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A Regulatory Sandbox for Financial Market Infrastructures in Australia: Key Considerations

Anton Didenko*

The current regulatory framework for the settlement of securities in Australia is not fit for the purpose of promoting competition and propagates a vicious cycle that entrenches the incumbent operators. This article explores the limitations of innovative technologies, analyses novel regulatory frameworks for financial market infrastructures (FMIs) overseas and draws important lessons for the creation of a new form of regulatory experimentation for FMIs in Australia. I argue that the development of a bespoke regulatory sandbox for FMIs will help overcome the underlying challenges and obtain the much-needed data to facilitate the entry of innovative FMIs and develop permanent adjustments to the current regulatory settings.

I. Introduction

Financial market infrastructures (FMIs) are the intermediaries sitting at the heart of the financial system. They ensure the finality of wholesale payments, absorb risks by acting as central counterparties to trades, and facilitate the orderly exchange, settlement and recording of various financial instruments. A basic explanation can be found in the international *Principles for Financial Market Infrastructures* (*PFMI*),[1] which define an FMI as "a multilateral system among participating institutions, including the operator of the system, used for the purposes of clearing, settling, or recording payments, securities, derivatives, or other financial transactions".[2]

The *PFMI* distinguish five types of FMI: (1) systemically important payment systems, (2) central counterparties (CCPs), (3) securities settlement systems (SSSs), (4) central securities depositories and (5) trade repositories.[3]

Like all other intermediaries, FMIs can generate efficiencies as well as risks. *Unlike* other intermediaries, however, FMIs focus on delivering *critical* services and co-ordinate *large networks* of counterparties. It follows that the benefits they produce can be immense. The downside is that many of the associated risks generated by FMIs can be systemic.

The centrality of FMIs in the financial system is explained by their very nature – as *multilateral systems linking numerous participating institutions*. Their interconnectedness is the reason why FMI disruption can have a major impact on the financial system and why FMIs need to be regulated and be subject to stricter licensing regimes and enhanced oversight, compared to other service providers. Due to the magnitude of associated risks, the most comprehensive legal requirements applicable to major FMIs in Australia are imposed and monitored by the Reserve Bank of Australia (RBA). As an example, under s 821A of the *Corporations Act 2001* (Cth) clearing and settlement (CS) facility licensees must comply with the standards set by the RBA and "do all other things necessary to reduce systemic risk".

FMIs benefit significantly from economies of scale and lack of substitutability of the services they provide. It is thus logical that they typically operate as large institutions with little competition or none at all. The informal "winner takes all" rule applies. As a result, efficiency often declines, and innovation stagnates.

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[1] This authoritative publication by the Committee on Payment and Settlement Systems and the Technical Committee of the International Organization of Securities Commissions is the de facto global standard for the regulation of FMIs. It is observed by the Reserve Bank of Australia, which closely follows the PFMI in its regulatory instruments, such as the Financial Stability Standards for different types of CS facilities.

[2] CPSS and IOSCO, *Principles for Financial Market Infrastructures* (April 2012) 7 [1.8] <https://www.bis.org/cpmi/publ/d101.htm>.

[3] CPSS and IOSCO, n 2, 5 [1.2].

In Australia, the issue is particularly pronounced in the area of cash equity CS dominated by the ASX (through its subsidiaries). It is therefore logical and understandable that the regulatory framework for securities settlement in Australia was designed with a few large, centralised and sophisticated licensees in mind. This is reaffirmed by the recent revisions of RBA's Financial Stability Standards for Securities Settlement Facilities (SSF Standards), which extended the minimum threshold for the application of the SSF Standards from $200 million to $40 billion with effect from 24 June 2024.[4]

The challenge of promoting competition in securities settlement is not unique to Australia, of course. In recent years, regulators in major financial centres have started developing bespoke legal frameworks to facilitate the development of FMI innovations. The European Union has launched a "DLT Pilot Regime",[5] Switzerland has implemented a licensing framework for "DLT trading facilities",[6] and the United Kingdom (UK) has launched a "Digital Securities Sandbox".[7] The results have been mixed so far, but it is clear Australia's competitors seek to reap the "first mover" benefits by creating "light touch" regulation enabling innovators to test *new approaches* to the redesign of their FMIs.

This article explores whether there is a convincing use case for a similar "light touch" version regulatory framework for SSSs in Australia and eventually proposes the establishment of a bespoke regulatory sandbox for FMIs. It proceeds as follows.

Part II makes the case for increased competition in securities settlement in Australia and argues that the previous attempts to disrupt the anti-competitive status quo, while welcome in principle, have remained unsuccessful.

Part III argues that while innovative technologies like blockchain and distributed ledgers have the potential to enhance securities settlement mechanics, the resulting implications remain underexplored.

Part IV outlines the limited progress achieved by the early-stage regulatory initiatives focusing on FMIs overseas.

Part V proposes a new type of regulatory sandbox in Australia targeting SSSs and outlines the main design features of such a proposed regulatory framework.

Part VI concludes.

II. From Risk Mitigation towards Promoting Competition in Securities Settlement

Having a monopolist at the centre of securities settlement presents major risks. When things go wrong, the consequences ripple throughout the financial system. Yet another reminder of this seemingly banal observation is the lawsuit by the Australian Securities and Investments Commission (ASIC) against ASX Limited initiated on 13 August 2024[8] alleging that the defendant's statements about the good progress of its CHESS[9] modernisation project were false and made in breach of s 12DA of the *Australian Securities and Investments Commission Act 2001* (Cth).[10] The importance of replacement of critical national infrastructure such as CHESS is hard to overestimate and was reiterated by ASIC's Chair Joe Longo:

[4] Reserve Bank of Australia, "New Financial Stability Standards for Securities Settlement Facilities" (Media Release 2024-13, 20 June 2024) <https://www.rba.gov.au/media-releases/2024/mr-24-13.html>.

[5] European Union Regulation 2022/858 of 30 May 2022 on a Pilot Regime for Market Infrastructures Based on Distributed Ledger Technology (EU DLT Pilot Regulation).

[6] FINMA, *Licensing as a DLT Trading Facility* <https://www.finma.ch/en/authorisation/fintech/dlt-handelssystem/>.

[7] Financial Conduct Authority, *Digital Securities Sandbox Opens for Applications* <https://www.fca.org.uk/news/news-stories/digital-securities-sandbox-opens-applications>.

[8] See *Australian Securities and Investments Commission v ASX Ltd* (Notice of Filing and Hearing, 13 August 2024) <https://download.asic.gov.au/media/5kypnmsy/24-177mr-originating-process-13-august-2024.pdf>.

[9] CHESS (Clearing House Electronic Subregister System) is the system used by ASX to record shareholdings and manage the CS of equity transactions.

[10] In particular, s 12DA(1) states: "A person must not, in trade or commerce, engage in conduct in relation to financial services that is misleading or deceptive or is likely to mislead or deceive."

"The CHESS replacement project must be managed effectively and transparently. Failure to do so can lead to a *lack of confidence in Australia as a market to attract investment*."[11]

In principle, the idea of increased competition in finance appears largely uncontroversial. However, the interconnectedness of FMIs presents unique difficulties. Promotion of competition in securities settlement is particularly challenging, since it can generate not only *benefits* (such as lower fees and more efficient services enabled by new technologies), but also *inefficiencies* (such as duplication and reconciliation of information across multiple SSFs and market fragmentation involving different settlement cycles across competing settlement service providers). To illustrate this point, let us consider the recent regulatory attempts to disrupt the non-competitive status quo in securities settlement.

A. A brief overview of the current SSF regulatory framework

The operating term for SSSs in Australia is "SSFs" – securities settlement facilities, which in turn are a subset of a larger category known as "CS [clearing and settlement] facilities". The latter are defined broadly as facilities that provide "a *regular mechanism* for the parties to transactions relating to financial products to *meet obligations* to each other that … arise from entering into the transactions".[12]

Section 820A of the *Corporations Act 2001* (Cth) requires operators of CS facilities in Australia to obtain a licence (known as an "Australian CS facility licence"),[13] which may be subject to conditions.[14] The legislation does not prescribe the types of conditions that may be imposed on a CS facility licence. ASIC has clarified that such conditions may, for example, include an obligation to make available additional information to the users and regulators, periodic reporting, localisation of certain activities and setting up additional controls for certain activities (such as outsourcing).[15]

Licensees are subject to ongoing obligations[16] and joint oversight by ASIC and RBA. An application for a CS facility licence is lodged with ASIC along with the prescribed information and documents.[17]

Among other obligations, CS facility licensees are required to (1) comply with the applicable RBA standards and "do all other things necessary to reduce systemic risk";[18] and (2) "do all things necessary to ensure that the facility's services are provided in a fair and effective way".[19] The RBA standards apply to a CS facility licensee if the value of financial obligations settled by the facility in a financial year exceeds $40 billion (this is a recent change with effect from 24 June 2024; previously the threshold was only $200 million).[20] Where the RBA standards do not apply, ASIC has clarified that its approach will need to be flexible and "adapt to the nature and scale of the CS facility's operations".[21]

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[11] Australian Securities and Investments Commission, "ASIC Sues ASX for Alleged Misleading Statements" (Media Release 24-177MR, 14 August 2024) <https://asic.gov.au/about-asic/news-centre/find-a-media-release/2024-releases/24-177mr-asic-sues-asx-for-alleged-misleading-statements> (emphasis added).

[12] *Corporations Act 2001* (Cth) s 768A(1)(a) (emphasis added). Certain activities are expressly excluded from this broad definition, such as the activities of an authorised deposit-taking institution acting in the ordinary course of its banking business. See *Corporations Act 2001* (Cth) s 768A(2).

[13] Certain facilities are exempted. See *Corporations Act 2001* (Cth) s 820C(1) ("The Minister may exempt a particular clearing and settlement facility, or class of clearing and settlement facilities, from all or specified provisions of this Part. An exemption may be unconditional, or subject to conditions specified in the exemption"). The exemption power "is intended for use when there is no satisfactory policy reason for regulating the arrangements as a licensed CS facility": ASIC, "RG 211 Clearing and Settlement Facilities: Australian and Overseas Operators" (Regulatory Guide 211, 18 December 2012) RG 211.79 (*ASIC Regulatory Guide 211*).

[14] *Corporations Act 2001* (Cth) s 825A.

[15] *ASIC Regulatory Guide 211*, n 13, RG 211.217, 211.219.

[16] *Corporations Act 2001* (Cth) s 821A.

[17] *Corporations Act 2001* (Cth) s 824A.

[18] *Corporations Act 2001* (Cth) s 821A(1)(aa).

[19] *Corporations Act 2001* (Cth) s 821A(1)(a).

[20] Reserve Bank of Australia, n 4.

[21] *ASIC Regulatory Guide 211*, n 13, RG 211.176.

The RBA's SSF Standards are largely based on the international *Principles for Financial Market Infrastructures*,[22] which predate the wider development of regulator-led initiatives to explore the benefits of innovative technologies like blockchain and distributed ledgers. The SSF Standards are principles-based and do not establish exhaustively the specific parameters that CS facility licensees must meet. It follows that their implementation and enforcement will depend on interpretation, which is objectives-driven: "The SSF Standards are to be interpreted in accordance with their respective objectives and by looking beyond form to substance."[23]

The SSF Standards are supported by the more detailed Guidance published by the RBA but nonetheless remain focused on *outcomes*, rather than the technology used to achieve them. The RBA has also published a high-level overview of its approach to supervising and assessing CS facility licensees, which envisages different requirements (from base-level requirements applicable to start-ups to requirements applicable to "Important" and "Systemically Important" CS facility licensees) but nonetheless largely focuses on procedure, rather than specific substantive requirements.[24]

The above brief overview shows that the regulatory requirements for SSFs and their operators are (1) proportional, (2) principles-based, (3) objectives-driven and (4) adjustable on a case-by-case basis (through licensing conditions and/or exemptions).

B. Minimum conditions

The prospects of increased competition have been discussed by the Council of Financial Regulators (CFR) in several high-profile consultations. Its 2017 consultation paper "Safe and Effective Competition in Cash Equity Settlement in Australia" acknowledged that "technological developments, such as the potential application of distributed ledger technology for clearing and settlement … facilities, may challenge the previous assumptions regarding the future market structure for settlement services".[25] In its response to the consultation, the CFR noted a significant appetite for increased competition in the securities settlement market, since "almost half [of the respondents] felt that competition was desirable provided adequate regulatory safeguards were in place".[26] Some of the perceived issues were observed in the monopolistic structure of the securities settlement market. As an example, the strong consensus among the respondents was that for any competition to be effective, it would be necessary to ensure access to the data on the ASX operated registers and address other issues associated with the monopoly's vertical integration.[27]

On the basis of the above consultation, the CFR sought to clarify the legal requirements for any future competitors seeking to disrupt the existing monopoly and published its Minimum Conditions for Safe and Effective Competition in Cash Equity Settlement in Australia (Minimum Conditions) which "aim to give prospective providers of settlement services sufficient clarity as to the measures that [ASIC]

[22] CPSS and IOSCO, n 2.

[23] *Financial Stability Standards for Securities Settlement Facilities* (2012) 1.

[24] Reserve Bank of Australia, *The Reserve Bank's Approach to Supervising and Assessing Clearing and Settlement Facility Licensees* (21 June 2019) <https://www.rba.gov.au/payments-and-infrastructure/financial-market-infrastructure/clearing-and-settlement-facilities/standards/approach-to-supervising-and-assessing-csf-licensees.html>.

[25] Council of Financial Regulators, *Safe and Effective Competition in Cash Equity Settlement in Australia* (March 2017) 1 <https://www.cfr.gov.au/publications/consultations/2017/safe-and-effective-competition-in-cash-equity-settlement-in-australia/safe-and-effective-competition-in-cash-equity-settlement-in-australia.html>.

[26] Council of Financial Regulators, *Safe and Effective Competition in Cash Equity Settlement in Australia: Response to Consultation* (September 2017) 2 <https://oia.pmc.gov.au/sites/default/files/posts/2023/01/Safe%20and%20Effective%20Competition%20in%20Cash%20Equity%20Settlement%20in%20Australia%20Response.pdf>.

[27] Council of Financial Regulators, n 26, 3–4.

and [RBA] would require be taken before they could advise in favour of a licence application".[28] These Minimum Conditions comprise four key expectations, namely:

(1) adequate regulatory arrangements;
(2) access on transparent, non-discriminatory, and fair and reasonable terms;
(3) appropriate links between competing SSFs; and
(4) appropriate regulatory arrangements for the oversight of primary and secondary markets.

The Minimum Conditions have been recently reinforced through the *Treasury Laws Amendment (2023 Measures No 3) Act 2023* (Cth), which granted ASIC additional powers to make and enforce new rules governing the management of CS facilities in Australia – exercisable with ministerial consent.[29] Such ministerial consent was given on 13 May 2024 in the *Corporations and Competition (CS Services) Instrument 2024* (Cth), which enabled ASIC to make said rules in respect of CS services relating to cash equities (as defined therein). ASIC has publicly endorsed the ministerial designation[30] and on 30 July 2024 published its *Consultation Paper 379: ASIC CS Services Rules* that sets out its initial proposals along with the draft ASIC CS Services Rules 2024. These proposals seek "to facilitate competitive outcomes in the provision of CS services for Australia's financial markets, where ASX Group is a monopoly provider of cash equity CS services"[31] and are therefore aimed at the *incumbent operator*, rather than its prospective competitors.

The prospective emergence of one or more new SSF operators is clearly viewed as a source of *increased risk of market disruption*, which is a valid concern. Therefore, it is appropriate that the Minimum Conditions serve the risk mitigation objective. Having said that, I argue that the Minimum Conditions offer few meaningful incentives to promote competition.

First, albeit for good reasons, they remain high-level and offer limited certainty for prospective CS facility licence applicants, since "detailed specific requirements would not be articulated or implemented until such time as a committed competitor emerged, or was likely to emerge".[32]

Second, some of the expectations are clearly meant to be temporary – yet it is not clear from the Minimum Conditions for how long the temporary measures would apply in practice. Examples include the requirement to have "clearly articulated wind-down plans"[33] and limitations on voluntary withdrawal from the market coupled with substantial capital requirements to cover any operating expenses for the duration of the notice period of at least one year. These capital requirements are *more stringent* than those which would typically apply under the RBA's SSF Standards (which, since 24 June 2024, apply only to the largest CS facility licensees that settle more than $40 billion of financial obligations in a financial year).[34]

I therefore argue in this article that the Minimum Conditions are not fit for the purpose of promoting competition in securities settlement. In Part V below, I submit that the objective of competition promotion will be better served by implementing a new form of regulatory experimentation – a regulatory sandbox.

A high-level comparison between the approach envisaged in the Minimum Conditions and the proposed regulatory sandbox is summarised in the table below.

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[28] Council of Financial Regulators, *Minimum Conditions for Safe and Effective Competition in Cash Equity Settlement in Australia* (Policy Statement, September 2017) 1 <https://www.cfr.gov.au/publications/policy-statements-and-other-reports/2017/minimum-conditions-safe-effective-competition/pdf/policy-statement.pdf>.

[29] See *Corporations Act 2001* (Cth) ss 828A, 828B.

[30] Australian Securities and Investments Commission, *ASIC Welcomes Ministerial Determination to Progress Competition in Clearing and Settlement Reforms* (15 May 2024) <https://asic.gov.au/about-asic/news-centre/news-items/asic-welcomes-ministerial-determination-to-progress-competition-in-clearing-and-settlement-reforms/>.

[31] Australian Securities and Investments Commission, *ASIC CS Services Rules* (Consultation Paper 379, July 2024) [19] 10 <https://download.asic.gov.au/media/u1zgu0k0/cp379-published-30-july-2024.pdf>.

[32] Council of Financial Regulators, n 28, 2.

[33] Council of Financial Regulators, n 28, 4.

[34] Reserve Bank of Australia, n 4.

	Current Approach	Regulatory Sandbox
Main objective	Risk mitigation	Competition promotion + risk mitigation
Ex ante guidance	Limited	More explicit
Target settlement service providers	Any prospective competitor	Prospective competitors implementing new technologies
Duration	Unclear	Subject to strict time-limits

In contrast to the Minimum Conditions, my proposal seeks to facilitate the development of *innovative* SSFs based on new technologies, including – but not limited to – blockchain and distributed ledgers; hence any new SSF operators that do *not* aim to innovate would continue to rely on the Minimum Conditions.

Two important factors inform the choice of a regulatory sandbox as a proper solution in this article. First, the benefits of the innovative technologies and associated risks, despite considerable promise, remain underexplored. Second, overseas regulatory experiments have so far produced limited or inconclusive results.

These aspects are discussed in greater detail in Parts III and IV, respectively.

III. Innovative Technologies and Their Limitations

While the current securities trading environment is efficient in terms of trade execution (ie entering into trades), post-trade settlement involves multiple intermediaries, is operationally cumbersome and consequently may propagate risks in the financial system. Settlement typically involves a time delay that may lead to a build-up of credit risk (which could be reduced if trades were settled instantly). In practice, such time delay may offer certain operational advantages, such as the reduced pressure to have the settlement assets available at the time of trade execution. Nonetheless, enthusiasts argue that new technologies may offer new ways to enhance post-trade settlement, beyond instantaneous settlement. Exploration of these new technologies is therefore important for the continuous improvement of the overall efficiency of the financial system. More efficient settlement may, in principle, reduce systemic risks and lower the costs incurred by financial intermediaries and investors (including banks and pension funds) when using financial markets.

When competition is limited, the few FMIs that operate in the financial system may lack the incentive to innovate. One may even argue that there is no more room for truly disruptive innovation. After all, the biggest revolution has arguably already occurred: most paper-based processes have become digital, and "transfers" of funds and securities today are nothing more than records in corresponding databases (ie neither securities nor funds are being "transmitted" anywhere). The current FMIs may not be ideal but are generally resilient and produce consistent results.

In recent years, this status quo has been questioned by new platform developers that seek to disrupt the current FMI ecosystem – not by making the *same* processes more efficient but by reimagining them with the help of transformative technologies, such as distributed ledgers[35] and blockchain.[36] Naturally, behind all the marketing façade hides the intention to persuade various stakeholders to switch to the new technologies and convince the regulators to give them the green light.

[35] A distributed ledger is "a database shared and synchronized across a network": see Ross Buckley, Anton Didenko and Mia Trzecinski, "Blockchain and Its Applications: A Conceptual Legal Primer" (2023) 26(2) *Journal of International Economic Law* 363, 367.

[36] A blockchain is "an electronic database in which (i) all data are arranged into individual blocks, (ii) each change of data is recorded in append-only mode (i.e. in the form of a new block), (iii) blocks are arranged in a sequential order, (iv) each new block is connected to the previous, usually by incorporating an electronic reference that uniquely identifies the previous block and its contents in a tamper-evident way (thus forming a 'chain')": Buckley, Didenko and Trzecinski, n 35, 366. See also Anton Didenko, *Banking Law in Australia* (LexisNexis, 11th ed, 2024) Ch 11 (Blockchains and Cryptocurrencies).

What are the expected benefits? In general, three main potential enhancements can be distilled from the voluminous marketing materials on blockchain and distributed ledgers:

- so-called "atomic settlement" which, according to crypto enthusiasts, is expected to reduce settlement risk by "over 99%" and "save $11–12Bn by applying blockchain to clearing and settlement of cash securities, equity, repo, and leveraged loans";[37]
- integration of "smart contracts" to automate various processes; and
- reduced number of intermediaries.

It remains to be seen whether FMIs will be disrupted by the new technologies. Expectations could range from modest (recalling ASX's debacle), to moderate (several innovative firms may occupy their own niche in the FMI ecosystem), to transformative (suggesting that legacy technologies will be completely replaced by blockchains on distributed ledgers just like telex has been replaced by SWIFT messaging in banking).

Amidst this uncertainty, let us consider whether and how the above technologically-enabled enhancements may transform the common risks underlying the operation of SSSs.

A. Systemic risks remain

However promising the new technologies may seem on paper, it is in the very nature of FMIs – as complex *multilateral* systems – that systemic risks are inherent and inescapable. These risks do not simply disappear when more efficient modes of service delivery are introduced. As an example, an innovative format of recording data securely that replaces an intermediary with a sophisticated self-executing algorithm can still fail and disrupt the market with systemic effects. Furthermore, if the advanced programming increases the speed of processing transactions, it can further propagate systemic risks.

Naturally, the relative risk weightings may change due to the new technologies, and yet the capacity of FMIs to generate systemic risks remains their permanent attribute. This feature stems from their interconnectedness, lack of substitutability and scale of operation (recall, for example, that according to the *PFMI*, only *systemically important* payment systems are considered FMIs).

It is conceivable, in theory, that new technologies may enable smaller businesses to offer the same services as current large-scale FMIs (such as the settlement of securities). The scope of activities of such new service providers may even be artificially restricted through regulation – to reduce their ability to cause systemic disruption. Nonetheless, the same technologies are equally likely to speed up the rate of transaction processing, enabling innovators to quickly outgrow any arbitrary caps, shortening the transition from "too small to care" to systemically important.

B. Implications of "atomic settlement"

Atomic settlement is often marketed as an enabler of transformative change in post-trade management of transactions involving securities. However, as this section will demonstrate, it does not change the types of underlying risks (but instead alters their relevance).

1. What is "atomic settlement"?

Atomic settlement is being marketed as nothing short of revolutionary – an innovative technology-enabled solution that will eliminate most risks from the settlement process. But what exactly does it mean?

The RBA/Digital Finance CRC report "Australian CBDC Pilot for Digital Finance Innovation" defines atomic settlement as a "[p]rocess where settlement occurs in an integrated fashion, such that it is *technologically infeasible* for one leg of a transaction to occur without the other".[38] Atomic settlement

[37] Kelly Mathieson, "Asset Creation and Issuance: Step One in Transforming Post-trade", *Digital Asset*, 7 September 2022 <https://blog.digitalasset.com/blog/asset-creation-issuance-step-one-transforming-post-trade>.

[38] Reserve Bank of Australia and DFCRC, *Australian CBDC Pilot for Digital Finance Innovation* (August 2023) 34 <https://dfcrc.com.au/wp-content/uploads/2023/08/australian-cbdc-pilot-for-digital-finance-innovation-project-report.pdf> (emphasis added).

is posited as a technology-enabled solution that reduces counterparty risks in transactions involving an exchange of value: "[a]tomic operations cannot be divided into smaller operations; either (i) all operations are fully performed or (ii) they are not performed at all."[39]

While the potential of certain technologies, like distributed ledgers and smart contracts, to enable atomic settlement of assets (whether on the same ledger or in "cross-chain" mode) has been investigated by multiple regulators across the globe,[40] the distinguishing features of atomic settlement warrant a deeper analysis from a legal perspective – considering the existence of related concepts in financial regulation (such as "delivery versus payment") that need to be distinguished from it, as well as inconsistent use of the term by different stakeholders.

2. "Instant" vs "simultaneous" settlement

Experts from the Federal Reserve Bank of New York and Swiss National Bank distinguish two related features of technology-enabled settlement systems that pursue "atomicity": (1) "*instant settlement*" and (2) "*simultaneous settlement*".[41]

"*Instant settlement*" involves the elimination of time gaps between trading and settlement, "so that settlement happens immediately once a trade has been agreed upon".[42] This eliminates settlement risks (the risk that a party to the transaction does not have the settlement asset (eg securities) at the time of settlement).

"*Simultaneous settlement*", conversely, involves the elimination of time gaps between the two legs of the settlement process achieved by making the settlement of each leg *conditional* on the settlement of the other. While this does not guarantee settlement, it protects the balance of interests of the parties: "if one counterparty doesn't settle its side of the trade, the other will not either."[43]

While this distinction is not recognised by all commentators, there appears to be a broad consensus regarding the "simultaneous settlement" function of atomic settlement. In contrast, the complete elimination of the time gap between a trade and its settlement has been described as non-essential or even potentially detrimental:

> Conflating both properties into atomic settlement can muddle the discourse on the future of settlement. We believe that it is more useful to define "atomic" settlement as being equivalent to "simultaneous" settlement …. Indeed, not only are "instant" and "simultaneous" two logically distinct properties, but while simultaneous settlement is probably always desirable, instant settlement may not be.[44]

Consequently, this article does not treat "instant settlement"[45] as a *necessary* feature of atomic settlement.

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[39] European Central Bank and Bank of Japan, *Securities Settlement Systems: Delivery-versus-Payment in a Distributed Ledger Environment* (March 2018) 2 <https://www.ecb.europa.eu/pub/pdf/other/stella_project_report_march_2018.pdf>.

[40] See, eg, Bank of Canada et al, *Project Jasper (Phase III)* (October 2018) <https://payments.ca/sites/default/files/2022-09/jasper_phase_iii_whitepaper_EN.pdf>; European Central Bank and Bank of Japan, n 39; Monetary Authority of Singapore et al, *Delivery versus Payment on Distributed Ledger Technologies: Project Ubin* (2018) <https://www.mas.gov.sg/-/media/MAS/ProjectUbin/Project-Ubin-DvP-on-Distributed-Ledger-Technologies.pdf?la=en&hash=2ADD9093B64A819FCC78D94E68FA008A6CD724FF>.

[41] Michael Lee, Antoine Martin and Benjamin Müller, "What Is Atomic Settlement?" (7 November 2022) <https://libertystreeteconomics.newyorkfed.org/2022/11/what-is-atomic-settlement/>.

[42] Lee, Martin and Müller, n 41.

[43] Lee, Martin and Müller, n 41.

[44] Lee, Martin and Müller, n 41. The potential downsides of instant settlement include the elimination of netting opportunities and associated liquidity pressures, as well as information exchange problems (in a system where each trader must already own the settlement asset, more information is revealed, which exacerbates the risk of a hold-up). See, eg, Michael Junho Lee, Antoine Martin and Robert M Townsend, "Optimal Design of Tokenized Markets" (August 2022) <https://ssrn.com/abstract=3820973>.

[45] It should also be noted that at a certain level of settlement efficiency, the distinctions between "instant" or "simultaneous" settlement may be purely theoretical, as in reality there is likely to be *at least some time lag* between the settlement legs even if atomic settlement is used.

3. Underlying technology

The concept of atomic settlement is commonly associated with the implementation of distributed ledger technology (DLT), digital signatures and smart contracts (including the so-called "hashed timelock contracts")[46] to enable the conditionality of both legs of a settlement of assets on the same ledger or across different ledgers. Nonetheless, it is conceivable that conditional simultaneous settlement could be implemented in a different form (whether now or in the future). The ability to establish clearly the defining features of atomic settlement without reference to a particular technology is therefore important in regulatory frameworks characterised as "technology-neutral" (including Australia's), as they tend to focus on the *function* of a particular activity, rather than the form that activity takes.

This has practical implications in those regulatory frameworks which already *require* mutual conditionality of settlement of both legs of a transaction by means of one or more of three related concepts: "DvP" (delivery versus payment), "PvP" (payment versus payment) or "DvD" (delivery versus delivery). In such legal frameworks, atomic settlement may be viewed as a method of achieving that which is *already mandatory* (DvP, PvP or DvD) without acknowledging the increased efficiency the underlying technology may bring. Regulators may choose to follow the simple logic that as long as simultaneous settlement is already required, it is in the regulated entity's best interest to choose the technical solution that achieves the greatest efficiency. In short, if atomic settlement helps achieve the same goal more easily, so be it.

The definition provided earlier in Part IIIB1 above suggests that atomic settlement may be differentiated from other forms of settlement through a single feature: *technological infeasibility* (atomicity) of settling one leg of the transaction without the other. While somewhat attractive, this feature is essentially grounded in technology: the difference is not in the outcome (which from a regulatory perspective remains the same – a promise to ensure DvP, PvP or DvD), but in the process used to achieve it. For this reason, technology-neutral regulatory frameworks may be insufficiently sophisticated to recognise the unique benefits of atomic settlement. Furthermore, even if such benefits were recognised in principle, it might be infeasible to develop appropriate regulatory requirements that meaningfully reflect those benefits (such as reduced settlement risks) – particularly in principles-based legal frameworks that focus on establishing only high-level expectations from regulated entities and leave the more detailed evaluation and fine-tuning of regulatory parameters to be determined on a case-by-case basis (as is the case in Australia).

4. System design vs implementation

The principle of "atomicity"[47] in computer science aligns well with the well-recognised legal concepts of DvP, PvP and DvD. However, since atomic settlement is ultimately grounded in the underlying technology, its benefits are conditional on the correct operation of such technology (including the absence of coding errors). This distinction is important from a regulatory perspective: regulators are unlikely to relax the regulatory requirements on the basis of technical features that can be difficult to verify *ex ante* (such as error-free programming).

In particular, macroprudential regulators concerned with systemic risks in the financial system are unlikely to rely on advanced programming as the *sole* systemic risk prevention mechanism and may seek additional protections (eg capital, insurance, guarantees) from the operators of large-scale settlement facilities – to be relied on in the event the settlement mechanism does not operate according to the stated specification (eg if coding errors become apparent only at a later date).

Vulnerability to operational risks could thus be one of the primary reasons why regulators may choose to "see through" the technology implemented to achieve DvP, PvP and DvD settlement and regulate the operator of the facility despite the fact that atomic settlement could achieve a certain degree of disintermediation – a feature to which I turn now.

[46] European Central Bank and Bank of Japan, n 39, 6.

[47] European Central Bank and Bank of Japan, n 39, 2.

C. Effects of disintermediation

Disintermediation is recognised as one of the key advantages of atomic settlement[48] but warrants a separate discussion – as it can be achieved in different ways (regardless of "atomicity") and may in principle generate even greater benefits.

1. Combining trade and post-trade settlement

One such potential benefit of the innovative technologies discussed in this article is the consolidation of (1) trade execution and (2) post-trade settlement on a single platform achieved by means of distributed databases. These activities are typically subject to *separate* licensing regimes due to different associated risks, and many legal frameworks around the world require them to be performed by *separate* legal entities.

Such consolidation could, in principle, reduce the number of intermediaries and streamline the trading process (eg by eliminating the need for clearing in the event of instant settlement) – but to perceive the disruptive potential of this consolidation one needs to look beyond individual functions performed by different intermediaries and consider whether those intermediaries are even necessary in the first place. One also needs to bear in mind that different intermediaries often exist not only to better mitigate certain risks, but also to enable greater flexibility for transacting parties. As an example, the introduction of central counterparties effectively eliminates counterparty risks *without* requiring each party to a contract to perform the contract immediately.

2. Complete disintermediation is a fiction

While cutting out an intermediary could reduce the costs of settlement, disintermediation is never absolute – at least in the context of the new technologies discussed in this article. This creates several related issues.

First, distributed ledgers and blockchains do not operate in a vacuum and are traditionally built on technical infrastructure (eg platforms like Ethereum or Corda) developed by one of the few major providers. The practical implications of this are profound: for those FMIs which implement such new technologies, the underlying technology platforms become *critical infrastructures*. In contrast to FMIs themselves, such platforms are not subject to direct oversight from financial regulators. However, it is conceivable that in the event of their wider use regulators may wish to regulate the key technology providers as a new category of FMIs.

Second, as long as the main source of disintermediation is advanced programming (which, as discussed above, must be error-free), it is conceivable regulators may choose to interpret the concept of "intermediation" broadly and treat the operator/developer of a settlement facility as an intermediary regardless of the technology used to settle transactions and its expected benefits.

Third, while a technology-enabled reduction in the number of intermediaries may reduce counterparty risks, it increases the reliance on the efficiency of the underlying technology (and thus enhances the effects of operational disruption). Should regulators, contrary to the previous paragraph, agree to treat technology-enabled settlement systems as genuinely disintermediated, they are more likely to require access to additional tools that enable them to suspend or terminate the operation of those systems in the event of a major disruption. After all, in the absence of a responsible entity, an in personam direction forcing compliance would be meaningless. Furthermore, for the technology-enabled platforms which process settlement on a 24/7 basis without breaks and holidays regulators would be inclined to have a solution that does not require human intervention in the first place. One of such solutions may involve the delivery to the regulator of administrative keys to the platform – a practice that, to my knowledge, has not been put in practice yet. Another related issue is the need to reverse erroneous transactions pursuant to a regulator's or court instructions – a major issue in a disintermediated setting, particularly where blockchains are involved.

[48] See, eg, Reserve Bank of Australia et al, *Project Atom: Exploring a Wholesale CBDC for Syndicated Lending* (December 2021) 41 <https://www.rba.gov.au/payments-and-infrastructure/central-bank-digital-currency/pdf/project-atom-report_2021-12.pdf>.

D. Tokenisation and "digital doppelgangers"

Innovative solutions discussed in Parts IIIB and IIIC above – whether they focus on atomic settlement or other forms of automation and disintermediation – invariably imply some form of tokenisation – that is, recording various entitlements by means of unique digital records (tokens) so that the transfer of the associated token transfers the corresponding entitlement. This is in contrast to account-based systems, where entitlements change by means of naming a new accountholder/beneficiary. Tokenisation often relies on creating distributed databases that serve as a "golden source of truth" and ostensibly eliminates the need to reconcile multiple centrally managed databases.

The efficiency of tokenisation relies primarily on the design of the relevant regulatory frameworks, which often fail to recognise its legal effects. Legal systems which do not facilitate tokenisation give rise to what may be called "digital doppelgangers" – processes and activities that mirror traditional (and legally recognised) processes but have no legal effect per se and therefore exist largely to demonstrate the capability of the new technologies. One example of this is the world-first issue of blockchain-enabled "bond-i" notes "created, allocated, transferred and managed through its life cycle using distributed ledger technology" arranged by the Commonwealth Bank of Australia in 2018 in collaboration with the World Bank.[49] The project involved a "classic" issuance of bonds accompanied by a blockchain record of entitlements that served no apparent *legal* purpose other than to demonstrate what the new technologies may achieve: at the end of the day, changes on the blockchain were duplicated on the traditional settlement systems, which were deemed definitive. Such duplication is also observed in similar initiatives overseas.[50]

As these "digital doppelgangers" are not legally recognised, they cannot benefit from the traditional protections afforded by the law, such as finality of settlement (and corresponding immunity to certain bankruptcy proceedings, including the so-called zero-hour rule[51]). In the absence of legal recognition, tokenisation – in its current form – can be a waste of effort and resources with few tangible benefits. A corollary effect of this status quo in the context of FMIs is that in the absence of regulation that legally recognises the effects of tokenisation only the incumbents or large tech firms may realistically afford to experiment with the innovative technologies by performing the same activities twice – using old and new tech.

E. Unforeseen risks

Not much can be said here. Innovative technologies like distributed ledgers may give rise to new, currently unforeseen, risks when used to enhance the settlement of tokenised assets.

IV. Pro-innovation Frameworks for FMIs: Lessons from Past Projects

Regulators in major financial centres (including the United Kingdom and Singapore) have joined forces with innovators on several occasions to gain a better understanding of the new technologies. However, the relevant projects did not achieve much beyond high-level observations that distributed ledgers and blockchains could, in principle, be used to build new FMIs (a low bar indeed).

[49] World Bank, "World Bank Prices First Global Blockchain Bond, Raising A$110 Million" (Press Release, 23/24 August 2018) <https://www.worldbank.org/en/news/press-release/2018/08/23/world-bank-prices-first-global-blockchain-bond-raising-a110-million>.

[50] An IMF staff report summarises the use of new technologies as follows: "Almost all prototypes were stand-alone type built as an add-on payment processing layer upon or in parallel with the existing LVPS [large-value payment systems]. Real-time interfaces with central banks' or financial institutions' internal payment systems were not tested except for one prototype (in Singapore), which had a direct operation link with the current RTGS system." See Ghiath Shabsigh, Tanai Khiaonarong and Harry Leinonen, "Distributed Ledger Technology Experiments in Payments and Settlements" (IMF Fintech Notes, Note/20/01) 2.

[51] This refers to a process whereby a court may date the bankruptcy of an entity from the midnight of the day on which the bankruptcy order is made. As a result, all the transactions made between midnight on that day and the time the insolvency order was made may be invalidated, unless the law intervenes to provide an exception. In Australia, this protection is granted to eligible systems approved under the *Payment Systems and Netting Act 1998* (Cth).

This largely uniform state of affairs in FMIs around the world was poised to be disrupted by Australia following the announcement by the ASX in December 2017 that CHESS would be replaced with a distributed ledger platform.[52] Five years (and $250 million) later, the project flopped spectacularly, resulting in "one of the biggest critical service stuff-ups seen in financial markets globally"[53] and generating doubts about the transformative potential of the new technologies.

And yet innovators persist, citing a range of benefits that blockchains and distributed ledgers will soon bring to FMIs, including reduced costs for market participants. "Where one has failed, others may prevail" seems to be the rule of thumb. Market operators, as prospective beneficiaries of this change, are also interested, understandably so.[54] Overseas regulators have answered the call and are setting up new regulatory frameworks to facilitate the development of FMI innovations. However, progress has been slow and results inconclusive.

Major regulator-led experiments focusing on the integration of innovative technologies like blockchain and distributed ledgers can be traced back to March 2016, when the Bank of Canada launched Project Jasper to explore the impact of distributed ledgers on the settlement of wholesale interbank payments.[55] The Monetary Authority of Singapore followed with its Project Ubin later in the year.[56] Both projects would then continue for many years and multiple phases (four phases for Jasper and five phases for Ubin) to test the different applications of the new technologies on various platforms. These experiments were followed by industry-led initiatives by some of the incumbent infrastructure providers like SWIFT and DTCC.

Although the relevant experiments have largely achieved their goals, the latter were too limited to provide convincing evidence of the viability of the new technologies:

> Most experiments have been completed under controlled and technology-focused environments. All reviewed projects concluded that DLT is, at least to some extent, feasible as the basis for a large-value payment system (LVPS) infrastructure, but there were some views warning against this technology's immaturity and lack of interoperability. Very few projects have explicitly and rigorously assessed risks against international standards for large-value payments and securities settlement systems. Almost none of the projects involved a cost-benefit analysis, and no conclusions could be reached on whether DLT-based or improved legacy systems could be the more efficient alternative in the future.[57]

Over time, the focus of central banks around the world shifted towards the hot topic of central bank digital currencies (CBDC). The extent of the collective global obsession with CBDCs has been truly staggering: according to the most recent survey results published by the Bank for International Settlements (BIS) in June 2024, "[n]inety-four percent of surveyed central banks are exploring a central bank digital currency".[58] Experimentation with CBDC innovations (which commonly use distributed ledgers and blockchain) started at a domestic level and later became international, in the form of numerous cross-border collaborations, typically under the auspices of the BIS. In recent years, these experiments have aimed to tackle the major difficulties associated with the cross-border use of CBDCs, including interoperability of domestic payment systems. Overall, the focus of regulatory attention has

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[52] ASX, *About CHESS Replacement* <https://www.asx.com.au/markets/clearing-and-settlement-services/chess-replacement/about-chess-replacement>.

[53] Byron Kaye, "Insight: Australian Stock Exchange's Blockchain Failure Burns Market Trust", *Reuters*, 20 December 2022 <https://www.reuters.com/markets/australian-stock-exchanges-blockchain-failure-burns-market-trust-2022-12-20/>.

[54] Sara Elinson and Prashant Kher, *How Tokenization in Asset Management Is Driving Meaningful Opportunity* (18 August 2023) EY <https://www.ey.com/en_us/insights/financial-services/tokenization-in-asset-management>.

[55] Payments Canada, *Project Jasper Primer* (Discussion Paper, 9 February 2017) <https://www.payments.ca/insights/research/project-jasper-primer>.

[56] Monetary Authority of Singapore, *Project Ubin* <https://www.mas.gov.sg/schemes-and-initiatives/project-ubin>.

[57] See Shabsigh, Khiaonarong and Leinonen, n 50, vii.

[58] Alberto Di Iorio, Anneke Kosse and Ilaria Mattei, "Embracing Diversity, Advancing Together – Results of the 2023 BIS Survey on Central Bank Digital Currencies and Crypto" (Bank for International Settlements Paper No 147, June 2024) 1 <https://www.bis.org/publ/bppdf/bispap147.pdf>. According to the authors, the "jurisdictions of the responding central banks represent 81% of the world's population and 94% of global economic output".

been on cross-border payments – facilitated in no small part by the G20's major ongoing project on the modernisation of cross-border payment ecosystem initiated during the Saudi Arabian presidency in 2020.[59]

With the efforts of central banks directed elsewhere, towards *cross-border* payments co-operation, the modernisation of other types of FMIs (like SSSs) has remained a topic for individual regulators to tackle at a *domestic* level – where a very different dynamic can be observed. In the absence of meaningful international co-ordination, governments are faced with the risk of regulatory competition. Some of them have chosen to take a proactive stance and design more favourable regulatory frameworks to attract the best innovators.

The transformative potential of DLT for FMIs is expressly recognised overseas. As an example, para (3) of the Preamble to the European Union (EU) Regulation 2022/858 of 30 May 2022 on a Pilot Regime for Market Infrastructures Based on Distributed Ledger Technology (EU DLT Pilot Regulation) states:

> The so-called "tokenisation" of financial instruments, that is to say, the digital representation of financial instruments on distributed ledgers or the issuance of traditional asset classes in tokenised form to enable them to be issued, stored and transferred on a distributed ledger, is expected to open up opportunities for efficiency improvements in the trading and post-trading process.

Some of the key financial centres have already set up bespoke regulatory frameworks or are in the middle of doing so.

The European Union has launched a bespoke "DLT Pilot Regime" (EU DLT Pilot), Switzerland has implemented a licensing framework for "DLT trading facilities" (Swiss DLT trading facility) and the United Kingdom has launched a "Digital Securities Sandbox". Each one of these three regimes provides relief from certain regulatory requirements applicable to operators of FMIs providing innovative settlement services, but the approaches differ substantially in terms of overall duration, types of securities covered, regulatory exemptions afforded to eligible service providers, approach to technological neutrality and so on.

There is very limited publicly available data concerning the performance of these regulatory initiatives. This is unsurprising, considering these are still largely in their early stages. The EU project, which launched in March 2023, did not produce any results during its first year: in April 2024, the European Securities and Markets Authority admitted that "no [eligible] market infrastructures [had] been authorised yet".[60]

Despite this, the regulatory parameters chosen by overseas authorities provide valuable insights into the expected risk tolerance levels and the underlying regulatory philosophy more generally. These regulatory parameters need to be compared, which is a task for a separate paper.

V. Path Forward for Australia: A New Regulatory Sandbox

In this Part V, I argue that a regulatory sandbox could be a first step towards a more forward-looking regulatory framework for FMIs in Australia. Australia was one of the world leaders in designing a FinTech regulatory sandbox in 2016 and can learn from its previous experience.[61] I acknowledge, however, that the concept of a regulatory sandbox remains largely untested in the context of FMIs. Furthermore, the balancing of regulatory priorities is likely to be more complex for FMIs, considering the magnitude of the associated risks and the likely involvement of the central bank.

[59] See Financial Stability Board, *Enhancing Cross-border Payments – Stage 1 Report to the G20* (9 April 2020) <https://www.fsb.org/2020/04/enhancing-cross-border-payments-stage-1-report-to-the-g20>.

[60] ESMA, "Ref: DLT Pilot Regime Implementation" (Letter to European Institutions, 3 April 2024) <https://www.esma.europa.eu/sites/default/files/2024-04/ESMA75-117376770-460_DLT_Pilot_Regime_-_Letter_to_EU_Institutions.pdf>.

[61] For a detailed analysis and critique of Australia's approach to regulatory sandboxes, see Anton Didenko, "A Better Model for Australia's Enhanced FinTech Sandbox" (2021) 44(3) *UNSW Law Journal* 1078.

A. The need for regulatory experimentation

It follows from the previous discussion in Parts II–IV that a vicious cycle exists in the regulation of SSFs in Australia that hinders competition and innovation.

The licensing requirements are high-level and principles-based and are designed with large FMIs in mind. They are *sufficiently flexible* to recognise – in principle – the efficiencies of atomic settlement and other benefits of innovative technologies but *insufficiently specific* to determine *ex ante* the exact regulatory adjustments they may trigger.

Innovative technologies may have the potential to disrupt and enhance SSF operation, but earlier regulatory experiments have not produced conclusive results regarding crucial aspects of FMI operation, such as cost-benefit analysis or scalability. Furthermore, it is possible the new technologies will simply reallocate certain risks, instead of removing or reducing them (not to mention unforeseen risks that may arise). Without the relevant data, permanent adjustments to the existing regulatory framework would be premature.

The results of regulatory experimentation overseas remain inconclusive, despite years of testing. As discussed in Part IV, there is still very limited guidance from the past regulatory initiatives seeking to modernise FMIs through innovative technologies. The early tests were essentially proofs of concept designed to observe the operation of blockchains and distributed ledgers, without real intention to move towards practical implementation. Understandably, the results produced in such low stakes environments have little practical value. It follows that the relevant data needs to be obtained domestically.

Yet, without any regulatory adjustments, the much-needed data will not emerge since prospective innovators are discouraged from applying for a licence in the first place: although the regulatory framework remains technology-neutral on paper, the licensing regime de facto *favours large institutions*, which absorb more easily the associated costs. The Minimum Conditions are not fit for purpose, and in the absence of an adequate regulatory framework for tokenised assets experiments with innovative technologies can only meaningfully be conducted by those who can afford to use "digital doppelgangers" – that is duplicate the same activities using old (recognised) and new (unrecognised) technologies. As an example, regardless of any potential improvements that may be achieved through atomic settlement, the payment leg of the settlement process needs to be performed using the "traditional" payment system, which remains *account* (not *token*) based. Hence, the same settlement process needs to be recorded twice – in tokenised and non-tokenised form. In a monopoly that is cash equity settlement, this means that only the monopolist can realistically innovate – but begs the question why.

B. A new regulatory sandbox for financial market infrastructures

I therefore propose setting up a new regulatory sandbox – an "FMI Sandbox" – administered by ASIC and RBA as outlined below.

1. What is a "regulatory sandbox"?

I adopt the following definition of "regulatory sandbox" I developed in my earlier article:

> A standing (or at least long-term) regulatory strategy that facilitates the development of innovative technology-driven solutions in the financial sector and (i) involves actual on-market testing involving real customers, (ii) is conducted under regulatory supervision and (iii) provides limited exceptions from the otherwise applicable regulatory framework (but regardless of specific regulatory tools used to administer such exceptions).[62]

A regulatory sandbox enables on-market testing with real customers and therefore will be useful for innovators who wish to proceed all the way to live implementation of the new technologies after exiting the sandbox. This is in stark contrast to the previous pilots which had no practical implementation in sight – and hence were not at all useful for assessing such crucial factors as scalability or cost-benefit evaluation.

[62] Didenko, n 61, 1095.

2. Why not reuse the existing fintech sandbox?

There are two main reasons why a *new* regulatory sandbox is needed.

First, although Australia was one of the early adopters of the concept of regulatory sandboxes, and ASIC currently operates the Enhanced Regulatory Sandbox (ERS), the latter is not suitable since the ERS expressly excludes CS facility operators and only offers exemptions from the Australian *financial services* or Australian *credit* licencing regime.[63] Furthermore, the current ERS regime is notice-based – which generates inefficiencies.[64]

Second, since the proposed regulatory sandbox tackles FMIs, capable of generating systemic risks by design, it must have different oversight arrangements – to ensure those risks are properly addressed. ASIC's efforts alone would be insufficient here – and must be complemented by the RBA, which is uniquely positioned to track the evolution of systemic risks posed by the sandbox participants during the testing period and post-exit.

C. Key features of the proposed FMI sandbox

A separate publication is needed to provide a complete specification of the proposed sandbox, so for the purposes of this article it is sufficient to summarise some of its key features.

The proposed regulatory sandbox will facilitate the development of safe and responsible mechanisms for the settlement of tokenised assets by incentivising prospective CS facility licensees to conduct time-limited experiments under regulatory supervision without having to obtain a full CS facility licence. By enabling monitored compliance, it will help the regulators collect the empirical data required to better understand the risks and opportunities that stem from the application of new technologies, which may be used to make targeted adjustments to the regulatory framework in the future to achieve an acceptable balance of regulatory objectives.

The proposed regulatory sandbox is intended to enable *on-market* testing with real investors. This will help understand better the implications of innovative settlement mechanics for the management of liquidity by investors. In particular, it will help explore to what extent the reduction of credit risk outweighs the extra liquidity pressure imposed on investors.

In contrast to one-off initiatives like regulatory pilots, the proposed sandbox is meant to create a *long-term* legal framework that would continue to be open for new entrants in the future. Therefore, the eligible innovations are not limited to a particular technology, such as distributed ledgers. I argue that *technology neutrality* is a valuable regulatory principle that will enable the proposed sandbox to remain relevant beyond the current blockchain- and DLT-dominated discourse.

The CS facility exemption granted by the proposed regulatory sandbox would be only *temporary*, and sandbox participants would be subject to additional restrictions, such as limitations on the scale of permitted settlements and the types of acceptable clients. By reducing the scope of permitted activities for each sandbox participant and limiting the number of its connections to the financial system, the proposed regulatory sandbox will effectively mitigate the most significant risks associated with settlement activities. This is important, as despite considerable promise, many of the innovative technologies remain untested at scale.

At the end of the sandbox period, sandbox participants would be expected to obtain a "full" CS facility licence or exit the market. To the extent that the regulators (ASIC and RBA) are satisfied that the innovative technologies adopted by the relevant entity mitigate some of the underlying risks, the CS facility licence obtained upon exiting the sandbox could usefully include corresponding exemptions from certain obligations (which may include some of the RBA standards). I propose a *staggered transition* process to a "full" CS facility licence for eligible sandbox participants. Such transition would involve several stages, each with gradual reduction of applicable restrictions, to minimise the potential for

[63] See ASIC, *Information Sheet 248: Enhanced Regulatory Sandbox* (October 2024).

[64] See further Didenko, n 61.

systemic disruption. Upon collecting sufficient evidence, regulators may choose to introduce permanent adjustments to the regulatory framework.

VI. Conclusion

The current regulatory framework for the settlement of securities in Australia is not fit for the purpose of promoting competition and propagates a vicious cycle that entrenches the incumbent operators. This article has explored the limitations of innovative technologies, analysed novel regulatory frameworks for FMIs overseas and drawn important lessons for the creation of a new form of regulatory experimentation for FMIs in Australia. It eventually argues that a new regulatory sandbox for FMIs in Australia can help overcome some of the challenges that limit the potential observed in the innovative technologies. The design specifications for such new sandbox require a detailed thoughtful analysis – which will be the focus of a separate publication.