission, 'The Draghi report on EU competitiveness' (September 2024)
 - 9 Eurochambres, '60 regulatory burden reduction proposals' (10 december 2024) <241210-60-regulatory-burden-reduction-proposals.pdf>.
 - 10 European Commission, 'Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions: A Competitiveness Compass or the EU' (COM(2025) 30 final, 29 January 2025) <https://commission.europa.eu/document/download/10017eb1-4722-4333-add2-e0ed18105a34_en> pp. 16-18.

new Commissioner for Implementation and Simplification.¹¹

Financial deregulation has become central to this agenda. The European Commission released its ‘simplification omnibus packages’ in February 2025 to: target the complexity of the EU Sustainable Finance Framework;¹² examine whether increased supervision at the EU level could enhance regulatory simplification and burden reduction (SBR);¹³ and task the European Supervisory Authorities (ESAs) with large-scale reviews of EU financial legislation to identify potential simplification and burden reduction.¹⁴ Meanwhile, lobby groups have put forward simplification proposals¹⁵ that have been discussed at conferences held by the European Parliament.¹⁶

While labelled as simplification to avoid conflict with EU long-term policy commitments, the EU agenda in finance aims in many aspects at deregulation in substance. Simplification, taken literally, can include an outright ban where to-the-point regulation is difficult and complex – a strategy pursued by European financial regulators before.¹⁷ However, outright prohibition of successful international business models rarely enhances EU competitiveness. Simplification is the political term for deregulating business-hostile rules in EU finance.¹⁸

In the UK, following the outcome of the US elections,¹⁹ the current UK Chancellor of the Exchequer unexpectedly endorsed the claim by leading bankers that financial regulators went too far in their efforts to protect consumers, investors and depositors in the years following the onset of the Global Financial Crisis of 2007–8, and often did so

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- 11 European Commission, ‘Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions: A Competitiveness Compass or the EU’ (COM(2025) 30 final, 29 January 2025) <https://commission.europa.eu/document/download/10017eb1-4722-4333-add2-e0ed18105a34_en> p. 17.
 - 12 European Commission, ‘Commission staff working document Accompanying the documents Proposal for a DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL amending Directives 2006/43/EC, 2013/34/EU, (EU) 2022/2464 and (EU) 2024/1760 as regards certain corporate sustainability reporting and due diligence requirements Proposal for a DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL amending Directives (EU) 2022/2464 and (EU) 2024/1760 as regards the dates from which Member States are to apply certain corporate sustainability reporting and due diligence requirements and specifying further steps, SWD/2025/80 final, 26 February 2025, <EUR-Lex - 52025SC0080 - EN - EUR-Lex>
 - 13 European Commission, ‘Targeted Consultation on Integration of EU Capital Markets’ <2025-markets-integration-supervision-consultation-document_en.pdf> p. 7 Question 9.
 - 14 See, for instance, EIOPA, Board of Supervisors, ‘Bolder, Simpler, Faster: EIOPA’s views for better regulation and supervision’ (EIOPA-BoS-25/118 08 April 2025) <Bolder, Simpler, Faster: EIOPA’s views for better regulation and supervision>
 - 15 Report by an expert group under the leadership of Elisabeth Delahousse, ‘Less is More’ (10 February 2025) <report_lessismore_fin.pdf>.
 - 16 AEDBF Europe, ‘Less is More – Conference at the EU Parliament’ (30 April 2025) <Less is More - Conference at the EU Parliament>.
 - 17 An example includes ESMA’s Technical Advice on the revision of the UCITS Eligible Assets Directive, ESMA34-2087785638-1548 (26 June 2025). Following a consultation ESMA proposes to prohibit investment strategies that represent 10 per cent of the existing EU UCITS market, in a step that avoids complex regulations of new strategies like investments of retail investment funds into crypto-assets. The EU Commission responded that it would issue its own proposal after gathering evidence and launching its own consultation, a wording indicating distance from ESMA’s proposal. Another example includes the ESRB’s proposal to ban multi-party third-country issuers. See *infra*, at
 - 18 In the same vein, see S. Todeschini, ‘The Great EU Reversal: Fast-Track Deregulation and the Erosion of Europe’s Sustainability Ambition with the Omnibus I Regulation’ <<https://www.europeanlawblog.eu/>> (last visited 22 November 2025). EU Commissioner Albuquerque lists only deregulatory measures in her first year progress report, see ‘The 2025 Annual Progress Report on Simplification, Implementation and Enforcement’ (last visited 22 November 2025). < 2025 Annual Progress Reports on Simplification, Implementation and Enforcement - European Commission>.
 - 19 D. Bloom, ‘Britain’s Rachel Reeves needs a growth miracle’ *Politico* (29 January 2025) <Britain’s Rachel Reeves needs a growth miracle – POLITICO> (last visited 22 November 2025).

ineffectively.²⁰ This trend has been accelerated by pro-bank advocates who are concerned about European banks falling behind their American and Asian counterparts, which face less stringent regulation.²¹

Indeed, deregulation cycles are not new in finance. 'Better regulation' initiatives,²² the UK's Big Bang in 1986,²³ and several deregulatory measures adopted prior to the onset of the Global Financial Crisis 2007-08 have all been characterised as forms of deregulation.

Deregulation has also been studied extensively. One severe type, 'structural deregulation',²⁴ involves deliberate limitation of the state's administrative capacities. Recent examples include the agenda of the current US administration for the Department of Government Efficiency (DOGE) and the longest shutdown of U.S. public services in the history of the United States. Another type, 'midnight deregulation',²⁵ refers to deregulation reforms introduced in the final months of an administration before elections. In finance, deregulation has been associated with increased competition in credit and financial markets,²⁶ as well as changes in environmental outcomes,²⁷ mortality rates,²⁸ and reporting practices of financial intermediaries.²⁹ More broadly, deregulation has been situated in a recurring cycle: liberalisation promotes economic expansion, leading to crises and eventually to renewed regulation.³⁰ Finally, deregulation has been studied in terms of regulatory competitiveness, where regulators compete to attract financial institutions.³¹

20 E. Nolsoe, 'Red tape has inflated our headcount by 40pc, bank boss says' *The Telegraph* (yahoo!finance, 14 October 2024) <Red tape has inflated our headcount by 40pc, bank boss says> (citing the CEO of UK Saxo Bank).

21 T. Skeet, 'Red tape is strangling UK and EU banks, while the US pulls ahead' *The Banker* (3 February 2025) <Red tape is strangling UK and EU banks, while the US pulls ahead - The Banker>; C. Conchie, 'PRA under pressure to cut red tape as growth plans fail to excite the City' *CityAM* (22 January 2025) <PRA under pressure to cut red tape as growth plans fail to excite the City>.

22 Examples include: U.S. President Jimmy Carter's Executive Order 12,044 in 1978 and U.S. President Ronald Reagan's Executive Order 12,291 in 1981 which required an impact analysis of new regulations to ensure that the benefits outweigh the costs imposed by new regulations; the Australian 'better regulation' units; and the initiatives associated with EU Commission Charles McCreevy in the 2000s.

23 Cf. GoldmanSachs, "'Big Bang' Deregulation Bolsters London's Position as Global Finance Center' <<https://www.goldmansachs.com/our-firm/history/moments/1986-big-bang>> (last visited 22 November 2025).; R.C. Michie, *The London Stock Exchange: A History* (Oxford, 2001; online edn, Oxford Academic, 1 Nov. 2003) <<https://doi.org/10.1093/0199242550.003.0013>>, (last visited 22 November 2025)., Ch. 12; E.K. Clemons and B.W. Weber, 'London's Big Bang: A Case Study of Information Technology, Competitive Impact, and Organizational Change' (1990) 6:4 J Inform. Syst. 41-60.

24 J. Freeman, Sharon Jacobs, 'Structural Deregulation', (2022) 135 Harv. L. Rev. 585.

25 J. Brito, V. de Rugy, 'Midnight Regulations and Regulatory Review' (2009) 61:1 Administrative Law Review 163.

26 J.Melitz, C. Bordes, 'The macroeconomic implications of financial deregulation', (1991) 35:1 Eur. Econ. Rev. 155-178, [https://doi.org/10.1016/0014-2921\(91\)90109-V](https://doi.org/10.1016/0014-2921(91)90109-V).

27 P. Weinberg, 'Masquerade for Privilege: Deregulation Undermining Environmental Protection', (1988) 45 Wash. & Lee L. Rev. 1321.

28 I. Hasan et al., 'Banking Market Deregulation and Mortality Inequality' (6 February 2023). Bank of Finland Research Discussion Paper No. 14/2022, <<https://ssrn.com/abstract=4349845>> or <<http://dx.doi.org/10.2139/ssrn.4349845>>.

29 Cf. H. Genberg, 'The changing nature of financial intermediation and its implications for monetary policy' Bank for International Settlements Working Papers No 39 (9 April 2008) <<https://www.bis.org/publ/bppdf/bispap39f.pdf>>, p. 102f; V. Behrmann et al. 'The deregulation of quarterly reporting and its effects on information asymmetry and firm value.' (2025) 64 Rev Quant Finan Acc 1221-1259.

30 J. Stiglitz, 'Symposium on Bubbles' (1990) 4 J. Econ. Persp. 13-18; F. Partnoy, 'Why Markets Crash and What Law Can Do About It', (2000) 61 U. Pitt. L. Rev. 741, 743.

31 See H. Laurence, 'Regulatory competition and the politics of financial market reform in Britain and Japan', (1999) 39:2 Asian Survey 348-373; D.M.Abdelhamid, 'International Regulatory Competition and Deregulation', (2000) 23:4 World Competition 89-114; J. Westrup, 'The Politics of Financial Regulatory Reform in Britain and Germany', (2007) 30:5 West Eur. Pol. 1096-1119.

In my view, none of these approaches adequately describe the attitude that regulators should take towards deregulation of finance. Neither should deregulation of finance be part of a political powerplay, nor should it come in cycles following periods of over-strictness and regulatory interventions. I argue herein that the question is not whether to deregulate, but *what* to deregulate. *Targeted* deregulation is part of any due regulatory process: just as enterprises must regularly optimise their operations, financial regulators should regularly optimise their regulatory framework.

To make the case for targeted regulation of finance, I argue in Part II that under certain conditions, deregulation aligns with widely accepted aims of financial regulation. In Part III, I identify ways to determine the optimal level of (de)regulation by outlining three preconditions that regulators must meet when deregulating finance. In Part IV, I examine why these three preconditions are often overlooked and in Part V, I offer recommendations for how over-regulation can be avoided in practice.

02

The Case For Targeted Deregulation

Both under-regulation and over-regulation are considered harmful. Deregulation is considered necessary where over-regulation exists, just as regulation is considered necessary where there is under-regulation. The real challenge, however, is identifying when regulation is excessive enough to justify deregulation.

To contextualise, I first summarise the main arguments for and against financial deregulation before arguing that the traditional objectives of financial regulation support targeted deregulation, i.e., the removal of rules and standards amounting to over-regulation.

2.1 Justifying Financial Regulation

Two main theories analyse the regulatory process. One emphasises the abstract notion of the public interest and sees regulators as a “helping hand”.³² The other focuses on individual decisions within legislative and regulatory institutions such as in public choice or regulatory capture theory,³³ where Shleifer & Vishny picture regulators as

32 The public interest theory assumes that political actors, regulators and individuals working in regulatory and supervisory agencies are expected to make decisions that serve the common good, often employing tools such as cost-benefit analysis to identify the most efficient outcomes. Early representatives of this theory include Max Weber's concept of bureaucracy. It is sometimes unclear whether the public interest is understood as an ideal that regulators ought to pursue, or as a realistic description of regulatory practice. See M. Weber (1921 (1976)), *Wirtschaft und Gesellschaft* (transl. The Economy and Society), Tübingen: J.C.B. Mohr, pp. 124-130; 552-553. See also C.W. Lewis, 'In Pursuit of the Public Interest', (2006) 66.5 Public Administration Review 694.

33 Lead authors of the public choice theory argue that political actors, regulators and individuals working in regulatory and supervisory agencies, like all human beings, are primarily motivated by self-interest rather than by a commitment to maximising the public good. Their decisions are shaped by various forms of market influence, including considerations such as future career prospects after leaving regulatory roles. See J. McGill Buchanan & G. Tullock, *The Calculus of Consent: Logical Foundations of Constitutional Democracy* (1962). In a more modern interpretation that includes regulated institutions, see also G.J. Benston 'Regulating Financial Markets: A Critique and Some Proposals' (1988) Hobart Paper No. 135, London, Institute of Economic Affairs.

a “grabbing hand”.³⁴ Despite these differences,³⁵ there is a uniform view of what financial regulation *ought* to do: reduce agency conflicts; mitigate negative externalities to address market failures; and reduce transaction costs.

First, financial intermediation gives certain people power over others’ assets as their agents, in exchange for uncertain returns: banks hold depositors’ funds; fund managers oversee investors’ funds; and insurance companies utilise clients’ premiums. This makes conflicts of interest a significant concern. Such conflicts traditionally take two forms: ‘stealing’, or the appropriation of assets not assigned to agents; and ‘shirking’, or an agent’s failure to perform what they are obliged to do.³⁶

Financial regulation and effective enforcement counter both types of agency conflicts. By imposing minimum standards of organisation and expertise associated with a regulated activity, the risk of asset appropriation is reduced. Additionally, licensing rules ensure compliance with agents’ obligations and exclude dishonest and unfit actors from conducting business.

Second, financial intermediation can impose risks and costs on parties not involved in the financial decision, justifying financial regulation.³⁷ Financial institutions often bear counterparty risk stemming from the business conduct of another financial institution. The related counterparty risk is usually factored into the market price or expected returns of a given financial product.

However, a market failure may occur if such risks are transmitted without adequate compensation due to factors like asymmetric information, deficient internal processes that allow for adequate pricing of the risk, or the risk-transmitting institution’s dominant position. Further, when counterparty risks reinforce one another, ‘systemic risks’³⁸ may arise where one failure could trigger a chain reaction that eventually destabilises several other institutions, if not the whole economy. Such systemic risks are typically not reflected in the market price or returns, as they emerge from interlinkages invisible to counterparties.³⁹

Regulations such as requirements for banks to hold prudential capital reduce systemic risk and enhance financial stability because if the risk materialises, the capital may absorb the loss (at least to some extent) and reduce or eliminate exposure of counterparties and depositors to the financial institution. The same rationale applies beyond finance, such as environmental regulation mitigating or preventing pollution affecting parties with no

34 A. Shleifer & R.W. Vishny, *The Grabbing Hand - Government Pathologies and Their Cures* (Harvard University Press, M.A. 1998). The concept was first published in A. Shleifer & R. Vishny, ‘Corruption’, (1993) 108 Qu. J. Econ. 599-617.

35 Public interest theory and public choice theory differ in both the methods and tools proposed to achieve regulatory objectives, as well as in their assessment of whether such objectives can ever be fully realised. See R.A Posner, ‘Theories of Economic Regulation’, (1974) 5:2 The Bell J. Econ. Man’t Sc. 335-358.

36 See M.C. Jensen & W.H. Meckling, ‘Theory of the firm: Managerial behavior, agency costs and ownership structure’, (1976) 3:4 JFE 305-360.

37 Cf. J Armour, D Awrey, P Davies, L Enriques, JN Gordon, C Mayer, J Payne, *Principles of Financial Regulation* (Oxford, 2016; online edn, Oxford Academic, 20 Oct. 2016) <<https://doi.org/10.1093/acprof:oso/9780198786474.003.0003>> (last visited 22 November 2025)., p. 57 f (section 3.3.2 on negative externalities).

38 See G.G. Kaufman & K.E. Scott, ‘What Is Systemic Risk, and Do Bank Regulators Retard or Contribute to It?’, (2003) 7:3 The Independent Review 371-391, at p. 371 (defining systemic risk as “the risk or probability of breakdowns in an entire system, as opposed to breakdowns in individual parts or components, and is evidenced by co-movements (correlations) among most or all parts”).

39 Let’s assume A contracts with B, but A also enters into contracts with C to an extent that C’s insolvency impairs A’s ability to deliver on the contract. Unless the exposure to C is transparent to B, B will price the counterparty risk without regarding C’s influence on A (which sits on top of A’s insolvency risk) or the fact that B also bears the insolvency risk in relation to C.

contractual relationship with polluting firms.

Third, financial regulation also enhances the allocative efficiency of financial markets by reducing transaction costs.⁴⁰

For example, mandatory disclosure through securities prospectuses allocates information-gathering costs to the issuer, who can do so at the lowest cost. Similarly, risk management rules assign responsibility to the institution best positioned to prevent harm, described by Guido Calabresi as the 'cheapest cost avoider' function.⁴¹

Further, clearly defining certain activities or products can allow the market to rely on standardised terminology instead of analysing each product individually.⁴² In all these cases, financial regulation reduces the overall costs borne by all market participants collectively.⁴³

2.2 Pro-Deregulation Arguments

The benefits of regulation hold only when regulators observe certain limits. When these limits are exceeded, over-regulation occurs. Six main arguments have been raised⁴⁴ in support of deregulation in such circumstances.

Over-regulation of financial institutions discourages the calculated risk-taking necessary for economic growth. Barriers intended to prevent risk-taking ultimately act as obstacles to innovation, and consequently, to economic growth.

Moreover, regulation increases compliance costs, which raises transaction costs, thereby undermining the allocative efficiency of the financial system. It is important to note that transaction costs weaken *all* financial decisions, whether risk-reducing or risk-enhancing.

Over-regulation also diminishes service quality and increases prices for consumers, as additional costs are passed on to consumers. For example, capital adequacy rules that require financial institutions and insurers to hold additional funds, which cannot be used productively for lending, providing insurance cover or investing, increase the cost of financial intermediation.

40 See D.B.Johnsen, 'A Transaction Cost Assessment of SEC Regulation Best Interest', (2019) 2018:3 *Columbia Bus. LR* 696–756, 706 et seq (arguing that the SEC's cost-benefit-analysis misses to consider transaction costs effects); D Llewellyn, 'The Economic Rationale for Financial Regulation' (1999) FSA Occasional Papers In Financial Regulation <https://www.fep.up.pt/disciplinas/pgaf924/PGAF/Texto_2_David_Llewellyn.pdf>.

41 R Padolesi, B Tassone, 'Guido Calabresi on Torts: Italian Courts and the Cheapest Cost Avoider' (2008) 1:4 *Erasmus LR* 7–39.

42 Examples include the terms 'credit' and 'securities', but also more specific legal terms, such as the EU-regulated UCITS (Undertaking for Collective Investments in Transferable Securities).

43 Cf. Armour et al., *Principles of Financial Regulation*, n 37, pp. 53f, 66 f., K. Pistor, 'A Legal Theory of Finance', (2013) 41 *J Comp Econ*. 315–330, p. 320 (section 3.4 stating that "[a]n important purpose of financial innovation is to alleviate the costs of regulation(...)" and "Regulatory reforms in the aftermath of the financial crisis have triggered another round of financial innovation to mitigate the costs of these regulations for individual firms.").

44 Eg C.M. Hardin, 'The Effects of Over-Regulation', (1979) 34:1 *Food, Drug, Cosmetic LJ* pp. 50–57; Ifo Institute, *EconPol Forum* 06/2024, *Overregulation in the EU? How to Boost Competitiveness with Smarter Legal Frameworks*; U.S. Chamber of Commerce, 'How Excessive Regulation Hurts the Economy', U.S. Chamber of Commerce, 16 January 2025, <www.uschamber.com/economy/how-excessive-regulation-hurts-the-economy> (last visited 22 November 2025). I summarise in this section views from different policy platforms and domains without necessarily agreeing on these views.

Over-regulation often induces substantial risk to shift into less regulated sectors. Although intended to enhance financial stability and support other policy objectives, such over-regulation may instead lead the shadow finance system to expand.

Furthermore, over-regulation where decision-making authority is transferred from experienced, accountable and incentivised decision-makers within financial institutions to regulators – who are neither accountable nor incentivised in the same way – can result in ‘dead hands’ governing business that produces significant externalities.

Regulators operate outside the sector’s alignment mechanisms designed to reduce agency costs, such as various modes of management compensation. This may lead to higher regulatory-driven agency costs that outweigh the benefits of mitigating firm-internal agency costs.

Finally, financial regulators that are not part of the elected legislative institutions become an unofficial ‘fourth branch of government’. This intermediation of responsibility potentially undermines public accountability of rulemaking and supervisory agencies.⁴⁵

2.3 Targeted Deregulation As A Precondition Of Effective Financial Regulation

While deregulation may be justified in abstract terms, such deregulation must be defensible in light of the specific objectives of financial regulation.

Objectives of financial regulation commonly accepted by regulators⁴⁶ and leading academic commentators⁴⁷ include: (1) client (consumer/investor/depositor) protection; (2) enhancing market efficiency; (3) ensuring market integrity; and (4) financial stability and prevention of systemic risks. More recently accepted regulatory aims⁴⁸ include: (5) openness to innovation; and (6) sustainability.

Where over-regulation is present, a closer examination of these core aims reveals that they can only be upheld through targeted deregulation. In other words, situations of over-regulation require targeted deregulation to create a state of the law that pursues these six regulatory objectives effectively.

45 Cf. M. Tushnet, *The New Fourth Branch* (Cambridge University Press 2021), arguing that regulatory and administrative institutions do not always succeed in protecting constitutional democracy, and indeed sometimes undermine it.

46 Cf. D. Llewellyn, ‘The Economic Rationale for Financial Regulation’ (1999) FSA Occasional Papers In Financial Regulation <https://www.fep.up.pt/disciplinas/pgaf924/PGAF/Texto_2_David_Llewellyn.pdf>. See also releases by various regulators, for instance Monetary Authority of Singapore Objectives and principles of financial supervision (Apr 2004, rev Sep 2015), at p. 6 <[Objectives and Principles of Financial Supervision in Singapore.pdf](#)>.

47 Cf. C. Brummer, ‘Disruptive Technology and Securities Regulation’, (2015) 84 Fordham LR 977, 1037-38; C. Brummer, ‘Regulatory Agencies and the Inclusion Trilemma’, (2024) 87:1 MLR 1, 3-8; C. Gortsos, *The European Banking Regulation Handbook II* (Palgrave Macmillan, 2025), at pp. 99-100.

48 See RP Buckley, DW Arner, DA Zetzsche, *FinTech: Finance, Technology and Regulation* 315-325 (Cambridge University Press, Cambridge MA: 2023).

2.4 Client Protection: The Consumer and The Investor

All regulation increases the costs of compliance. While these costs will be passed on to clients in the form of higher costs, they are justified if the benefits of regulation outweigh the higher costs.

Some of this cost-benefit analysis can be assessed financially and mathematically, while others concern non-monetised goods such as the ban on using sensitive information for credit scoring.⁴⁹ The value of protecting such sensitive information is perceived differently depending on factors like: the political perspective of the decision-makers; their attitudes towards privacy; the degree of legal protection for privacy; and the interests of the respective financial service providers and recipients.

2.5 Market Efficiency

The compliance burden stemming from regulation increases transaction costs, which raise the minimum size of financial transactions and reduce the allocative efficiency of financial markets. When such rules do not mitigate risks or transaction costs, they are efficiency-reducing.⁵⁰

Examples include rules embedding social values that are not uniformly shared, such as those regarding the inclusiveness of the financial system.⁵¹ In some jurisdictions, financial institutions are required to offer low-cost or even free bank accounts to low-income clients. Some perceive these rules as risk mitigation, as individuals without access to the regulated financial system are exposed to storage and transfer risks from theft, fraud, and disasters. However, others view the same rules as cost-enhancing or redundant on the basis that any additional costs imposed by such accounts are not offset by the income they generate, or that these accounts would have been provided to such clients in any case.

2.6 Market Integrity

Regulation divides the economy into regulated and unregulated sectors. When the costs of regulated activities are not commensurate with income opportunities, business actors seek to avoid regulation and operate in less regulated sectors, commonly referred to as 'shadow banking'.

Shadow banking is a significant concern in finance. Overly strict bank regulation may lead to reduced access to regulated finance, thereby supporting the existence of 'loan sharks' and other irregular types of financial services⁵² whose very existence undermines market integrity due to non-compliance with regulations like anti-money laundering and counter-terrorist financing frameworks.

49 Cf. K. Langenbucher, 'Responsible A.I. credit scoring – a legal framework', (2020) 25 Eur Bus LR 527.

50 Cf. J Armour et al., *Principles of Financial Regulation*, supra note 37, at pp. 102 f.

51 On financial inclusion more generally T. Beck, A. Demirguc-Kunt, M Martinez Peria, 'Reaching out: Access to and use of banking services across countries' (2008) 85:1 JFE 234-266; Brummer, 'Regulatory Agencies and the Inclusion Trilemma', n 47, 5-8.D Ha, P Le, DK Nguyen, 'Financial inclusion and fintech: a state-of-the-art systematic literature review' (2025) 11 Financ Innov 69; A Hannig, S Jansen, 'Financial Inclusion and Financial Stability: Current Policy Issues' ADB Institute Working Paper No. 259 (December 21, 2010) <<http://dx.doi.org/10.2139/ssrn.1729122>>.

52 See R. Mayer, 'Loan Sharks, Interest-Rate Caps, and Deregulation', (2012) 69 Wash. & Lee L. Rev. 807 (arguing that deregulation does not starve the nonviolent species of loan sharks into extinction but instead feeds it while violent criminal loan sharks loose importance).

2.7 Financial Stability

The Global Financial Crisis of 2007–08 highlighted the prevention of systemic risks as a key objective of financial regulation. Such prevention involves improved monitoring of factors that can prompt such risks, the containment of systemic risk, and enabling supervisory authorities to provide assistance during a crisis.

Depending on the state of the market, deregulation can both reduce and enhance systemic risks. If over-regulated, financial institutions bear excessive regulatory costs, which undermines their profitability and reduces their ability to maintain capital reserves during a crisis. Moreover, regulation increases the costs of doing business and erects barriers to entry in financial services markets.

While barriers to entry may be viewed as desirable, as regulation excludes bad actors from the market and reduces information costs associated with monitoring counterparty risk, it can also lead to fewer providers offering financial services and can lead to greater market concentration among licensed entities.

2.8 Openness To Innovation

All regulation limits openness to doing business, particularly in the financial sector. Financial regulation specifies which economic activities are strictly prohibited for those who are not licensed to pursue or offer these activities. The more intense the regulation, the higher the entry costs, resulting in a greater need for financial resources as a prerequisite for providing financial services.

To mitigate the adverse impact of regulation on innovation, regulators and scholars have sought to enhance openness to innovation through instruments like regulatory sandboxes, bespoke FinTech licences, piloting regimes, and innovation hubs.⁵³ However, these instruments also come with their own costs and challenges.⁵⁴ Further, none of these instruments have gained practical significance in the large financial markets of the United States and the European Union, although Luxembourg did introduce an innovation hub in 2014 and the UK Financial Conduct Authority has gained experience with the regulatory sandboxes since 2015.⁵⁵

53 See D.A. Zetzsche, Ross P. Buckley, D. Arner, and J. Barberis, 'Regulating a Revolution: From Regulatory Sandboxes to Smart Regulation', (2017) 23 *Fordh J Corp & Fin L* 31.

54 Cf. R Parenti, 'Regulatory Sandboxes and Innovation Hubs for FinTech - Impact on innovation, financial stability and supervisory convergence', Study Requested by the ECON committee, European Parliament (2020); ESMA, EBA, EIOPA 'FinTech: Regulatory sandboxes and innovation hubs', Report JC 2018 74 (2018); A Attrey, M Leshner, C Lomax, 'The role of sandboxes in promoting flexibility and innovation in the digital age', OECD Going Digital Toolkit Notes, No. 2, OECD Publishing, Paris (2020) <<https://doi.org/10.1787/cdf5ed45-en>> ; RP Buckley et al., *FinTech*, n 48, 164-176; World Bank Group, 'Global Experiences from Regulatory Sandboxes', Finance, Competitiveness & Innovation, Global Practice, Fintech Note No. 8 (2020).

55 See RP. Buckley, Douglas Arner, Robin Veidt, and Dirk Zetzsche, 'Building Fintech Ecosystems: Regulatory Sandboxes, Innovation Hubs and Beyond', 61 *Wash. U. J. L. & Pol'y* 055 (2020).

2.9 Sustainability

In our view, sustainability⁵⁶ refers to the long-term viability and desirability of a given business model in light of environmental, social and governance challenges. This includes both the financial institution's susceptibility to sustainability risks and the impact it has on the environment and society at large.

Regardless of political preferences regarding individual ESG factors, unprofitable businesses are never sustainable as they impose externalities on other parts of society through lower corporate tax revenues, the need for subsidies, and costs associated with restructuring and insolvency. When the externalities prevented by regulation do not outweigh those created by regulation, the tide begins to favour deregulation.

03

Targeted Deregulation as Due Regulatory Process

While deregulation can undermine the accepted objectives of financial regulation, deregulation of the rules and standards identified as over-regulation are likely to strengthen them as enforcement capacities can focus on the remaining, better drafted, regulations. This will result not only in better regulation but also in more effective enforcement at lower costs for society and institutions alike. Further, enforcing more effective rules will also support the credibility and standing of regulators within the financial system and society at large. In short, deregulation of the *right* rules is something regulators should pursue rather than avoid. I refer to this as 'targeted deregulation'

Indeed, any effective regulatory strategy is deficient without regular reviews of existing financial regulation and appropriate targeted deregulation. In the context of a 'crash-then-law' cycle of regulation, prominent commentators have long proposed tools such as sunseting to prompt periodic reconsideration of such rules.⁵⁷ While regular reviews of financial regulation are also mandatory in many countries,⁵⁸ I have not seen any evidence that suggests such reviews in fact lead to targeted deregulation. Rather, the amount of regulation continues to expand.⁵⁹

56 European Commission, 'EU taxonomy for sustainable activities', <https://finance.ec.europa.eu/sustainable-finance/tools-and-standards/eu-taxonomy-sustainable-activities_en> (last visited 22 November 2025).; Deloitte, Sustainability regulation outlook 2024 <<https://www2.deloitte.com/us/en/insights/environmental-social-governance/sustainability-regulation-outlook.html>> (last visited 22 November 2025).; ESGtoday, 'EU Regulators Propose New Sustainability and Transition Categories for Financial Products' <<https://www.esgtoday.com/eu-regulators-propose-new-sustainability-and-transition-categories-for-financial-products/>> (last visited 22 November 2025)..

57 Sunseting refers to legislation which, after a fixed time span, expires unless it is reenacted to remain in force. See Roberta Romano & Simon A. Levin, *Sunseting as an adaptive strategy*, 118 (26) PNAS (Proceedings of the National Academy of Sciences) (June 29, 2021; online pub. June 25, 2021); DOI: 10.1073/pnas.2015258118 (advocating the use of sunseting as a mechanism for mitigating the potentially adverse consequences of crisis-driven financial legislation).

58 Examples include the U.S., the EU and the UK. See *supra*, at I. For instance, U.S. financial regulators have been required since the early 1980s to review adopted rules, at least every ten years. These reviews seem, however, to face several challenges. See, on the legislative history as well as for a critique on the cost-benefit analysis applied by the SEC Johnsen, D. B. (2019), 'A Transaction Cost Assessment of SEC Regulation Best Interest', *Columbia Business Law Review*, 2018(3), 696–756, 706 et seq.

59 The website www.countyoffice.org counts the quantitative data on regulations published in the Federal Register and the Code of Federal Regulations (CFR). It noted that the number of pages in 2021 (approx. 86,000 pp.) and 2022 (approx. 80,000 pp.) were among the highest in history. As of 2019, the CFR contained more than 160,000 pp., an increase of 161 per cent compared to the 1970s.

Notably, the link between crises and regulation is also misleading. First, the evidence regarding regulators' response to crises with changes in regulation is mixed.⁶⁰ Second, as I will elaborate further below, regulation is increasingly pursuing policy goals beyond crisis-response. Thus, deregulation cannot occur unless these accompanying policy approaches are revisited.

Instead, I argue that targeted deregulation should become an ordinary part of the regulatory process: just as enterprises seek to constantly optimise their operations, financial regulators too should seek to constantly optimise their regulatory framework. The following parts identify how regulators can pursue this task with a three-pronged deregulation test, and then reviews why regulators often fail to apply this test in practice.

04

A Three-Pronged Deregulation Test

The central difficulty in assessing whether deregulation is appropriate lies in determining when over-regulation is present to a degree that justifies deregulation. For example, prior to the Global Financial Crisis of 2007–8, banks' prudential capital requirements were less stringent than those under the current Basel framework, meaning certain financial transactions were generally less costly.⁶¹ In light of the profound consequences of that financial crisis, during which many individuals lost their jobs, homes and, in some cases, their lives, the question arises: do the current Basel capital regulations constitute over-regulation?

In this Part, I propose a three-pronged test to help assess such questions.

Proceeding on the basis that any regulation should benefit either the relevant financial institution or society generally, if the costs of regulation exceed the benefits for either the relevant financial institution or society, the regulation in question should be repealed.⁶²

I also propose deregulation if the costs of regulation are equal to the benefits on the basis that any additional costs or restrictions in freedom imposed on financial institutions can only be justified if the benefits *exceed* the costs.

Accordingly, I propose three cumulative conditions that favour deregulation, which I will discuss further below:

- The costs of regulation to the financial institution are greater than or equal to the benefits to the financial institution [$C(FI) \geq B(FI)$]; and

60 In fact, in a more recent paper Roberta Romano could not find consistent evidence that all or even most financial crises lead to more and deeper financial regulation, see Roberta Romano, *Are There Empirical Foundations for the Iron Law of Financial Regulation?*, Am. L. & Econ. Rev. __ (forthcoming), Yale Law & Economics Research Paper, SSRN: <https://ssrn.com/abstract=4340042>.

61 Basel Committee on Banking Supervision, 'Evaluation of the impact and efficacy of the Basel III reforms', Bank for International Settlements (14 December 2022) <https://www.bis.org/bcbbs/publ/d544.pdf>, p. 50f; S Noess-Schmidt, JB Jensen, H Ehmann, M Facinio, A Lemberg, 'Economic Impact of the final Basel III Output Floor', Swedish Bankers' Association, Copenhagen Economics (16 March 2021) <https://www.financesweden.se/media/4902/2103-copenhagen-economics-output-floor-in-final-basel-iii.pdf>, p. 12.

62 Cf. GR Baldwin and CG Veljanovski, 'Regulation and Cost-Benefit Analysis', Public Administration, Vol. 62 Spring 1984 (51-69)

- The costs of regulation to the financial institution are greater than or equal to the benefits to society [$C(FI) \geq B(S)$]; and
- The costs of regulation to society are greater than or equal to the benefits of regulation to society [$C(S) \geq B(S)$].

4.1 Costs Of Regulation At The Firm Level Are Greater Than Or Equal To The Benefits At The Firm Level

The costs of regulation to the firm must be greater than or equal to the benefits to the firm. Benefits may include reduced agency costs and the avoidance of losses, specifically unprofitable risk-taking.

Example 1: Consider regulation aimed at reducing agency conflicts between the investment fund manager and unit holders. If, for instance, the costs of mandatory rules on fees and remuneration exceed the benefits of improved alignment of incentives between the fund manager's executives and the fund investors, the first condition for deregulation will be met.

Example 2: Consider regulation seeking to influence the risk-taking behaviour of a financial institution through prudential or risk management requirements. If the regulation leads to less profitable risk-taking on a risk-adjusted basis, the first condition for deregulation will be met.

4.2 Costs Of Regulation At The Firm Level Are Greater Than Or Equal To The Benefits To Society

The costs of regulation at the firm level must be greater than or equal to the benefits to society. Benefits of regulation for society may include, for example, reduction of externalities, counterparty risk or information costs.

Example 1: While mandatory disclosures may result in lower information costs for counterparties and investors, such costs will exceed the benefits when: (1) the information disclosed is immaterial for the counterparties and investors; or (2) the counterparties' and investors' collective search costs are lower than the issuers' costs of disclosure; or (3) the collectively identified and assessed information is more reliable than the issuers' disclosures.

Note that high search costs and low reliability of the information provided are often the case with disclosures involving non-firm specific information: social values; uncertain predictions on the future like with environmental developments; and any subject-matter on which the issuer is a non-expert, such as biodiversity impacts and climate change.⁶³ However, in the age of Big Data and artificial intelligence, technology impacts on such search costs as the focus shifts from searching and collecting to validating information.⁶⁴ Factoring-in technology can lead to entirely new cost-benefit-ratios of mandatory disclosure.

⁶³ Note that there is a difference between mandatory and voluntary disclosure of (potential) sustainability impacts. Where an issuer promises to deliver positive sustainability impacts in the course of its products or services it must be held accountable for its promises. Further, for *some* sustainability-related information the issuer *is* the cheapest cost avoider; for instance, the issuer knows its own energy costs and costs for raw materials best.

⁶⁴ See Buckley et al., *FinTech*, n 48,

Example 2: Consider again regulation seeking to influence risk-taking behaviour of financial institutions through prudential regulations or risk management requirements. If the regulation leads to less profitable risk-taking on a risk-adjusted basis, and the reduction in profitability is greater than the societal benefits derived from that reduction such as diminished systemic risk and bankruptcy costs, the second condition for deregulation will be met.

4.3 Costs Of Regulation To Society Are Greater Than Or Equal To The Benefits Of Regulation To Society

As regulation often imposes costs on third-parties, the third condition for deregulation will be satisfied when the costs of regulation to society are greater than or equal to the benefits.

Example 1: Certain financial activities, such as banks' provision of credit, can become more expensive when regulation influences the risk-taking behaviour of financial institutions through prudential regulations or risk management requirements. If the increase in financing costs exceeds the societal benefits such as reduced systemic risk and bankruptcy costs, the third condition for deregulation will be met.

Example 2: Enhanced compliance duties such as AML/CTF requirements can lead to higher compliance costs for opening bank accounts which, in turn, results in higher fees or a higher minimum balance required to open a bank account. Similarly, additional reporting requirements can increase the costs of the respective financial services, which can raise either the fees or the minimum transaction size for those services. If the reported data is not analysed by regulators, either because it is immaterial or because the regulators lack the capacity for data analytics, the third condition for deregulation will be fulfilled.

4.4 Jurisdiction For The Application Of The Three-Pronged Test

Responsibility for applying the three conditions above lies with designated decision-makers: parliament; members of the polity such as ministers or secretaries of state; or members of expert administrative bodies with specific regulatory responsibilities. I refer to the latter as 'regulators'.

In the United States, responsibility for the prevention of systemic risks has been allocated to the Financial Stability Oversight Council (FSOC) since the adoption of the 2010 Dodd-Frank Act,⁶⁵ which is chaired by the Secretary of the Treasury and includes representatives from all federal financial regulatory agencies, along with a few other financial officials.⁶⁶ As the FSOC is led by the Treasury Secretary, the influence of the executive branch on its work is considerable. Similarly, commissioners of federal agencies are appointed by the presidential administration and confirmed by Congress.

65 Dodd-Frank Wall Street Reform and Consumer Protection Act – P.L. 111-203, 21 July 2010.

66 Marc Labonte, 'Financial Regulation: Systemic Risk' (Congressional Research Service Report, 01 February 2022) <R47026.pdf (GESCHÜTZT)> (stating that „FSOC can make nonbinding recommendations to its member agencies and Congress on how to address emerging threats. It can also designate nonbank financial firms as systemically important financial institutions (SIFIs). To address the “too big to fail” issue, large banks and SIFIs are subject to enhanced prudential regulation (heightened safety and soundness standards) by the Federal Reserve.”).

By contrast, prevention of systemic risks in the EU is assigned to the European Systemic Risk Board (ESRB), which is chaired by the President of the European Central Bank.⁶⁷ A representative of the European Commission serves as a link to the Commission, which functions as the executive authority of the EU. However, the composition and working methods of the ESRB remain largely technocratic and operate with a considerable degree of independence from the political sphere. For instance, contrary to the European Commission's deregulation agenda, the ESRB recently proposed the ban of multi-issuer stablecoins involving issuers of third-countries.⁶⁸

The foundation of financial regulation is often established by the financial regulators themselves, with many rules being drafted, adopted, and subsequently revised by these authorities. For instance, the Securities and Exchange Commission's authority extends to regulations under the Securities Act, the Securities Exchange Act, the Investment Advisers Act, and the Investment Company Act. Similarly, the European Supervisory Authorities (ESAs) play an important role in relation to Regulatory and Implementing Technical Standards, as well as supervisory guidelines, recommendations and opinions. These instruments function as de facto rules, constituting 'soft law' at Levels 2 and 3 of the EU Lamfalussy rulemaking system.⁶⁹

05

Factoring In Bounded Regulatory Rationality

While cost-benefit analysis may appear to offer a straightforward calculation as to whether a given rule should be removed, the implementation of such a test presents a range of practical challenges.⁷⁰

5.1 The Limits Of Regulatory Rationality

Regulators' rational decision-making abilities are constrained for three main reasons. First, there are limitations in data availability. Second, even where all relevant data is available, there are limitations in jurisdiction, expertise and

67 See Art. 5 and 6 of Regulation (EU) No 1092/2010 on European Union macro-prudential oversight of the financial system and establishing a European Systemic Risk Board (as amended).

68 European Systemic Risk Board, 'Recommendation of the European Systemic Risk Board of 25 September 2025 on third-country multi-issuer stablecoin schemes (ESRB/2025/9)' (25.9.2025) https://www.esrb.europa.eu/pub/pdf/recommendations/esrb_recommendation251020.en.pdf (last visited 25 November 2025) p. 7, Recommendation A.

69 BaFin, European Supervision <<https://www.bafin.de/ref/19591252>> ; European Commission, Regulatory process in financial services <https://finance.ec.europa.eu/regulation-and-supervision/regulatory-process-financial-services_en> ; Kostas Botopoulos, 'The European Supervisory Authorities: role-models or in need of re-modelling?', ERA Forum 21, 177–198 (2020) <<https://doi.org/10.1007/s12027-020-00609-7>>.

70 Some of these limitations have been emphasised by the lead authors of public choice theory. See Kenneth J Arrow, *Social Choice and Individual Values*, Yale University Press (2012). JSTOR, <<http://www.jstor.org/stable/j.ctt1nqb90>> (last visited 22 November 2025).; Gordon L. Brady and Gordon Tullock (Eds.), *Formal contributions to the theory of public choice: The unpublished works of Duncan Black*, Norwell, MA: Kluwer Academic Publishers (1996); James M. Buchanan and Gordon Tullock, *The Collected Works of James M. Buchanan*, Vol. 3. *The Calculus of Consent: Logical Foundations of Constitutional Democracy*, with a Foreword by Robert D. Tollison (Indianapolis: Liberty Fund, 1999); Anthony Downs, *Political Theory and Public Choice* Books, Edward Elgar Publishing (1998); William A. Niskanen, *Policy Analysis and Public Choice* Northampton, Mass.: Edward Elgar (1998) 430 pp.; Mancur Olson, *The Logic of Collective Action: Public Goods and the Theory of Groups*, Second Printing with a New Preface and Appendix. Harvard University Press (1971) JSTOR, <<https://doi.org/10.2307/j.ctvjsf3ts>> (last visited 22 November 2025).; William H Riker, *The Political Psychology of Rational Choice Theory*, Political Psychology, vol. 16, no. 1, 1995, pp. 23–44. JSTOR, <<https://doi.org/10.2307/3791448>> (last visited 22 November 2025)..

resources. Third, rational decision-making is further hindered by conflicts of interests.

Reliable data on future developments are impossible to generate. As far as complex multi-factor decisions outside of individuals' preferences and data trials are concerned, predictive artificial intelligence remains a Nirvana assumption.⁷¹ Meanwhile, data on the past and present may be limited due to constraints in regulators' and the industry's data collection capacity or due to regulators' restricted jurisdiction in certain subject areas.

Even with full data availability, limitations in jurisdiction, expertise and resources impair the quality of regulatory decisions. For instance, a US banking regulator may be unconcerned by the impact of US bank regulations on China, unless significant Chinese counterparties encounter difficulties. Moreover, bank regulators have limited expertise in assessing the impact of their rules on other financial sectors and industries, even though a financial concern may arise from a non-financial event, such as new technologies or political conflict. In the context of systemic risk, while this limitation is mitigated by cross-sectoral bodies such as the FSOC and the ESRB, boards that consider macroeconomic factors are typically the domain of central banks and are less commonly embedded within specialist regulatory authorities.

Furthermore, regulators operate with limited resources, including restricted data analytics capacity. As a result, rational decision-making is affected by the growing complexity and interdisciplinarity of the matters subject to regulation. Notable examples include the emergence of quantitative mathematics,⁷² financial and regulatory technologies,⁷³ and sustainability risks and factors within the financial sector.⁷⁴ Although the delegation of authority to financial regulators rests on the assumption that they possess subject-matter expertise, in each of these cases the regulators are not experts in the relevant fields and are tasked with regulating and enforcing rules that are financial in name only. Challenged by increasingly complex and less well-understood topics, regulators face a choice between acting out of fear of the unknown, which often results in overly restrictive or prohibitive approaches, or relying on the industry for additional knowledge, which may in turn increase the risk of regulatory capture.

Regulatory institutions are led by individuals who possess their own motives, challenges and ambitions. As a result, conflicts of interest may arise. The extent to which such conflicts influence regulatory and supervisory practice depends largely on the governance structure of the agency in question. For instance, some individuals may be motivated to serve within a prominent regulatory authority in order to engage in 'empire building'.⁷⁵ This may involve expanding the institution's mandate openly through legislative amendments, or more subtly through expansive interpretations of legal terms that define the scope of the regulator's jurisdiction. On the other hand, while regulators do not share in the benefits of financial institutions' risk-taking, they do bear the reputational consequences if such

71 See IBM, 'Generative AI vs. predictive AI: What's the difference? | IBM' (last visited 22 November 2025). (stating that 'Predictive AI blends statistical analysis with machine learning algorithms to find data patterns and forecast future outcomes. It extracts insights from historical data to make accurate predictions about the most likely upcoming event, result or trend. Predictive AI models enhance the speed and precision of predictive analytics and are typically used for business forecasting to project sales, estimate product or service demand, personalise customer experiences and optimise logistics. In short, predictive AI helps enterprises make informed decisions regarding the next step to take for their business.').

72 For a doomsday account see Scott Patterson, *The Quants: How a New Breed of Math Whizzes Conquered Wall Street and Nearly Destroyed It* (New York, 2011).

73 See Arner et al, 'FinTech and RegTech: Enabling Innovation While Preserving Financial Stability', (2017) 18:3 Geo J Int'l Aff. 47-58.

74 See D.A. Zetsche, L.C. Anker-Sørensen, 'Regulating Sustainable Finance in the Dark' (2022) 23 EBOR 47-85.

75 See Daryl J. Levinson, 'Empire-Building Government in Constitutional Law' 118 Harv L Rev 915, 932-37 (2005).

risks materialise as regulators may be held responsible for ineffective regulation and supervision. This can lead regulators to favour risk avoidance and prohibition, even if more balanced risk management strategies would be more socially optimal. This tendency, which I refer to as 'regulatory discouragement', is typically accompanied by an over-emphasis on risks that are often less well understood.

5.2 The Dual Role Of Politics In Financial Regulation

Similar to the contrast between the 'helping hand' and the 'grabbing hand' laid out above,⁷⁶ political influence may have both constructive and detrimental effects on regulatory decision-making.

On the one hand, political influence may counter the risk of 'regulatory capture', which refers to the danger that industry or social preferences influence regulators to such an extent that regulation primarily serves the interests of the industry or social group rather than those of society at large, resulting in suboptimal regulation or enforcement.⁷⁷ Indicators of regulatory capture include: dependency on advisory firms when drafting rules and regulations; strong representation in regulatory commission and staff; and financial dependency on particular industry groups.

Political influence may also counter the risk of 'regulatory discouragement', which refers to the tendency to overemphasise risks based on regulators' awareness that they may be blamed for any adverse outcomes, while the risk premium in the form of profits, rents or salaries will be internalised by the regulated industry.

At the same time, political influence on financial regulation can be potentially harmful where the decision-makers prefer ensuring their re-election and remaining in power over pursuing the public interest.⁷⁸

The most obvious form of this negative impact is nepotism, whereby individuals lacking the necessary fitness and propriety are appointed to regulatory positions on the basis of personal or political connections. This can lead to political influence on financial regulation that reflect the political connections' ethical and social expectations. This holds true regardless of whether the connections favour a market-liberal or market-hostile agenda. When such expectations are integrated into regulation, the additional influences could divert attention from reducing agency costs, externalities, and transaction costs, ultimately undermining regulations' core objectives.

Recent examples of a politically induced widening of regulatory mandates include the expectation that financial regulation – rather than financial markets directly – promotes job growth and innovation by ensuring well-governed funding streams.⁷⁹ Further, financial regulation is now expected to: help reduce negative sustainability impacts beyond the immediate reach of business activities;⁸⁰ ensure that profits are fairly distributed to all parts of society; and ensure that firms treat all stakeholders (including employees) fairly, for instance after a take-over.

⁷⁶ Supra notes 33 to 35.

⁷⁷ Ernesto D. Bó, 'Regulatory capture: A review' (2006) 22.2 *Oxford Rev Econ Pol'y* 203–225; G.J Stigler, 'The Theory of Economic Regulation' (1971) 2:1 *The Bell J Econ Man'T Sc* 3–21; ME Levine, JL Forrence, 'Regulatory Capture, Public Interest, and the Public Agenda: toward a Synthesis' (1990) 6 *JLEO* 167–198.

⁷⁸ D Acemoglu, JA Robinson, 'A theory of political transitions', (2001) 91:4 *Am Econ Rev* 938–963.

⁷⁹ For a US perspective see Brummer, 'Disruptive Technology and Securities Regulation', n 47, at 1037 et seq.

⁸⁰ It should be noted that disclosure on sustainability risks falls within the core mandate of financial regulation, as it enhances the information available to shareholders and creditors for assessing non-financial risks to which the firm is exposed.

Where outright prohibitions cannot be adopted in the regulatory process, the overburdening of financial regulation with political influences often results in additional obligations intended to compel behaviour favoured by the relevant political faction. This may take the form of expanded risk management requirements, whereby political expectations are reframed as risks to be addressed. The overload of financial regulation increases compliance costs for financial institutions and strains regulators' enforcement resources to their limits. This results in either weaker enforcement of the core aims of financial regulation or the accumulation of additional resources on the part of regulators – for instance, in natural sciences – which in turn leads to higher fees charged to supervised entities to cover the costs of these resources.

5.3 Non-Monetised Goods As Legislative Prerogative

In principle, financial regulation applies only to financial decisions and goods with a market price. However, an increasing range of goods for which a market price cannot be reasonably established poses a challenge for the application of the three-pronged deregulation test. For instance, what is the value of privacy? What is the value of a future with a healthy climate that will be experienced by our grandchildren in the future rather than ourselves today? What is the value of reduced drug trafficking and addictions, and greater personal security in society, due to enhanced AML/CTF regulations?

As these non-monetised goods are subject to the domain of politics and the legislative process, regulators *stricto sensu* must stay away from political infection as much as possible to ensure a neutral cost-benefit assessment that is so crucial for effective regulation. While politics must stop short of mixing its political agenda into financial regulation objectives.

06

Curing Financial Regulation

By synthesising the three-pronged test into specific guidance, this section presents a set of recommendations for targeted deregulation of finance, arranged in a broadly thematic order.

6.1 Capital Markets Regulation 'By Capitalists'

The first recommendation concerns regulatory attitude. Capital markets regulation must take place under market influence. A regulator must be solely driven by the desire to establish the best financial system possible, facilitating the smooth channelling of financial resources from the supply side to the most productive demand. In this sense, financial regulators should not resist capital markets but rather embrace them. As the former central bank governor and head of the International Monetary Fund *Jacques de Larosière* stated in February 2025: 'regulators must take the perspective of a well-meaning mother or father who is painfully aware of the deficiencies of their daughters and sons but nevertheless wants the best for them in all they do.'

This regulatory attitude implies that any effort to expand regulatory mandates beyond the core missions of financial regulation should be approached with caution, just as a good mother would not want to see her children overburdened with non-material concerns, allowing them to focus on the core values of life, whatever those may be.

Similarly, regulators must refrain from requiring financial entities to report data that they do not use for supervisory purposes. Even as financial entities gather increasingly more data in response to the datafication of finance and for internal steering purposes, regulatory reporting must be limited to material data relevant for supervisory purposes. A *bon père* will recognise the need for economic requirements and only ask for what is truly necessary for supervisory purposes.

6.2 Avoiding Unmeasurable Tasks and Terminology

The second recommendation is to avoid using regulatory terminology and reasoning that is unmeasurable. What cannot be measured cannot be managed or assessed. Whether financial regulation meets the three-pronged test relies on solid measurements. Avoiding measurable terms equates to avoiding accountability.

Examples of problematic regulatory language include the calls to ‘harmonise laws’ or achieve ‘cross-sectoral coherence’, both of which can be found in many legislative projects.⁸¹ These terms serve to obscure rather than clarify the true legislative intention and act as harbingers of over-regulation.

Terms like ‘harmonisation’ can be (ab)used as an argument to justify *any* rule and *any* regulatory approach that creates more rules as harmonisation does not explain how regulation should be designed or why it should occur alongside additional rules. The alternative to adopting more rules could be the harmonised removal of restrictions, or the limitation to commonly accepted general principles where the details are left to the courts to consider their application in each case.⁸² In other words, the freedom to do business can also be harmonised. Moreover, harmonisation through additional rules does not guarantee that markets following these rules will function effectively. For instance, a regulator’s uniform cap on interest rates does not necessarily promote efficient credit markets, as it disregards differences in service levels and risks among financial institutions. As such, I strongly suggest abandoning ‘harmonisation’ as a rationale for regulating finance.

The same is true for ‘cross-sectoral coherence’, which can only support regulation if it refers to two identical things. However, this is never the case, as existing rules would cover the situation. In fact, securities regulation addresses investments, which is a different subject matter from insurance contracts in insurance regulation and the provision of credit in banking regulation. For instance, the international harmonisation efforts prompted by the FSB in the aftermath of the US experience with the ‘breaking of the buck’ of money market funds, which aimed for

81 Art. 114 of the Treaty on the Functioning of the European Union (TFEU) assigns jurisdiction to the European Parliament and the Council with respect to ‘measures for the approximation of the provisions laid down by law, regulation or administrative action in Member States which have as their object the establishment and functioning of the internal market.’ Almost all recent EU financial legislative measures have been based on Art. 114 TFEU.

82 As discussed in Louis Kaplow’s seminal article, rulemaking can take place *ex ante* (by regulators) or *ex post* (via the courts). See L. Kaplow, “Rules Versus Standards: An Economic Analysis”, (1992) 42 Duke LJ 557-629. *Ex post* rule-making by courts has, among many other advantages, better access to case-specific facts and can deliver, for that reason, a better ethical balance between the parties. See H.E. Smith, ‘Equity as Meta-Law’ (2020-21) 130 Yale LJ 1050.

a constant net asset value (CNAV) and were marketed as bank-like accounts,⁸³ have led to the adoption of money market fund regulation in many markets outside of the US. This was problematic because CNAV funds did not hold significant meaning in these markets, resulting in increased regulatory costs for investment fund managers in those markets.⁸⁴

In particular, the adage ‘same risks, same rules’ implies that everything must be identical. However, substantive similarity, which is common in cross-sectoral comparisons, is not sufficient to justify regulation. For instance, when regulators adopt rules for digital assets that have previously been implemented in the context of securities, the aforementioned adage is inappropriate.⁸⁵ Some digital assets have features that resemble securities, but many do not. Similarly, when investment funds grant credit, they do so from the investor’s own equity, while banks grant credit from depositors’ funds which have become the bank’s property. In many countries, lending from equity without accompanying deposit-taking activity is not even regulated as banking activity. Against that background, applying rules governing the credit activities of funds that are similar to banks’ credit risk assessments is not justifiable.⁸⁶

Other examples include terms that assign overly broad discretion to regulators, such as ‘fair’, ‘balanced’, ‘proportionate’, and ‘just’, along with other terms whose application presupposes a value judgment. Unless a financial test is provided to measure fairness, these terms invite deferring the decision on which rules apply until the regulator reviews a financial institution’s application or practice, long after the rule has been adopted. Regulated entities are incapable of handling such terms in the absence of detailed regulatory guidance. Hence, their use in regulatory texts will most likely lead to additional rules later, the costs and effects of which are not considered when the initial rules are adopted.

However, I do not deny the need for value-based decisions by *courts*, which are facilitated by ambiguous, ethically charged terms. Court decisions not only add to the further development of law and provide legal certainty, but also serve an important ethical function and have merits as such.⁸⁷ In fact, it is one of the deficiencies of contemporary financial regulation that courts are less present; even well-governed regulated entities often pay deference to the regulator’s view.⁸⁸ What I take issue with is framing financial *regulation*, which is inherently designed to deliver legal certainty by ex-ante rulemaking, in a form and style that provides legal uncertainty and requires adjudication ex-post.

Naturally, banning ambiguous, boilerplate regulatory language makes the process of regulating much more challenging. Regulators must better analyse the potential effects and counter-effects of financial regulation and clearly describe the desired policy outcome and the rationale behind it.

83 See W.A. Birdthistle, ‘Breaking Bucks in Money Market Funds’, (2010) Wis. L. Rev. 1155.

84 For instance, the EU adopted the Money Market Fund Regulation. See Regulation (EU) 2017/1131 of the European Parliament and of the Council of 14 June 2017 on money market funds, OJ L 169, 30.6.2017, p. 8–45.

85 This is the case, for example, with many rules adopted at Level 2 of the European Markets in Crypto-Assets Regulation, which have been drawn from the EU MiFID framework governing transferable securities and financial derivatives.

86 In these cases, a gradual buildup of rules over a very long time, informed by regulatory experience and cases, helps to avoid over-regulation.

87 See H.E. Smith, ‘Equity as Meta-Law’ 130 Yale L.J. 1050 (2020–21).

88 See on banking law S. Heitzer, *Messing with the Regulator* (Mohr Siebeck, 2023).

As the use of terms like ‘harmonisation’, ‘cross-sector coherence’, and value-charged language is an indicator of potential over-regulation, regulators should analyse existing financial regulation that uses such language to identify opportunities for deregulation.

6.3 Embracing Regulatory Arbitrage And Competition On Merit

As ‘harmonisation’ is not an argument for (de)regulation per se, regulatory competition⁸⁹ on a merits basis should be recognised in regulatory circles as unavoidable and even positive.

For instance, both innovation hubs and regulatory sandboxes⁹⁰ reflect a commitment to fostering innovation and advancing regulatory learning. Innovation hubs were introduced by the Luxembourg CSSF in 2014, and regulatory sandboxes by the UK FCA in 2015, both as tools to enhance competitiveness in attracting financial technology firms.⁹¹ In the absence of regulatory competition, regulators have limited incentives to maintain high standards of performance. Regulatory innovation may also yield reputational benefits, which are particularly important in the market for supervisory staff, where financial regulators often operate at a financial disadvantage.

In the same vein, the term ‘regulatory arbitrage’⁹² does not carry a negative connotation, *provided that all regulators apply equivalent rules effectively*. The fact that one regulator is conducting the same review with the same level of diligence faster, because it is equipped with better staff and technologies than other regulators, enhances social welfare. The same is true if certain regulators establish regulatory centres of expertise for specific sectors of the financial industry.⁹³ The respective sector will be better supervised in these cases as the staff members become more competent, and dependency on a few large national incumbents – which increases the risk of regulatory capture – is reduced.

Taking into account merit-based competition and regulatory arbitrage in all regulatory decisions serves as an effective safeguard against over-regulation, as these considerations prompt reflection on how market participants are likely to respond to the adoption of a given rule. Such anticipated responses should inform and guide the rulemaking process.

89 Cf. K Gatsios, P Holmes (2002). Regulatory Competition. In: P Newman (eds) *The New Palgrave Dictionary of Economics and the Law*. Palgrave Macmillan, London. <https://doi.org/10.1007/978-1-349-74173-1_317>, pp. 1671-1675; J.P. Trachtman, ‘Regulatory Competition and Regulatory Jurisdiction’ (2000) 3 JIEL 331; D.C. Esty, ‘Regulatory Competition in Focus’ (2000) 3 JIEL 215; P.B. Stephan, ‘Regulatory Competition and Anticorruption Law’ (2012) 53 Va J Int’l L 53; A.T. Guzman, ‘Public Choice and International Regulatory Competition’ (2002) 90 Geo LJ 971; C.M. Radaelli. ‘The Puzzle of Regulatory Competition’ (2004) 24 J Public Pol’y 24 1-23.

90 Cf. ; H.J. Allen, ‘Regulatory Sandboxes’ (2019) 87 Geo Wash L Rev 579; D.A. Zetsche et al., ‘Regulating a Revolution’, n 53, at 31; Buckley et al., ‘Building Fintech Ecosystems’, n 55, at 55.

91 Cf. Buckley et al, *supra* n 55.

92 Cf. V. Fleischer, ‘Regulatory Arbitrage’ (2010) 89 Tex L Rev 227; J. Barry, ‘On Regulatory Arbitrage’ (2009-2010) 89 Tex L Rev 69; F. Partnoy, ‘The Law of Two Prices: Regulatory Arbitrage, Revisited’ (2019) 107 Geo LJ 1017; A. Riles, ‘Managing Regulatory Arbitrage: A Conflict of Laws Approach’ (2014) 47 Cornell Int’l LJ 63.

93 Examples include Ireland and Luxembourg in the context of investment funds.

6.4 Towards Sandbox Thinking

Regulators should also adopt what has been referred to as ‘sandbox thinking’.⁹⁴ This involves the experimentation and testing of new supervisory approaches and regulatory concepts in response to financial, legal and technological innovation. Such experimentation should be accompanied by the transparent disclosure and reporting of both the methods used and the results obtained, allowing other regulators to take these findings into account. When conducted with full transparency, this practice can enhance the overall effectiveness of cross-border financial supervision. This recommendation is necessarily dependent on our second recommendation as sandbox thinking is precluded where strict harmonisation leaves no room for national experience or experimentation.

As such, in untested or innovative fields, regulators are encouraged to limit themselves to reliance on broad principles (such as the ‘no conflict of interest’ and ‘no authorised profit’ rules of fiduciaries) while making space for experimentation. This approach may include reliance on decisions by courts and arbitrators who are better equipped to render value-based decisions following a case-by-case assessment.⁹⁵

6.5 Towards Proportionate Risk-Based Approaches

Finally, regulators should favour proportionate risk-based approaches over outright prohibition. The purpose of any market activity is to fund the next cycle of innovation,⁹⁶ and innovation cannot flourish under conditions of strict prohibition and high regulatory costs.

There may be cases where doubt remains about whether a rule is justified. While regulators may have incentives to err on the side of caution and adopt a restrictive rule, even when the justification is too weak to preserve their reputation, I propose the opposite: if in doubt, deregulate.

Adopting such an approach will strengthen both the acceptance of new rules and the ‘deregulation reputation’ of the regulator, as market participants will understand that a costly rule will be repealed and revised rather than kept indefinitely.⁹⁷

Further, nothing prevents a regulator from regulating later, in a better manner, once research or experience has revealed a regulatory approach that produces a positive cost-benefit ratio. In fact, with targeted deregulation approaches in place, the law in certain areas may change more frequently while remaining more stable in other areas. If ultimately leading to more societal benefits, such implementation costs borne by financial institutions and regulators in some sectors should be seen as inherent costs of regulatory optimization, in the same way that restructuring costs are seen as inherent costs of business optimization.

94 D.A.Zetsche, L.C. Anker-Sørensen, ‘Towards a Smart Regulation of Sustainable Finance’, in P. Câmara, F. Morais, *The Palgrave Handbook of ESG and Corporate Governance* (Palgrave MacMilla, 2022), 87, 89 et seq.

95 See H.E. Smith, ‘Equity as Meta-Law’ 130 Yale L.J. 1050, 1080-81 (2020-21) (using opportunism as example for the effectiveness of ex post principles based on equity).

96 See on J. Schumpeter’s cycles of creative destruction in capitalist systems J. Gupta, A. Srivastava, B. Alzugaiby, ‘Schumpeterian creative destruction and temporal changes in business models of US banks’, (2024) 91 Int’l Rev Fin Analysis 102951.

97 The alternative approach of sunset clauses presents the drawback that financial institutions may delay deregulation in anticipation of the rule expiring as proactive deregulation requires investing regulatory capital.

Conclusion

Financial regulation should deliver benefits for regulated financial institutions and society at large. When the benefits created by a given rule do not exceed their costs, a case for targeted deregulation arises. While this principle is, to my knowledge, undisputed, and finance is particularly amenable to a strict cost-benefit analysis, bounded regulatory rationality and political influence on financial regulation have undermined the uniform application of this principle. Consequently, regulators' objectives have gradually expanded, resulting in financial regulation addressing non-financial issues. Cost-benefit analysis has become challenging, and regulatory accountability for rules, as well as the acceptance of those rules by regulated entities, has been compromised.

I have set out five principles for adjusting financial regulation. When regulators view themselves as beneficial parents of financial systems rather than autocrats, avoid the use of vague terms such as 'harmonisation' and 'cross-sectoral consistency', accept regulatory competition, adopt 'sandbox thinking', and favour proportionate risk-based approaches over outright prohibition, cases for targeted deregulation will inevitably come to light.

