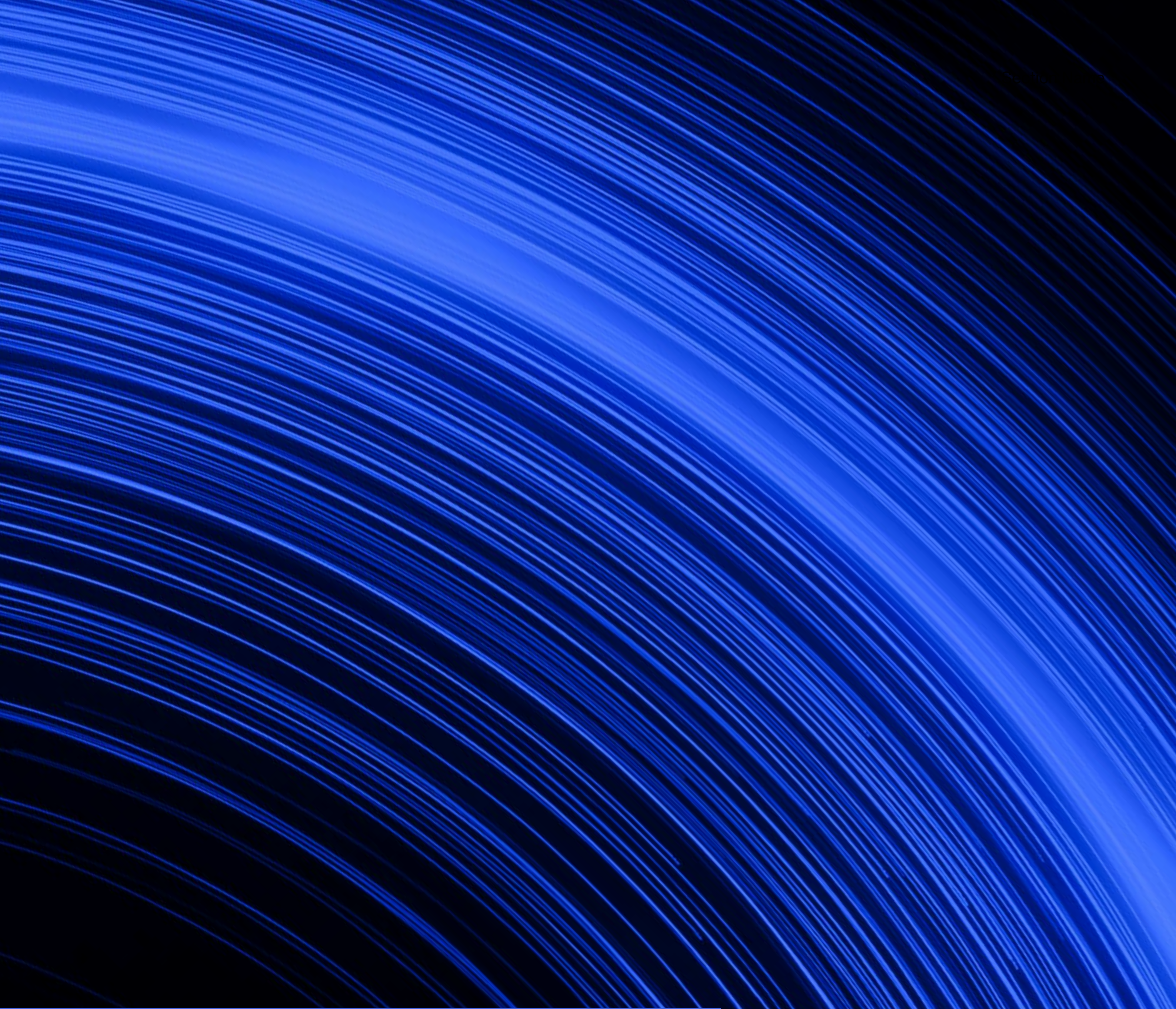
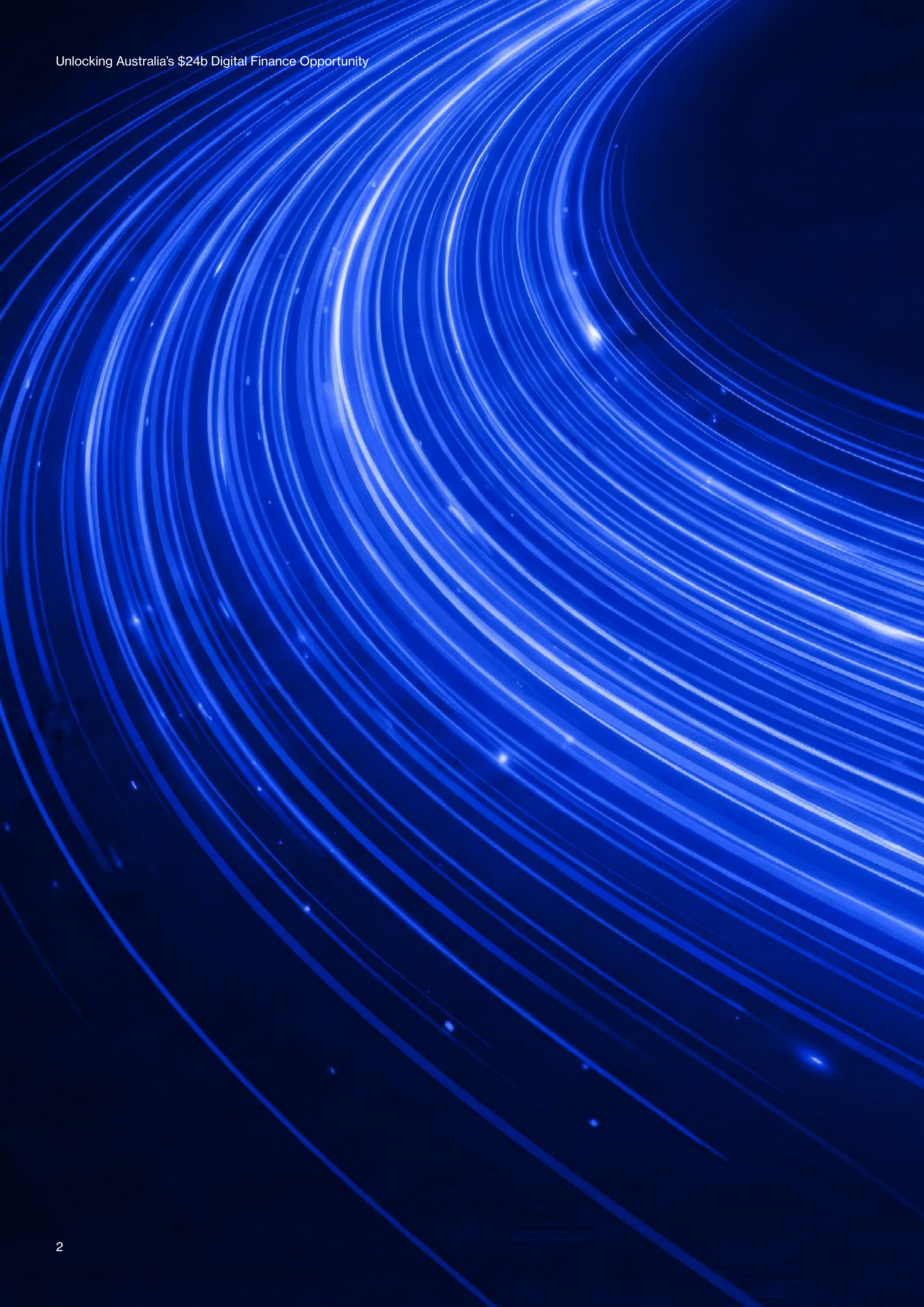
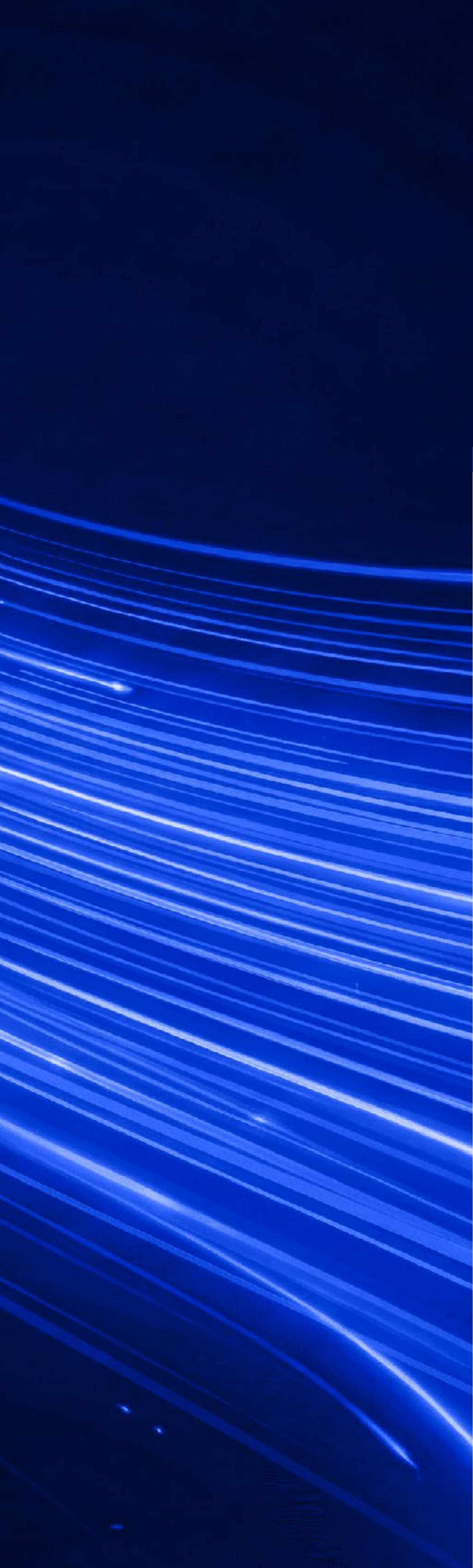


Unlocking Australia's $24b Digital Finance Opportunity

The Economic Impact Potential of Digital Finance Innovation in Australia Report

The Digital Finance Cooperative Research Centre





About this Report

This report was independently authored by the Digital Finance Cooperative Research Centre (DFCRC), in collaboration with the Digital Economy Council of Australia (DECA). The research was made possible through the financial support of OKX.

About the Digital Finance Cooperative Research Centre

As a participant in the Australian Government's Cooperative Research Centres Program, DFCRC's mission is to unlock the significant economic potential of Digital Finance innovation for Australia by bringing together industry, government and research.

Research Governance and Independence

In accordance with the DFCRC's commitment to academic and research integrity, OKX provided financial sponsorship to facilitate the study, but held no editorial influence, research involvement or approval rights over the final findings and recommendations.

DFCRC DIGITAL FINANCE CRC

Digital Economy Council of Australia

OKX

Executive Summary

The global financial system has reached a pivotal juncture. We are witnessing a once-in-a-generation transformation where Digital Finance is moving beyond a peripheral innovation – it is becoming a foundational layer of the global financial system.

This transition is being triggered by a powerful convergence of clearer global regulatory frameworks and the acceleration of large-scale, real-world adoption by leading financial institutions. The technologies at the centre of this shift (tokenisation, distributed ledgers, programmable money, and real-time atomic settlement) are proving their value across markets, payments, assets and collateral systems, and increasingly shaping a more efficient, inclusive and transparent global economy.

With the global economic dividend for full-scale real-world asset tokenisation now estimated to exceed **$4 trillion annually**, the international landscape is moving rapidly.

Against this backdrop, **Australia stands at a critical inflection point.** While our advanced payment infrastructure and mature financial markets provide a natural headstart and mean we are well placed to capitalise on Digital Finance applications reaching scale overseas, the window to capture a competitive advantage is narrowing.

This report, informed by research and industry consultation, outlines the productivity gains and economic windfalls available to Australia through Digital Finance innovation.

The stakes for the Australian economy are quantifiable and significant. This report estimates that around **$24 billion per year in economic gains** (approximately 1% of Australia's GDP) could be generated for Australia through Digital Finance innovation that enables Better Markets, Better Payments and Better Assets, three core functions of the financial system. This includes:

- **Better Markets: $10 billion per year** from more efficient trading, settlement, and capital allocation.
- **Better Payments: $8 billion per year** from faster, lower-cost payments, particularly across borders.
- **Better Assets: $6 billion per year** from enhanced asset functionality, collateral efficiency, and automated compliance.

These estimates reflect potential productivity gains, measured as economic surplus, including reduced transaction costs, improved capital utilisation, lower costs of capital, and increased market participation. At the core of these gains is a structural improvement in financial infrastructure.

Australia's Digital Finance Innovation Economic Gain Potential

$24 billion

per year **(approx. 1% of GDP)** + downstream economic effects likely to exceed this baseline

Global Digital Finance Innovation Economic Gain Potential

$4 trillion+

per year approx.

While these *direct* productivity gains are substantial, the broader, downstream economic effects are likely to exceed this baseline. By lowering the cost of capital and expanding access to finance, Digital Finance can stimulate higher levels of real investment and economic activity. More efficient cross-border payments can support growth in trade and capital flows internationally, while streamlined, programmable financial infrastructure can enable new markets, attract international financial services to Australia and integrate more effectively with complementary technologies such as AI. These second-order effects are more difficult to quantify but are economically significant.

In this report, Digital Finance innovation refers to the application of technologies and practices that transform how assets trade and financial services are delivered. Central to this is tokenisation, which stores digital representations of assets called tokens on distributed ledgers. Tokenisation enables more direct exchange of value, reducing counterparty risk and the reliance on intermediaries. It allows trading, settlement, custody, and compliance to be integrated within a unified programmable system.

This report shows that the greatest economic gains from tokenisation are likely to come from improving the performance of high-turnover asset classes. The largest opportunities are in domestic markets for real-world assets, cross-border payments, and high-turnover asset classes.

Asset classes with the highest potential for Australian economic gain include:

Foreign exchange
$7.2 BILLION P.A.

Investment funds
$2.2 BILLION P.A.

Public debt and private equity
$1.3 BILLION AND $1 BILLION P.A.

Private debt and private equity
$0.8 BILLION AND $1.4 BILLION P.A.

Other real-world assets such as commodities and real estate
$0.5 BILLION AND $1.5 BILLION P.A.

The estimates in this report show the potential of the full-scale tokenisation of financial and real-world assets in Australia. **Currently, Australia is not on track to realise even half of these potential economic gains by 2030.** On its current trajectory, Digital Finance innovation is expected to generate around $1 billion per year of economic gains by 2030. That is because adoption of Digital Finance innovation requires substantial industry-wide changes that take time.

The report shows that **regulatory barriers and uncertainty are the primary constraints identified** by industry. Industry survey responses in Australia identify these as the primary constraints to tokenisation adoption, consistent with findings from Australian policy forums and international evidence. Key barriers identified include uncertainty regarding licensing frameworks for tokenised financial markets and financial market infrastructure and legal treatment of tokenised assets, which limit product development, compliance, and operational planning. Additional constraints include industry co-ordination and access to trusted programmable settlement assets.

The potential annual economic gains from Digital Finance in Australia:

$24 billion

> While the gains estimated by 2030 reflect the sector's current trajectory, this report also estimates the potential uplift from targeted, innovation-fostering policy and regulatory reforms. The findings highlight an opportunity to accelerate adoption to capture more of the gains, sooner.

The recommended path combines (i) regulatory and policy settings that actively enable innovation, and (ii) stronger, system-wide collaboration across industry, regulators and the public sector. Together, these steps would allow Australia to capitalise on this strategic economic and productivity opportunity, strengthen the resilience of its financial system, and secure a competitive role in the rapidly evolving global Digital Finance ecosystem.

More specifically, the analysis identifies the following key policy priorities, based on Australian industry survey data and the most significant categories of economic gain:

Establish a dedicated Digital Financial Market Infrastructure (DFMI) sandbox to support transitions from pilot to production

$1.4 billion
per year estimated economic impact by 2030

The sandbox could support the evolution of DFMI licensing, provide a stage-gated path to production for tokenised financial market use cases and build on Australia's strengths (including Project Acacia) and international best practice. It would formalise ongoing collaboration between regulators, industry participants in testing and scaling Digital Finance innovations.

Evolve the licensing framework for tokenised financial markets and Digital Financial Market Infrastructures

$1.9 billion
per year estimated economic impact by 2030

This would complete the fourth pillar of a modern Digital Finance regulatory architecture. Australia has made important progress on regulation and guidance for digital assets, digital money (stablecoins), and consumer protections, but evolving the financial markets and DFMI licensing pillar remains an important enabling step.

Deploy foundational infrastructure, including tokenised Government bonds and wholesale Central Bank Digital Currency in the DFMI sandbox

$2 billion
per year estimated economic impact by 2030

The data suggests these foundational components would enable the development of tokenised markets, collateralised lending, payments, and related services. They can help coordinate sequencing across industry participants, reducing fragmentation and accelerating the transition to a digital financial system.

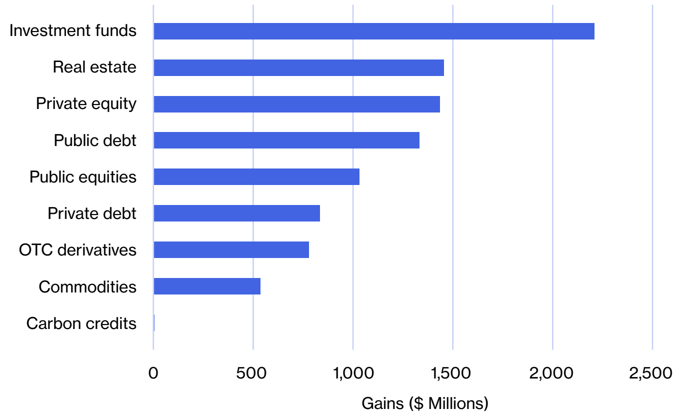
Other policy priorities, including clear and consistent definitions of digital assets, regulatory guidance on FMI licensing, and the regulatory framework for stablecoins are also identified in the report.

The estimation approach in this report uses an economic framework that measures the gains that arise between counterparties in the exchange of value. We systematically analyse Australian markets, assets, and payments, drawing data from many primary sources, academic studies, and industry analysis. The estimates include cost savings such as transaction costs, capital tied up in margin or settlement processes, streamlining of financial compliance and asset servicing, risk reductions through atomic settlement, and gains from increased trade of illiquid assets.

Better Markets

$10 BILLION ANNUALLY

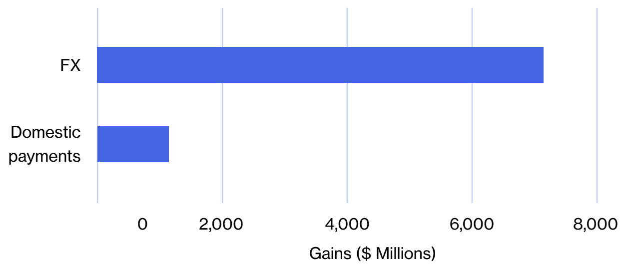
Better Markets improve the way assets trade and capital is allocated. Atomic settlement and improved post-trade processes can reduce settlement risk and operational costs and unlock trapped collateral. Digital asset markets can broaden investor access and mobilise liquidity to illiquid assets, decreasing the cost of capital for issuers. On-chain trading mechanisms such as automated market makers, can increase market depth and reduce bid-ask spreads in several asset classes by enabling passive liquidity provision.



Better Payments

$8 BILLION ANNUALLY

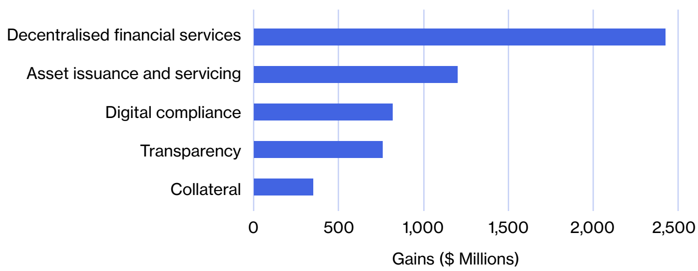
Better Payments improve how value moves domestically and across borders. Tokenised money in the form of CBDCs, stablecoins and deposit tokens can streamline cross-border and domestic transactions and enable new programmable payment functionality. Potential gains are larger in cross-border payments, where tokenised money transfers can reduce reliance on correspondent banks, decrease FX spreads, free up nostro balances, and reduce back-office expenses.



Better Assets

$6 BILLION ANNUALLY

Better Assets have enhanced functionality. Tokenisation can increase the transparency, usability, flexibility, and divisibility of assets and reduce the costs of asset servicing, issuance, and compliance. Assets with lower levels of transparency, such as corporate bonds and private equity, could also benefit from enhanced transparency, potentially attracting cheaper financing and lower trading costs. Assets locked up as collateral could be better utilised, improving liquidity and balance sheet efficiency.



$24 billion per year:

potential Australian economic gains from Digital Finance

This report finds that by creating **Better Markets, Better Payments,** and **Better Assets**, Digital Finance could generate around $24 billion per year in economic gains for Australia. It provides industry and economic evidence for the top policy priorities to accelerate tokenisation, unlock earlier and larger economic gains, and act with the urgency required to secure our global competitiveness in the rapidly evolving Digital Finance ecosystem.

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Terms and Abbreviations

Atomic settlement	A type of settlement performed in one indivisible unit of work such that all legs of a transaction settle simultaneously and conditionally on all legs settling.
Automated Market Maker (AMM)	A smart contract that facilitates trading of digital tokens via liquidity pools using algorithmic pricing.
Blockchain	A decentralised ledger that records transactions in sequentially linked blocks.
Central Bank Digital Currency (CBDC)	Digital currency, issued by a central bank, in the form of digital tokens representing a direct claim on the central bank.
Centralised ledger	A database in which a single controlling entity records ownership and transactions.
Central Counterparty (CCP)	An entity that interposes itself between buyers and sellers, becoming the buyer to every seller and the seller to every buyer.
Central Securities Depository (CSD)	An entity that provides securities settlement and safekeeping services and maintains the official record of securities ownership.
Clearing	The process of calculating obligations between counterparties and managing exposures arising from trades.
Cold wallet	A digital wallet that is kept offline.
Crypto-asset (or Crypto)	Digital tokens implemented using cryptographic techniques whose value is native to a distributed ledger and not backed by an external legal claim, contract, or asset.
Cryptocurrency	A subset of crypto-assets issued as part of a blockchain protocol (e.g., Bitcoin).
Delivery-versus-Payment (DvP)	A settlement in which delivery of an asset occurs if and only if payment is made.
Distributed ledger technology (DLT)	Technologies that enable decentralised or distributed ledgers, including networks, cryptography, and consensus mechanisms.
Decentralised ledger/ Distributed ledger	A database where multiple participants record ownership and transactions according to a consensus mechanism.
Decentralised lending	Smart contracts that facilitate peer-to-peer collateralised lending and borrowing of digital assets.
Digital asset	Asset for which the rights or title are represented by digital tokens, including crypto-assets and tokenised real-world assets

Digital Finance	The use of digital technologies, such as tokenisation and DLT, to improve how assets are exchanged, payments are made, and financial services are delivered.
Digital Financial Market Infrastructures (DFMI)	Financial market infrastructures that use distributed ledger technology and smart contracts to perform FMI functions (such as trading, clearing, settlement, custody, or record-keeping), typically in an integrated and automated manner without (or with fewer) central intermediaries.
Digital token	A unit of digital information recorded on a distributed ledger that can be exclusively controlled by a user (typically via private keys) and used to represent native on-chain value or rights or title to an asset.
Digital wallet	Software or hardware that stores private keys.
Digitisation	The process of converting analogue information or processes into digital form.
Decentralised Finance (DeFi)	Financial services provided through smart contracts on distributed ledgers without reliance on traditional intermediaries.
Financial Market Infrastructures (FMI)	Systems that are critical to the smooth functioning of financial markets by facilitating clearing, settlement, and recording of transactions, including payment systems, central securities depositories, securities settlement systems, central counterparties, and trade repositories.
Fungible token	A token that can be substitutable for others of its type.
Gains from trade	The economic surplus accruing to both counterparties of a trade or financial exchange.
High-Quality Liquid Asset (HQLA)	Assets that are easily and immediately convertible into cash with little or no loss of value, commonly used to meet liquidity requirements and as collateral.
Hot wallet	A digital wallet that is connected to the internet.
Liquidity pool	A reserve of digital assets used to facilitate trading or lending.
Native token	A token whose ownership and state are determined entirely by the distributed ledger and its protocol.
Non-Fungible Token (NFT)	A unique token where only one of its kind exists.
Non-native token	A token whose ownership or state is partially determined by off-chain information.
Off-chain	Not recorded on a distributed ledger.

On-chain	Recorded on a distributed ledger.
Permissioned ledger	A type of distributed ledger where only authorised participants may validate transactions or record state.
Post-trade	The set of processes that occur after a trade is executed, including clearing, settlement, confirmation, and reconciliation.
Private key	An alphanumeric code used to create digital signatures that authorise transactions and control tokens.
Programmable money	Digital money whose transfer and usage can be controlled by embedded logic or smart contracts.
Real-time atomic settlement	Atomic settlement that occurs at the time a trade is executed (i.e., when a buy and sell order are matched), such that trade formation and settlement occur as one inseparable event, making it technologically infeasible for settlement risk to arise.
Real-world asset (RWA) tokens	Tokens that represent ownership, rights, or claims to tangible or intangible asset that exists in the physical world or traditional financial system.
Settlement	The final exchange of assets and payment that discharges obligations arising from a trade.
Smart contracts	Rules deployed in computer code on distributed ledgers which can contain digital asset properties or decentralised financial service logic.
Stablecoin	A digital token designed to maintain a stable value relative to a reference asset or currency, typically through reserve backing or stabilisation mechanisms.
Staking	Locking digital assets as collateral to participate in maintaining the decentralised ledger or a decentralised financial service.
Tokenisation	The process of creating a digital token on a blockchain or distributed ledger to represent ownership, rights, or claims to an asset.
Tokenised asset	A digital token representation of a real-world asset or financial instrument recorded on a distributed ledger.
Token	*See Digital Token.*

Introduction

It is a pivotal time for Digital Finance. Globally, real adoption is underway, supported by major policy changes and engagement from leading financial institutions. Governments and market participants are increasingly recognising that tokenisation, programmable money, and real-time atomic settlement are not incremental upgrades, but foundational changes to how financial systems operate.

01

Estimates suggest that full-scale real-world asset (RWA) tokenisation could deliver global economic savings exceeding US$2.7 trillion per year (AU$3.8 trillion).[1] In the nearer term, annual global gains of up to US$213 billion by 2030 are plausible.[2] Although only a small fraction of global assets has been tokenised to date, jurisdictions are accelerating efforts to capture these gains by modernising asset functionality, market infrastructure, and payment systems.

Digital Finance is no longer fringe – it's foundational.

In Australia, Digital Finance has the potential to transform the financial system by enabling new marketplaces, improving the efficiency of asset trading, reducing frictions in domestic and cross-border payments, and lowering the cost and complexity of financial compliance. This report estimates that full adoption of Digital Finance could unlock up to $24 billion in annual economic gains for Australia, with the largest opportunities arising in domestic tokenised RWA markets, cross-border payments, and high-turnover asset classes.

Recent initiatives are laying important foundations. Wholesale CBDC pilots and Project Acacia[3] - a joint Digital Finance Cooperative Research Centre (DFCRC) and Reserve Bank of Australia (RBA) research project exploring how digital money and infrastructure can support wholesale tokenised asset markets - demonstrate both technical feasibility and strong industry interest. The industry-led use cases piloted in these initiatives illustrate the appetite and capability of Australian institutions to develop Digital Finance markets that capture efficiency gains, improve liquidity, and free capital that is currently locked within traditional post-trade processes.

The purpose of this report is to provide an evidence-based assessment of Digital Finance innovation and its potential economic impact for Australia. It builds on Economic Impact Analysis undertaken by the DFCRC in the context of CBDC pilots conducted with the RBA, as well as DFCRC research on the economic effects of real-world asset tokenisation.[4]

Estimating the economic value of Digital Finance innovation is an inherently forward-looking exercise, making it challenging from a research methodology standpoint. Material uncertainties persist about eventual market architecture, adoption paths, and regulatory settings of Digital Finance innovations. To this end, although we rely on economic models and a vast body of market microstructure research to underpin our approach, quantifying potential economic gains requires many assumptions and approximations, resulting in relatively wide margins of estimation uncertainty.

Accordingly, the estimates in this report are intended to serve two purposes:

(i) To indicate the approximate magnitude of potential economic gains and how they vary across gain channels, asset classes, and financial services, rather than to provide precise point estimates.

(ii) To identify, based on data, priority areas where targeted policy interventions, research and development, or commercial initiatives are likely to deliver the greatest economic impact.

The report focuses on opportunities and practical implications across three domains:

(i) Enhancing market infrastructure and trading efficiency ("**Better Markets**"),

(ii) Modernising domestic and cross-border payments ("**Better Payments**"), and

(iii) Improving the functionality of real-world assets ("**Better Assets**").

[1] Throughout this report, $ denotes Australian dollar unless otherwise specified.

[2] The global economic gains from tokenisation are quantified in Baltais, Karlsen, Putnins, and Sondore (2024).

[3] Project Acacia is being led by the Reserve Bank of Australia (RBA) and the Digital Finance Cooperative Research Centre (DFCRC) in collaboration with ASIC, Treasury, and APRA.

[4] See Baltais, Karlsen, Putnins, and Sondore (2024) and Aliyev, Gaudiosi, and Putnins (2023).

Across these domains, automation, improved transparency, and more efficient collateral usage can unlock substantial value in corporate bonds, private markets, real estate, and other asset classes, while real-time settlement and programmable infrastructure can reduce reliance on intermediaries, free capital, and streamline post-trade processes.

Although international developments are considered throughout, the analysis is Australia-centric. The report highlights where policy, regulation, and technology intersect to unlock economic value, strengthen competitiveness, and enable new market structures.

> Digital Finance innovation refers to the application of technologies and practices that transform how assets are represented, made tradable, and how financial services are delivered.

Digital Finance innovation leverages distributed ledger technology (DLT), smart contracts, and tokenisation to make financial systems more efficient, accessible, and transparent. Unlike simple digitisation, which is the conversion of analogue records into digital form, Digital Finance introduces programmable, self-custodied, and transferable representations of assets that can be exchanged more directly, in real-time, without central intermediaries.

A key element of this innovation is tokenisation, which involves creating digital tokens on distributed ledgers, with the tokens representing ownership, rights, or claims to an asset. These tokens can be native, created entirely on-chain, or represent RWAs such as stocks, bonds, commodities, or stablecoins. Tokenising RWAs adds functionality: they can be traded more efficiently, used as collateral more effectively, and more readily integrated into automated financial services.

In contrast, crypto-assets and cryptocurrencies exist only in digital form and are not backed by any underlying asset or legal claim. While crypto-assets and tokenised RWA are two distinct types of digital assets, they share technological foundations and can both leverage decentralised finance (DeFi) platforms. The primary focus of this report is on the efficiency enhancements that generate net economic gains in RWAs.

Digital Finance innovation also encompasses programmable money and real-time settlement systems, which allow transactions to settle instantly, reducing counterparty risk and freeing up capital. Central Bank Digital Currencies (CBDCs) combine the safety and status of central bank money with these digital capabilities, enabling wholesale transactions with enhanced programmability.[5] Regulatory technology (RegTech) complements these innovations by embedding compliance, identity verification, and reporting directly into the digital assets or markets.

> Digital Finance is no longer a distant aspiration - it is happening now.

Globally, adoption is accelerating. Stablecoin transfer volumes exceed US$28 trillion annually, which is greater than the combined volumes of Visa and Mastercard.[6] Major financial institutions, including BlackRock, JPMorgan, UBS, HSBC, and State Street, have launched tokenised bonds, money-market funds, and settlement platforms that have moved from pilot to production. Major financial markets including the New York Stock Exchange and Nasdaq have announced plans to develop tokenised market infrastructure.

Several structural trends underpin this acceleration in adoption of Digital Finance. Jurisdictions such as Singapore, the UK, Hong Kong, and the EU are implementing bespoke regulatory frameworks for tokenised assets, intentionally positioning themselves to capture a significant share of the future global financial system. More recently, the United States has signalled a renewed ambition to lead in Digital Finance, accelerating global regulatory and industry-led initiatives. This has intensified what is increasingly characterised as a global race to shape the future financial system and in doing so reap the economic benefits.

[5] The focus of this report is therefore on wholesale CBDC (wCBDC), as Australian policymakers (e.g., RBA and Treasury) have indicated that retail CBDC is not a priority for Australia (RBA and Treasury, September 24, 2024 report, "Central Bank Digital Currency and the Future of Digital Money in Australia").

[6] See World Economic Forum, March 26, 2025 article, "Stablecoin surge: Here's why reserve-backed cryptocurrencies are on the rise." Note that McKinsey and Artemis Analytics, February 18, 2026 article, "Stablecoins in payments: What the raw transaction numbers miss," report that only a small fraction (around 0.2%) represents real-world payments, with the bulk of activity coming from internal transfers (e.g., moving money between wallets) and other non-economic on-chain activity.

At the same time, Digital Finance infrastructure is on the path to achieving critical mass. Enterprise-grade solutions for custody and compliance and wallet-based user interfaces have matured considerably, allowing incumbent financial institutions to deploy tokenised solutions without incurring prohibitive operational complexity.

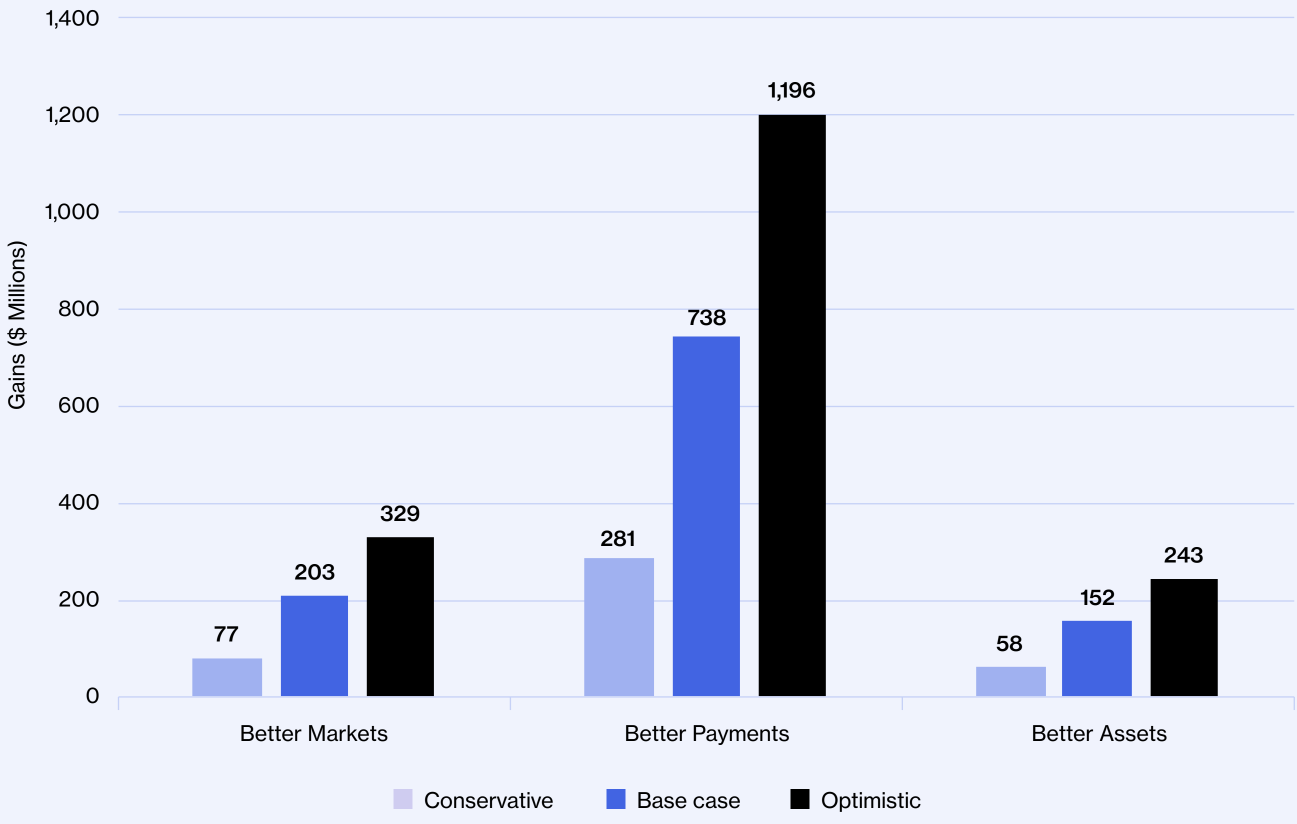
Against this backdrop, Australia has a strategic opportunity to capitalise on Digital Finance. The progress in overseas markets means that Australia can benefit by adopting international best practice in regulation and innovation-enabling policy. Australia can also leverage the proven Digital Finance applications that are starting to reach scale in other jurisdictions. However, a complacent or substantially delayed approach to Digital Finance can result in Australia capturing a smaller share of the value generated by this transition than could be achieved through a more proactive approach. With its advanced payment infrastructure, mature financial markets, and strong regulatory system, Australia is well placed to harness tokenisation to generate substantial economic gains.

This report estimates that by 2030, improvements in asset functionality, market efficiency, and payments are estimated to deliver a base-case gain of approximately $1 billion per year. This represents only a small fraction of the estimated long-run potential of $24 billion per annum, reflecting that large-scale tokenisation will take time.

This gap between near-term and long-run gains highlights the value of policies and initiatives that accelerate adoption and pull forward future benefits. This report, therefore, also evaluates a set of policy options and estimates their potential contribution to Australia's economic outcomes.

Taken together, Australia has an opportunity not only to capture substantial economic gains but also to strengthen the resilience and competitiveness of its financial system and to participate actively in shaping the global Digital Finance landscape.

Figure 1: Estimated economic gain by 2030 in markets, payments, and assets



Conceptual Framework

02

Exchange of Value Creates Economic Surplus

At its core, the financial system exists to facilitate the exchange of value, in the form of assets, money, and contractual claims, and to allocate and redistribute risk among participants. This occurs through markets, banking, asset management, and insurance.

Economic value is created when individuals or firms engage in mutually beneficial exchange, such as trading, lending, or transferring assets. Each party values what they receive more than what they give up. In economics, this net benefit is called **"economic surplus"** or **"gains from trade"** and it represents a fundamental source of economic value.

> Exchange of value produces economic "surplus" – also known as "gains from trade" – which contributes to GDP and more productive economic activity.

Some innovation and changes to market structure create redistribution of benefits between market participants, while others create genuine efficiency improvements and "net economic gains" from freeing up resources so they can be redirected toward other revenue-generating activities. This report focuses solely on net economic gains that can be unlocked in markets, payments, and assets from applying Digital Finance technologies. These gains reflect genuine productivity and welfare improvements.

While aggregate production of goods and services is commonly measured by GDP, the contribution of the financial system is better measured through **total economic surplus** or **gains from trade** generated by financial exchanges. A well-functioning financial system increases surplus by lowering frictions, reducing risk, and expanding the set of mutually beneficial transactions that occur. In this sense, the value created by finance is not primarily the volume of financial activity itself, or the salaries plus profits of financial services firms, but the gains from trade that financial infrastructure facilitates.

This distinction matters. For example, many financial transactions, such as trades in stocks, bonds, or derivatives, create gains from trade, but those economic gains are not directly counted in GDP. Rather, what is counted is the fees and commissions generated by these trades and the costs of running the underlying markets infrastructure.

This is where a conflict arises. A financial activity can generate enormous fees (increasing GDP) while simultaneously creating no new value or even destroying economic surplus by deterring welfare-creating trades. Less efficient financial system infrastructure costs more to run; less competitive financial intermediaries charge higher fees. Clearly these are not good things, yet they would appear to increase GDP. In contrast, an extremely efficient financial system that facilitates nearly frictionless and costless trade would generate the maximum economic gains from trade, yet would register a very small component in measured GDP.

The same applies to banking, asset management, and insurance. More costly provision of these services can create the appearance of increased GDP while negatively impacting the amount of value exchange and economic benefits participants in total obtain from the financial system.

Finance is the infrastructure of value exchange. Entities in the financial system perform functions that enable the efficient exchange of value

Virtually every core function of the financial system boils down to enabling mutually beneficial exchanges, differing only in what is being exchanged (money, claims, risk, time value), who the counterparties are (individuals, firms, governments, future selves), and how the exchange is structured (through markets, banks, contracts, etc.):

Financial markets

Enable exchange between those seeking capital and those supplying it (*Primary Markets*) and facilitate ongoing reallocation of assets among investors (*Secondary Markets*).

Payments systems

Enable the exchange of money for goods, services, or assets and constitute one leg of almost every transaction.

Banking

Enables exchange of value across time, allowing savers to transfer liquidity to borrowers.

Insurance and derivatives

Enable exchange of risk between parties with different risk preferences.

In a frictionless world, all mutually beneficial exchanges would occur. Any barrier or friction that prevents such trades, whether transaction fees, settlement delays, counterparty risk, information asymmetry, or access restrictions, create unrealised surplus. That is the potential economic gain that can be unlocked by Digital Finance innovation.

Frictions – costs, delays, asymmetries, exclusions – destroy economic surplus

Reducing such frictions has long been a source of economic progress, and Digital Finance is best understood as the latest step in the ongoing effort to maximise the economic value created by the exchange of assets or claims.

Digital Finance Innovations can Increase Economic Surplus

Digital Finance can increase economic surplus by improving the exchange-of-value mechanism and reducing frictions.

Digital Finance enhances the ability of individuals and institutions to exchange value efficiently throughout the economy

Tokenisation, programmable money, smart contracts, and distributed ledgers can shorten settlement cycles, reduce costs, and lower counterparty risk. They can also expand market access by fractionalising assets and enabling broader participation, while compliance automation can lower onboarding and monitoring costs.

Digital Finance innovations lower transaction costs and frictions

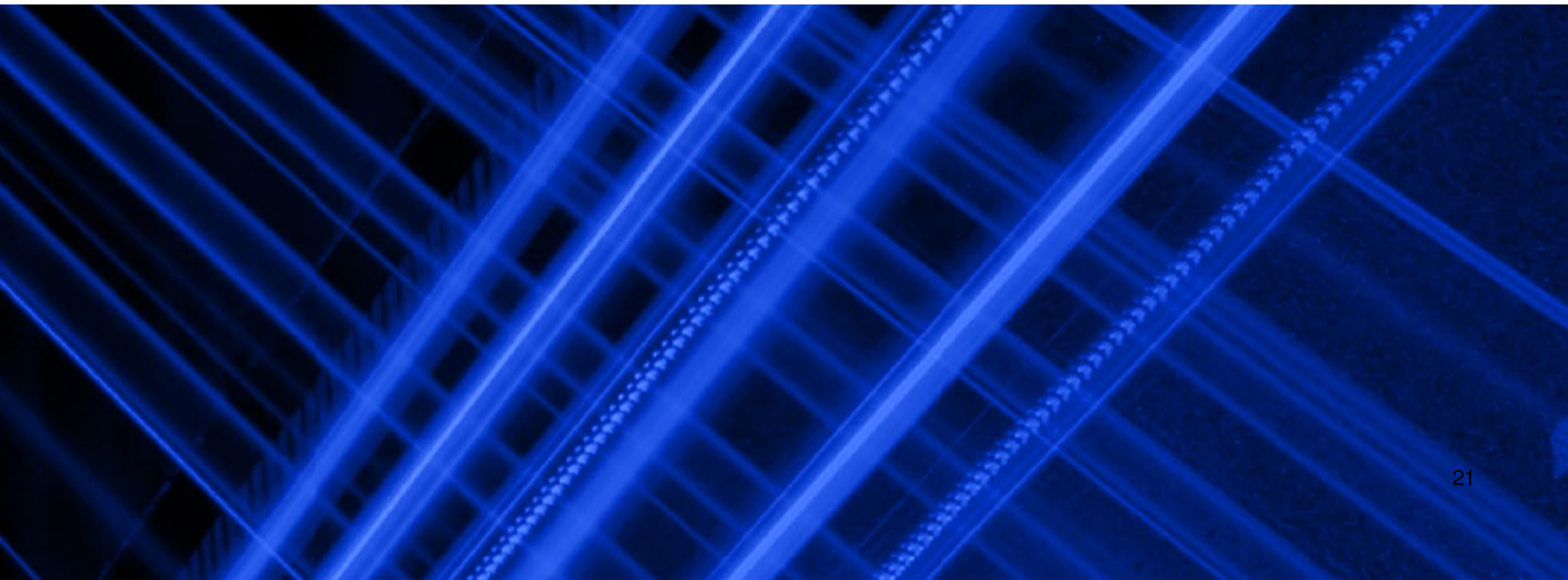
Digital Finance technologies can lower various transaction costs and frictions. This includes reducing:

- **Explicit costs,** such as fees, commissions, and reconciliation expenses; and
- **Implicit costs,** such as settlement risk, collateral requirements, operational errors, and illiquidity.

Real-time atomic settlement, for example, combines trade execution and settlement into a single inseparable event, substantially reducing counterparty and credit risk. Shared ledgers can further reduce information asymmetries by providing consistent, auditable records. By lowering costs and uncertainty, Digital Finance increases surplus on existing transaction volumes and enables additional transactions that were previously uneconomic.

Digital Finance increases the matching efficiency of markets

Digital Finance also improves **matching efficiency** – how effectively buyers and sellers (or lenders and borrowers, issuers and investors) find one another and agree on terms. Distributed ledger-based markets and algorithms can aggregate a much larger pool of participants than fragmented or siloed traditional markets, improving price discovery and increasing the likelihood of mutually beneficial exchanges.



Digital Finance is creating entirely new avenues of exchange that were previously infeasible or non-existent

In addition, Digital Finance creates **entirely new avenues of exchange.** For example, Automated Market Makers (AMMs) embed order matching logic and pricing algorithms into smart contracts, enabling pooled passive liquidity provision by asset holders. Research shows that the novel property of passive liquidity provision enabled by this mechanism can substantially reduce trading costs in many major asset classes relative to the cost of current financial markets.[7]

Furthermore, tokenisation makes it possible to represent and trade assets that were previously illiquid, indivisible, or costly to transact (e.g., real estate, private equity, art, or infrastructure assets). Assets that were effectively "latent" or "dead capital" can become tradeable and usable as collateral, unlocking new sources of liquidity and investment.

Long-run efficiency gains outweigh implementation costs

Technological transitions typically involve upfront implementation costs. However, these are largely one-off, whereas the efficiency gains persist indefinitely. From a long-run perspective, the present value of the ongoing surplus generated by a productivity-enhancing innovation can far exceed its initial cost. Historical experience with major infrastructure and information technologies illustrates this pattern.[8]

Accordingly, this report's conceptual framework focuses on **flows of surplus created by improved exchange mechanisms,** rather than on transition costs. Efficiency gains are treated as economically meaningful insofar as resources freed by automation and improved infrastructure can be redeployed to productive uses elsewhere in the economy.

An important implication of the presence of transition costs is that moving from today's financial system to a fully tokenised one is inherently difficult. Many of the largest economic gains from Digital Finance depend on broad, coordinated adoption across market participants and infrastructures, meaning they cannot be realised immediately or in isolation. Early adopters may bear substantial implementation and integration costs while capturing only a fraction of the eventual system-wide benefits, weakening individual business cases despite large, long-run social gains. These dynamics help explain why adoption can be slow even when technologies are clearly productivity-enhancing. Accordingly, later sections of this report examine transition frictions and coordination challenges, and treat them as central considerations in the design and prioritisation of policies aimed at accelerating Digital Finance adoption.

[7] See, e.g., Foley, O'Neill, and Putnins (2025) and Aspris, Dyhrberg, Putnins, and Foley (2022).

[8] For example, few today would question whether the cost of laying down internet cables was "worth it," given the decades of enormous productivity gains that the internet has enabled.

Empirical Methodology

03

Overview of Estimation Approach

This report estimates the economic gains from Digital Finance innovation using a bottom-up, asset-class-level framework grounded in financial economics and empirical evidence from Australia and comparable international markets.

The estimation proceeds in four steps:

1. Identification of efficiency channels

We identify specific mechanisms through which Digital Finance reduces frictions, including transaction costs, settlement delays, collateral requirements, operational expenses, compliance costs, and information asymmetries.

2. Measurement of baseline frictions

We quantify the current magnitude of these frictions using Australian market data wherever possible, supplemented by international evidence and industry benchmarks where local data are unavailable.

3. Estimation of efficiency improvements

We estimate the reduction in frictions achievable through tokenisation and programmable financial infrastructure, drawing on empirical studies, pilot implementations, and real-world deployments.

4. Translation into economic surplus

We convert estimated efficiency improvements into dollar-denominated economic gains by applying an economic model to the relevant market size and scaling by realistic adoption scenarios.

Estimating economic benefits across asset classes ex ante is inherently challenging. Large-scale natural experiments in Australia for many relevant innovations, such as enterprise distributed ledger infrastructures, DeFi applications for RWAs, or programmable money, do not yet exist or are rather limited. Moreover, the currently tokenised fraction of RWAs is too small to allow meaningful direct estimation of efficiency improvements from observed data.

Therefore, where historical data or prior experiments are unavailable, we adopt strategies to approximate potential benefits, informed by evidence from various sources, including peer-reviewed finance and economics literature, industry reports, pilot program outcomes, and data from comparable markets and assets in a similar setting (e.g., with low levels of efficiency and low levels of transparency).

To this end, we form some of our assumptions based on international evidence from jurisdictions such as the UK, Singapore, the EU, and from studies conducted by the Bank for International Settlements (BIS). For instance, if we lack local data on the efficiency of a blockchain-based bond issuance, we reference results from overseas pilot issuances or sandbox experiments as proxies for plausible cost savings. Industry case studies are used to further discipline assumptions regarding operational cost reductions, settlement efficiency, and changes in intermediation.

Our estimation approach is deliberately conservative. Given the early stage of adoption and the substantial uncertainty surrounding future market architectures, adoption paths, and regulatory settings, we prioritise plausibility over precision. That means for some of our estimates we report a range of potential gains by 2030 and highlight the drivers of value creation.

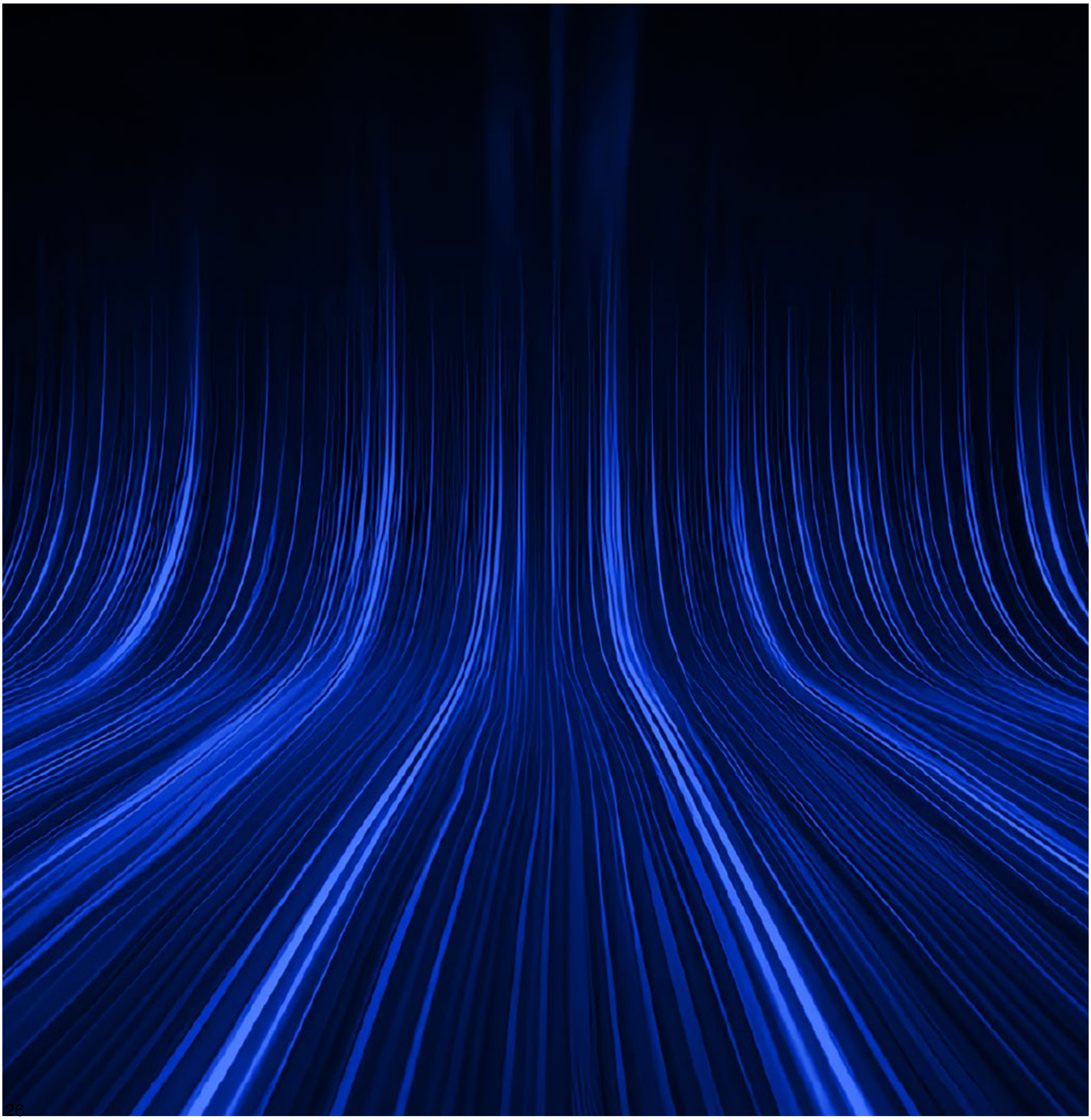
The objective is not to forecast an exact dollar figure, but to establish the order of magnitude of potential gains (e.g., millions versus billions of dollars) and, importantly, to determine where the largest sources of value are likely to arise.

Throughout the report, we express projected economic gains as shares of relevant macroeconomic or industry aggregates such as GDP, financial sector revenues, wage bills, and aggregate fee income, to ensure results are proportionate to the size of the underlying cost base. In addition, expert interviews are used as qualitative anchors against which to test the reasonableness of assumptions and resulting estimates.

Estimation of Economic Value Added: $E = MC^2$

The magnitude of economic impacts of Digital Finance varies substantially across asset classes. We therefore estimate the **Economic Value Added** from Digital Finance on an asset-class-by-asset-class basis, and separately for markets, payments, and asset functionality enhancements. Below we provide a summary of the approach. Further details can be found in Appendix B.

For each asset class *i*, annual Economic Value Added (E_i) is estimated as the product of three components: Market Size (M_i), Change in economic surplus per dollar tokenised ($C_{\$i}$), and the Change in fraction of the asset class adopting tokenisation ($C_{\Delta i}$).

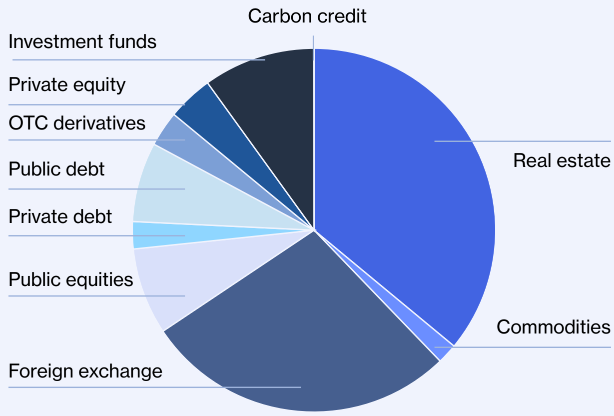


Three components, multiplied, estimate the Economic Value Added (or “E_i”) from Digital Finance innovation

$$E_i = M_i \times C_{\$i} \times C_{\Delta i}$$

M_i

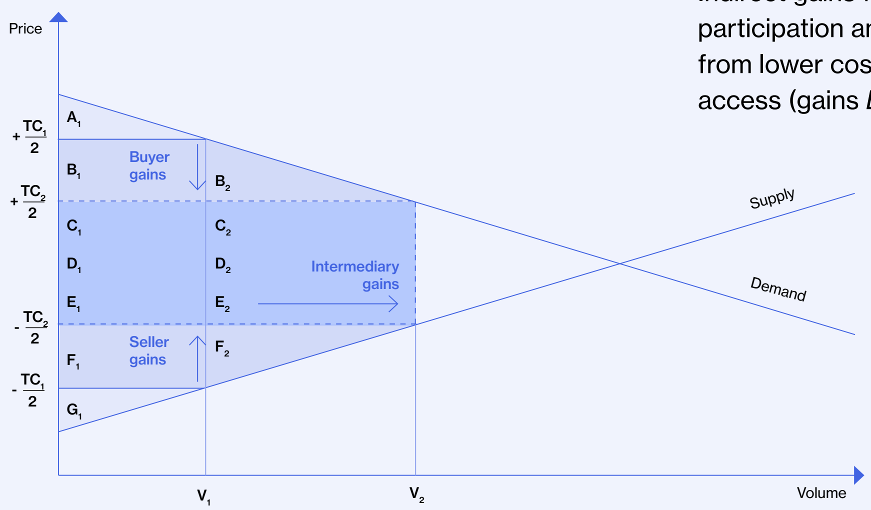
The total market value of asset class *i*. Larger asset classes generate larger absolute gains even for modest efficiency improvements.



$C_{\$i}$

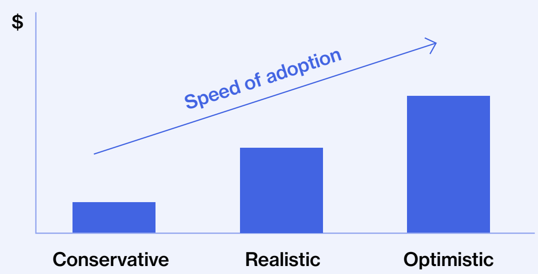
Change in economic surplus per dollar tokenised: Some asset classes benefit more from tokenisation than others. This component captures two channels:

- Direct reductions in market frictions and operating costs (e.g., lower transaction costs, reduced settlement risk), gains B_1 and F_1.
- Indirect gains from increased participation and trading activity resulting from lower costs and improved market access (gains B_2, C_2, D_2, E_2, and F_2).



$C_{\Delta i}$

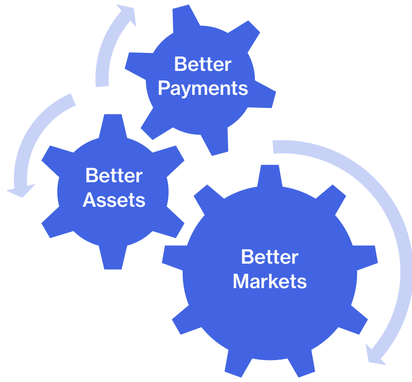
Change in the fraction of the market that adopts tokenisation: Adoption speed and ultimate penetration differ across asset classes depending on legal complexity, operational readiness, and market structure.



Throughout the estimation, we exclude pure redistribution. If an innovation merely transfers revenue from one intermediary to another without reducing real resource use, we do not count it as net surplus (aside from welfare effects from lower prices).

Sources of Economic Gains

Digital Finance innovations reshape how assets are represented, how markets are organised, and how payments and settlement occur. The table below summarises economic gains that we estimate in this report.



Asset issuance and servicing	New asset types, products, and marketplaces Reduced issuance and distribution costs Lower servicing costs for corporate actions (e.g., coupon payments, redemptions, voting)
Trading and investing	Improved liquidity and tighter bid–ask spreads Increased participation in existing markets through lower transaction costs Increased participation through fractionalisation of assets More efficient securities lending and borrowing
Post-trade processes	Reduced costs associated with settlement failures Elimination or reduction of clearing fees and other clearing and settlement operational costs Reduced middle- and back-office processing costs Increased transparency in over-the-counter (OTC) markets
Collateral	Lower counterparty risk reducing collateral requirements Expanded range of eligible collateral types Improved access to short-term (including intraday) funding Reduced trapped liquidity and faster collateral reuse Lower operational costs of collateral management
Payments	Reduced costs of domestic (retail) payments Working-capital efficiency gains from faster settlement Reduced correspondent banking charges in cross-border payments Reduced fraud and payment errors
Financial services	Reduced intermediation costs for private and commercial lending More efficient invoice financing and receivables markets
Compliance	Reduced onboarding time and costs Process automation through smart contracts

Estimation Procedure

For each asset class, the estimation follows the following empirical process:

Step 1: Quantify baseline costs and frictions

We measure existing costs using Australian market data wherever available, including:

- Transaction fees
- Market liquidity costs
- Clearing and settlement costs
- Collateral and margin requirements
- Compliance and operational costs
- Issuance and servicing costs

These estimates are derived from regulatory filings, exchange disclosures, industry reports, and market data.

Step 2: Estimate efficiency improvements from Digital Finance

Economic gains are estimated using empirical evidence from:

- Peer-reviewed academic literature
- Real-world tokenisation deployments
- Regulatory pilot programs
- Historical financial infrastructure innovations

Where possible, we use natural experiments, such as:

- TRACE transparency introduction
- Automation of market infrastructure
- Blockchain-based bond issuance
- Tokenised repo and collateral platforms

Step 3: Scale gains to Australian market size

Estimated efficiency improvements are applied to the total market value or annual transaction volume of each asset class. This produces gross potential gains under full adoption.

Step 4: Adjust for adoption scenarios

Projected adoption rates are applied to scale back estimates to reflect partial adoption by 2030 rather than full system transformation.

Data Sources

The estimation draws on a wide range of primary and secondary data sources, grouped into six categories.

1) Regulatory and official data

These provide authoritative measurements of market size, costs, and operational structure, including data from:

- Reserve Bank of Australia (RBA)
- Australian Securities Exchange (ASX)
- Australian Prudential Regulation Authority (APRA)
- Australian Bureau of Statistics (ABS)
- Bank for International Settlements (BIS)
- International Monetary Fund (IMF)
- Central bank publications and disclosures

2) Market infrastructure and industry disclosures

These provide detailed operational and cost information, including:

- Exchange annual reports and disclosures
- Clearinghouse and settlement system disclosures
- Custodian and market infrastructure providers
- Industry associations such as AFMA and ISDA

3) Academic and empirical finance literature

Peer-reviewed studies provide empirical estimates of how reductions in frictions affect:

- Transaction costs
- Liquidity
- Cost of capital
- Market participation
- Asset valuations

4) Industry pilots and real-world tokenisation deployments, including:

- Tokenised bond issuance
- Tokenised repo platforms
- Tokenised funds
- Stablecoin payment systems

5) Financial market datasets

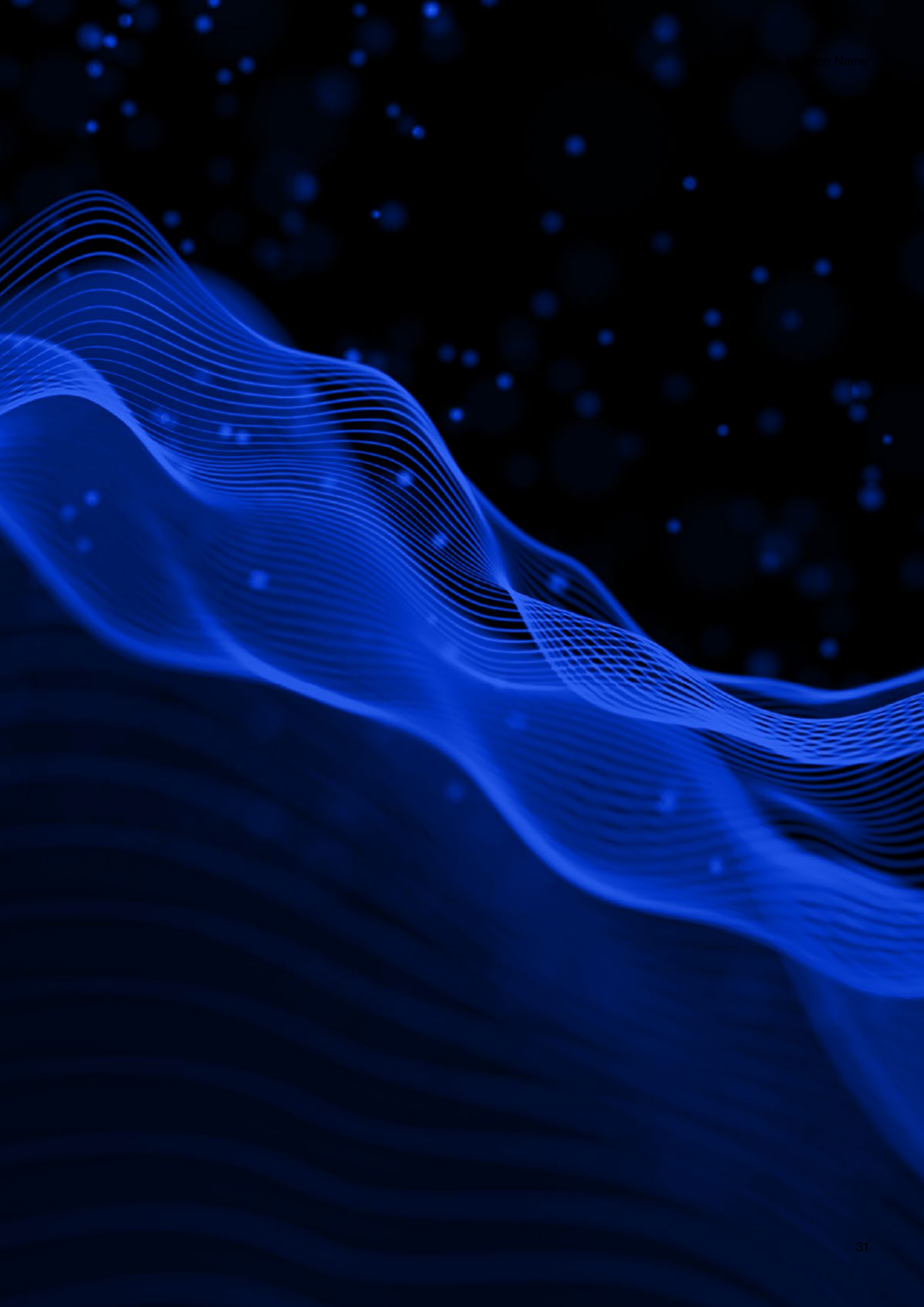
These provide primary data on:

- Market capitalisation
- Trading volume
- Asset issuance
- Payment flows

6) Industry surveys

We survey a cross-section of industry participants working in Digital Finance or relevant fields for input regarding the constraints to Digital Finance innovation, policy priorities, and relative gains across different asset classes.

Additional details on specific data sources are provided throughout the report.



Better Markets

04

Key Insights

High-turnover markets generate the largest gains

Even small reductions in per-transaction costs generate large aggregate benefits when applied to markets with enormous trading volumes (e.g., FX, equities, government bonds). Turnover amplifies economic gains. The total size of the asset class matters too.

Atomic settlement transforms the economics of post-trade

Real-time atomic settlement collapses clearing and settlement into the trading process, sharply reducing counterparty risk, settlement failures, and collateral needs. This reshapes risk management and frees capital previously tied up in clearing cycles.

Market infrastructure design, not asset tokenisation alone, drives most gains

The largest market-level gains arise when tokenisation is combined with redesigned trading and settlement infrastructure (e.g., atomic settlement, integrated post-trade, and automated execution). Simply representing existing assets as tokens, without changing how markets function, delivers only a small fraction of the potential value.

Collateral mobility is a major hidden source of value

Tokenised markets enable assets to be reused, rehypothecated, and mobilised more efficiently across trading, repo, and lending, improving balance sheet efficiency and lowering funding costs throughout the system.

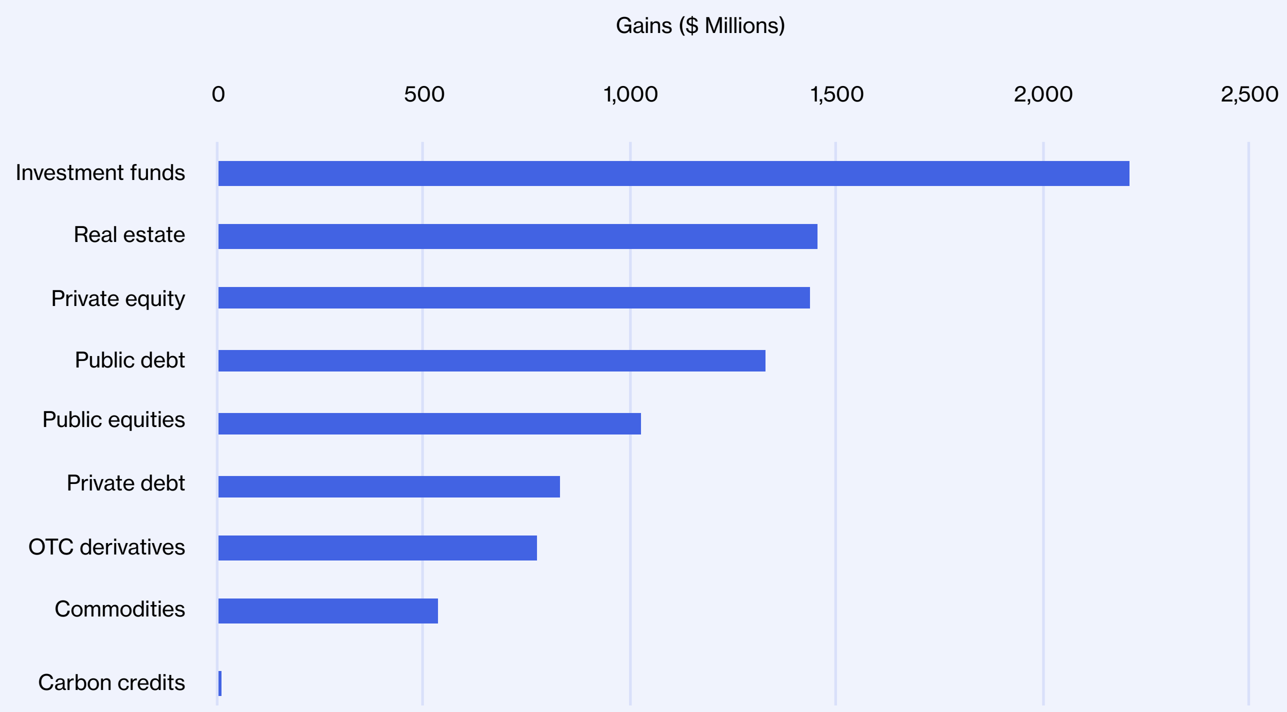
Direct cost reductions are only the first-order effect

Lower transaction costs and reduced settlement frictions initially generate savings, but the dominant second-order effect is increased trading activity, deeper liquidity, and higher market participation, creating additional gains from trade. Reductions in cost of capital for issuers are yet another important second-order effect.

Liquidity improvements feed through to the real economy

More liquid secondary markets reduce issuers' cost of capital, enabling additional real investment. Efficiency gains in markets therefore extend beyond trading desks to broader economic activity.

Figure 2: Overview of economic gain potential in markets



The core function of secondary financial markets is to facilitate exchange between buyers and sellers, generating value called "gains from trade," and drive price discovery. Liquid and efficient secondary markets also benefit issuers (companies and governments) in the primary market through a lower cost of capital. They also drive overall economic efficiency by facilitating better resource allocation across the economy.

By simplifying post-trade processes, enabling atomic settlement, facilitating new market structures, and greater collateral mobility, tokenisation can reduce trading costs, incentivise market participation, and "unlock" additional gains from trade.

This section estimates the value of these potential gains in a number of key asset classes using the methodology described earlier. It then extrapolates estimates out to smaller asset classes to provide a more complete picture of potential economic gains, even where granular data are limited.

$E_i = M_i \times C_{\$i} \times C_{\Delta i}$

Estimation of market value per asset class

Step 1

First, we estimate the aggregate value of all major RWAs in Australia, including financial and non-financial assets. Based on the most recent available data, the total value is approximately $39 trillion. Real estate represents the dominant share, with an estimated $14 trillion (36% of the total), followed by foreign exchange markets ($10.85 trillion, 28%), investment funds ($3.9 trillion, 10%), and public equities ($3 trillion, 8%). Other significant asset classes include public debt ($2.8 trillion), private equity ($1.6 trillion), over-the-counter (OTC) derivatives ($1.2 trillion), and private debt ($0.9 trillion). Commodities and carbon credits make up smaller shares of the total, with $0.7 trillion and $1.83 billion, respectively.

Table 1: Size of markets (M_i)[9]

Asset Class	Market Size ($bn)	Relative Size (%)
Real estate	14,034.00	36.00%
Foreign exchange	10,850.36	27.83%
Investment funds	3,883.67	9.96%
Public equities	3,007.00	7.71%
Public debt	2,759.00	7.08%
Private equity	1,579.00	4.05%
OTC derivatives	1,224.60	3.14%
Private debt	943.20	2.42%
Commodities	698.40	1.79%
Carbon credit	1.83	0.00%
Total	**38,981.06**	**100.00%**

[9] Table 1 reports the size (dollar value and relative) of each market. See Appendix A for more detailed calculations and sources. Note that public debt includes government and corporate bonds, and money market instruments. OTC derivatives consider the market value of contract positions. Private debt excludes mortgages.

$E_i = M_i \times C_{\$i} \times C_{\Delta i}$

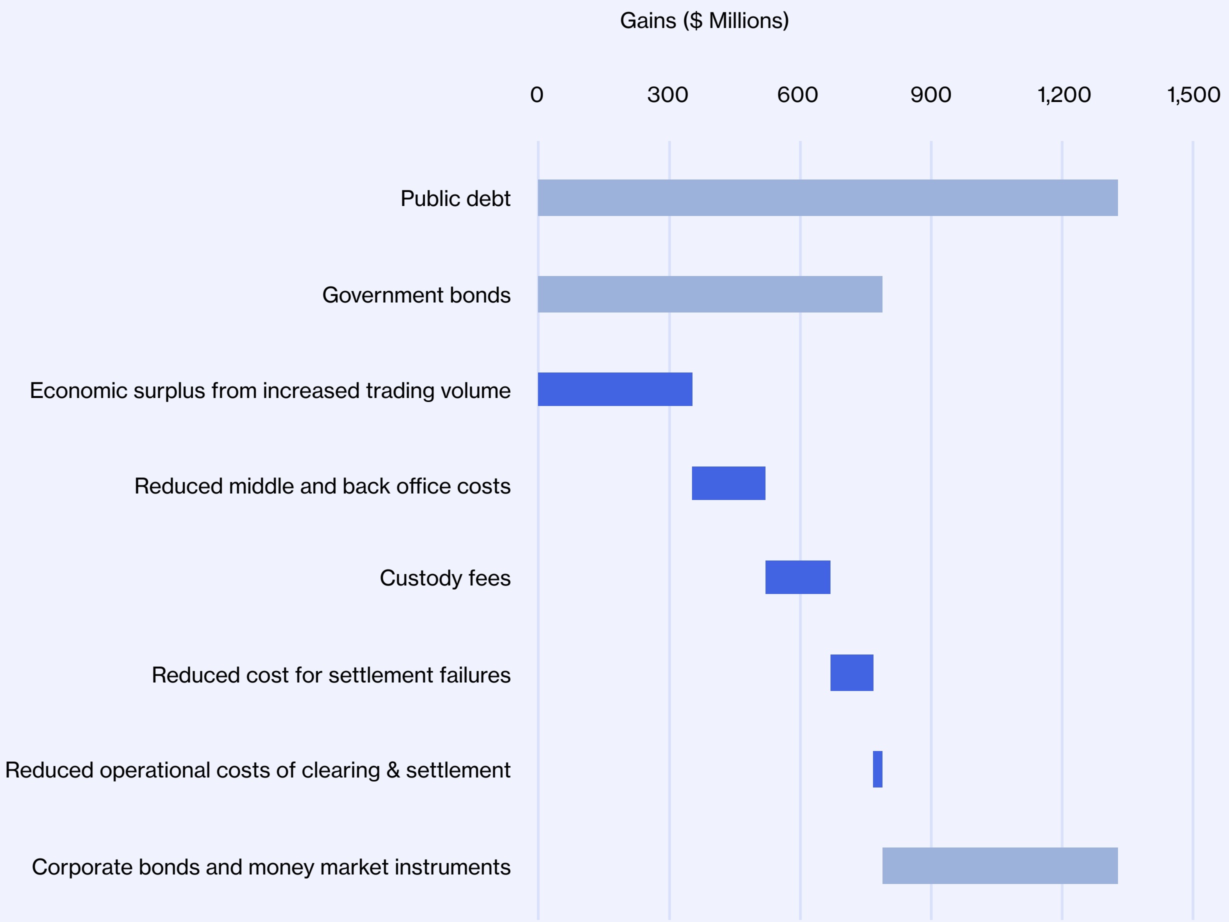
Estimation of economic surplus

Step 2

The second step in our estimation involves quantifying the economic gains achievable across key financial markets. We conduct detailed, bottom-up assessments for public debt, public equities, and real estate, where available data allows us to estimate potential cost savings. In addition, we provide an in-depth evaluation of efficiency improvements in foreign exchange markets, presented separately in the Better Payments section. For the remaining six asset classes, where empirical data are more limited, we apply a structured extrapolation approach, scaling from observed efficiencies in the benchmark markets to derive estimates of potential gains.

Public Debt

Figure 3: Overview of economic gain potential in public debt markets[10]



[10] Note that potential economic gains are calculated for government bonds, and then extrapolated for corporate bonds and money market instruments.

Reduced settlement failures

The treasury bond markets in Australia and the US share several similarities, including regulatory framework and market structure, although the Australian market is approximately 18 times smaller.[11] One significant difference between the two markets is that Australia does not operate a central counterparty (CCP) for fixed income securities. In contrast, the US Treasury market operates a CCP for cash Treasury transactions, i.e., the Fixed Income Clearing Corporation (FICC), a Depository Trust & Clearing Corporation (DTCC) subsidiary. By interposing itself between buyers and sellers, the DTCC (through FICC) provides multilateral netting that considerably reduces the number of settlement obligations. Ceteris paribus, reducing the number of settlement instructions also reduces the number of settlement failures.[12]

However, failures continue to occur in US Treasury securities markets, amounting to up to USD 95 billion.[13] According to more recent data from the DTCC, the US Treasury market records daily bond failures-to-deliver in the order of USD 50 billion, resulting in approximately USD 2.7 million fines per day or USD 1 billion per annum.[14]

Digital Finance market infrastructure, such as real-time atomic settlement of tokenised asset markets, can substantially reduce or eliminate settlement failures and the associated costs. Coupling this infrastructure with a settlement liquidity bridge (SLB), another key piece of Digital Finance infrastructure, can enable market participants to defer settlement to a horizon of their choosing while the underlying market is settled in real time.[15]

In Australia, debt securities are settled through Austraclear, an ASX subsidiary, which does not explicitly require participants to pay fees or interest on failed settlement. Nevertheless, settlement failures are compensated bilaterally.[16] When there is no bilateral compensation, those costs remain as implicit opportunity/interest costs borne by the affected party. Compensation for settlement failures is necessary because, effectively, each settlement failure of government and corporate bonds incurs an unrecoverable cost of carry, which the DTCC quantifies to be in the order of 2.5%.[17] We use the 2% interest charge in the US as a proxy for these bilateral fees.

In practice, the costs associated with mitigating settlement failures in the Australian market are substantial. To provide an illustrative order of their magnitude, we scale the observed US fails charge (USD 1 bn) by relative market size. Adjusting for exchange rates and outstanding Government bond market size suggests a cost in the order of **$86 million per annum**. This calculation is not intended to imply that Australia currently incurs this level of explicit fines. Rather, it provides a benchmark for the economic value of eliminating principal settlement risk.

Even though there is no CCP, Australian bond market participants and the RBA have adopted mechanisms to mitigate settlement failures which resemble, in partial form, the SLB described above. A key safeguard akin to the SLB is the ability to borrow securities to avert delivery failures. Market participants that are unable to deliver a bond on the settlement date will typically borrow the securities either in the private lending market or from the RBA's Securities Lending Facility (SLF). The RBA operates the SLF for Australian Government Securities (AGS) and semi-government bonds, allowing eligible counterparties to borrow bonds that the RBA holds on its balance sheet. In effect, the SLF functions as a security-leg bridge that temporarily injects scarce securities into the settlement chain to preserve settlement integrity.

[11] The market value of the US Treasury bond market is sourced from Federal Reserve Economic Data (FRED), and the value of the Australian Treasury bond market ($1.5 tn) is as in Appendix A. We adjust for the fact that not all trades are centrally cleared in the US.

[12] See "Minutes of the US Commodity Futures Trading Commission's October 25, 2021 meeting of the Global Markets Advisory Committee."

[13] See FED April 18, 2016 publication, "What's behind the March Spike in Treasury Fails?"

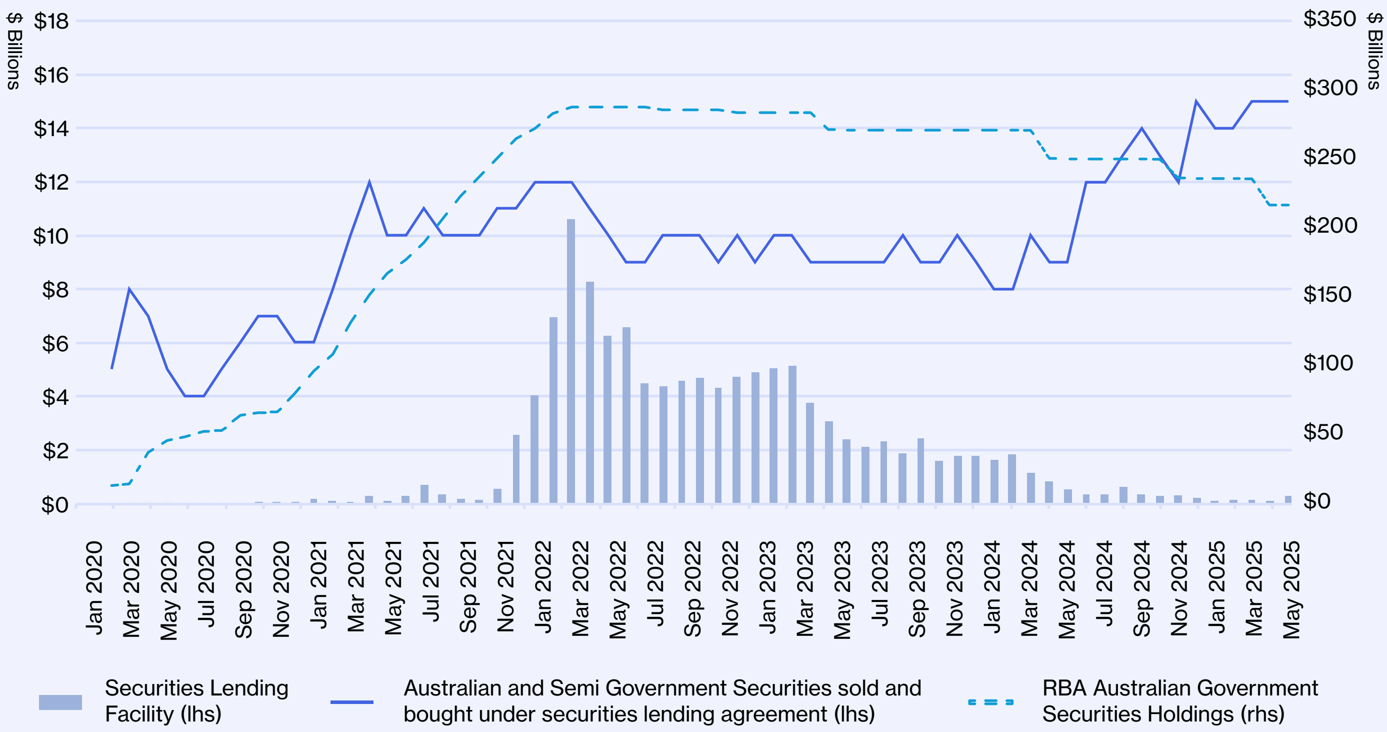
[14] The daily total of US Treasury trade fails is available through the DTCC website. The Fixed Income Clearing Corporation (FICC) provides an example of the collected interest, i.e., an annual rate of approximately 2% on the value of failed trades. Using this example, the annual interest that accrues for USD 50 billion of failed trades is USD 1 billion per annum or USD 2.7 million per day.

[15] A settlement liquidity bridge (SLB) is a tokenised securities lending facility that enables short-term collateralised loans of tokenised money or tokenised securities for the purpose of settlement, enabling synthetic deferred settlement while maintaining risk and operational benefits of having the underlying market settle in real time (no clearing, no counterparty risk, no settlement failures). Additionally, an SLB provides flexibility to users as they can create a settlement cycle that matches their liquidity and securities circumstances (e.g., 3 hr, 1 day, 3 day, 1 week settlement) and a better allocation of risk by having the cost of counterparty risk priced at the level of the SLB user. The calibrations in Arthur, Putnins, and Weiss (2026) applied to Australian equity market data show that such a facility is technically and economically viable.

[16] See AFMA Code of Conduct: "When a buyer/seller fails to match a seller/buyer's instructions or cannot settle for reasons such as lack of cash or failure to settle in Austraclear, the buyer/seller is entitled to claim use of funds at the market rate, together with any other associated costs."

[17] See, e.g., DTCC, 2020 report, "Hidden impact: The real cost of trade fails."

Figure 4: Securities lending and SLF demand



However, it operates to correct shortfalls and does not eliminate settlement risk in the same way as real-time atomic settlement.

In using the SLF, market participants incur a fee of 20 basis points for up to 7 days, secured either against cash or other bonds for accessing the SLF.[18] As depicted in Figure 4, usage of the RBA's SLF has risen notably since late 2021, and a significant volume of bonds was temporarily borrowed to support settlement. By 2022, an average of about $5-$6 billion in face value of bonds was lent daily from the RBA's portfolio to dealers via the SLF. This means that market participants paid approximately $10 million ($5 billion × 20 bps) in 2022 for using the SLF.

The primary reason for the sudden increase in SLF demand in 2021 was the RBA's accumulation of Australian government bonds, which substantially reduced the effective supply (or "free float"), making specific issues more difficult for market makers to source. Consequently, most of the borrowing has been very short-term (often overnight) just to meet delivery obligations. However, this comes at a cost since the 20 basis points charged by the RBA act like a penalty fee to obtain the securities and avoid failing. The fee is higher than typical market rates, incentivising market participants to use the facility as a last resort. Demand for the SLF has therefore since dropped below $250 million.

However, the total market value of securities lent under formal lending agreements, including interbank and registered financial corporation (RFC) activity, remained elevated at around $9–10 billion, suggesting that securities lending continued to be facilitated primarily through banks and RFCs. The volume-weighted average fees in these lending arrangements are approximately 14 basis points, six basis points below the SLF fee.[19]

The most recent available data indicates that around $15 billion is currently lent out in these arrangements, which means that market participants pay approximately $21 million (0.0014 × $15 billion) in fees. Rather than characterising these fees as costs of settlement failure prevention, they can be interpreted as the price paid to maintain settlement integrity in a non-atomic environment. In this sense, observed SLF and securities

[18] See e.g., RBA, December 8, 2022 Bulletin, "The RBA and AOFM Securities Lending Facilities" and "Reassessing the Costs and Benefits of Centrally Clearing the Australian Bond Market" (March 16, 2023).

[19] See Securities Finance Times, September 2024. Country profiles – Australia.

lending fees provide an empirical benchmark for the value market participants place on a settlement liquidity bridge. A real-time atomic settlement architecture with an integrated SLB would internalise this bridge function within the settlement mechanism itself, potentially at lower aggregate cost, while eliminating principal settlement risk rather than correcting shortfalls. The SLF therefore demonstrates both the demand for and the economic value of such a bridge-type functionality.

Digital Finance innovations can further reduce the costs of using such a facility. For illustrative purposes, a 50% reduction in securities lending demand due to faster settlement times or higher velocity of debt securities can potentially save bond market participants **$10.5 million per annum.** Alternatively, a 50% reduction in the fee through a greater supply of lendable securities (e.g., through lending mechanisms supported by smart contracts for investors who do not currently lend out their government bond holdings) achieves a similar cost saving.

The costs associated with avoiding settlement failures are currently likely substantially larger than the quantified costs above due to the many manual processes involved in pre-positioning securities and cash for settlement. Additional costs arise from “chasing” counterparties to confirm delivery will occur as scheduled. This is especially relevant in transaction chains, where the delivery of a particular bond depends on the timely settlement of the previous transaction with a different counterparty.

Reduced clearing and settlement costs

The most accurate proxy for the costs associated with clearing and settlement in Australian debt markets is the revenues from Austraclear. Over the past five years, Austraclear has generated approximately $70 million in revenues per annum.[20] While this revenue pool includes broader services (such as registry and depository functions and collateral management) it also includes operational revenues directly linked to fixed-income settlement activities.[21] Since no breakdown of revenues within Austraclear is available, we attribute approximately one-third of Austraclear’s revenues to activities that could be substantially reduced with atomic settlement, consistent with industry estimates.[22] This implies potential cost savings in the order of **$23 million per annum.**

Reduced middle- and back-office costs

Post-trade processing in fixed income and money markets remains highly labour-intensive. Traditional middle and back-office operations require substantial resources for trade reconciliation, monitoring settlement positions, regulatory and client reporting, asset servicing, risk management, and managing settlement failures. These costs are particularly high in bilateral OTC markets where processes are fragmented and less automated than in exchange-traded equities.

We source industry data from IBISWorld to gauge the scale of annual wages in relevant industries. Across the Custody, Trustee and Stock Exchange Services industry, total wages amount to $2.6 billion per year for 34,346 employees. In the Investment Banking and Securities Brokerage industry, wages total $1.9 billion for 17,235 staff. Money Market Dealers, which more directly overlap with short-term debt and fixed income trading, spend $160 million on wages for just over 1,000 employees. These segments illustrate that personnel costs across relevant financial services exceed $4.5 billion annually. For context, wages and salaries in the auxiliary finance and insurance services industry were $23 billion in FY 2024.[23]

Attributing a fraction of this to public debt markets is infeasible. As a case in point, government securities account for about 32% of money market dealer revenues, according to IBISWorld. Applying a similar fraction to wage costs suggests that around $50 million annually in labour expenses can be attributed to Australian government bonds and money market transactions. This figure captures only direct dealer activity; it excludes relevant reconciliation and compliance costs borne by custodians, settlement providers, and other participants.

[20] We source this data from ASX’s annual reports.

[21] Tokenising the assets could potentially also substantially reduce the costs associated with depository services because many processes can be fully automated.

[22] See e.g., Broadridge, September 4, 2015, “Charting a Path to Post-Trade Utility: How mutualized trade processing can reduce costs and help rebuild global bank ROE.”

[23] The data is available at the Australian Bureau of Statistics, Series ID A130110345W.

Atomic settlement and smart-contract-driven process automation across post-trade activities could significantly reduce costs by eliminating reconciliation mismatches and automating settlement instructions. BCG and Ripple estimate that USD 40-60 million per USD 100 billion in issuance could be saved annually.[24] For the $1.5 trillion Australian Treasury market, this means at least $600 million ($1.5 tn × 0.04%). A 2023 study by Cashlink/FinPlanet (with a bottom-up process map against German digital bonds) estimates savings of around 80% in middle/back-office processes.[25] Further, the study suggests that back-office costs make up approximately 34.6% of the total costs over the lifecycle of a bond. Applying this to our $600 million in potential cost savings suggests back-office cost savings of **$166 million** ($600 million × 34.6% × 80%) per annum.

Reduced custody fees

In addition to the middle and back-office processes described above, fund managers and other investors must pay custody fees for the safekeeping and administration of fixed income securities. Tokenisation and new market infrastructures can lower these costs by enabling direct market access and self-custody of assets. Current custody fees vary widely, from as little as 1–2 basis points for large institutional investors to around 20 basis points for smaller portfolios under $500,000.[26] If tokenisation were to reduce average custody fees by even 1 basis point, the resulting potential savings in the Australian Government bond market alone would be approximately **$150 million per annum** (1 bp × $1.5 trillion).[27] For context, revenues across custodial, trustee and administration services are $4.4 billion per annum, according to IBISWorld.

Reduced transaction costs

In the subsequent assessments of public equity and foreign exchange markets, we discuss the potential for AMMs to significantly reduce transaction costs. Similar efficiency gains are plausible in public debt markets. However, compared to cash equities and spot foreign exchange markets, public debt instruments are structurally less standardised. Even within a single sovereign or corporate issuer, bonds differ for example across maturity, coupon structure, and issuance size, resulting in fragmentation of liquidity across numerous semi-fungible instruments. As a case in point, O'Hara and Zhou (2025) note that "JPMorgan Chase Financial alone now has 10,000 outstanding bond issues." Additional research is therefore required to determine how semi-fungible instruments can be grouped or pooled in order to capture AMM-driven efficiency gains. Consequently, we do not consider potential transaction cost savings in public debt markets in this report.

Increased trade

The sections above indicate a total saving from tokenisation of $435 million out of $1.133 billion. Our framework for estimating economic value added (see "Empirical Methodology") depicts these savings as gains to buyers (area B_1) and sellers (area F_1), who now face lower transaction costs (from TC_1 to TC_2). The savings also stimulate market participation and increase trading activity (from V_1 to V_2) generating gains to buyers (area B_2), sellers (F_2) and intermediaries (areas C_2, D_2, and E_2).

Market participants benefit from the increase in trading activity beyond areas B1 and F1, totalling $84 million (sum of B_2 and F_2). Intermediaries, who now facilitate more trade, gain $269 million ($C_2$, D_2, and E_2). In total, the potential gains from additional trade from tokenising public debt equal **$353 million annually**[28] (See Table B1 in Appendix B for the calculations).

[24] Ripple and Boston Consulting Group, April 7, 2025 report, "Approaching the Tokenization Tipping Point."

[25] Cashlink and FinPlanet, December 2023, "Cost savings potential of DLT based capital market infrastructures – a quantitative analysis."

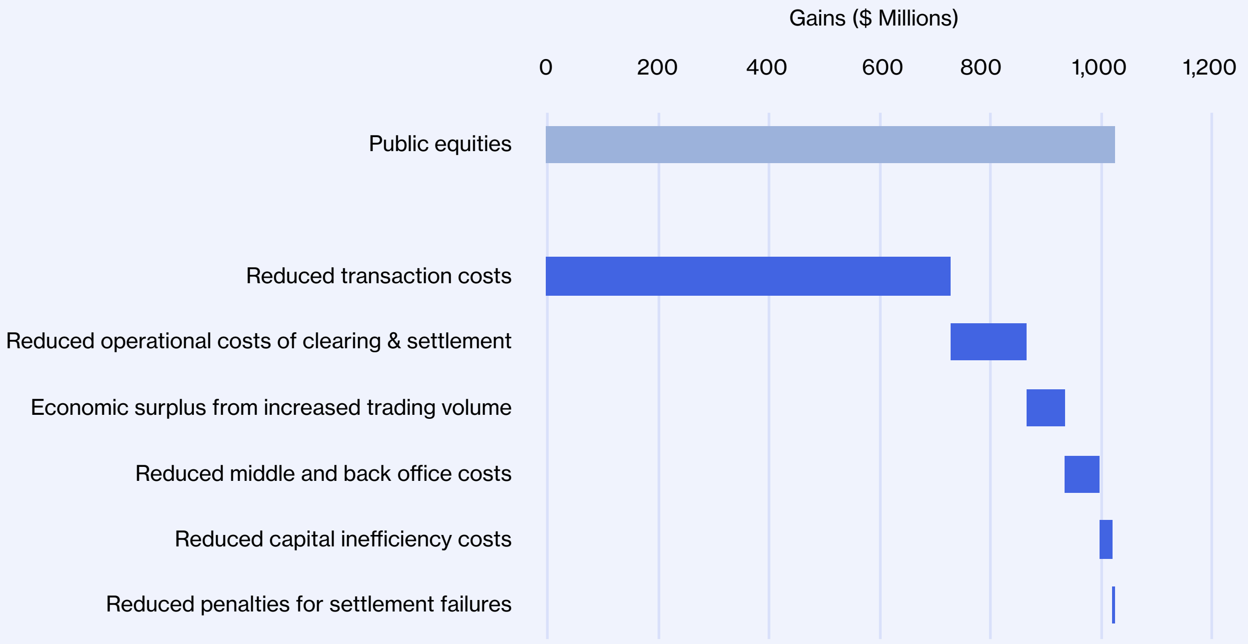
[26] See, e.g., fees for Australia in Schedule B: Global Custody Fee Schedule to the Global Custody Agreement in SEC's "Amended and Restated Global Custody and Fund Accounting Agreement Between J.P. Morgan Exchange-Traded Fund Trust and JPMorgan Chase Bank, N.A." and FIIG Securities "Fees and charges."

[27] For example, a global industry survey by ISSA reports that the tokenisation of securities and collateral is expected by market participants to reduce custody and asset-servicing fees as part of broader post-trade cost reductions. See ISSA, 2025 report, "DLT in The Real World 2025: A practical perspective on where, why and how distributed ledger technology is changing our capital markets in 2025."

[28] For an overview of public debt tokenisation initiatives in other jurisdictions see the "Global Progress in Digital Finance" section.

Public Equities

Figure 5: Overview of economic gain potential in public equities



Reduced settlement failures

Atomic settlement can also eliminate settlement failures in cash equity markets. Settlement failures occur because one party to a trade does not deliver the cash or securities on time. In equity markets, failures usually occur because settlement instructions for the securities leg have not been submitted on time. Failure to deliver (FTDs) of the cash leg is rare in centrally cleared equity markets because, technically, this would imply the default of a participant. The director of Capital Markets Strategy at Swift, Charifa El Otmani, stated that the leading causes of settlement failures across European markets between 2018-2021 were related to inventory management problems.[29]

In the US, the number of shares failing to settle amounted to 2.4 billion shares (a value of $38.5 billion) over 21 trading days in November 2023 (average of 114 million shares or $1.8 billion per day). For context, the daily average trading volume on major equity markets (NYSE, NASDAQ, AMEX) in 2022 was 6.5 billion shares, totalling around $330 billion, implying that 1.8% of daily public equity transactions in the US fail to settle.[30] In Europe, the situation is even more pronounced with ESMA reporting an equity settlement failure rate of around 5%. The average daily volume of the European equity market in December 2023 was €38.3 billion (or $42.3 billion), suggesting average daily settlement failures of around $2.1 billion.[31]

[29] See Swift, April 27, 2022, “Settlement fails: Getting to the root of the problem.”

[30] November 2023 data on settlement failures of public equities is available in the “Fails-to-Deliver Data” section on the Securities Exchange Commission website. DTCC newsletter, “Naked Short Selling and the Stock Borrow Program,” reports failures occur in 1/10 of the 1% transaction they process (1.5% of the dollar volume).

[31] December 2023 average daily volume in the European equity market is from the Cboe “Data & Access” page “European Equities Market Share by Market” and failure rates are in ESMA 2023 report, “TRV Risk Monitor: ESMA Report on Trends, Risks and Vulnerabilities.”

As US and European public equities markets represent around 56% of the global volume, the global daily settlement failure rate amounts to approximately $7 billion (($1.8 billion + $2.1 billion) ÷ 56%), or almost $1.8 trillion annually.[32] Settlement penalty rates for public equities vary by market: 1 basis point in Europe, 10 basis points in Australia, and 2 basis points in Japan.[33] Assuming an average penalty rate of 5 basis points per day, the potential global annual savings from eliminating settlement failures are $880.9 million ($1.8 trillion × 0.05%).

FTDs further have a time-varying nature, which presents systemic risk. During market stress events, where volatility increases significantly, FTDs can spike (Putnins, 2010). For example, in early 2021, the fail rate surged for stocks like GameStop and AMC amid high short-selling and a sudden increase in stock purchases via cash instruments and options from retail investors.[34] During the first quarter of 2020, ESMA reported that equity settlement fail rates in Europe increased from 5% to 14% due to the COVID-19 pandemic.[35] Over a 17-month period (January 2005 to May 2006), more than 20% of stocks listed on NYSE and Nasdaq experienced severe enough failure to deliver events to merit special treatment from the SEC (Angel and McCabe, 2009). Such cyclicality in failure rates can exacerbate financial instability and undermine market confidence.

The RBA's 2008 review of settlement practices for Australian equities noted that less than 1% of transactions fail to settle on time. According to the ASX monthly fail report for equities, the average percentage of settlements rescheduled to the next settlement day during July 2022 – June 2023 was 0.25%. More recently, the average daily fail rate was around 0.13%.[36] Under current arrangements at ASX, a failure fee of 0.1% applies to the value of the failing trade. Extrapolating these numbers to the Australian equities market, with a total volume of around $2 trillion per year, results in an estimated value of failed trades at $5 billion per annum and fines of approximately **$5 million per annum** (0.1% × 5 billion) for failed trades. These costs could be substantially reduced or eliminated through the implementation of atomic settlement.

Reduced clearing and settlement costs

A significant benefit of moving equities to atomic settlement is the potential to remove the central clearing layer and its associated costs. ASX's annual reports provide details on these clearing and settlement costs in the Australian cash equity market. In the previous five financial years, the average revenues from cash market clearing and settlement were $67.52 and $67.12 million, respectively. The clearing function involves ASX Clear interposing itself, becoming the counterpart to each trade, and facilitating the netting of settlement obligations at the participant level. These risk-mitigating functions of the CCP could potentially be redundant under atomic settlement.[37] Settlement fees would still exist, but could reduce substantially, depending on the technology used and the decentralisation of the ledger. For illustrative purposes, a less decentralised system (e.g., Hedera) has transaction fees in the order of USD 0.001 ($0.0015). For 378.13 million cash market transactions in FY24, this equates to $567,195 in settlement fees. Consequently, the potential economic gain is **$134.6 million.**

Reduced capital inefficiency costs

Atomic settlement could also remove the need for central counterparties to "lock up" collateral in equity markets. One substantial cost incurred by market participants from mitigating counterparty risk and settlement failures in cash markets is the requirement to post collateral to the CCP. These margin requirements for cash instruments, including equities and ETFs, are a function of the credit risk that emerges from separating trade execution and settlement, could decrease by shortening the settlement cycle. When considering the potential benefits of shorter settlement times, Industry participants surveyed by the ASX identified cost and capital savings (margin and collateral) for clearing participants as the primary benefit of implementing T+1.[38]

[32] Public equity market volume by region is from the Securities Industry and Financial Markets Authority, January 2024 report, "Quarterly Report: US Equity & Related, 4Q23."

[33] Penalty rates are in Euroclear, December 2019, report, "CSDR Settlement Discipline Guide" (Europe), ASX Clearing & Settlement January 1, 2024 report, "Schedule of Fees" (Australia), and Japan Securities Clearing Corporation page "Assumption of Obligation" under the section "Fail" (Japan).

[34] See Bloomberg, February 17, 2021, "SEC Data Show $359 Million of GameStop Shares Failed to Deliver."

[35] See ESMA, 2020, "Risks and Vulnerabilities in the EU Financial System."

[36] Data on settlement fails is available on ASX's website under "Operational performance of Cash Market Clearing and Settlement Services."

[37] For a discussion, see Feenan, Heller, Lipton, Morini, Ram, Sams, Swanson, Yong, and Barrero Zalles (2021).

[38] See ASX, July 14, 2021, "CHESS Replacement. Business Committee Update."

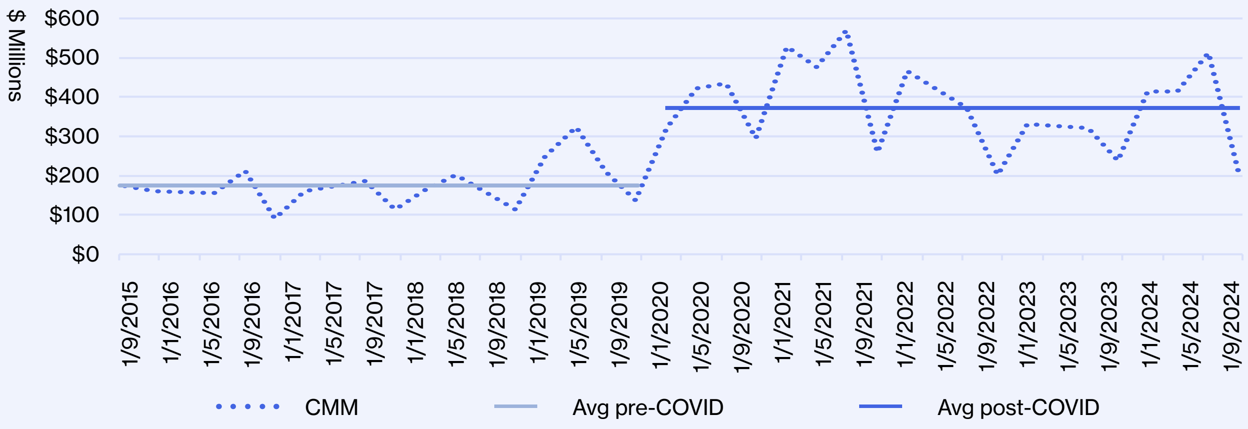
The margin and collateral requirements can effectively be eliminated by compressing the time difference between trade execution and settlement into one atomic function, thereby removing the temporal exposure that gives rise to counterparty risk. Put differently, the rationale for posting margin to mitigate settlement risk disappears if there is no exposure window during which a default could occur.

We collect data from ASX Clear's quantitative disclosures to calculate the benefit of removing the cash market margin (CMM) requirements.[39] As illustrated in Figure 6, prior to the COVID-19 induced volatility in March 2020, average daily CMM balances at ASX Clear were approximately $177 million, rising to $374 million in the post-pandemic period. Using an 8% nominal cost of capital (consistent with the benchmark applied in the Oxera report) on Australian post-trade infrastructure costs, the annual cost of providing this margin capital amounts to approximately $29.9 million per annum post-COVID.[40]

Estimating potential cost savings on these margins represents a lower bound, as margin requirements are inherently volatile and difficult to forecast. Consequently, participants typically maintain additional capital buffers. Therefore, the "true" economic costs extend beyond the reported end-of-quarter balances and lie in the capital tied up to meet peak margin requirements. As Menkveld (2013) argues, the maximum capital employed by a participant provides a more accurate representation of the collateral requirements, reflecting the minimum capital that must be committed for uninterrupted market participation. Using the highest reported quarter-end margin of $570 million and assuming those funds are sourced via repos (with the current repo rate of 4.1%), the potential annual funding cost saving is **$23.37 million.**[41] It is important to note that these cost savings are still conservative, as using the average nominal cost of capital is more appropriate, consistent with the benchmark applied in the Oxera report. Similarly, Goldman Sachs has modelled the economic savings from reduced margin requirements using a 10% return on equity.[42]

Real-time atomic settlement comes at the cost of prefunding settlement obligations, which removes margin requirements but also the free lines of credit that CCPs provide over the settlement cycle.[43] These implicit lines of credit would have to be replaced by explicit intraday credit extension mechanisms for some participants, such as high-frequency traders and other liquidity providers.[44] The main benefit of such a market design is that it is a "polluter-pays" system, which only requires participants who require intraday credit extension to pay. This is in contrast to a CCP, where every participant pays, regardless of whether they utilise the free lines of credit.

Figure 6: Cash market margin



[39] The data is available on the ASX website under "Quantitative disclosures for ASX Clear."

[40] See Oxera. June 2014. "Global cost benchmarking of cash equity clearing and settlement services."

[41] The RBA publishes ESA and repo rates in its "Reserve Bank Information & Transfer System Information Facility."

[42] See Goldman Sachs, May 24, 2016 report, "Profiles in Innovation: Blockchain Putting Theory into Practice."

[43] In cash markets, the CCPs provides these lines of credit implicitly because participants can enter positions without having to post collateral to guarantee the settlement of these trades immediately. Instead, margin requirements are usually assessed based on the position at the end of the trading day and collected the following morning.

[44] For example, an intraday repo facility, which allows market makers to borrow funds and securities.

Other capital and settlement risk externalities

It is important to note that CCP margin requirements are different from requiring that trades are pre-funded in real-time settlement arrangements because the collateral held at the clearinghouse is not used to settle trades in the normal course of business and is therefore additional to the capital used in trading. This design particularly constrains retail-oriented brokers. Even though their clients pre-fund transactions, the broker must hold the funds in trust until settlement and must fund margin requirements through debt and/or equity.

In contrast to clearing arrangements in the derivatives market, the clearing participant cannot use those client monies to fund the margin payable to ASX or directly pass through the margin requirements to their clients. Instead, since cash market transactions are not segregated on a House vs. Client basis, it is impermissible for the clearing participant to use client money to cover commingled house and client transactions.[45] Presently, client money reserved by a clearing participant for unsettled buying transactions is pooled and held in a trust account controlled by the broker/clearing participant.

In Australia, this has led to certain products with high margins (e.g., Bitcoin ETFs) not being attractive for retail brokers to recommend.[46] Therefore, a potential follow-on effect of reduced margin requirements is increased trading volume for high-margin securities and reduced fees charged by retail brokers.

In the US, the events surrounding the GameStop short squeeze in January 2021 revealed significant inefficiencies and fragilities in the CCP clearing architecture for retail brokers. During this period of extreme volatility, Robinhood was forced to restrict buy-side trading in a number of stocks, citing liquidity pressure arising from elevated margin requirements imposed by the clearinghouse, the National Securities Clearing Corporation (NSCC).[47] Despite customers fully prefunding their trades, the retail broker was required to post margin on their behalf during the T+2 settlement cycle. Because NSCC margin requirements are assessed on a portfolio basis for the clearing participant, brokers faced sudden and unpredictable spikes in capital requirements, which exceeded their available liquidity buffers.

The key inefficiency is that capital requirements are imposed even when clients pre-fund their trades, and those requirements are magnified in times of market volatility. Importantly, the costs associated with these frictions are disproportionately borne by the retail broker, resulting in a settlement risk externality (Schulhofer-Wohl, 2022). In contrast, a real-time atomic settlement model (where trades settle in real-time), could potentially eliminate such temporal exposures removing the need for brokers to post CCP margin on behalf of fully collateralised transactions with practically no settlement risk.

The same logic applies to institutional investors with a longer investment horizon who already hold the securities they intend to sell or have the cash readily available to fund a purchase. Such participants do not rely on the implicit credit provided during the settlement window and therefore pose less counterparty risk to the clearinghouse. In practice, however, these lower-frequency traders end up cross-subsidising the implicit credit lines which high-frequency trading firms primarily use.

Reduced IT and back-office costs

Goldman Sachs estimates that applying blockchain technology to US cash equities could deliver around USD 1.4 billion per year in IT and back-office savings, largely by streamlining post-trade processes and eliminating duplicative reconciliations.[48] To gauge what such efficiencies might mean for Australia, we scale this figure by relative market capitalisation: in 2024, the US equity market stood at roughly USD 62.2 trillion, while Australia's was about USD 1.74 trillion, or 2.8 per cent of the US market.[49] Applying this ratio to Goldman's savings estimate yields a proportional Australian benefit of USD 39 million annually, which converts to approximately **$63 million per annum** at prevailing exchange rates.

[45] According to ASX Clear's Operating Rules (2013), clearing participants are prohibited from utilizing their clients' funds to meet CMM requirements during the settlement cycle. Likewise, the Financial Stability Standards for Central Counterparties (2012) established by the RBA emphasize the importance of segregating clients' positions and collateral from those of the CPs through which the clients clear their transactions.

[46] See Australian Financial Review, January 11, 2024 article, "Bitcoin ETFs line up for ASX listing."

[47] See Robinhood, Jan 28, 2021 article, "What happened this week" and SEC Oct 14, 2021 "Staff Report on Equity and Options Market Structure Conditions in Early 2021."

[48] See Goldman Sachs, May 24, 2016 report, "Profiles in Innovation: Blockchain Putting Theory into Practice".

[49] Market capitalization in the US and Australia is sourced from the World Bank Group database.

Reduced transaction costs

We turn to the Digital Finance literature for an estimate of transaction costs savings from implementing Automated Market Makers (AMMs) – Malinova and Park (2024) estimate savings in a sample of US stocks to range from 30% to 33% (with larger savings in smaller firms). Using a different model, Foley, O'Neill, and Putnins (2025) estimate savings to retail trades ranging from 8% to 58% (also depending on firm size). The midpoint of the two ranges equal 33% and 32% respectively. For simplicity, we therefore use 30% as our measure of the transaction cost reduction.

The economic channel through which these gains are realised is enabling passive liquidity provision. That is, allowing the securities sitting idle in investment portfolios to be used in liquidity provision. Thus, the gain stems from better capital utilisation rather than merely a redistribution.

To compute transaction costs in Australian equities, we obtain data on volume and bid and ask quotes from Refinitiv Tick History (RTH) for all ordinary shares that traded on the ASX during 2022. After standard filtering, we end up with 1,731 stocks with an average daily spread equal to 1.46 cents and an average volume of 2.2 billion shares per day. Our savings estimate from the academic literature (30%) implies that equity spread in Australia could reduce to 1.02 cents if AMMs were implemented equal to $2.43 billion annually (252 annual trading days). However, our savings estimate is based on studies using US data, which is much more liquid than the Australian equities market. Foley et al. (2025) note that AMMs are better suited for illiquid markets, which generate higher fee revenues, resulting in deeper liquidity pools and lower transaction costs.

Therefore, to avoid overestimating potential gains, we adopt a conservative assumption that AMMs are only applied to the bottom 30% of total transaction volume, resulting in **$728.48 million in potential annual savings.**

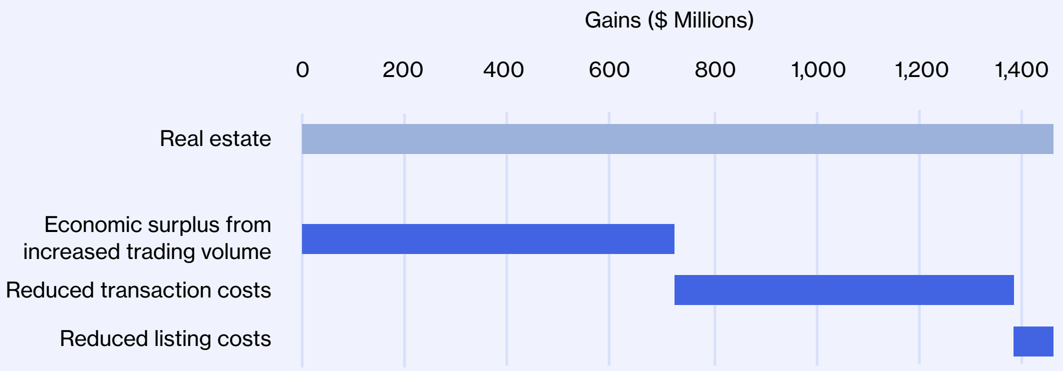
Increased trade

The sections above indicate a total saving from tokenisation of $950 million out of $1.73 billion (or 55.33%). Our framework for estimating economic value added (see "Empirical Methodology") depicts these savings as gains to buyers (area B_1) and sellers (area F_1), who now face lower transaction costs (from TC_1 to TC_2).

The increased trading activity benefits buyers and sellers beyond areas B_1 and F_1, totalling $26.7 million (sum B_2 and F_2). Intermediaries, who now facilitate more trade, gain $43 million ($C_2$, D_2, and E_2). In total, the potential gains from additional trade from tokenising public equities equal **$69.8 million annually.** (See Table B2 in Appendix B for the calculations).

Real Estate

Figure 7: Overview of economic gain potential in real estate



Reduced transaction costs

Buyers and sellers in the real estate market face several fees and expenses when transacting property, including moving costs, transfer duty, mortgage insurance, legal or conveyancing fees, registration of title, and loan application fees.[50] The expenses add up to a significant portion of the transaction value and often exceed 5% of the property's purchase price. They also create a "fixed cost of participation," large enough to keep low-wealth individuals from participating (Campbell, 2006). Most of these are unlikely to be significantly changed by Digital Finance.

Evidence from the US suggests DLT could substantially reduce the reliance on certain intermediaries (e.g., escrow agents) in the real estate market and significantly reduce (possibly remove) associated fees. The inherent transparency and security of decentralised ledgers could also streamline title searches and the insurance process (which is a feature more common in the US and less relevant to Australia). By digitising and automating these traditionally manual and time-consuming processes, DLT and tokenisation present an opportunity to make real estate transactions more efficient and cost-effective (Baum, 2021).[51]

In Australia, many of these potential cost savings are not applicable, including escrow fees and costs associated with title searches and insurance. Nevertheless, we estimate that in the Australian real estate market, approximately $661 million could be saved annually from tokenising real estate title and using programmable, distributed ledgers in transaction settlement. These gains arise primarily from reducing repetitive, manual tasks in real estate transactions, reducing the likelihood of unexpectedly delayed settlements, and increased transparency when settlement delays do occur to enable more efficient resolution of the settlement failures. These gains are collectively equivalent to approximately 33% of $1.98 billion in annual conveyancing costs.

The savings estimate is derived from a collection of sources (in Table 2). Across sources, the transaction cost savings are consistently attributed to reductions in intermediated manual processing (labour-intensive tasks) and more efficient settlement processes. Given the large variation in the estimates (33%-83%) and to avoid overstating potential gains, we select the lowest reported value, 33% (from Stobox).

[50] In real estate, the term "closing costs" is primarily used in US markets, whereas in Australia the RBA refers to these as "transaction costs" (see RBA (RDP 2014-06) research discussion paper, "Is Housing Overvalued?").

[51] Reducing these inefficiencies may also generate non-economic gains (e.g., shelter). For example, Campbell (2006) reports that more than half of the bottom wealth quartile hold no real estate in their portfolios (e.g., for home ownership).

Table 2: Savings from real estate tokenisation from global sources

Source[52]	Potential saving
1: Stobox RWA tokenisation company	33% intermediaries and manual processes.
2: DLD pilot Tokenised real estate platform	35% transfer of ownership, release of escrow funds, third-party verification, and notarization.
3: Landshare Tokenised real estate system	50% intermediaries, title transfer, escrow management, payment flows, and compliance checks.
4: Nadcab Labs Blockchain company	73% intermediaries and manual processes.
5: Pedex RWA tokenisation platform	83% broker commissions, legal fees, marketing, and closing costs.

To assess the relevance of these estimates to Australia, Table 3 presents the breakdown of Australian residential transaction costs.

Table 3: Transaction costs in Australian residential real estate

Cost[53]	Seller	Buyer	Total
Agent commission	2.75%	-	2.75%
Stamp duty	-	1.54%	1.54%
Mortgage/Loan	0.11%	1.38%	1.49%
Conveyancing	0.14%	0.20%	0.34%
Marketing/Advertising	0.14%	-	0.14%
Transfer fee	-	0.12%	0.12%
Auction fee	0.08%	-	0.08%
Other	0.38%	0.25%	0.62%
Total	**3.59%**	**3.48%**	**7.07%**

In the table, agent commissions represent the largest share of transaction costs. However, these are relationship-focused services, and not easily automated.[54] By contrast, conveyancing, though only 0.34% of property value, is highly labour-intensive and factors in some of the work needed to resolve issues that arise during the settlement process including delays where some leg of the transaction cannot complete. Conveyancers spend most of their time on operational and administrative tasks, including booking and balancing settlements, reviewing contracts, preparing documents, ensuring regulatory compliance, and reconciling trust accounts, all of which are repetitive and process-driven and potentially could be automated with blockchain technology.[55]

[52] Estimates are from “Real Estate Tokenization: Complete 2025 Guide & Platform Solutions” (1: Stobox guide from August 1, 2025), “The Role of Blockchain in Dubai’s Business Ecosystem” (2: Anika Property blog from April 24, 2024), “Research Report: Real Estate Blockchain - Q2 2025” (3: Landshare research report on August 12, 2025), “Tokenized Real Estate Use Cases Transforming Institutional Property Investment” (4: Nadcab Labs blog on January 22, 2026) and, “Real Estate Tokenization: Complete Guide 2025” (5: Pedex guide on January 25, 2024). We estimate reductions using the midpoint when sources report ranges, including Pedex (8%-12% to 2%-4%), Nadcab (5%-10% to 1%-3%), and Stobox (5%-7% to 1%-2%).

[53] Table 3 takes the average of values from ANZ “Typical costs when selling a home” and Westpac May 2023, “How much does it cost to sell a house?” to estimate seller transaction costs. Buyer costs are the average across states from realestate.com “Upfront costs of buying a house in 2024.” We convert costs given in dollar values to percent using the median house price of $923,038, from “Australia's Residential Property Market Analysis 2025,” September 2025, Global Property Guide.

[54] ABS “December 6, 2024 release, “622232 Real Estate Agent” includes typical real estate agent tasks (e.g., assess buyers needs and arrange advertising).

[55] The Real Time Conveyancer, 2025 report, “The State of Conveyancing 2025,” finds that a key priority is to reduce the work, time, and effort conveyancers spend on manual, low-skill, and administrative tasks, with 89% seeking greater efficiency and 75% identifying improving accuracy and reducing rework as a high priority

Disputes arising from settlement delays further increase the complexity and cost of conveyancing. These disputes typically involve multiple parties, extensive verification of documentation, and sometimes legal action, with delays and errors potentially resulting in tens of thousands of dollars in fees and financial exposure.[56] Even with electronic conveyancing, practitioners still perform substantial coordination and verification work.[57] Distributed ledgers could reduce these complexities by making the dispute process more transparent and efficient, for example, through smart contract functionality that simplifies the identification of the party responsible for the delayed settlement.

Applying the average conveyancing cost of 0.34% to annual Australian residential property sales of $585.6 billion implies total conveyancing costs of approximately $1.98 billion per year. If DLT-based automation were to reduce these costs by one-third (33.3%), the resulting efficiency gain would be around **$660 million annually** (0.333 × $1.98 billion).[58]

Commercial real estate also faces high transaction costs, which could potentially be streamlined.[59] However, compared to residential real estate, these transactions are far more complex. They involve not only stamp duty but also costly building inspections and complex legal work. Unlike residential property, where conveyancing is largely standardised with well-defined procedures, commercial real estate transactions exhibit greater heterogeneity, informational asymmetries, and additional legal and negotiation requirements.[60] We therefore exclude commercial real estate from our gains estimates, as potential savings cannot be estimated with sufficient precision.

Fractionalisation is often cited as a key benefit of tokenising real estate, as it can in principle broaden investor access and reduce minimum investment thresholds. However, many of these benefits are already achievable today through existing investment products such as Real Estate Investment Trusts (REITs), which effectively fractionalise the cash flows from large property portfolios into widely accessible listed units. As discussed in the "Better Assets" section, fractionalisation is therefore not a novel outcome unique to tokenisation, and the incremental economic gains for real estate specifically are likely to be modest. Tokenisation may still streamline certain processes, but given that REITs already provide efficient fractional exposure to real estate, the primary uplift from tokenisation in this asset class arises from operational efficiencies rather than new demand unlocked through fractional ownership.

Nevertheless, there are potential efficiency gains in REIT listing costs, which we consider in the remainder of this section.

Reduced listing costs for REITs

The costs and time required to list REITs create "barriers to entry," confining investment entities to less efficient private markets. The process can take more than two years and accrue costs from 3% to 10% of the REIT's total market capitalisation. Tokenising REITs could streamline the listing procedure, drastically reduce reliance on manual labour, decrease the listing expenses, break down the barriers to entry, and boost liquidity in the public real estate market. Table 4 reports expenses from a USD 200 million REIT IPO.

The expenses equal USD 16.6 million out of the total USD 200 million IPO value, or 8.3% (within a 3-10% range), and underwriters collect the lion's share (almost 85%).[61] Underwriters commit to purchase and resell the REIT shares and therefore perform substantial due diligence (business, financial, and legal), including visits to the properties, to ensure consistency between the offer materials (e.g., prospectus) and the information

[56] CM Law, September 6, 2024, "Mismanaging closing procedures can lead to last-minute issues and delays," highlights the complexity of dispute resolution in property transactions, with approximately 15% of settlements experiencing significant issues (10% of settlements involving delays). Around 25% of delayed settlements escalate into legal disputes over closing delays (ranging from $30,000 to $70,000). These risks can be mitigated slightly by using experienced professionals (e.g., skilled conveyancers and legal representatives), leading to a slight (20%) reduction in delays.

[57] See e.g., RBA, March 18, 2021 publication, "Property Settlement in RITS."

[58] Residential real estate sales are from Australian residential property sales are from PEXA, July 18, 2024 Property Insights and Market Report, "PEXA Property Insights | Metropolitan Areas Outperform Regions in FY24."

[59] For example, Deloitte April 24, 2025, "Digital dividends: How tokenized real estate could revolutionize asset management" expects a substantial portion of commercial real estate will be tokenised by 2035.

[60] Conveyancing in commercial real estate transactions involves far more rigorous due diligence, more complex legal documentation, and higher risk, all of which increase the level of detail required in the process. See, e.g., RubiconLaw, April 9, 2024, "Residential vs commercial conveyancing: Key differences explained", and Ensure Legal, April 11, 2025, "Legal insight: How much do lawyers charge for commercial property transactions?"

[61] Dimovski (2005) estimates comparable costs for Australian REIT listings (sample spanning 1994 to 2004) at an average of 6.5% (ranging from 2.20% to 16.71%).

provided. Tokenisation can remove some, but not all (e.g., property visits) of the costs. Conservatively, we assume tokenisation can reduce reliance on manual workload by 1/3 in underwriting. Similarly, tokenisation cannot alleviate road show and printing expenses. The total savings, therefore, equal 40% out of the (3%-10%) total cost, or 1.2% to 4%.

To calculate the savings, we collect the average number of new REIT listings per year from LSEG Tick History (formerly Thomson Reuters Tick). We download the data from 1997 and 2023 and estimate a total of 175 new REIT listings, an average of 6.5 REITs per annum.[62] We then collect the market capitalization of the FTSE Nareit All REITs Index (contains 195 REITs) to calculate the average–USD 6.7 billion (as of January 31, 2024).[63]

We calculate the average value listed in REITs each year as the average number of listings (6.5 per annum) multiplied by the average REIT value (USD 6.7 billion) equal to USD 43.4 billion.

In the US, the annual listing costs therefore equal USD 1.3 to USD 4.3 billion (3% to 10%) and could reduce to between USD 0.5 to USD 1.7 billion (1.2% to 4%) with tokenisation. We scale the savings to the Australian market using the relative size difference between the two markets. The "S&P/ASX 300 A-REIT" index contains all Australian REITs with a combined market capitalisation of $173.95 billion (8.53% of the FTSE Nareit). Tokenisation could therefore generate **$69.4 million** from streamlining the REIT listing process (in the optimistic scenario, $231.3 million).

Table 4: Listing expenses from a US REIT IPO[64]

Expense type	Amount		Savings	
	(USD)	(% of IPO)	(USD)	(% of total)
Underwriting discount (7% of gross proceeds)	14,000,000	84.52	4,666,667	28.17
Regulatory filing fees (SEC and FINRA)	34,760	0.21	34,760	0.21
NYSE listing fee (assuming $10 per share price)	114,000	0.69	114,000	0.69
Legal fees and expenses	800,000	4.83	800,000	4.83
Accounting fees and expenses	1,000,000	6.04	1,000,000	6.04
Transfer Agent fees and expenses	15,000	0.09	15,000	0.09
Road show expenses	200,000	1.21	0	0.00
Printing expenses	400,000	2.41	0	0.00
Total	**16,563,760**	**100.00**	**6,630,427**	**40.03**

[62] The database does not include information about REITs that were both listed and delisted during this period. Consequently, the real average number of annual REIT listings is likely higher.

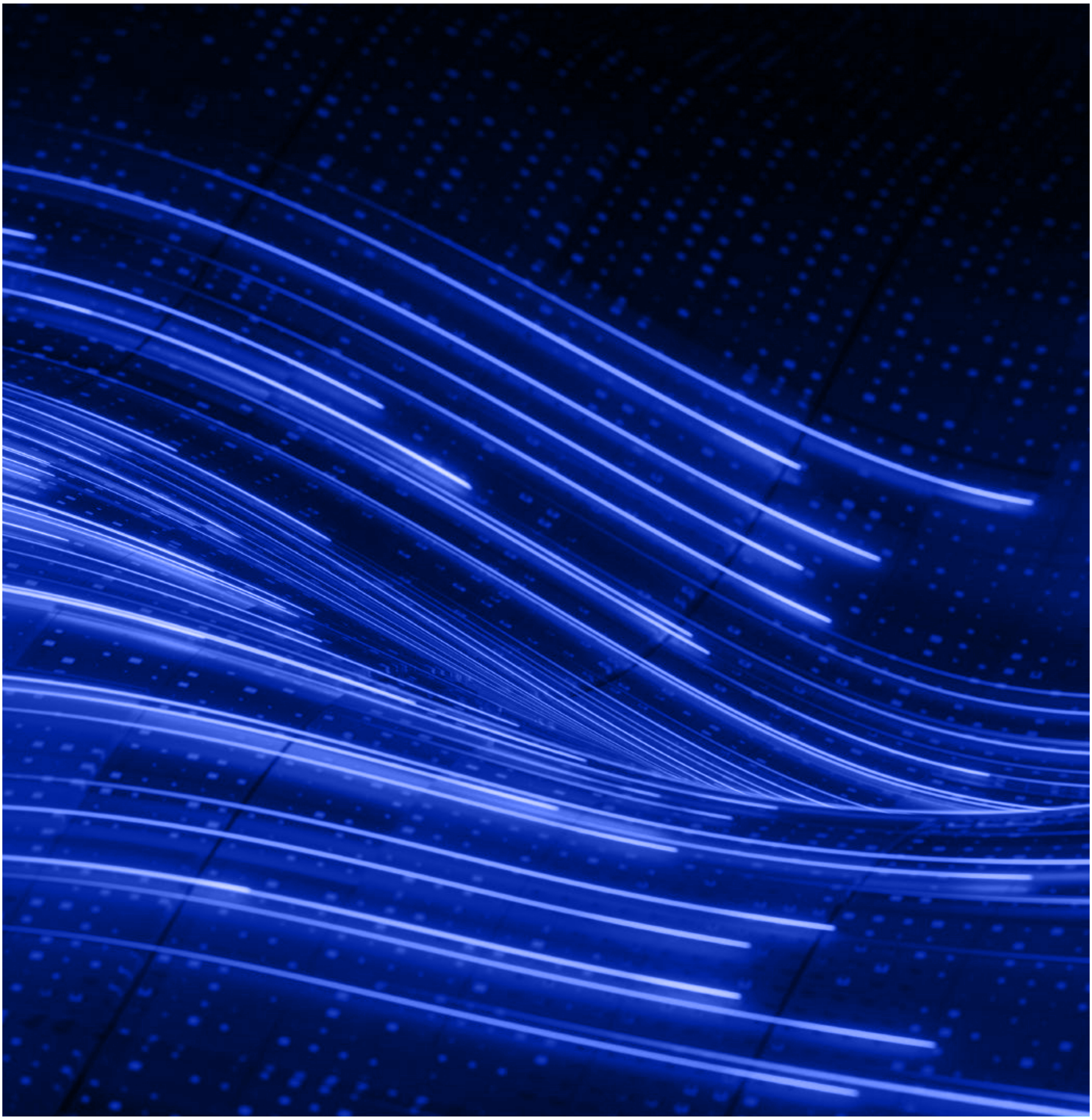
[63] REITs market capitalization data is from the Nareit, January 31, 2024 report, "REIT Industry Fact Sheet."

[64] Data is from Morrison Foerster, "MoFo's Quick Guide to: REIT IPOs."

Increased trade

The real estate market is characterised by high transaction costs which often deter potential buyers and sellers, reducing market liquidity. The sections above indicate a lower-bound estimate of the savings from tokenising Australian real estate, $730 million annually (33.5% out of $2.18 billion). The "Empirical Methodology" framework illustrates these savings to market participants (buyers and sellers in the real estate market) as B_1 and F_1.

The savings incentivise market participants to trade and generate additional gains (increased gains from trade) to buyers and sellers (B_2 and F_2) equal to $146 million and intermediary gains (C_2, D_2, and E_2) equal to $576 million. The total potential gains (B_1, F_1, B_2, F_2, C_2, D_2, *and* E_2) equals **$722 million annually** (See Table B3 in Appendix B for the calculations).



Extrapolation

Table 5 calculates the annual gains per $1 tokenised ($C_{\$i}$) in FX, public debt, public equity, and real estate markets by dividing their efficiency gains by their market capitalisation. The implied $C_{\$i}$ variable for these asset classes is equal to around 7, 5, 3, and 1 basis point (bps), respectively.

The gains for foreign exchange dwarf the other asset classes, both in total dollar values and per dollar tokenised. The FX market has many costly inefficiencies (intermediaries, transaction costs, manual back-office processes). In real estate, the gains are the smallest on a "per dollar tokenised" basis. Real estate is non-fungible (one asset is unlike another) making it less conducive to automation in the settlement process, compared to fungible assets like public equities. But perhaps more importantly for understanding its relative low per-dollar gain is its low turnover rate. Given much of the benefits of tokenisation are in the more efficient transactional flows that Digital Finance enables, assets that do not turnover much do not benefit as much from tokenisation. Further, for most individuals, purchasing real estate also constitutes the largest investment decision they ever make, and as a result, they may continue to rely more on intermediaries, even if economically inefficient.

Table 5: Summary of economic gains in markets for four key asset classes

		Economic Gains ($bn)			
		Foreign exchange	Public debt[65]	Public equities	Real estate
Category of Economic Impact	Reduced transaction costs	6.36	-	0.73	0.66
	Reduced settlement failures	-	0.45	0.01	-
	Reduced clearing and settlement costs	0.10	0.04	0.16	-
	Reduced middle and back-office costs	-	0.18	0.06	-
	Reduced listing costs	-	-	-	0.07
	Increased trade	0.69	0.65	0.07	0.72
	Total	**7.15**	**1.33**	**1.02**	**1.45**
	Market value	**10,850**	**2,759**	**3,007**	**14,034**
	Calculated bps	**6.59**	**4.81**	**3.41**	**1.03**

[65] Total cost savings are calculated for government bonds and then extrapolated for the entire publicly listed debt market.

For the remaining six asset classes, where direct estimation is infeasible, we apply a structured extrapolation approach, scaling from observed efficiencies in the benchmark markets to derive estimates of potential gains. In doing so, we also draw on data from our industry survey, which provides expected gains from tokenisation across all ten markets (second column of Table 6).[66] These responses give a sense of where relative gains are likely to occur but do not capture the overall scale with the same depth as our estimates for the four larger markets (FX, public debt, public equities, and real estate).

To adjust for this, we compare the estimated gains for the four larger markets with the corresponding industry expectations, compute the ratio, and take the average of these four ratios. These ratios capture the average tendency of the industry estimates to under- or overstate total gains and have a mean value of 1.11, indicating that our estimates are approximately 11% higher than the industry values.

To account for this overall underestimation in the survey responses, we apply the scaling factor to the industry expectations for the six smaller asset classes. This produces the extrapolated $C_{\$i}$ values reported in column 3 ("Extrapolated $C_{\$i}$"), preserving the relative ranking implied by the survey while correcting for its overall scale based on the four markets where we have high-confidence estimates.[67]

It is important to note that this extrapolation approach is applied only to the six smaller asset classes, representing approximately 21% of total market capitalisation. For the four largest asset classes by market capitalisation and trade volumes (accounting for the remaining 79%), we instead rely on direct estimation using measurable efficiency channels.

The remainder of this section provides additional context for these smaller asset classes, discussing partial gains that can be reasonably quantified.

Table 6: Extrapolation of gains per dollar tokenised ($C_{\$i}$)

Asset Class	Implied $C_{\$i}$ (bps)	Scaled Industry Measure of Relative Gain	Extrapolated $C_{\$i}$ (bps)	Economic Gains ($mn p.a.)
Foreign exchange[68]	6.59	4.91		7,149.78
Public debt	4.81	2.65		1,326.88
Public equities	3.41	3.11		1,024.29
Real estate	1.03	5.16		1,451.82
Carbon credits		8.31	9.24	1.69
Private equity		8.16	9.08	1,433.28
Private debt		7.89	8.78	828.28
OTC derivatives		5.69	6.33	775.35
Investment funds		5.10	5.67	2,203.45
Commodities		6.89	7.67	535.58
Total				**16,730.41**

[66] Industry expectations are derived from our survey results (see Section "Accelerating the Digital Finance dividend: Where policy support can help unlock economic value sooner") and are based on the average (scaled) efficiency-gain estimates from survey participants.

[67] The scaling factor is the average of the ratios (6.59 / 4.91, 4.81 / 2.65, 3.41 / 3.11, 1.03 / 5.16) of our calculated gains for the four markets to the corresponding industry expectations for the same markets.

[68] We calculate the potential basis point gains in FX markets in the "Better Payments" section.

OTC Derivatives

The extrapolated potential economic gains in OTC derivatives markets are 6.33 bps, corresponding to $775 million per annum. Tokenisation and smart-contract-based derivatives markets can address several frictions, including:

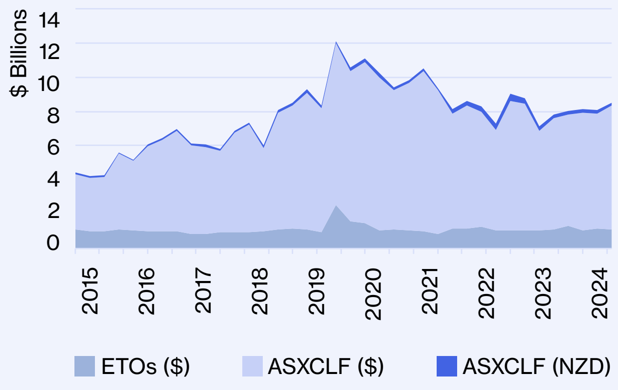
- Inefficiencies in pledging collateral for margin requirements and liquidity management
- Limited netting and cross-margining benefits across products and jurisdictions
- Manual processes, including regulatory reporting.

The primary benefit from tokenisation in derivatives markets, both exchange-traded (e.g., futures, options) and over-the-counter (e.g., OTC swaps, forwards), is a more efficient use of collateral. Since data on posted margins in OTC derivatives markets is not available, we proxy some of the gains in this section by examining potential efficiency gains in the Australian centrally cleared derivatives market.

This collateral is posted to ASX Clear for exchange-traded equity options contracts or ASX Clear (Futures) for other centrally cleared derivatives. As illustrated in Figure 8, the average and maximum margins for these products over the last five years were $9.042 billion and $12.107 billion, respectively. Since counterparty exposure in derivatives markets persists beyond the initial transaction or contract initiation, tokenisation will not eliminate these margins. However, better collateral management can result in substantial cost savings in derivatives margining.

First, and most significant, is the funding cost differential between cash collateral obtained via repos and the direct posting of tokenised non-cash collateral such as equities, corporate bonds, government securities, or money market fund units. Under current practices, institutions must often liquidate assets or engage in repo transactions to generate cash eligible for margin calls, incurring a funding cost equal to the repo rate minus the foregone yield on the underlying asset. Tokenisation of high-quality non-cash collateral allows these assets to be posted directly without having to convert them to cash, preserving their yield and avoiding repo market frictions.[69] The result is a dual cost saving: (1) eliminating repo financing costs and (2) retaining the return on the pledged asset. This substantially increases collateral efficiency and reduces the economic costs of collateral in derivatives markets.

Figure 8: Derivatives initial margin posted[70]



The average daily margin at ASX Clear (Futures) is $9 billion, of which 66% (or $5.94 billion) is posted as cash. For this cash collateral, we assume a funding rate at the current repo rate.[71] For cash collateral, the CCP pays interest, which means that the relevant saving is net of the interest pass-through. The CCP's cash remuneration rate is currently 3.5%, and the overnight repo rate is 3.85%. If tokenised non-cash collateral (such as MMFs or corporate bonds) were used instead of cash, the funding cost via repos net of interest pass-through could be avoided, as institutions could pledge assets they already hold without needing to convert them to cash. Additionally, the assets currently pledged and converted to cash do not generate returns, which adds to the funding costs of the collateral. Therefore, tokenisation could generate a net annual funding cost saving of approximately **$21 million** (35 bps on $6 billion cash collateral).

[69] See Calastone October 16, 2024, "The future of tokenised yield-bearing assets as collateral."

[70] The data is sourced from ASX's quantitative disclosures.

[71] Consistent with Bank of England Staff working paper (No. 966), "Collateral cycles," which documents that clearing members use repos to raise cash to meet margin, directly linking repo funding rates to the cost of cash collateral.

Additionally, capital buffers could reduce by facilitating real-time collateral mobility.[72] To estimate this potential benefit, we consider the difference between the maximum and average margin as the lower bound of the capital buffer that participants hold. Assuming this capital buffer of $3 billion can be reduced by 20% and using a 4% funding cost, the annual cost saving to participants is **$120 million per year.**

Second, smart contracts enable more efficient cross-margining across offsetting exposures across products and CCPs. For example, a market-neutral arbitrage position involving a long position in an S&P/ASX 200 ETF and a short position in the S&P/ASX 200 futures contract does not pose significant risk to the clearinghouse. However, these positions are currently margined separately (the ETF leg at ASX Clear and the futures leg at ASX Clear (Futures)) even though they offset each other in terms of market risk. The absence of cross-margining recognition between the two CCPs leads to higher margin requirements for participants engaged in arbitrage and hedging strategies.[73] The introduction of tokenised smart contract–based margining frameworks could potentially allow for automated offsets of risk exposures across asset classes and CCP silos, thereby reducing total margin requirements while maintaining systemic risk controls.

Margining in centrally cleared derivatives markets is likely more efficient than in bilateral OTC markets. Consequently, the cost savings above do not fully capture the (industry-derived), extrapolated economic impact potential in OTC markets.

[72] Several projects have demonstrated efficiency improvements through 24/7 collateral mobility (see, e.g., Canton August 12, 2025, "Digital Asset and Industry Working Group Complete Groundbreaking On-Chain US Treasury Financing on Canton Network."

[73] Shen, Yan and Zhang (2014) show that the absence of cross-netting mechanisms leads to frictions and price discrepancies between assets with identical cash flows.

Investment Funds

The extrapolated gains across listed and unlisted investment funds are 5.67 bps, corresponding to $2.2 billion per annum. Managed investment schemes, including money market funds and other tokenised fund structures are particularly well-suited to tokenisation and, consequently, have already experienced considerable global momentum.

The Australian investment funds market incurs significant ongoing costs from asset servicing, manual processes in applications and redemptions, reconciliation and unit valuations, which could be removed to a large extent by on-chain registries and transaction processing. For example, unit trust applications require extensive manual KYC checks, investor information is fragmented across several systems, transfer agents and registry service providers, and redemptions often settle with significant delays due to inefficient fund accounting and unit pricing mechanisms. The lack of automation in back-office processes further implies a high rate of errors or significant costs associated with quality assurance.

We rely on Calastone's whitepaper on the potential efficiency gains from tokenising investment funds. The paper finds that tokenisation could eliminate inefficiencies in fund registry and accounting services (e.g., issuance, administration, and distribution), cutting operational costs by 23% annually, equivalent to 0.13% of assets under management. With a market value of $485 billion in retail unit trusts,[74] this translates into **$630.5 million** (0.13% × $485 billion) in potential economic gains in this segment alone.[75]

Alternatively, using Lim (2024), who estimates that it costs investors between $0.05 and $0.26 per dollar committed over a fund's lifetime, the total lifetime intermediation cost for Australian investment funds is approximately $24.3 billion (5% × $485 billion). Applying the 23% efficiency gain from tokenisation to this figure implies lifetime gains of $5.6 billion.

The two approaches provide complementary perspectives: $630.5 million captures the annual efficiency improvements, while $5.6 billion represents a one-time reduction in intermediation costs (the present value of the cash flows). As a sanity check, this one-time present value can be converted into an equivalent annual cash flow to make it comparable with the $630.5 million annual operational gain. Assuming a 13.8% discount rate in perpetuity yields an annualised efficiency gain of approximately $770 million per year, slightly higher than the $630.5 million estimate.[76]

Overall, the quantified annual gain of approximately $630 million from tokenising retail unit trusts represents only a fraction of the economic potential available across Australia's $3.9 trillion investment-funds sector.

Moreover, the extrapolated survey-based efficiency gain of 5.67 bps is conservative when benchmarked against Calastone's estimated 13 bps improvement, suggesting that system-wide adoption could unlock substantially larger gains than reflected in this report.

[74] The data is sourced from the ABS for the Dec Qtr 2023 in "Managed Funds, Australia."

[75] From April 2025, Calastone enabled asset managers to tokenize their funds on Ethereum, Polygon and Canton. Their 2025 whitepaper, "Decoding the Economics of Tokenisation: Transforming Cost Dynamics in Asset Management," estimates operational efficiency gains to 23% (0.13% of AUM annually).

[76] Using the formula $PV=C/(r-g)$, the annualized efficiency gain, C, is $C = 5.6 \times 0.138 = 0.77$.

Private Equity and Private Debt

Extrapolated gains are 9.08 bps for private equity (economic gains $1.4 bn p.a.) and 8.78 bps for private debt (economic gains $0.8 bn p.a.).

Private equity represents ownership stakes in unlisted companies and private equity funds, while private debt in this report largely reflects household and SME credit, as well as other non-publicly traded credit exposures such as private credit funds. These segments are characterised by high origination and servicing costs, fragmented data, manual documentation processes, and limited portability of loan records across institutions. Secondary transfer of whole loans is rare and operationally complex, meaning lenders cannot easily reprice or reallocate risk, and borrowers face higher funding costs as a result.

Tokenisation can reduce these frictions by enabling programmable loan records, automated servicing logic, and standardised collateral verification. Smart-contract-based lending mechanisms allow credit agreements to be originated, serviced, and transferred with significantly lower intermediation costs. For household and SME private credit specifically, this creates the potential for cheaper, more efficient alternatives to traditional lending channels.

According to Bain and J.P. Morgan, the main value of tokenisation lies in expanding access to alternative investments by streamlining the complex and fragmented fund infrastructure that drives high administrative costs and limits distribution to wealthy individuals. Bain estimates that tokenisation could increase allocations from 5% to 20%, generating around $400 billion in additional annual revenue globally across fund managers, wealth managers, and service providers. A significant portion of this also comes from new revenue in illiquid markets and collateralised loans (around $30 billion annually), which forms the focus of this report's market analysis (areas C_2, D_2 and E_2 in Figure B1 in Appendix B.[77] With a total value of $33 trillion AUM, these gains equal roughly 0.09% of AUM. Scaling to the current private equity AUM in Australia ($139 billion) implies **around $125 million in annual gains**.[78]

However, these estimates include benefits to all market participants, not just intermediaries, such as efficiency gains from reduced transaction costs (B_1 and F_1) and increased market participation (B_2 and F_2) by both buyers and sellers. Our estimates also account for the broader private equity market, not just the current AUM, including the 500 largest Australian private companies.

The same 0.09% ratio can also be applied to the private debt market. With a current Australian private debt AUM of approximately $205 billion, this implies potential **annual gains of around $185 million**. As with private equity, these gains also remain below our extrapolated estimates, which capture benefits to all market participants (e.g., also buyers and sellers) and consider the broader private debt market.[79]

[77] These estimates are from Bain and J.P. Morgan, December 2023 report, "How Tokenization Can Fuel a $400 Billion Opportunity in Distributing Alternative Investments to Individuals."

[78] Preqin and the Australian Investment Council, "Australian Private Capital 2025 Yearbook: A Calm Port in a Wild Storm," provides Australian and global AUM values ($140 billion and $22 trillion, respectively).

[79] Alvarez & Marsal Holdings December 16, 2024 article, "Australian Private Debt Market Review 2024: A new record market size of $205 bn and impacts of recent regulatory change" estimates the combined AUM to AU$120 billion to business-related lending and AU$85 billion to commercial real estate loans.

Commodities

Table 6 reports an extrapolated gain of 7.67 bps in commodities markets, corresponding to $536 million in potential economic gains per annum.

These economic gains are most likely to materialise in documentary and settlement delays in physical trades and trade finance, which drive working-capital needs and create operational risk.

Australia's key commodity exports, totalling $169.36 billion annually, generate substantial capital flows which take around 11-15 days to settle. With the current annualised cash rate of 3.6%, the opportunity cost is approximately $183.7 million per annum ($169.36 billion × 3.6% × 11/365). Blockchain-based systems can speed up the process substantially (e.g., ING's "Easy Trading Connect" prototype), demonstrating that the settlement time can be reduced to 4 days, a $116.9 million annual saving ($169.36 billion × 3.6% × 7/365).[80] ING notes other savings, including reduced risk of fraud, increased safety, real-time monitoring, and other cost reductions.

Beyond settlement time reductions, tokenisation could deliver further gains by automating and streamlining post-trade processes in commodity markets. Australian minerals and commodities (e.g., iron ore) typically pass through multiple intermediaries who manually reconcile shipping documents, certificates of analysis, and ownership records. These manual processes create delays, errors, and exposure to operational and fraud risk.[81] By recording transfers and enforcing trade conditions on blockchain-based ledgers tokenisation can reduce costs to verification and lower counterparty risk.[82]

[80] ING simulated a soybean transaction from global agricultural merchant LDC to a Chinese buyer Shandong Bohi which featured no paper contracts, certificates or manual checks, and was completed after 4 days, five times the speed of a paper-based trade (see January 22, 2018 ING article "Bringing blockchain to agricultural commodity trade").

[81] Inadequate verification can generate significant financial losses in commodity trading. For example, Trafigura Group incurred a $870 million loss due to shortcomings in its own internal controls (e.g., inadequate verification of shipping documents), which left the company exposed to fraud. See July 13, 2023 AFR article, "Trafigura proposed fake nickel deals, says man it blames."

[82] See e.g., Fastmarkets, August 6, 2020, "INTERVIEW: Blockchain can help 'antique' iron ore industry thrive amid global steel slump, DBS Bank says."

Better Payments

05

Key Insights

Cross-border and FX payments dominate the economic opportunity

Australia's domestic payments system is already relatively efficient, whereas cross-border payments remain slow, opaque, and costly. The overwhelming share of payment-system gains (approximately $7.2 billion per annum) arises from FX settlement and correspondent banking, making cross-border use cases the primary value driver for tokenised payments.

Tokenisation collapses multi-layer correspondent chains into direct exchange

Digital settlement architectures enable direct payment-versus-payment (PvP) and delivery-versus-payment (DvP) across currencies, replacing long intermediary chains with atomic, programmable settlement. This simultaneously reduces fees, settlement risk, liquidity buffers, and operational complexity.

High turnover magnifies small efficiency improvements

The FX market's enormous transaction volume means that even modest reductions in spreads or intermediary fees translate into large economy-wide gains. Tokenised settlement assets combined with automated FX trading could generate up to $3 billion per annum in savings from correspondent banking processes and $3.4 billion per annum in transaction cost reductions.

Domestic gains are concentrated in infrastructure efficiency and small-merchant competition

In domestic retail payments, the main efficiency channel is not speed but cost structure. Stablecoin-based payments with flat, low per-transaction fees can disproportionately benefit small merchants who currently face higher effective card fees, improving competitive neutrality and levelling the playing field.

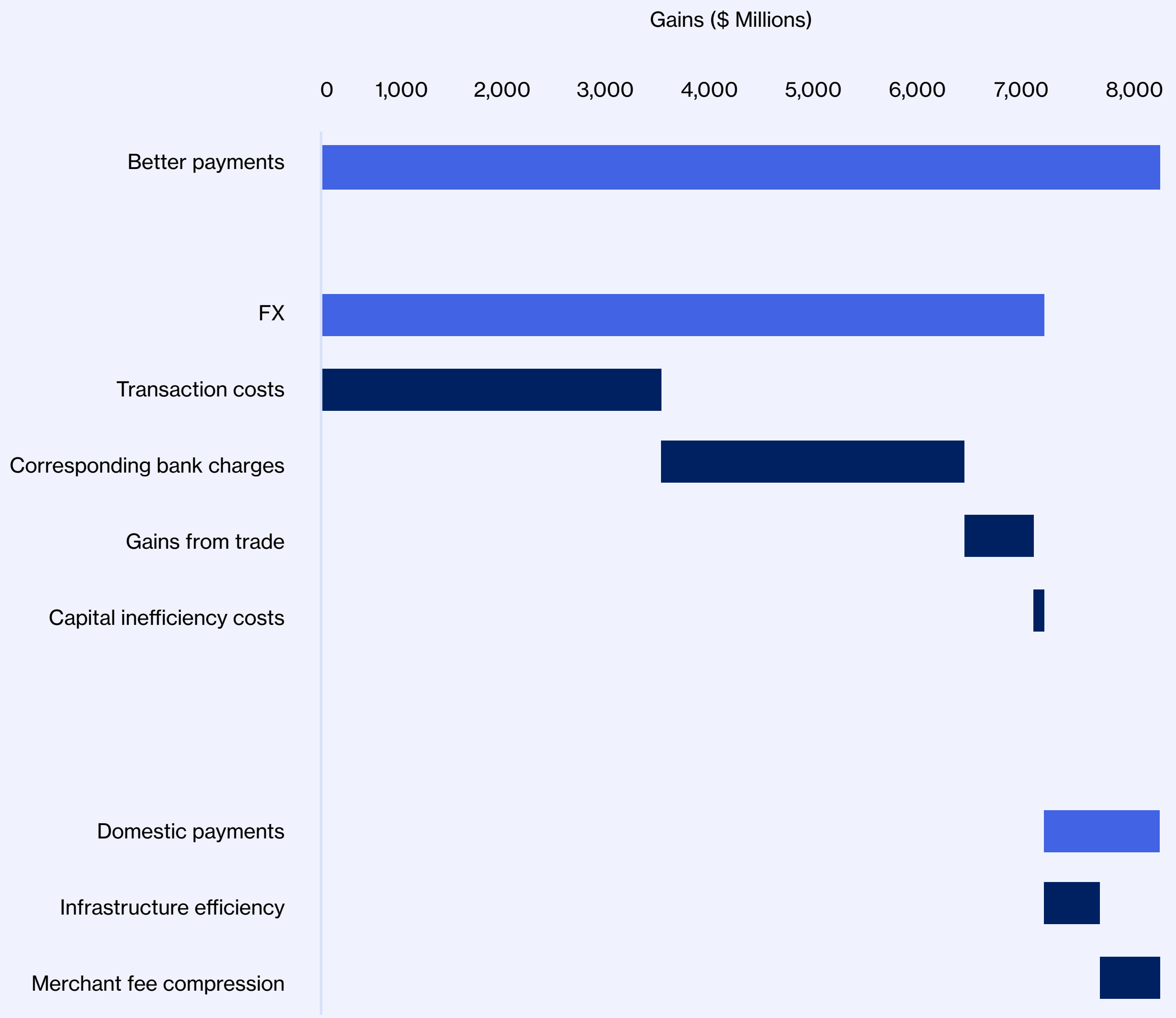
Programmable settlement assets are the binding constraint

The largest payment-system gains depend fundamentally on the availability of trusted, programmable digital money, either wholesale CBDC,well-regulated AUD stablecoins or deposit tokens. Without such assets, tokenised payment rails cannot support atomic settlement, on-chain FX exchange, or interoperability with tokenised asset markets.

Payment architectures will remain layered and use-case specific

Given trade-offs between throughput, cost, and security, multiple distributed payment systems are likely to coexist, each optimised for different transaction types (e.g., highly secure base-layer systems for large-value payments and lower-cost scaling layers for small retail transactions).

Figure 9: Overview of economic gain potential in payments



Payments is an area that comprises FX settlement and domestic payments. In terms of transacted dollar volume, the FX market is substantially larger than the markets in the earlier section. To give a sense of the scale, the Australian FX market trades almost $10 billion daily which is more than thirty times greater than the Australian equities market.[83] With such scale, even small efficiency improvements can generate significant gains (detailed in Figure 9).

This section analyses cross-border payments/FX and domestic payments separately as they have vastly different structures and opportunities for economic gains.

[83] See ASIC, "Equity market data for quarter ending June 2025" for equities turnover ($308 bn) and AFXC April 2025, "Semi-Annual Report on Foreign Exchange Turnover" for FX turnover ($9.8 bn).

Cross-Border and FX Settlement

Cross-border payments have become a central focus of tokenisation initiatives.[84] Both CBDCs and stablecoins, possibly also tokenised bank deposits with token interchange facilities, can address long-standing frictions in the correspondent-bank model, where payments are routed across multiple intermediaries, funded via pre-positioned nostro/vostro balances, and frequently settle with one-to-three business-day delays. By contrast, tokenised money payment instruments enable more direct exchange and settlement in multiple currencies, across borders.

In our analysis, the dominant channels through which Digital Finance can impact cross-border payment efficiency are:

- lower correspondent-bank charges; and
- direct exchange of currencies in deeper, consolidated liquidity pools that reduce FX transaction costs.

In this section, we consider each channel in turn and estimate the implied cost and liquidity impacts.

Reduced correspondent bank charges

The first potential impact from tokenising fiat currencies (e.g., CBDCs or stablecoins) includes lower cross-border transaction costs.[85] Transaction costs consist of bank fees resulting from cross-border payments and FX exchange costs (e.g., the bid-ask spread) resulting from currency conversion.

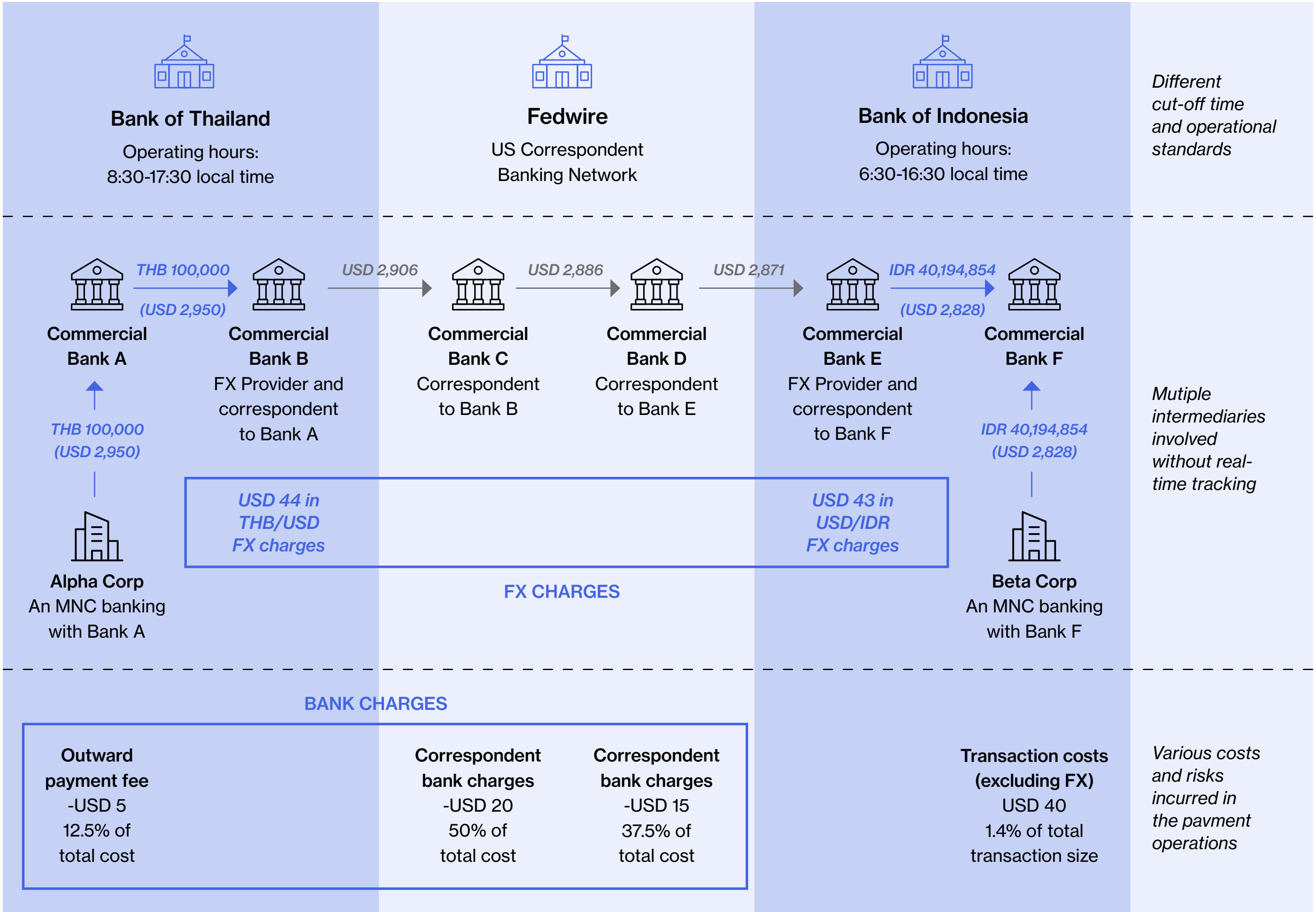
Conventional cross-border payment procedures are relatively expensive, slow, and lack transparency. FX transactions frequently involve five or more intermediaries, each imposing substantial fees (see Figure 10, Panel A). Moreover, the initiator of the transaction often lacks visibility into the payment status, resulting in a lack of control and transparency. This exposes the transacting party and the banks upstream to significant settlement risk if any of the downstream banks fail to fulfil their obligations.

[84] For example, the BIS Innovation Hub's work to date has concentrated on settling tokenised assets in central bank money and on improving cross-border payments. See BIS–CPMI, Oct 2024, "Tokenisation in the context of money and other assets: concepts and implications for central banks."

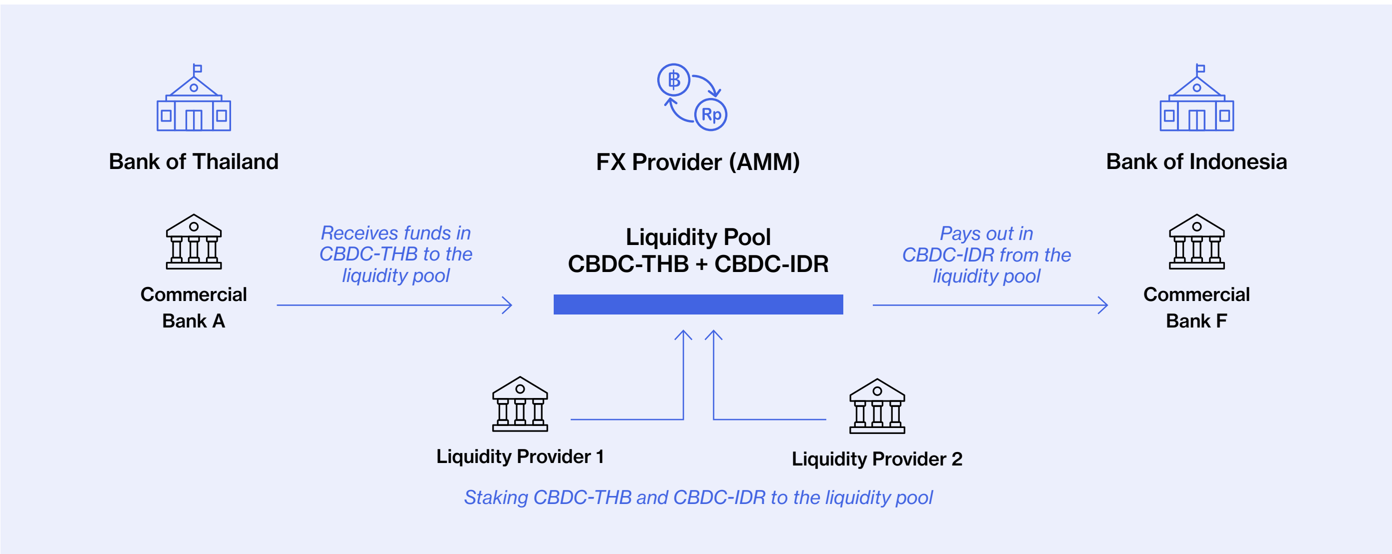
[85] Australian policymakers highlight the risks of algorithmic stablecoins (See e.g., RBA December 8, 2022 report, "Payments: Stablecoins: Market Developments, Risks and Regulation"). This report focuses on stablecoins, designed to maintain stable value, peg (or link) their value to an asset or pool of assets algorithmically (e.g., "Dai") or by holding the asset(s) in reserve (e.g., "USDT" and "USDC").

Figure 10: How tokenisation changes the process of cross-border payments

Panel A: Cross-border payment flow via correspondent banking



Panel B: Direct, cross-border payments of tokenised fiat currency with exchange via an AMM



More direct cross-border payments including a currency exchange are illustrated in Figure 10, Panel B. Although the illustration shows FX transactions with wholesale CBDCs, analogous functionality can also be provided by multi-currency stablecoins. Tokenised money can facilitate real-time atomic settlement, reducing the need for intermediaries traditionally involved in foreign exchange and international payments.

Globally, companies make approximately $23.5 trillion in cross-border payments, which, due to network complexity, cost two to six intermediary bank charges, constituting approximately $120 billion (or 0.5%) annually.[86] Using tokenised money designed to facilitate cross-border payments could significantly reduce these costs by reducing reliance on correspondent banks. Globally, estimates suggest correspondent banking fees could be reduced from an average of $27 to $5 (approximately 81%) per transaction, or $97.8 billion annually.[87]

According to the Australian Bureau of Statistics (ABS), in the 2024 financial year, Australia received $659.6 billion from goods and services exports and $76.64 billion in foreign direct investment (FDI), making a total capital inflow of $725.4 billion. Applying a 0.5% total bank charge rate from the industry estimates, approximately $3.7 billion in costs were incurred in 2024 on cross-border inflows to Australia. This is a lower bound as it excludes retail cross-border remittances and charges on outflows.[88]

Extrapolating the estimated global cost savings (the 81%) to the Australian context, the implementation of tokenised money for cross-border payments has the potential to yield bank charge savings of approximately **$3.0 billion per annum.**

Reduced transaction costs

FX market participants also incur a bid-ask spread cost in converting currencies. We draw on research by Foley, O'Neill, and Putnins (2025) to estimate the potential cost savings from tokenisation.[89] The study suggests that AMMs potentially reduce trading costs (mean bid-ask spread) for multiple asset classes, including major FX currency pairs (by 23%) and exotic pairs (by 65%).[90]

To convert these estimates into annual dollar terms, we obtain daily turnover of all "high-volume" and "exotic" AUD currency corridors from the Australian Foreign Exchange Committee (AFXC).[91] We also calculate daily bid-ask spreads in FX markets (for 2024–2025) for AUD FX pairs from Refinitiv Tick History. From these inputs, using the method from Foley et al. (2025), we estimate that AMMs can reduce daily trading costs in AUD currency corridors by $13.33 million (out of $52.42 million) daily, **$3.4 billion annually.**

Table 7: FX reduced transaction costs (spread)

	Major Currency Pairs	Exotic Currency Pairs
Daily transaction cost ($mn)	47.60	3.48
Saving (%)	23%	65%
Daily saving ($mn)	10.99	2.34
Annual saving ($mn)	2,769.92	588.57

[86] Estimates are from Oliver Wyman 2021 report, "Unlocking $120 billion value in cross-border payments–How banks can leverage central bank digital currencies."

[87] Ibid.

[88] Australian exports ("Goods and Services credits") and FDI ("Direct investment, Liabilities") are from Table 30 in the Australian Bureau of Statistics, "Balance of Payments and International Investment Position, Australia."

[89] The paper derives a model for an AMM's liquidity equilibrium and analyses 39 million AMM transactions to compare trading costs of AMMs to traditional trading mechanisms.

[90] Major currency pairs include pairs with USD on one side and one of the eight major currencies on the other side. Major currencies are the US dollar, euro, Japanese yen, British pound, Canadian dollar, Australian dollar, Swiss franc, and New Zealand dollar. Similarly to the study by Foley et al. (2025), we define exotic currency pairs as all the other besides the major ones.

[91] Table 4 in AFXC "Foreign Exchange Turnover Report – April 2024" reports volume for AUD/USD, AUD/EUR, AUD/JPY, AUD/GBP, AUD/CHF, AUD/CAD, and AUD/NZD, (our "high-volume sample") and AUD/SEK, AUD/OTHER ASIAN, AUD/OTHER EUROPEAN, AUD/OTHER (the "exotic sample"). We set the relative bid-ask spread of all exotic AUD pairs equal to the AUD/SEK realized spread. This should not bias the results too much since exotic pairs turnover is only 1.7% of the total turnover.

Reduced clearing and settlement operational costs

Australian FX market participants clear AUD transactions through a fragmented mix of infrastructures. A significant share of interbank and broker flows settle via CLS Bank's Continuous Linked Settlement (CLS) system, which provides PvP settlement and netting across major currencies, including AUD.[92] Spot and forward trades outside CLS are often settled bilaterally through correspondent banking channels or domestically via RITS and Austraclear.

This fragmentation of venues and processes implies that costs are spread across global settlement providers, domestic infrastructures, and bilateral arrangements. However, unlike equities or listed derivatives, where CCPs publish clearing fees, there is no consolidated or publicly available data on the explicit costs of FX clearing and settlement for Australian brokers. Further, these costs might already be captured by the corresponding bank charges. Consequently, we do not include these in our estimates.

Reduced capital inefficiency costs

FX markets have numerous capital inefficiencies caused by fragmented payment systems, lengthy settlement cycles, and large volumes of idle liquidity tied up across accounts. According to UBS, the reliance on nostro accounts (foreign currency balances held at correspondent banks) is a significant structural inefficiency, as banks must immobilise liquidity to facilitate client flows.[93] Institutions with extensive nostro networks can process payments more quickly. However, this comes at the cost of holding more trapped liquidity, while those with fewer accounts face higher correspondent fees. McKinsey estimates that around USD 30 trillion is locked in nostro balances globally, illustrating the scale of capital inefficiency inherent in the current settlement infrastructure.[94] Furthermore, SWIFT estimates that 34% of FX transaction costs are related to liquidity trapped in nostro accounts.[95]

We do not have the data to accurately estimate the trapped liquidity in nostro accounts across Australian participants. However, Olyver Wyman estimates that commercial banks could free up USD 10 billion in overnight balances by adopting CBDC.[96] According to a SWIFT Institute working paper, these liquidity buffers cost banks 100 bps.[97] For illustration purposes, if we conservatively assume that Australian banks collectively hold $10 billion excess liquidity in nostro accounts, the cost to them of this trapped liquidity is **$100 million per annum**.[98]

Reduced middle- and back-office costs

Tokenisation can improve the efficiency of middle and back office functions across financial institutions by streamlining processes associated with clearing and settlement, trade support, collateral management, client reporting, and risk management. These activities often rely on manual workflows and fragmented systems, particularly in markets like OTC FX, creating operational complexity and raising the cost of participating in these markets.

While the potential efficiency gains are material, they arise primarily from reducing duplicative processes. To illustrate the possible scale, indicative calculations[99] show that even small efficiency improvements across large operational cost bases could translate into meaningful system wide savings. However, these estimates likely overlap with cost categories already captured elsewhere in our analysis (such as correspondent bank charges), and for this reason we do not include them in the total quantified gains presented in this report.

[92] According to the 2024 "Master List of Members of CLS Bank International", the five largest Australian banks are all members of CLS.

[93] See "Towards digital capital markets: How and why cutting-edge technologies can reshape global markets for the better" (UBS, 2025 report).

[94] See McKinsey (2016) "Global Payments 2016: Strong Fundamentals Despite Uncertain Times – Financial Services Practice."

[95] See SWIFT 2016, position paper on DLT, "gpi Nostro Proof of Concept: Can Distributed Ledger Technology finally pave the way for real-time Nostro reconciliation and liquidity optimisation?"

[96] Oliver Wyman and J.P. Morgan (2021) "Unlocking $120 Billion Value in Cross-Border Payments: How Banks Can Leverage Central Bank Digital Currencies for Corporates."

[97] See Milne and Ransome (2024) "Payment 'Tokens': A Route to Optimizing Liquidity Management?"

[98] For example, ANZ's 2024 annual report documents settlement balances owed to ANZ of approximately $5.5 billion. which includes ANZ's nostro accounts held at other banks overseas.

[99] In Australia, there are around 200 thousand bank employees which cost $9.72 billion per quarter ($38.87 billion annually) in personnel expenses, according to annual reports and figures from the Australian Banking Association. Assuming an equal allocation of costs between the front-, middle- and back-office and that only a small fraction (e.g., 1%) of work is in OTC FX markets suggests a potential saving of $259.11 million annually to Australian banks in middle- and back-office costs.

Increased trade

The sections above indicate a total potential saving from tokenisation of $6.46 billion out of $17.06 billion (around 38%). In our framework for estimating economic value added (see "Empirical Methodology"), these savings are depicted as gains to payment or trade counterparties (areas B_1 and F_1), who now face lower transaction costs (from TC_1 to TC_2). Our framework also shows that the reduced transaction costs incentivise more FX trade and cross-border payment (from V_1 to V_2) which generates further gains to payment or trade counterparties (areas E_2 and F_2), and intermediaries (areas C_2 , D_2 and E_2).

To estimate these *gains from increased trade*, we require the sensitivity of trading volume to trading cost reductions, the "elasticity." Several studies have attempted to estimate the elasticity in FX (see e.g., Baltais, Karlsen, Putnins, and Sondore, 2024). Frankel and Rose (2002) use the introduction of the Economic and Monetary Union (EMU, or "the Euro"), which significantly reduced the costs of trade between European nations (coined the "Rose effect"). The consensus estimate suggests that the Euro boosted intra-Euro-area trade by five to ten per cent. Conservatively assuming a 5% "Rose effect" from tokenising Australian FX generates **$692 million** in potential gains from increased cross-border payments and trade.

Domestic Payments

Australia's domestic payments system is already relatively efficient following two decades of regulatory reform, including reducing interchange fees and increasing competition/transparency in card payments (reforms starting already in 2003).[100] As an example, the launch of the New Payments Platform (NPP) provided faster (near-instant) payments, 24/7 availability, efficient data handling, and open access infrastructure.[101] As a result, the scope for additional gains from tokenisation in domestic retail payments is materially smaller than in cross-border and foreign-exchange markets.

Nevertheless, merchant fees remain economically significant and provide a measurable channel through which digital payment innovation, particularly via stablecoins or tokenised deposits, could deliver efficiency improvements.

Baseline current cost structure

When a customer makes a payment to a merchant using a debit or credit card, including contactless and mobile wallet payments, multiple intermediaries are involved in authorising, clearing, and settling the transaction. Each intermediary provides specific services and receives compensation through a set of fees collectively referred to as the "merchant service charge" (or fee). This charge is typically expressed as a percentage of the transaction value and varies depending on the card type (debit vs credit), payment channel (in-person vs online), and merchant pricing arrangement.

The merchant service charge comprises three main components:

1. Interchange fees. These are paid to the customer's bank to compensate for providing payment accounts, funding transactions, and managing fraud risk. In-terchange fees vary depending on the card type, transaction method, and merchant category.
2. Scheme fees. These are charged by the card networks (such as Visa and Master-card) for operating and maintaining the payment network, including core network services, transaction routing, clearing and settlement infrastructure, network security, and rule enforcement.

[100] The RBA Bulletin – September 2010, "A Guide to the Card Payments System Reforms" goes into more detail on past reforms. The New Payments Platform was developed through industry collaboration and launched in 2018 and included benefits such addressed payments ("PayID"), instant transfers (within seconds), improved data handling, and 24-7 availability.

[101] For more information on the infrastructure, see "The New Payments Platform" on the RBA website.

3. Acquirer or merchant service provider fees. These are charged by the merchant's payment service provider (such as Stripe or Square) for processing the transaction and providing hardware (e.g., terminal), software, and support.

Together, these components determine the total cost to merchants of accepting card payments, and is the total cost base that could potentially be reduced by more efficient payment infrastructure.

How those total costs are distributed among users of the payment system depends on, among other things, the extent to which merchants recover some or all of these costs through "surcharging", whereby a fee is added to the purchase price for customers who pay using cards.

The RBA's recent *Review of Merchant Card Payment Costs and Surcharging* finds that:

i. Surcharging is no longer achieving its intended purpose of steering consum-ers towards cheaper payment methods as businesses are increasingly charging the same surcharge rate across debit and credit cards,

ii. Removing surcharging across debit and credit cards could save consumers a total of $1.2 billion each year,

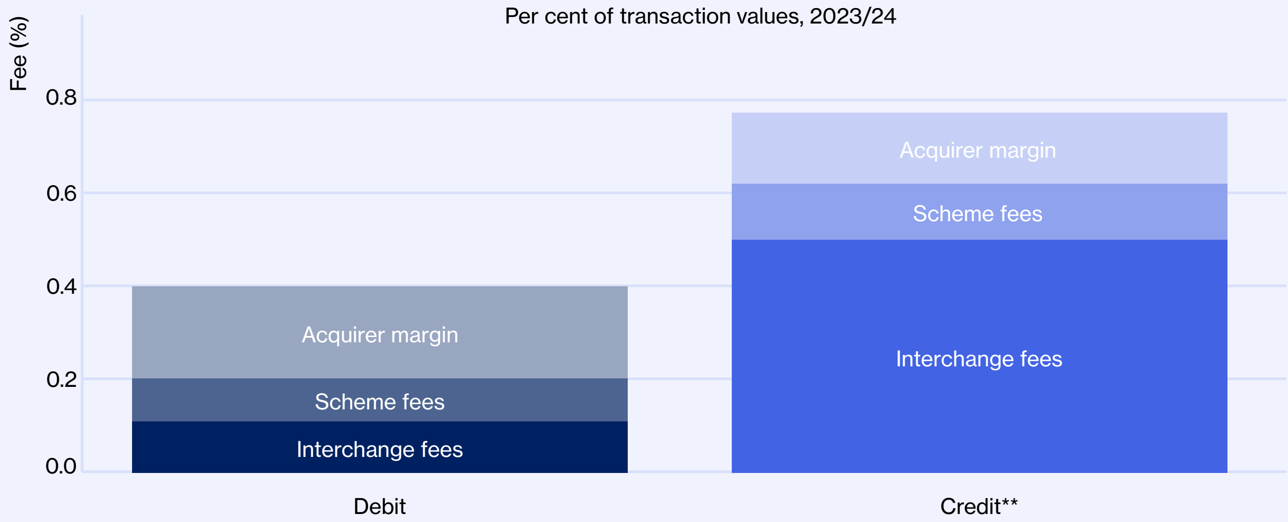
iii. Interchange fees paid by businesses to card providers are too high, especially for small businesses, and

iv. Potential reforms could save businesses around $1.2 billion in inter-change fees a year.[102]

Whether surcharging is applied or not is not particularly relevant to estimating the potential net gains in the payment system as the surcharge is a redistribution between merchants and consumers. That said, the estimates above provide a useful benchmark of the magnitude of potential savings in the domestic payment system. What is relevant is the total merchant fee as that is the cost for non-financial sector entities (merchants and consumers) to use the payment services provided by the financial sector.

The breakdown of merchant service charges in Australia is illustrated in Figure 11, which is based on RBA data[103] and calculations:

Figure 11: Average Merchant Fees for Card Payments in Australia



* Domestic card transaction. The acquirer margin component is estimated as the difference between average merchant fees and wholesale costs (the sum of average interchange and scheme fees).

** Mastercard and Visa Credit only. Interchange fee component is calculated by taking each scheme's weighted average credit interchange rate and weighting those rates by the number of transactions for each scheme.

Source: RBA.

[102] See RBA, July 15, 2025 consultation paper, "Review of Retail Payments Regulation: Merchant Card Payment Costs and Surcharging – July 2025."

[103] Ibid.

In 2024, total debit card transaction value in Australia was approximately $664.7 billion (around two-thirds of the $1,035 billion in card payments)[104]. With an average merchant services charge of around 0.49%, annual merchant costs for debit transactions are approximately:

$664.7bn × 0.49% ≈ $3.27 billion per annum.

This forms the baseline against which potential gains are measured.

Digital payment innovation such as using tokenised money (e.g., stablecoins and deposit tokens) for direct payments could generate savings through two economically distinct channels:

i. Infrastructure efficiency and

ii. Merchant fee compression from improved competition.

We evaluate potential gains in these two areas separately.

Gains in infrastructure efficiency

A regulated, widely accepted stablecoin or deposit token model with flat per-transaction fees can potentially reduce the per-transaction cost by reducing card-network fee structures, removing routing complexity between domestic and international schemes, and reducing processing layers and settlement costs. The fees in stablecoin payments typically remain fixed regardless of transaction size and presumably the same could be the case for deposit tokens, although to date only stablecoins can be observed circulating at scale.

To model plausible efficiency gains, we use three transaction cost benchmarks with different levels of security and decentralisation, each with its own benefits and drawbacks. For each benchmark we estimate costs using currently observable stablecoin transactions on a range of distributed ledgers. These vary significantly; for example, Hedera (which is highly centralized) charges approximately USD 0.001 per transaction ($0.0015), while Ethereum (highly decentralised and secure) averages about USD 0.386 per transaction ($0.603).[105] Layer 2 solutions on Ethereum charge substantially lower fees (e.g., Arbitrum One charges $0.0555 per transaction) and are therefore more likely to be used for domestic payments with stablecoins. Redbelly (host to some AUD stablecoin), which can process ten times more transactions than Visa, charges only $0.015 per transaction.[106]

Currently, the Australian domestic payments system processes 14.23 billion debit transactions, comprising 85.8 million physical transactions (inserting a card) and 14.14 billion contactless transactions. We use these transaction volumes to estimate savings if debit payments were instead processed via stablecoins, under three scenarios.

1. **Low-cost, high-throughput architecture scenario (around $0.02 per transaction).** This scenario reflects highly scalable, high-throughput payment architectures (e.g., Layer-2 or purpose-built payment chains) where marginal transaction costs are very low and network congestion is minimal. It assumes that stablecoin or tokenised payment rails operate at scale with efficient validation and minimal base-layer settlement overhead. The cost estimate is derived from current costs if the Ethereum network was used for high-value transactions due to its high security while the remaining 99% of transactions use a network like Redbelly for high throughout and efficiency,[107] resulting in average transaction fees of $0.019. A payment infrastructure with this average per-transaction cost could generate gains of approximately $3 billion ($3.27 billion − $0.019 × 14.23 billion) per year relative to the current debit payments system.[108]

[104] The RBA, September 2022 Bulletin, "The Cost of Card Payments for Merchants" (Graph 5), includes debit fees by deciles of merchant size (also shown in Figure 12 further below). The RBA Retail Payments 2024 report indicates $1,035 billion in transaction volume for 2024, which we can convert into deciles of debit volume, equal to approximately $66.5 billion in debit transactions per decile (Considering debit transactions account for 64% of transaction volume). With an average fee of 0.49% across merchant size deciles, the annual costs of debit transactions equal $3.27 billion ($664.7 bn × 0.49%).

[105] The Hedera website page, "Network & Governance," notes that governance is distributed across 39 organizations. On Ethereum, the number of validators exceeds one million (see Cointelegraph, June 2024 article, "Ethereum validators up 30% in a year, exceeding 1 million").

[106] Redbelly charges USD 0.01 ($0.0153) in fees and allows for 73,158 TPS (transactions per second) with a theoretical TPS of 666,970, ten times larger than Visa (65,000). See Vine Redbelly Network developer portal (for network fees), Chaininspect (for Redbelly TPS), and VISA, November 9, 2023 article, "A deep dive on Solana, a high performance blockchain network" (for Visa TPS).

[107] In the current payment system, card providers require any payments above $100 to use a physical card-insert, which is more secure. If merchants were to adopt stablecoins, they may similarly require customers to use more secure Layer 1 networks (e.g., Ethereum) for payments above $100 and allow cheaper Layer 2 networks for smaller payments.

[108] Routing 85.8 million physical transactions on Ethereum (at a fee of $0.603 per transaction) and the remaining 14.14 billion contactless transactions on Redbelly (of $0.015 per transaction) equals a weighted average of $0.153.

2. **Mid-cost architecture scenario (around $0.06 per transaction).** This scenario reflects scalable but moderately security-intensive distributed ledger environments, where transaction validation costs remain modest but not negligible. It captures a realistic middle ground in which digital payment infrastructure achieves material efficiency gains relative to card networks but retains some structural cost components. The cost estimate is derived from current costs of using a Layer 2 like Arbitrum One for 99% of the transactions with the remainder on Ethereum, resulting in average transaction fees of $0.06.[109] These fee levels would result in approximately **$2.43 billion** in annual savings ($3.27 billion – $0.06 × 14.23 billion).

3. **Higher-cost base-layer settlement scenario (around $0.15 per transaction).** This scenario assumes payments settle directly on more security-heavy base-layer infrastructure, with higher validation and processing costs. While still cheaper than current debit fee structures on a percentage basis, it reflects a more conservative assumption about technical scalability and cost compression. The cost estimate is approximated from current costs if 75% of transactions were done on Hedera with the remainder using Ethereum, resulting in average transaction fees of $0.15. In this conservative scenario, the annual cost saving is approximately **$1.14 billion** ($3.27 billion – $2.13 billion).

The scenarios suggest gross cost reductions in the range of **$1.14 billion to $3 billion**. While this provides a useful benchmark, it is important to recognise that existing payment fees fund a broader bundle of services beyond settlement alone and some of these services are not captured in the baseline or low-cost tokenised money payments scenarios.

For example, merchant service fees incorporate fraud detection, dispute resolution, compliance monitoring, and network security, and operational resilience. Card networks also provide consumer protection features, including chargeback rights and fraud reimbursement, which reduce risk for both merchants and consumers. These services add measurable economic value. Tokenised payment systems can provide operational resilience and reduce certain fraud vectors, particularly credential theft (this is discussed further in the *Better Assets* section), but equivalent protection mechanisms, such as custodial safeguards, insurance, and dispute resolution frameworks, may still incur costs beyond those captured by the fee estimates above.

To account for this, we estimate the approximate insurance-equivalent cost of providing fraud protection and dispute resolution services currently embedded in card payment fees (some estimates of the fee components can be found in the RBA's Review of Retail Payments Regulation). Card fraud losses in Australia total approximately $351 million annually. Industry evidence suggests that existing fraud prevention systems block a substantial share of attempted fraud (typically between 65% and 85%). This implies that card networks and issuers prevent fraud losses on the order of approximately $1.0 billion per year. Providing this protection requires fraud monitoring systems, reimbursement mechanisms, and dispute resolution infrastructure. Based on observed industry cost structures, we conservatively estimate that providing these protections costs approximately $150 million to $300 million per year. In addition, card networks provide formal dispute resolution and chargeback rights, which allow consumers to reverse fraudulent or disputed transactions. Processing disputes, managing investigations, and maintaining associated infrastructure imposes additional operational costs, which we estimate at approximately $150 million to $300 million per year based on observed dispute rates and processing costs.[110]

These estimates suggest that even when accounting for the economic value of embedded consumer protection services, tokenised payment architectures have the potential to deliver significant net economic gains.

[109] Approximately 85.8 million physical transactions would require secure Layer 1 (at a fee of $0.603 per transaction), with the remaining 14.14 billion contactless transactions using Layer 2 at much lower fees of USD 0.0365 on average ($0.0555) per transaction. The average transaction fee (USD 0.0365) for Arbitrum One is from token terminal.

[110] Mastercard, April 30, 2024 article, "What's the True Cost of a Chargeback in 2025?" estimates processing costs incurred by financial institutions ranging from $9.08 to $10.32 per dispute (around 261 million disputes globally per year). Stablecoin-based solutions may reduce some of these costs by automating dispute resolution and escrow (see e.g., Circle, April 17, 2025 report, "Refund Protocol: Non-Custodial Dispute Resolution for Stablecoin Payments").

To account for these additional services and ensure conservative aggregate estimates, rather than using the gross cost difference under the baseline scenario, this report adopts the lowest net-gain scenario in its economic impact estimates, $1.14 billion. Larger gains may be realised as tokenised payment systems mature and replicate protection mechanisms more efficiently.

Merchant Fee Compression from Improved Competition

A second and economically distinct channel arises from competitive pressure. Under the current system, contactless debit transactions are frequently routed through international card networks by default, limiting merchants' ability to steer transactions to lower-cost domestic networks.

When Australian merchants accept payment via debit or credit card, their payment provider charges a fee that depends on the network used to process the transaction. In the past, customers would insert their debit card into the card terminal and select which network to use. For example, in debit transactions, customers could choose an international network by pressing "Visa Debit" or "Debit Mastercard," or select the EFTPOS network. For many merchants, transactions processed via EFTPOS are materially cheaper than those processed via the international networks. The growth of contactless payments has changed how this choice is made.[111] Today, when a customer taps their debit card, the terminal and card automatically route the transaction through the international networks by default.[112]

Larger merchants can negotiate favourable rates, but smaller merchants often face materially higher effective fees. If digital payment rails introduce viable alternatives, such as regulated stablecoin or tokenised deposit payments, merchant bargaining power could increase, compressing fee dispersion.

To estimate this effect, we:

1. Observe the decile distribution of merchant fees;
2. Use credit card fee gradients as a benchmark for bargaining effects independent of routing distortions;
3. Construct a counterfactual debit fee structure without routing-based fee inflation.

A simple way to estimate the potential savings from removing the contactless surcharge is to multiply the total debit transaction volume by the reduction in fees from shifting to EFTPOS instead of using the international network. However, this approach would likely overstate the savings, as larger merchants may be able to negotiate lower debit fees (including lowering the contactless debit surcharge to the EFTPOS fee).[113]

We illustrate this in Figure 12, which shows average card fees by decile of merchant size. The figure indicates that larger merchants face substantially lower debit fees (solid black line). However, an increase in merchant size above decile 5 does not seem to affect the fees.[114] For example, the fees in deciles 6 and 10 are similar (both around 0.34%). For these larger merchants, we assume that removing the contactless surcharge does not materially change debit fees (their fees are already very competitive).

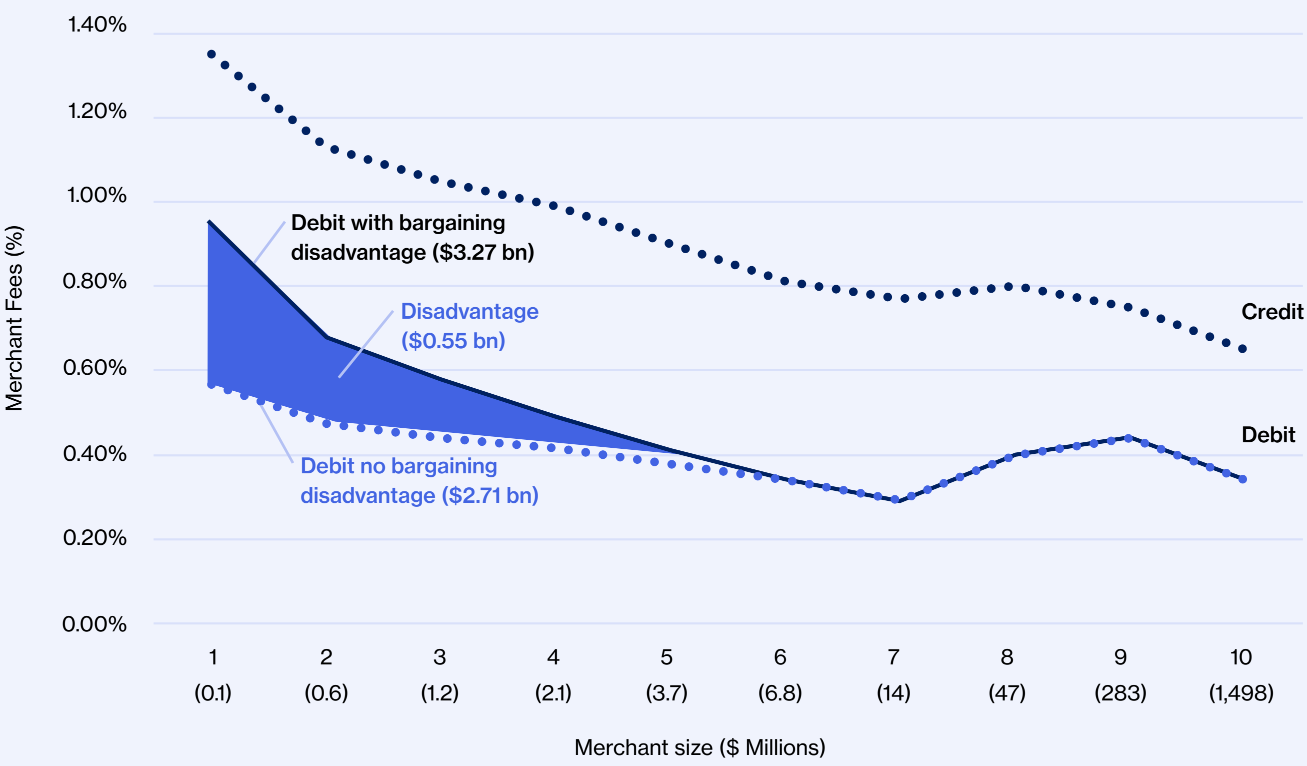
[111] RBA, June 2023 Bulletin, "Consumer Payment Behaviour in Australia" shows debit card payment rising from 15% (in 2007) to 51% (in 2022) with contactless card payments rising from 85% in 2019 to 95% in 2022. More recent RBA estimates in "Retail Payments October 2024" indicate that 98% of device-present transactions in Australia are contactless, via mobile wallets (44%), and contactless cards (54%).

[112] See AFR, September 9, 2024 article, "Contactless payments take the more expensive route."

[113] See e.g., RBA, September 2022 Bulletin, "The Cost of Card Payments for Merchants" (which we rely on for our estimations) or more recently RBA Issues paper, "Merchant Card Payment Costs and Surcharging – Issues Paper – October 2024."

[114] The figure is from Graph 5 in RBA, September 2022 Bulletin, "The Cost of Card Payments for Merchants." Each decile contains merchants that account for 10 percent of the total value of card transactions.

Figure 12: Savings from removing contactless surcharge in debit card payments



We therefore focus on estimating savings for smaller merchants (deciles 1 to 5), where contactless debit fees seem more prevalent.[116] For this purpose, we use the trend in the credit fee (dashed black line) to estimate what debit fees would be without. Since credit transactions lack a lower-cost alternative that merchants can leverage (such as EFTPOS in debit transactions), the credit line reflects negotiated fees in the absence of the ability to reduce costs through routing contactless payments to a cheaper network.

The estimations are in Table 8. In the table, we use the credit fee trend (starting from decile 6 to decile 1) to estimate the incremental change in fees between deciles (the "Credit trend"). For example, credit fees increase by around 11% from decile 6 to 5 and 10% from decile 5 to 4. We then apply this trend to debit fees, starting with merchants in decile 5, to estimate the debit fees in the absence of a contactless fees (the "Debit no routing distortion" column). Finally, we calculate the potential savings in dollar terms (the final column) by multiplying the fee reduction by the transaction volumes for each decile.

The new debit fee is also illustrated by Figure 12's dashed grey line with the total annual savings represented by the purple area, $554.86 million annually.[117]

Some portion of this effect could also be achieved via regulatory reform (e.g., surcharge rules or routing mandates), independent of tokenisation. Removing the contactless debit surcharge through regulatory action has been discussed by the RBA as a potential policy measure.[118]

[116] RBA, October 2024 Issues paper, "Merchant Card Payment Costs and Surcharging," elaborates on the bargaining power of bigger merchants to negotiate lower fees.

[117] As a comparison, the RBA, July 15, 2025 consultation paper, "Review of Merchant Card Payment Costs and Surcharging" estimates a total annual surcharge of $1.2 billion (when including credit cards).

[118] For example, the RBA supports the wider adoption of Least-Cost Routing (LCR) which ensures debit card transactions are processed through debit networks rather than the higher cost international debit card schemes. See e.g., RBA page "Backgrounder on Least-cost Routing."

Table 8: Savings from removing bargaining disadvantage of small merchants in debit transactions [119]

Decile	Credit		Debit		
	Fee	Trend	With routing distortion (1)	No routing distortion (2)	Saving in $mn (1-2) × $66.45 bn
6	0.81%		0.34%	0.34%	
5	0.90%	1.11	0.41%	0.38%	21.41
4	0.99%	1.10	0.49%	0.42%	49.47
3	1.05%	1.06	0.58%	0.44%	92.55
2	1.13%	1.08	0.68%	0.47%	136.69
1	1.35%	1.19	0.95%	0.57%	254.75
Total					**554.86**

Importantly, this regulatory change increases costs to merchants while benefiting consumers (a transfer of gains that merchants bear). Merchants may absorb this cost of lost merchant fees themselves or negotiate to share it with payment providers. In either case, the gain represents transfer(s) of value from one group to another (not a net economic gain).

However, digital payment alternatives can accelerate competitive pressure even absent formal regulatory change. In this case, the effect represents a true net gain rather than a transfer of gains. Merchants can adopt more affordable stablecoins, reducing transaction costs to a fixed fee without the need for bargaining. Payment providers would no longer earn fees from processing these transactions, but they would also avoid the costs of providing the service.

Total Domestic Payments Gains

Given the wide range of potential gains in infrastructure efficiencies depending on the assumptions about which networks could process tokenised money payments, we use the conservative estimate of $1.14 billion, being the lowest of the three scenarios analysed. Furthermore, to ensure no double counting, we assume this gain already includes the potential $554.86 million annual savings in contactless debit fees, with the remaining $585.14 million ($1.14 billion − $554.86 million) reflecting gains from infrastructure efficiency improvements.[120]

Combining the conservative infrastructure efficiency estimate with the merchant fee compression estimate yields total annual gains of approximately **$1.14 billion per annum** ($585 million + $555 million).

This estimate is deliberately conservative, reflecting:

- Modest assumed transaction-cost reductions;
- Partial fee compression;
- Recognition that Australia's domestic system is already relatively efficient.

Relative to cross-border payments, where inefficiencies are materially larger, domestic payments represent a secondary, though still economically meaningful, source of gains.

[119] In Table 8, "Credit Trend" is the credit fee divided by the credit fee one decile larger. The "Debit no routing distortion" column equals the "Debit with routing distortion" column for decile 6. For the remaining deciles (deciles 5 and below), the fees with no routing distortion increase in line with the credit trend. For example, the fee for decile 5 equals the credit trend in the same row multiplied by the no-routing value for decile 6 (1.11 × 0.34% = 0.38%). The final column ("Saving") is the difference between debit with and without routing distortion (1-2), multiplied by transaction volume in the decile (equals to $66.45 bn).

[120] Note that the surcharge may reflect the high costs of servicing smaller merchants, in which case reducing it represents an economic gain from introducing stablecoins.

Better Assets

06

Key Insights

The largest asset-level gains come from decentralised financial services built for tokenised RWAs

Nearly half of the asset-related economic gains arise from enabling collateralised lending, repo, and invoice-financing markets on tokenised rails, where smart contracts automate collateral management, margining, and settlement.

Asset utility improvements feed into lower cost of capital

Assets that have better liquidity (low transfer costs) or enhanced utility can lower the cost of capital for issuers due to the premium placed on such assets by investors.

Native issuance matters more than “digital twin” and token wrapping

The largest efficiencies occur when assets are issued natively on distributed ledgers with embedded lifecycle logic (coupon payments, corporate actions, redemption), rather than tokenised as secondary representations layered on top of legacy systems.

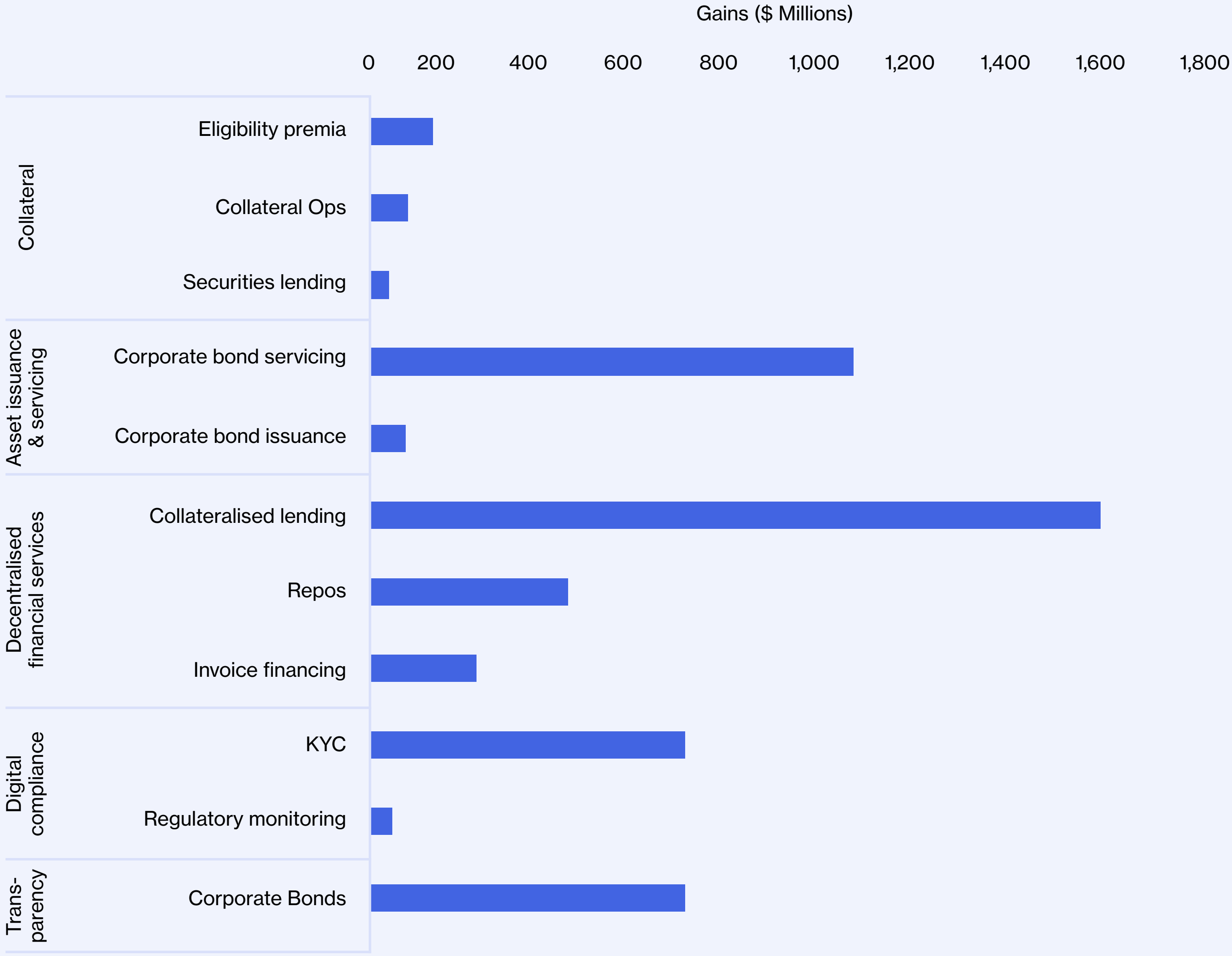
Tokenised government bonds are a keystone asset

On-chain sovereign bonds provide high-quality liquid assets (HQLA) for collateral, repo, and stablecoin backing, anchoring private-sector tokenised markets and potentially accelerating institutional adoption.

Tokenisation transforms assets into programmable financial building blocks

By embedding rules and compliance into tokens, assets become directly usable within automated trading, lending, and collateral-management systems, greatly expanding their economic utility.

Figure 13: Overview of economic gain potential in assets



Tokenisation can enhance the fundamental economic functions of financial assets. By improving the usability and flexibility of assets, and automating processes such as issuance, servicing, and compliance, tokenisation can generate substantial economic gains.

As illustrated in Figure 13, we estimate these potential gains collectively are approximately $5.3 billion annually. The gains occur through five primary channels:

- **More efficient use of assets as collateral,** improving liquidity and balance sheet efficiency.
- **Asset issuance and servicing efficiencies,** through automation of issuance, lifecycle management, and corporate actions.
- **Enabling decentralised financial services,** such as collateralised lending, repo, and invoice financing built directly on tokenised assets.
- **Digital compliance,** embedding KYC, reporting, and regulatory logic into assets and transactions.
- **Improved transparency,** particularly in historically opaque asset classes.

Better Utilisation of Collateral

In financial markets, collateral refers to assets pledged or posted to a collateral taker that serve a broad range of functions, including acting as a settlement guarantee (e.g., CCP margining in cash equity markets), providing a performance bond (e.g., in derivatives markets), and facilitating liquidity and credit transformation (e.g., in securities lending or repo transactions).

Economically, collateral mitigates the limited commitment problem which is a fundamental issue in contract theory whereby one or both parties may have incentives to renege on an agreement after it is entered. Counterparty risk arises because contractual obligations are agreed today, but delivery occurs at a future point in time.[121] Collateral reduces this risk by providing a claim on value if a counterparty fails to perform. The timing of delivery varies across asset classes and products and may be fixed (e.g., trade date plus two days, T+2, in Australian cash equity markets) or state-contingent and flexible (e.g., in derivatives markets).

The form of pledged collateral and its purpose vary across financial market segments due to differing risk profiles of the agreement, settlement structures, and regulatory frameworks. In cash/spot markets, collateral primarily supports trade settlement and securities lending. Repo markets are inherently collateralised, using HQLA to secure short-term funding. Exchange-traded derivatives require initial and variation margins managed by CCPs, while OTC derivatives rely on both bilateral and CCP margining. Finally, systemically important financial market infrastructures like CCPs impose collateral obligations in excess of initial margin on members to ensure systemic resilience if multiple participants default simultaneously.

Since the 2008 Global Financial Crisis, there has been a global shift toward central clearing of cash markets and OTC derivatives markets to mitigate systemic risk, enhance transparency, and reduce counterparty exposures. This move was driven by G20 commitments in 2009 and implemented through regulatory mandates such as the Dodd–Frank Act (US), EMIR (EU), and equivalent central clearing mandates in Australia, which require standardised cash market and specific derivatives transactions to be cleared through CCPs.[122] As a result, a significant share of interest rate and credit derivatives is now centrally cleared, and considerable collateral is concentrated in these intermediaries.[123]

Tokenisation can substantially improve collateral management globally through better automation, transferability, and visibility of collateral. Since these benefits are evident, a growing set of industry initiatives is targeting improved collateral mobility, eligibility, and intraday reuse through tokenisation and distributed ledger technology.[124]

How large is the opportunity for better collateral management globally? The size of the global collateral market is estimated to be around USD 15 trillion.[125] GFMA and BCG estimate that widespread DLT adoption in global collateral markets, including repos and OTC derivatives, could free up over $100 billion of collateral annually.[126] Several studies and reports have outlined explicit cost savings. For example, Accenture and Clearstream estimate that blockchain-based management could eliminate EUR 4 billion in yearly costs to banks from collateral inefficiencies.[127] BCG and Ripple estimate that tokenising collateral in repo markets could save $150 – 300 million per $100 billion of trading volume through faster settlement.[128]

[121] Market participants may have incentives to fail because prices of assets change between trade execution and settlement, resulting in one party to a trade being “in-the-money” and the other party “out-of-the-money.”

[122] Further incentives for central clearing included higher capital and margin requirements for non-centrally cleared trades under Basel III and BCBS–IOSCO frameworks, making bilateral clearing more costly.

[123] In 2024, large clearing houses held roughly USD 915.7 billion in initial margin, according to FIA.

[124] For example, J.P. Morgan’s Tokenised Collateral Network (enabling instant pledging of tokenised money market fund shares for margin), Broadridge’s and Fnality–HQLA’s Distributed Ledger intraday repo market, initiatives from Clearstream and Eurex, DTCC and Digital Asset, Euroclear, or BNY Mellon and Goldman Sachs for tokenised money market funds.

[125] See Securities Finance Times. “Collateral supply, demand and mobility.”

[126] Global Financial Markets Association (GFMA), and Boston Consulting Group (BCG), 2023 report, “Impact of Distributed Ledger Technology in Global Capital Markets.”

[127] Accenture and Clearstream, 2011 report, “Collateral Management – Unlocking the Potential in Collateral.”

[128] BCG and Ripple, 2025 report, “Approaching the Tokenization Tipping Point.”

What are the structural inefficiencies in collateral management that tokenisation can solve?

Fragmented collateral pools

Collateral is frequently held in disparate, non-interoperable accounts across multiple custodians, CCPs, and market infrastructures. This fragmentation prevents the mobilisation of cash and non-cash collateral, meaning liquidity that could otherwise support funding or margin requirements is trapped at their respective custodian. The result is an inefficient deployment of high-quality collateral, increasing aggregate liquidity needs.[129] Tokenised collateral networks, such as DTCC's Collateral AppChain, provide firms with the ability to mobilise and pledge collateral more efficiently.

Cross-border mobilisation barriers

Jurisdictional differences in regulatory requirements and settlement infrastructures hinder the efficient movement of collateral across borders.[130] Oliver Wyman's 2017 report notes that liquidity buffers are now dispersed across multiple entities and jurisdictions because local regulators require legal-entity-level liquidity management.[131] This lack of harmonisation increases funding costs for participants who would otherwise have sufficient resources. According to industry estimates from HQLA^{x} and Ernst and Young, more efficient mobilisation of collateral can save a large bank $75 million per annum.[132]

Lengthy settlement cycles

Current settlement cycles (such as T+2 for cash equities) create an extended exposure window between trade execution and final settlement. This results in participants having to hold larger liquidity buffers and maintain excess collateral to mitigate counterparty risk between trade execution and settlement.

Operationally complex and manual processes

Collateral movements are still heavily dependent on manual processes, including bilateral instructions, reconciliations, and exception handling. Manual processes increase operational risk and the probability of settlement failures. In stressed conditions, these manual processes can materially slow the capacity to reallocate collateral to where it is most needed or meet margin calls in time (Box A). Smart contracts allow for the automatic execution and payment of margins, with embedded trigger events (Priem, 2020).

Box A: Manual processes and fines in Australian derivatives markets

One significant benefit of tokenisation and using smart contract logic to pledge collateral more efficiently is that it reduces the costs and risks associated with delayed posting of collateral, which creates credit risk between the time a margin call is issued, and the moment collateral is lodged. This risk emerges, for example, in Australian derivatives markets that trade overnight. ASX Clear (Futures) makes an overnight margin call at 2 am. Participants have approximately 2 hours to pay initial and variation margin. Nevertheless, these payments are regularly missed due to manual operational processes and human error, resulting in credit risk and fines (see ASX Enforcement Notices). Both fines and credit risk could be mitigated by automating intraday margin calls via smart contracts.

[129] Global banks could save €50–100 million per year by replacing fragmented collateral systems with DLT solutions, according to a HQLAx estimate in their report "Redefining Collateral Mobility."

[130] Foreign entities increasingly participate in Australian markets. For example, the Council of Financial Regulators observes in its Consultation for Central Clearing of Bonds and Repos in Australia that non-resident participation in the Australian repo market has tripled since 2015.

[131] See Oliver Wyman, 2017, "Advancing the collateral management imperative."

[132] See, e.g., EY, August 2024, "Crypto Insights: A digital assets newsletter."

Limited real-time visibility and control

Multiple industry commentators stressed that real-time, enterprise-wide visibility of collateral is the foundational enabler for optimisation, risk reduction, and efficient mobilisation of liquidity across markets and counterparties.[133] The existing infrastructure does not provide continuous, consolidated insight into collateral positions and obligations across all markets. Without real-time collateral monitoring, participants cannot optimise allocation, substitute assets, or respond immediately to margin calls, which is often mitigated through inefficient over-collateralization. Real-time visibility is also beneficial from a regulatory perspective for financial stability, as well as for CCPs, who would be able to calculate collateral requirements more accurately (Platt, Csoka, and Massimo, 2017). This inefficiency is most evident in Australian equity markets in the absence of intraday margining of cash equity exposures (Box B).

Box B: Lack of intraday margining in the Australian equity market

ASX calculates margin requirements based on the end-of-day portfolio of participants and makes intraday margin calls only in cases of extreme volatility. Efforts at ASX Clear are currently underway to “enhance its capacity to monitor the build-up of current exposures to participants and to make intraday margin calls to participants.” Effectively, participants accumulate uncollateralised intraday exposures using the free lines of credit from the CCP, which creates unprotected credit risk. If participants reduce those exposures before the end of the business day, they can avoid the associated collateral costs. Real-time settlement eliminates the build-up of unprotected exposures and allows the immediate closeout based on pre-defined logic (e.g., Morini, 2016).

Narrow eligibility frameworks

Despite their credit quality, certain assets, such as segments of the corporate bond market or tokenised equivalents of eligible instruments (such as index ETFs and money market funds), are excluded from collateral eligibility lists. These restrictive frameworks force participants to deploy scarcer, higher-opportunity-cost assets (primarily cash), reducing overall collateral velocity and increasing funding costs. Alternatively, participants can substitute collateral, which is operationally cumbersome and often sequential.

Constraints on collateral reuse and transformation

Market structures and legal frameworks often limit the ability to re-use, re-pledge, or rehypothecate collateral across venues. Where reuse is possible, the need to transform collateral (e.g., from government bonds to cash, or from one currency to another) introduces delays, operational friction, and market dependency on Repo and FX transactions. Sequential processes and eligibility mismatches magnify both liquidity and credit risk. Reuse (including rehypothecation of collateral) could benefit from tokenisation, as the information about the number of times that a certain bond has been pledged could be more easily shared across parties. The ability to rehypothecate assets is usually seen as beneficial for the liquidity of the asset (Gottardi, Maurin and Monnet, 2019). However, there is a trade-off as rehypothecation also creates the risk of chain liquidations in times of stress (Infante, Press and Saravay, 2020).

[133] See Global Investor Group, 2019 report, “Collateral in 2020. Driving optimisation in an evolving ecosystem.”

Understanding the Australian collateral landscape

Before estimating potential benefits in certain segments of the Australian collateral market, it is worth understanding the magnitude and types of assets used to secure obligations. The majority of collateral in the Australian financial system is concentrated in repo and wholesale securities lending markets and collateral held at the two CCPs, ASX Clear and ASX Clear (Futures), as these infrastructures sit at the core of secured financing, clearing, and settlement.

Repo markets represent the primary venue for collateralised short-term funding, enabling both liquidity provision to participants and monetary policy transmission. CCPs, by contrast, act as systemically important entities, requiring large and stable pools of both cash and securities margin to support cleared derivatives and cash equity transactions. Additionally, securities lending and bilateral derivatives markets also mobilise collateral, and they often feed indirectly into repo and CCP collateral chains. As a result, repo transactions and CCP margin requirements together capture the bulk of high-quality collateral pledged in Australia, making them the most relevant segments for assessing efficiency gains from tokenisation and improved collateral mobility.

The types of assets pledged vary substantially across markets. For example,

- As of May 2025, the size of the repo market is $350 billion. The outstanding collateral in these transactions is comprised of 50% Australian government bonds, 24% semi-government securities and 26% of other eligible securities, i.e., non-government instruments, including bank bills and certificates of deposit, ADI debt, residential and commercial mortgage-backed securities (RMBS and CMBS), other ABS, non-ADI corporate AAA securities, as well as commercial paper (CP) and asset-backed commercial paper (ABCP).
- In centrally cleared derivatives markets, the primary collateral of the around $9 billion initial margin posted is cash (often exceeding 80% of pledged collateral), followed by bank-issued securities as non-cash collateral.

Quantifying potential efficiency improvements

Equity Securities Lending

Securities lending in Australia is conducted OTC via bilateral agreements. A lender (often via an agent) and a borrower agree on the loan terms (fee, duration, collateral). Both domestic and international borrowers must pre-lodge collateral (commonly 105% of the stock's value) prior to receiving the shares, ensuring security loans are fully over-collateralised.[134]

Acceptable collateral includes cash and high-quality securities (usually government bonds). During the loan, the borrower obtains title to the securities and can sell or deliver them (e.g., to settle a short sale), while the lender retains title to the collateral. When the loan is terminated, the borrower returns equivalent securities, and the lender releases the collateral. In Australia, the settlement of securities loans is facilitated through the ASX's CHESS batch settlement on T+2.[135]

Securities lending market data from DataLend indicates that average fees for most equity loans in Australia range from 35 to 95 basis points.[136] Securities lending data for 2017-2018 indicates an average lending fee of 60 bps or $162 million on a loan balance of approximately $27 billion.

Tokenisation can significantly increase the supply of collateral and lendable securities by allowing a broader range of investors, such as retail investors, to "stake" their shares and other securities to generate additional income.[137] Further, tokenisation can reduce agent lender and operational fees, as well as transaction and settlement costs, and reduce search frictions in

[134] See Securities Finance Times, May 03, 2024, "Country profiles: Australia" or Australian Securities Lending Association (ASLA) "About Securities Lending."

[135] See ASX May 02, 2024. "ASX CHESS Replacement. Business Design Working Group – T+1 for CHESS Replacement."

[136] See Securities Finance Times, May 03, 2024, "Country profiles: Australia."

[137] Staking refers to the process by which an asset holder temporarily pledges or locks up their assets (e.g., tokenised securities or digital representations of traditional financial instruments) in a smart contract or custodial arrangement to support specific market functions. In return, the asset holder typically earns a yield or staking reward.

the securities lending market. If these efficiency gains reduce the average lending fee by 20 bps (around 1/3), the potential annual cost saving is **$54 million per annum.**

Assuming that approximately $28 billion in collateral is lodged in Australian securities lending transactions (typically overcollateralized at 105% of the value of securities loaned) and that loans settle through the CHESS T+2 batch process, the requirement for pre-lodgement of collateral before delivery of securities results in collateral being immobilised for up to 2 days before it can be reused. With real-time settlement, this pre-funding window could be eliminated, releasing collateral sooner for reuse or reducing the duration for which funding is required. Hence, allowing immediate recourse of securities and reuse of collateral via atomic settlement could further reduce funding costs.[138]

Importantly, these inefficiencies are not unique to equity securities lending. Across a broad range of markets (including government bonds, money market instruments, and secured funding markets) the processes for sourcing, allocating, and pledging collateral remain highly manual and operationally intensive. In many institutions, these workflows are still executed through phone calls, email confirmations, and Bloomberg chat messages, rather than through automated systems or integrated collateral management platforms.

To illustrate the potential scale of these benefits, industry estimates provide a useful benchmark. Finteum reports that enabling real-time mobilisation and release of high-quality liquid assets through DLT-based intraday funding platforms can save a large bank up to USD 75 million per year by reducing idle collateral, minimising buffer requirements, and lowering operational overheads.[139]

Similarly, Finadium estimates that enhancing collateral mobility and visibility across institutions could unlock €7.3 billion in annual global cost savings in collateral operations.[140] Conservatively allocating these global economic gains to Australia, based on just 1% share of global financial market activity, implies potential **annual savings of around $110 million** from improved automation, intraday optimisation, and real-time collateral reuse.

Collateral eligibility premia

One of the main benefits of tokenisation is a potential increase in the utilisation of non-cash collateral in place of cash collateral.

This has two advantages:

1. First, pledging non-cash collateral removes the need to transform assets into cash through selling them or a repo transaction.
2. Second, the sequential settlement models and the involvement of several intermediaries (banks, brokers, CSDs, custodians) complicate the transfer of collateral.

Two examples of such underutilised assets are money market fund units and corporate bonds.[141]

[138] Since many securities lending transactions are facilitated via prime brokerage arrangements with heterogeneous fee structures, we do not attempt to quantify this benefit.

[139] See Finteum, August 8, 2023, “Global Banks Progressing towards Go-live on the Finteum Platform.”

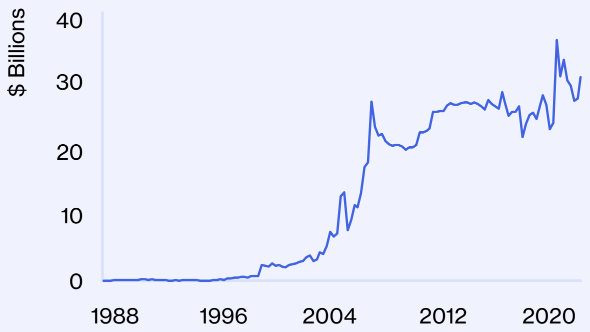
[140] See Finadium, June 15, 2023, “Expanding HQLAX’s digital registry value proposition for collateral mobilisation.”

[141] Other assets not currently considered as non-cash collateral are tokenised gold and tokenised emission certificates.

Case Study 1: Money Market Funds

Money market funds (MMFs) are an asset class that can be tokenised to increase the available supply of high-quality non-cash collateral.[142] Currently, money market fund units are not utilised as collateral at CCPs or in repo markets, even though uncleared margin rules in the US, under CFTC Regulation 23.156, do already permit "redeemable securities in a pooled investment fund" such as MMFs to be posted as initial margin.[143] The structural problem with posting MMFs as collateral is that these units are not easily pledged or transferred because ownership transfers must be conducted through the fund issuer or agent. Consequently, an investor who intends to use MMF units as collateral must usually redeem the units for cash. Tokenising MMFs can overcome this issue.

Figure 14: Australian money market funds [144]



If Australia's $30 billion in money market fund assets held in cash management trusts (Figure 14) were tokenised and made eligible as collateral for margin and settlement purposes, the resulting reduction in collateral funding costs would be substantial, as the yields on the MMFs could be passed through and the funding costs associated with the sourcing of cash could be eliminated.

Traditionally, institutions needing to post cash collateral either divert internal liquidity (incurring an opportunity cost), or fund it externally via repo markets, which imposes a spread between the repo rate and the return on eligible collateral. The repo rate used to source cash is currently 4.1%.[145] The relevant spread is the difference between the repo funding rate and, for example, the CCP's cash remuneration on cash collateral, which is currently about 35 bps.[146] If tokenisation enables institutions to post MMFs directly without liquidating them or converting them into cash via repos, they avoid both the need for external funding and the associated yield spread loss.

For example, Deribit (a derivatives crypto exchange) allows traders to post tokenised money market funds as margin in derivatives transactions, which has the advantage that participants can earn yield on the fund units and do not have to convert their MMFs into cash to post it as collateral.[147]

Under a conservative assumption that one-third of Australia's $30 billion MMF market could be tokenised and used in this way, the resulting reduction in funding costs would be approximately **$35 million per annum** ($10 billion × 0.35%).

[142] Several major financial institutions including Goldman Sachs, BNY Mellon, UBS, JPMorgan, Franklin Templeton, BlackRock, and WisdomTree alongside fintech innovators like Spiko, Ondo Finance, and Superstate, have launched tokenised MMFs.

[143] See CFTC, April 14, 2025, "CFTC Staff Issues Interpretation Regarding US Treasury Exchange-Traded Funds as Eligible Margin Collateral for Uncleared Swaps" (Release Number 9065-25).

[144] The assets under management data are sourced from the ABS ("Assets (held) in Australia, Equities, Units in trusts, Cash management trusts").

[145] The RBA publishes ESA and repo rates in its "Reserve Bank Information & Transfer System Information Facility."

[146] If the collateral taker does not have cash remuneration, the saving increases to the 4.1% repo rate.

[147] See Securitize, 18, Jun 2025, "BlackRock's BUIDL, Tokenized by Securitize, Accepted as Collateral on Crypto.com and Deribit."

Case Study 2: Corporate Bonds

Corporate bonds were used as non-cash collateral at ASX Clear (Futures) until September 2018. Notably, at the end of Q3 2015, 22% of the initial margin had been provided by pledging corporate bonds to the CCP. This illustrates that participants are willing to post corporate bonds as collateral. However, corporate bonds are not on the list of eligible collateral at ASX or ASX Clear (Futures). The main reasons why government bonds are preferred by collateral takers as non-cash collateral relative to corporate bonds are their higher liquidity and lower credit risk. Consequently, many repo and derivative agreements only accept HQLAs, which excludes corporate bonds.

Tokenisation could make corporate bonds more suitable as collateral, especially if tokenisation increases their liquidity, as suggested by multiple empirical studies (e.g., Leung, Wong, Ying, and Wan, 2023). Supporting this trajectory, the European Central Bank has announced that the Eurosystem will accept tokenised securities as eligible collateral for Eurosystem credit operations from 30 March 2026, signalling a material step towards embedding tokenised instruments within core liquidity and collateral frameworks.[148]

The Reserve Bank of Australia's expansion of eligible collateral in 2020 was a notable development, improving collateral usage for corporate bonds. In May 2020, amid COVID-19 market stress in fixed-income markets, the RBA broadened the range of corporate bonds it would accept in repurchase agreements from only AAA-rated to all investment-grade (BBB– or above).[149] This policy change added around $150 billion of corporate bonds to the pool of potentially eligible collateral for RBA liquidity operations.[150] The immediate impact was an increase in the corporate bond market's liquidity during the pandemic, as market participants valued the ability to pledge these bonds to the RBA for cash if needed, which made investors more willing to hold (and trade) them.

In essence, by expanding collateral eligibility, the RBA increased the attractiveness and liquidity of corporate bonds. This demonstrates how collateral policy can yield efficiency gains as it allowed banks and dealers to utilise corporate bond inventories without selling them, reducing fire-sale risk and funding costs for those bonds. Additionally, the additional demand for these bonds decreases illiquidity premia and reduces the yield spread between government bonds and eligible corporate bonds.[151]

Further evidence of the eligibility premium in Australia has been documented when the RBA made Australian state and territory government debt eligible in 1997; the spread between those assets and Australian Government debt subsequently narrowed from around 20 to 5 basis points. Using a difference-in-differences framework, Pelizzon, Riedel, Simon, and Subrahmanyam (2024) estimate the eligibility premium (i.e., the yield spread reduction for bonds upon inclusion in the Eurosystem's list of eligible collateral).[152] For the overall sample, the eligibility premium ranges from approximately 4.6 to 20.1 basis points, with the upper end observed for seasoned bonds, where eligibility status has a stronger impact on bond fungibility and demand. Additionally, a BIS (2015) survey shows that almost 70% of respondents view collateral eligibility policies as having a considerable impact on collateral market functioning.[153]

To estimate the potential economic impact of increasing the eligibility of Australian corporate bonds as non-cash collateral, we assume the $150 billion of bonds that the RBA included in the list of accepted collateral could be broadened to other markets, such as CCP or OTC initial margin requirements. Assuming an average eligibility premium of 10 bps, the corresponding yield spread reduction implies a relative valuation uplift of **$150 million (10 bps × $150 bn)**, reflecting an effective annual saving of 10 bps for the bond issuer.

[148] See ECB, January 27, 2026 press release, "ECB paves way for acceptance of DLT-based assets as eligible Eurosystem collateral."

[149] RBA, June 17, 2021 Bulletin, "Corporate Bonds in the Reserve Bank's Collateral Framework."

[150] Ibid.

[151] Ibid.

[152] See also Mésonnier, O'Donnell and Toutain (2022) and Van Bekkum, Gabarro and Irani (2018).

[153] BIS, 2015, "Central bank operating frameworks and collateral markets" (CGFS Paper, No 53).

Asset Issuance and Servicing

Tokenisation can reduce reliance on intermediaries (e.g., registrars, brokers, and custodians) in issuance, servicing, and redemption through an asset's lifecycle. For example, tokenised bonds can automate coupon payments and redemptions via smart contracts, reducing manual processing and reconciliation.

Pana and Gangal (2021) note that while DLT has the potential to lower intermediation throughout the asset lifecycle, adoption is slowed by barriers including limited technical understanding among executives, lack of platform standardisation, privacy constraints, and regulatory uncertainty. These frictions imply that, although cost reductions are technically feasible, realising them in practice requires parallel progress in education, standards, and legal frameworks.

Evidence from regulatory experimentation supports the scope for economic gains. In a study of the UK Financial Conduct Authority's regulatory sandbox, Cohen, Smith, Arulchandran, and Sehra (2018) show that blockchain-based issuance can simplify securities issuance by recording beneficial ownership directly on-chain, reducing contractual complexity and legal fees. At the same time, they caution that overly complex smart contracts can introduce new operational risks, including potentially irreversible coding vulnerabilities.

Similarly, Malamas, Dasaklis, Arakelian, and Chondrokoukis (2024) argue that smart contracts can improve traceability and auditability and simplify processes such as ownership recording and coupon processing, lowering ongoing servicing costs. They emphasise, however, that tokenisation does not eliminate broader legal and jurisdictional complexities.

Overall, the literature indicates meaningful potential for automation-driven cost reductions in the corporate bond lifecycle. We therefore proceed to estimate potential gains from tokenisation in the Australian corporate bond market.

Bond issuance in Australia currently costs approximately 245–301 basis points in the wholesale market and 504–578 basis points in the retail market.[154] These costs include syndicate fees, accounting and legal costs (e.g., due diligence), rating fees, roadshow expenses, and listing or registry fees.

Tokenisation can streamline the bond issuance process and reduce the costs significantly (see e.g., Tanveer, Ishaq, and Hoang, 2025). Goldman Sachs reports that its Digital Asset Platform ("GS DAP") achieved 15 basis points in cost savings on a €100 million digital bond issuance.[155] Assuming a similar effect from tokenising the Australian corporate bond market, which issued $69 billion in 2024 (a 20% increase from 2023), the potential annual savings could **equal around $104 million per year** ($69 billion × 0.15%).[156]

There are also significant ongoing costs associated with asset servicing.[157] For German corporate bonds, Cashlink and FinPlanet estimate servicing costs ranging from 35.8 to 79.1 basis points per year, depending on market structure and reliance on central securities depositories (CSDs). They further estimate that adopting DLT and smart contract automation could reduce servicing costs to just four basis points annually.

Assuming Australia's current servicing costs align with the lower bound of 35.8 basis points, and that implementing tokenised infrastructure alongside central bank digital currencies (CBDCs) reduces this to 4 bps, the annual cost saving would be 31.8 bps (35.8 bps – 4 bps). Applied to the Australian corporate bond market value of $144.2 billion in 2024, this translates to recurring savings of approximately $458.4 million per year ($144.2 billion × 0.318%).[158] If servicing costs are closer to the upper bound of 79.1 bps, the annual savings could reach **$1.1 billion** ($144,2 billion × (0.791% – 0.04%)).

[154] The "Corporations Amendment (Simple Corporate Bonds and Other Measures) Bill 2014," estimates the cost of a $500 million bond issue to the retail market. The costs differ only marginally on bonds above or below $500 million. The average bond issuance is from October 2021 "The Development of the Australian Corporate Bond Market: A Way Forward."

[155] Information on the GS digital platform is in Zoniqx, June 25, 2024, "How asset tokenization cuts costs and boosts returns."

[156] The size of the Australian corporate bond market is in NAB, May 30, 2024, "Australian bonds record start to 2024."

[157] See e.g., October 16, 2023, RBA Assistant Governor (Financial System) Brad Jones speech, "A Tokenised Future for the Australian Financial System?"

[158] Cashlink and FinPlanet December 2023, "Cost savings potential of DLT based capital market infrastructures – a quantitative analysis," estimate the savings from tokenizing corporate bonds at 79.1 to 4 bps (Scenario 2) and 35.8 to 4 bps if CBDCs have been introduced (Scenario 1), where central bank money reduces the initial level of intermediation (and cost base). S&P global website page "S&P Australia Investment Grade Corporate Bond Index" provides the market value of Australian corporate bonds (retrieved August 25, 2025) equal to $144,162.51 million.

Enabling Decentralised Financial Services

Automating manual processes in financial services has historically generated large economic gains. For example, robo-advisors have reduced reliance on human financial advisers, lowering operating costs and fees (Jung, Dorner, Glaser, and Morana, 2018).

Tokenisation has the potential to unlock analogous efficiencies in lending, borrowing, and investment intermediation by enabling decentralised financial services (DeFi) architectures. DeFi protocols have demonstrated, at scale, that it is feasible to conduct direct, peer-to-peer lending and borrowing against pooled liquidity without a central intermediary, using smart contracts to automate interest calculation, collateral management, margining, liquidation, and settlement.

In these systems, users supply funds to liquidity pools, and borrowers access those funds by posting collateral, with prices and risk parameters determined algorithmically. The absence of traditional intermediaries eliminates multiple layers of balance-sheet intermediation, manual credit processing, and back-office operations. As a result, operating costs are substantially lower than in conventional lending structures.

When applied to tokenised RWAs, these models enable collateralised lending, repo-style financing, and invoice financing to occur directly on-chain, extending DeFi-style efficiency gains to traditional asset classes.

To estimate these gains, we require estimates of the financial intermediation costs currently and what they could become if the assets were tokenised. As a proxy for the current costs, Philippon (2015) measures the efficiency of the financial system as the annual cost of financial intermediation over the total value of intermediated assets.[159] He finds that intermediation costs range from 1.5% to 2%.

We use a more conservative estimate from the RBA, which is specific to the Australian market. RBA estimate that financial intermediation services add around 1.4% to the household debt-servicing ratio.[160] Although the RBA estimate is from 2003 it should still be a good proxy today, as Philippon (2015) notes that efficiency remains relatively constant over time and the estimate is broadly in line with the estimates by Philippon (2015). We therefore set our estimate of intermediation costs in the current private debt market to 1.4%.

Disintermediated lending can decrease this cost. For example, Castro-Iragorri, Ramirez, and Vélez (2021) estimate that decentralised lending is significantly more efficient. Their evidence is from analysis of decentralised lending platforms such as Compound. Although the comparison to current lending markets is by no means a perfect one, it is informative about the approximate magnitude of potential gains. Contrasting their estimates of decentralised intermediation efficiency with the estimates from the Australian financial system, suggest a potential intermediation saving of 0.4% of the current 1.4%.

Excluding corporate bonds, the total value of private debt in Australia is $4.4 trillion. However, only a portion is collateralised lending and therefore suitable for decentralised lending. As a conservative proxy for that collateralise fraction, we take commercial real estate debt, which accounts for $401 billion of private debt.[161] Using the 0.4% efficiency improvement, the potential gains are approximately **$1.6 billion annually** ($401 billion × 0.4%).[162]

[159] As in Akerlof (1970), we can illustrate the concept using cars (as the assets class) and mechanics (as the intermediary): Cars require regular servicing (e.g., oil change), with expensive cars typically requiring service at more frequent intervals and increased costs (e.g., specialized mechanic). The "efficiency" of the car service can be thought of as the annual cost divided by the car value. Innovation (e.g., electric tools), could "drive" down intermediary costs and improve efficiency.

[160] See RBA "Box C: Measuring Household Debt Servicing Costs" in RBA, May Bulletin.

[161] See RBA, 2025, Australian Financial Accounts – Household Mortgages, D: Household Sector Excel sheet. Collateralized household mortgage debt ($3.226 trillion) calculated as the sum of the columns "Credit; Owner-occupier housing" (1,656.7 billion) and "Credit; Investor housing" (786.3 billion), representing the segment of private debt suitable for tokenisation.

[162] Data on commercial real estate lending is publicly available in APRA "Quarterly authorised deposit-taking institution statistics." We use "Total commercial property exposures of which: Exposures in Australia" (XLSX file: "Quarterly authorised deposit-taking institution property exposures statistics March 2025").

Another category of collateralised debt, invoice financing, has grown substantially in Australia, reaching $78.9 billion (in 2024). This allows businesses to use receivables as collateral. Tokenising invoice financing could potentially generate **$0.3 billion** in annual efficiency gains ($78.9 billion × 0.4%).[163] Other collateralised short-term lending markets (e.g., bridging loans and asset-backed business loans) could also be tokenised, but due to limited reliable data and their relatively small size, we exclude them from this analysis.

Beyond private lending, similar efficiency gains can be realised in collateralised short-term funding markets, particularly repurchase agreements (repos). Efficient repo markets are central to the functioning of most financial systems. They represent the primary source of short-term funding for a broad range of market participants and serve as a key transmission channel for monetary policy. Consequently, it is not surprising that the tokenised intraday repo market has gained substantial international adoption and is one of the first high-volume tokenised asset services.[164] Examples of tokenised repo platforms include Broadridge's and Fnality–HQLA's Distributed Ledger intraday repo market.[165]

A repo transaction involves the sale of a security combined with a simultaneous agreement to repurchase it at a specified future date (often the next day) reflecting the significant demand for overnight and other short-term liquidity.[166]

Real-world implementations of intraday repo markets, including emerging tokenised repo platforms now operating at scale, are examined in more detail in the "Global Progress in Digital Finance" section.

Government bonds are the most widely used asset as collateral in repo transactions. The Boston Consulting Group and Ripple estimate that tokenising collateral in repo markets could yield savings of USD 150–300 million per USD 100 billion of trading volume, primarily through faster settlement and improved operational efficiency.[167]

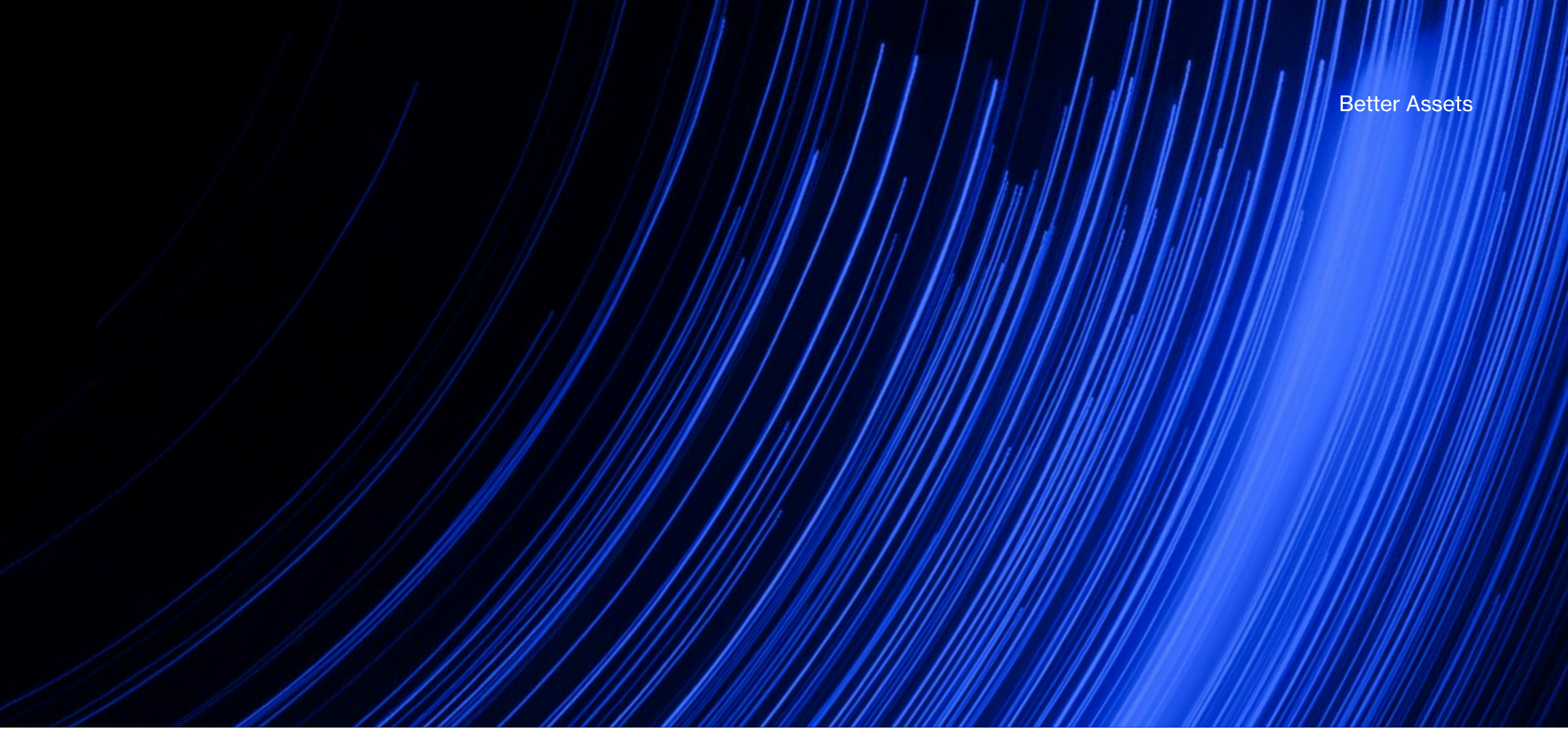
[163] See e.g., Corporate Factoring, 2024, "Current State of the Invoice Financing Market in Australia."

[164] See, for example, World Economic Forum, 2025, "Asset Tokenization in Financial Markets: The Next Generation of Value Exchange."

[165] Broadridge's solution is already processing intraday repos in the order of US$ 1 trillion each month. See Broadridge: "DLR Transacts $1 Trillion a Month."

[166] Repos can be open-ended or have a specified buy-back date of the security. RBA, March 2015, "Central Clearing of Repos in Australia: A Consultation Paper" reports that around 85% of Australian repo is contracted against "General Collateral 1" with a "typical" duration of less than 14 days.

[167] See BCG and Ripple, April 7, 2025 report, "Approaching the Tokenization Tipping Point."



Box C: Inefficiencies in Australia's repo markets

Market execution and post-trade workflows in bonds and repos remain heavily manual (phone, email, chat), dispersed across bilateral channels and multiple venues. The lack of a single, integrated platform for both trading and settlement creates reconciliation steps that elevate operational risk, slow straight-through processing, and increase back-office costs. To avoid fails against Austraclear cut-offs, participants often pre-borrow ("over-borrow") securities, which increases funding costs. Jointly, these inefficiencies increase the costs of repo transactions.

Tokenisation can facilitate more effective collateral utilisation in repurchase agreements by:

(i) Enabling real-time transfer and substitution of collateral under smart-contract–encoded eligibility schedules and haircuts;

(ii) Providing high-frequency records of ownership instead of manual reconciliation;

(iii) Improving interoperability across custodians and FMIs through common token standards that lower operational frictions; and

(iv) Portfolio- and cross-margining that nets risk across cash Treasuries, repo, futures, and interest-rate derivatives, an approach already adopted in the United States.[168]

Some of these inefficiencies have been documented in the recent consultation on centrally clearing bonds and repos in Australia.[169]

The Australian repo market (contracts outstanding) has expanded to approximately $350 billion, up from $200 billion in 2021.[170] Applying the estimate from BCG and Ripple to the Australian repo market suggests a potential saving of approximately **$525 million per annum.**

[168] See CME Group, July 7, 2025, "FAQ: CME-FICC Cross-Margining Arrangement expansion."

[169] See Table 6, "Aspects of the bond and repo market not functioning effectively" in Council of Financial Regulators 2025 report "Reassessing the Case for Central Clearing of Bonds and Repos in Australia: A Response to Consultation."

[170] See RBA, 18, July 2024 Bulletin, "The Australian Repo Market: A Short History and Recent Evolution.

Digital Embedded Compliance

Smart contracts enable compliance requirements, such as KYC, AML, and tax reporting, to be embedded directly into tokenised assets and tokenised asset services, rather than implemented through labour-intensive, ex-post processes.[171] For example, a digital asset's smart contract can restrict transfers to sanctioned entities, trigger tax reporting at settlement, or carry a reusable digital identity credential that streamlines KYC. Because these rules execute at the point of transaction, they reduce reliance on post-trade reconciliation, exception handling, and manual review.

Distributed ledgers also provide accurate, tamper-resistant, real-time transaction records. With appropriate permissioning, regulators can be granted direct visibility into relevant data, reducing both firms' compliance burdens and regulators' monitoring costs.

The academic literature highlights both the efficiency potential and governance considerations of automated compliance. Bamberger (2010) notes that technology can streamline regulatory processes and reduce human error, though poorly designed systems may obscure uncertainty or weaken accountability. Singireddy et al. (2021) show that digital ecosystems can enhance enforcement and ensure consistent compliance across transactions, enabling scale without proportional increases in compliance staffing. Alao, Dudu, Alonge, and Eze (2024) find that automation in financial reporting improves efficiency, accuracy, and scalability, provided systems are well integrated and supported by robust data management. Dombalagian (2016) cautions that automation should complement, not replace, professional judgment, underscoring the importance of human oversight alongside embedded controls.

On balance, the literature suggests that embedding compliance into transaction infrastructure can materially reduce resource costs while maintaining or improving regulatory effectiveness.

Aggregate compliance costs in the Australian financial system

The potential scale of these gains is large. Global financial crime compliance (FCC) costs are estimated at approximately $206 billion per year. In Australia, FCC costs rose to around $5.3 billion in 2023, driven mainly by higher labour expenses. Labour accounts for roughly 39% of total FCC costs, or about $2 billion annually.[172] The size of this manual cost base indicates substantial scope for efficiency gains from automating routine compliance checks and embedding rule-based controls into programmable assets and market infrastructure.

Grant Thornton reports that compliance-focused staff account, on average, for approximately 3% of total full-time-equivalent (FTE) employees across surveyed financial institutions. The share is higher for smaller entities. Personnel expenses represent around 50% of total operating costs.

For the four major Australian banks, operating expenses total approximately $44 billion per year, implying compliance labour costs of around $660 million annually ($44 billion × 50% × 3%). The major banks account for roughly 25% of total financial-sector revenue ($134 billion out of $525 billion). Scaling proportionally, this implies compliance labour costs of approximately $2.6 billion per year across the Australian financial sector.[173]

This estimate is broadly consistent with separate survey evidence indicating that Australia's financial crime compliance (FCC) costs were approximately $5.3 billion in 2023, with labour accounting for 39%, or around $2.0 billion annually. Given the close alignment of these independent estimates, we use their average as our baseline estimate of labour costs devoted to compliance: $2.3 billion per year.

[171] See e.g., industry reports "Tokenization: A digital-asset déjà vu" (McKinsey, 2023 report) and "Towards digital capital markets: How and why cutting-edge technologies can reshape global markets for the better" (UBS, 2025 report).

[172] See Lexis Nexis, 2023 reports, "Financial Crime Compliance in Australia" and "True Cost Of Financial Crime Compliance Study, 2023." The 53 survey Australian survey participants are from investment bank/securities firm (21%), insurance company (20%), retail bank (19%), wholesale/commercial bank (18%), asset management firm (14%), money service business (8%).

[173] Full year 2023 results for the big 4 are in KPMG November 2024 report, "Australian Big Four Banks: Full year 2024 results analysis" and Grant Thornton November 2018, "A case for proportionate regulation" includes percent values attributable to personnel expenses. The total revenue for the Australian finance sector equal "Finance in Australia - Market Research Report (2015-2030)."

Automation of regulatory monitoring

Almost two-thirds (62%) of survey respondents report spending between 1 and 7 hours per week tracking and analysing regulatory developments. A weighted average across responses equals 3.76 hours per week, or roughly 9% of a 40-hour work week. Deloitte reports that RegTech solutions can reduce time spent on operational risk and compliance processes by 30–50%. Using the lower bound of 30%, the implied annual saving from automating regulatory monitoring is approximately: $2.3 billion × 9% × 30% = $65 million per year.[174]

Automation of KYC monitoring

Know-your-customer (KYC) processes account for a large share of compliance costs. Estimates suggest KYC consumes 31–40% of total compliance budgets, and that 31–60% of KYC reviews require manual labour. Using conservative lower bounds, this implies manual KYC monitoring costs of approximately: $5.3 billion × 31% × 31% = $509 million per year.[175]

Many KYC tasks, such as monitoring transactional patterns, responding to trigger events, and updating client profiles, are well suited to rule-based automation using tokenised assets and embedded compliance logic. If automation allows 95% of manual KYC monitoring to be replaced (leaving only high-risk cases for human review), the implied potential saving is approximately: $509 million × 95% = $484 million per year.

Automation of KYC onboarding

A LexisNexis survey reports that Asia–Pacific institutions incur annual onboarding KYC costs in the ranges of USD 10k–$1m, $1m–$10m, and $10m–$125m, with 39%, 37%, and 50% of respondents in each category respectively identifying onboarding as a top operational challenge.[176] Using the lower bound of each range yields a conservative weighted average onboarding cost of approximately USD 5 million per institution per year. Multiplying by 53 Australian respondents implies total onboarding KYC costs of approximately USD 285 million ($444 million).

NetSet reports that blockchain-based KYC solutions can reduce onboarding time from 10 days to 4 days (a 60% reduction). Applying this reduction conservatively implies potential savings of approximately: USD 174 million per year ($267 million).

Failure to comply with KYC standards is costly. In 2018, an Australian bank agreed to pay a $700 million penalty for breaching anti-money laundering laws 53,750 times, including failure to report over $625 million in cash transactions through deposit machines. These compliance failures allowed criminals to exploit the system, prompting AUSTRAC to stress that such negligence puts the community at real risk.[177]

Aggregate compliance savings

Combining:

- Regulatory monitoring automation: $65 million
- KYC monitoring automation: $484 million
- KYC onboarding automation: $267 million

yields total estimated compliance-related savings of approximately $816 million per year.

[174] See, Thomson Reuters Regulatory Intelligence, "2023 Cost of Compliance: Regulatory burden poses operational challenges for compliance." See Financier Worldwide Magazine January 2022 article, "RegTech rising: a regulatory revolution" for estimates on the cost reduction.

[175] McKinsey, August 2019 article, "Making your KYC remediation efforts risk and value-based" puts the proportion of high-risk AML customers to 0 and 5 percent. We assume the same for other infringements.

[176] Lexis Nexis, November 2023 study, "True Cost Of Financial Compliance Study, Asia Pacific" (page 12) reports that onboarding is a top challenge for 39% of small spenders ($10,000–$1 million), 37% of medium spenders ($1 million–$10 million), and 50% of large spenders ($10 million–$125 million). Out of all 1,181 survey respondents, Australia Edition reports 53 submissions from Australia. We estimate the response weighted average of the lower bounds and multiply it with the number of survey responses from Australia: 53 × (39% × $100,000 + 37% × $1 mn + 50% × $10 mn) = USD 285.

[177] See AUSTRAC, June 4, 2018 media release.

Fractionalisation

Tokenisation is best viewed as an additional mechanism for achieving fractionalisation, particularly for asset classes characterised by large unit sizes and high minimum investment thresholds. Infrastructure, private credit, and certain real assets remain largely inaccessible to smaller investors. In these cases, tokenisation can provide a new pathway to divide ownership into more granular, investable units.

Traditional financial markets already employ several forms of fractionalisation. Equities can be split into smaller share units (stock splits), diversified portfolios are fractionalised through collective vehicles such as ETFs, and real estate and infrastructure are commonly accessed via REITs and infrastructure investment trusts.

Fractionalisation in equity markets predates electronic trading. Lakonishok and Lev (1987) document that nearly one-fifth of NYSE-listed stocks split at least once between 1921 and 1930. The literature identifies two primary motivations for stock splits: information signalling and liquidity enhancement (Muscarella and Vetsuypens, 1995). McNichols and Dravid (1990) argue that splits signal positive future earnings, implying that valuation effects reflect expectations rather than improved accessibility.[178] By contrast, Muscarella and Vetsuypens (1994) find that liquidity and returns increase following splits.[179]

By reducing share prices to a "normal" trading range, stock splits may broaden investor participation (Lakonishok and Lev, 1987), attract uninformed trading, reduce liquidity risk, and lower the cost of capital (Lin, Singh, and Yu, 2009). However, other studies note offsetting effects: Schultz (2000) finds that splits can increase relative tick size, benefiting market makers and raising trading costs. Evidence on returns is similarly mixed. Some studies report positive abnormal returns following splits (Desai and Jain, 1997), others find negligible long-run effects (Byun and Rozeff, 2003), and some report negative abnormal returns (Conroy, Harris, and Benet, 1990).

Comparable patterns appear in real assets. In REIT markets, stock splits increase liquidity, but primarily in the short term (Huang, Liano, and Pan, 2011). Chan, Chen, and Wang (2013) find weak medium-term performance following initial REIT listings. More broadly, Duffy, Friedman, Rabanal, and Rud (2025) show that inclusion in ETFs is associated with valuation premia, while Chang, Hong, and Liskovich (2015) document positive price effects from ETF additions and negative effects from deletions.

Taken together, the literature suggests that fractionalisation can broaden investor access and improve liquidity, though effects on prices and returns are heterogeneous and context-dependent. Tokenisation is therefore unlikely to generate large gains in asset classes that are already highly fractionalised (such as listed equities) but may deliver meaningful benefits in less accessible asset classes, including infrastructure, private credit, and certain real assets. We focus our estimation of fractionalisation-related gains on these segments.

For example, although the REIT listing process is costly, it substantially broadens the investor base to include smaller investors (Brounen and De Koning, 2012; Liu and Chen, 2025). Tokenisation could potentially "unlock" similar access benefits in other assets at significantly lower cost by enabling fractional ownership without requiring full public-market listing.

A particularly relevant application is infrastructure investment. While a small number of listed infrastructure vehicles exist (e.g., the Macquarie International Infrastructure Fund in Asia), they remain modest relative to the size of global infrastructure markets. One reason infrastructure has struggled to mature as a distinct, widely accessible asset class is its high heterogeneity. Projects differ widely in contractual structures, regulatory regimes, cash-flow profiles, and data availability. This fragmentation limits standardisation and investor participation.

[178] Brennan and Copeland (1988) argue that using stock splits as a signalling mechanism is costly to existing shareholders, who may hold an odd lot of shares (not a multiple of 100) which are harder to sell.

[179] Their choice of ADRs to separate the "liquidity story" from the "signaling story" is clever. An American Depositary Receipt (ADR) trade on the US market and represents a claim on shares in a foreign company. Usually, when the foreign stock splits, its ADR also splits. But sometimes ADRs split without the foreign stock doing so (an "ADR solo split"). In these cases, the split decision is made independently of the foreign company, removing any signaling motive. Any price effect can therefore be attributed to improved liquidity.

Tokenisation, by enabling standardised, fractional ownership and programmable cash-flow rights, could help lower entry barriers and broaden investor access. Evidence from equity markets suggests that greater accessibility can reduce firms' cost of capital. Lin, Singh, and Yu (2009) estimate that stock splits lower the cost of capital by approximately 2.42%. As an illustrative upper bound, if tokenisation were to generate comparable cost-of-capital reductions for infrastructure assets, the $48 billion in private infrastructure deals completed in Australia in 2024 alone would imply a potential value unlock of over **$1.16 billion per year.**[180]

We do not include this estimate in the report's aggregate economic gain totals. The reason is that the calculation relies on a strong extrapolation from listed equity markets (stock splits) to infrastructure assets, and the mechanism (lower cost of capital via broader investor participation) depends on behavioural and market-structure responses that are uncertain at this stage. Infrastructure funds differ from listed equities in important respects, including governance structures, investment horizons, liquidity, and risk profiles. Empirically, infrastructure funds have tended to underperform public markets and exhibit volatility comparable to private equity investments. This suggests that a broader investor base may not necessarily choose to invest, even if tokenisation improves accessibility.[181]

Accordingly, we treat fractionalisation-driven cost-of-capital effects as a potential upside rather than a base-case gain. To remain conservative and to avoid overstating benefits, we include in the headline totals only those gains that are more directly attributable to tokenisation and can be anchored to observable cost bases or well-established empirical analogues (e.g., automation of issuance/servicing, collateral efficiency, and compliance cost reductions).

[180] See Preqin and the Australian Investment Council "Australian Private Capital 2025 Yearbook: A Calm Port in a Wild Storm" for statistics on Australian infrastructure investments and BIS "Understanding the challenges for infrastructure finance" for an overview of the challenges.

[181] See e.g., Andonov, Kräussl, and Rauh (2021).

Transparency

Transparency is often cited as a benefit of tokenisation, particularly where ownership, cash flows, and transactions are recorded in a structured, machine-readable form. In principle, greater transparency can improve price discovery, reduce information asymmetries, lower the cost of capital, and support regulatory oversight. In practice, however, the economic value of transparency improvements is highly context dependent and varies significantly across asset classes.

In already transparent markets, such as public equities, tokenisation is unlikely to deliver meaningful incremental transparency-related benefits. Continuous disclosure obligations, consolidated market data, and trade reporting regimes already provide extensive visibility of market activity. Moreover, market microstructure research shows that additional transparency can sometimes be harmful to market quality by decreasing incentives for information acquisition and analysis or reducing liquidity by discouraging risk-bearing by intermediaries. In these markets, transparency is therefore not a primary source of tokenisation-driven gains.

By contrast, several important Australian markets remain structurally opaque. These include segments of the corporate bond market, private credit, bank bills, term deposits, and private equity. In these markets, limited price discovery, infrequent reporting, and heterogeneous valuation practices create material information asymmetries between issuers, investors, and regulators. These are precisely the settings in which improved transparency has the greatest potential to generate economic value.

Empirical evidence from bond markets illustrates the magnitude of these effects. For example, Bessembinder, Maxwell, and Venkataraman (2006) show that public transaction reporting through TRACE cut execution costs by around 50% for eligible corporate bonds, with spillover benefits to non-eligible bonds, while Pagano and Röell (1996) find that greater transparency generally lowers trading costs for uninformed traders. Several other studies document a range of effects of increased transparency in bond markets.[182]

Overall, these studies point to a nuanced conclusion: the impact of transparency is shaped less by its existence alone than by the market structure, incentives, and information environment in which it operates. The most promising gains are likely in markets where information asymmetries remain high (e.g., corporate bonds and private equity).

Brugler, Comerton-Forde, and Martin (2022) estimate that TRACE reduced yield spreads by around 14 basis points, equivalent to a 1.1% increase in bond prices. Applied to Australia's $69 billion in annual corporate bond issuance, this implies a potential value uplift of approximately **$759 million.**[183]

Private markets present an even starker transparency gap. Private equity valuations rely on infrequent reporting, bespoke methodologies, and limited external verification, creating uncertainty for investors and regulators.[184] While studies of listed private equity firms show large valuation and return effects following listing, these estimates likely capture multiple mechanisms beyond transparency alone (including liquidity and investor base expansion) and therefore risk overstating the gains attributable purely to improved information.[185]

To remain conservative, we anchor our estimates instead to a well-identified transparency shock: the introduction of machine-readable financial reporting via XBRL (or "eXtensible Business Reporting Language") in public equity markets. XBRL does not change underlying assets or market structure; it improves transparency by standardising disclosures, reducing information-processing costs, and enabling automated

[182] Di Maggio and Pagano (2018) and Kaya and Roy (2024) argue that the welfare effects of transparency depend heavily on underlying market conditions (e.g., bargaining power, investor sophistication, expected asset quality, and the degree of buyer competition) so that the same disclosure rules can help in some contexts and harm in others. Bessembinder and Maxwell (2008) and Asquith, Covert, and Pathak (2013) likewise find that greater transparency, while lowering trading costs, can also reduce dealer services or sharply curtail trading activity, particularly in high-yield bonds.

[183] See NAB, May 30, 2024, "Australian bonds record start to 2024."

[184] ASIC, February 2025 discussion paper, "Australia's evolving capital markets: A discussion paper on the dynamics between public and private markets" provides and in-depth overview of Australian private markets.

[185] For example, Goktan and Muslu (2018) estimate substantial buy-and-hold abnormal returns (BHAR) of around 5% when private equity firms become listed.

analysis by investors and regulators. This makes it a close analogue to one of the core transparency channels of tokenisation, namely the transformation of financial information into structured, programmable, and verifiable data.

Empirical studies find that XBRL adoption reduced firms' cost of capital by approximately 0.4% on average and up to 1.4% for smaller firms, which tend to face greater information frictions. Because private equity portfolios are dominated by smaller, less transparent firms, we use the upper bound (1.4%) as a benchmark for potential transparency gains. Applying this conservatively to the $11.7 billion raised annually by Australian private equity funds implies potential annual gains of approximately **$164 million** ($11.7 billion × 1.4%).[186]

Two further features make this benchmark for the estimation conservative. First, XBRL adoption was voluntary, meaning estimated effects reflect only partial market uptake, similar to the expected adoption path for tokenisation in private markets. Second, public equity markets were already far more transparent than private markets prior to XBRL, suggesting that the estimated effects likely understate the potential gains from transparency improvements in private assets.

Finally, transparency also has important, though harder-to-quantify, financial stability and supervisory benefits. Opaque private markets can obscure leverage, valuation practices, conflicts of interest, and interconnections with the broader financial system. While these risks are not directly monetised in our estimates, improved transparency through tokenisation could materially enhance regulators' ability to monitor systemic risk and market integrity.[187]

Taken together, transparency is not a universal benefit of tokenisation, nor is it always welfare-enhancing. Its economic value depends critically on market structure and existing information regimes. The largest and most robust transparency-related gains are likely to arise in opaque debt and private markets, where tokenisation can materially reduce information frictions rather than duplicate already-effective disclosure frameworks.

[186] See the effects of XBRL on the cost of capital in Li, Lin, and Ni (2012).

[187] IOSCO, September 2023, "Thematic Analysis: Emerging Risks in Private Finance," notes that intransparency in private equity markets could jeopardize availability of information (e.g., valuations and conflicts of interest) that regulators and investors rely on to assess risks. This, combined with the sectors links to the broader economy, could have wider impacts.

Efficient Digital Store of Value

A core function of the financial system is to provide reliable ways to store value over time (Merton, 1995). Traditionally, this function has been served by physical cash, commercial bank deposits, government securities, and certain commodities such as gold. Each of these assets entails trade-offs between safety, liquidity, yield, and operational cost.

This section considers whether tokenisation or digitally native assets can materially improve the efficiency of this store-of-value function relative to existing instruments. In contrast to payments, markets, or collateral management, where frictions are large and measurable, the scope for efficiency gains in stores of value is more limited and highly dependent on asset design.

Tokenised gold and physical stores of value

Gold is a canonical store of value but entails non-trivial custody, insurance, and verification costs. For example, the RBA stores most of its gold at the Bank of England, incurring annual storage fees and periodic physical audits. While these costs are modest at the sovereign level, they can be considerable for private holders and intermediaries.

The Bank charges approximately £3.50 per bar annually, which equates to a storage cost of £102,200 for 100 tonnes of gold. Given the RBA's gold reserve of 80 tonnes, the annual storage cost amounts to £81,760, **or approximately $168,000 annually**.[190] Another cost associated with holding physical gold is verification, but those costs are also not significant for a large sovereign holder. For example, RBA's verification costs, to a rough approximation could be approximately **$134,855 every five years.**[191]

Tokenised gold products provide operational conveniences such as fractional ownership, easier transfer, and 24/7 accessibility. But they do not eliminate the core economic costs of physical storage, insurance, and audit. The underlying bullion must still be held, safeguarded, and periodically verified. As a result, tokenisation primarily redistributes convenience rather than generating material net economic gains in the store-of-value function itself.

Although tokenisation allows for ownership in smaller increments as small as a millionth of a troy ounce (far more granular than gold ETFs), investors may not require fractionalisation at such high levels. For example, Globa- X Gold Bullion ETF (which represents 1/10th of a troy ounce of gold) sees only about 9% of trades involving a single unit. Similarly, Global X Physical Gold Structured which represents even smaller portions of gold per unit (1/100th of an ounce) sees just 5% of trades at the one-unit level. This suggests that even though small denominations of gold are available, the majority of trade is in higher denominations.[192]

Cryptocurrencies as "digital gold"?

Digitally native crypto-assets such as Bitcoin are often described as "digital gold" due to their scarcity, divisibility, and resistance to debasement. Unlike tokenised physical assets, they do not require custody

[190] The BOE gold holdings are in StoneXBullion, October 18, 2024 blog "How Much Gold is Kept in the Bank of England?"

[191] Assuming an audit cycle of around 4.5 years (see the RBA "Gold Audit Summary Report June 2022" web page. The RBA audit frequency is consistent with the (planned) five-year auditing frequency for the American gold reserve (see "The Gold Reserve Transparency Act of 2025"). In 2022, auditors randomly selected 450 bars, or 8.55% of the RBA's total holdings, for inspection. RBA July 31, 2025, "Gold Verification Audit Report" includes extensive information on the most recent audit of Australian gold reserves Bank of England (in June 2025). While there are no publicly available records of the RBA's gold verification costs, estimates from major US custodians, such as the Federal Reserve and Fort Knox, offer a useful benchmark. According to public accounts, a full audit of the gold stored at Fort Knox would take at least 18 months and require 20 personnel equipped with precision instruments. At the Federal Reserve Bank of New York, gold handling requires the presence of a three-person team: two vault staff and one internal auditor. Salaries at the Fed range from USD 36,500 to 295,200, average of $258.648 (USD 165,850). Using these salary and time estimates, the total labour cost for a full audit at Fort Knox would be approximately $7.8 million (20 personnel × 1.5 years × $58,648), or about $21.07 per gold bar. See: JM Bullion June 6, 2025 article "Can Fort Knox Be Audited? Here's How Long It Could Potentially Take" includes estimations on the resources (e.g., man hours) required to audit Fort Knox. Salaries for Federal Reserve employees is the FED website (see "2025 FR Salary Structure").

[192] We download 2024 daily volume data from TRHT for Global X Gold Bullion ETF (GXLD) and Global X Gold Bullion ETF (GXLD). Overall investment in both ETFs are high with mean (median) trade size equal to 454 (60) for GXLD and 367 (57) for GOLD.

of an underlying object and therefore avoid storage and verification costs entirely.

However, from a financial-stability and store-of-value perspective, cryptocurrencies do not currently meet the characteristics of high-quality liquid assets (HQLA).[193] Currently, Bitcoin currently does meet these criteria (e.g., Smales, 2019). Compared to gold, bitcoin is four times more volatile and 90 times less liquid.[194] The bitcoin blockchain can also become congested in times of market stress.

Accordingly, while cryptocurrencies may serve speculative or diversification purposes for some investors, they do not presently provide a superior store-of-value function at a system level.

High-quality liquid assets and government securities

Government securities and central bank balances already serve as highly efficient stores of value, particularly for institutional participants. In Australia, HQLA includes balances held at the RBA and Australian Government Securities (AGS) such as Australian government and semi-government bonds, valued at approximately $1.3 trillion.[195]

While tokenisation could theoretically enable 24/7 retail access to Australian Government Securities, retail participation in this market is currently minimal.[196] Institutional investors already enjoy deep liquidity via OTC markets, and retail demand is largely met through bank deposits, cash products, and bond ETFs.

As a result, tokenising government securities primarily generates economic value through collateral use or settlement efficiency, these gains are captured elsewhere in this report (e.g., gains associated with more efficient repos, and more efficient markets for HQLA securities).

CBDC and stablecoins as stores of value

General-purpose CBDCs, stablecoins, and commercial bank deposit tokens could, in principle, function as digital stores of value. However, their economic attractiveness depends critically on design choices, policy, and regulation, particularly whether they pay interest and the breadth of access.

Non-interest-bearing CBDCs are unlikely to displace deposits or securities as stores of value. Interest-bearing CBDCs could materially disrupt bank funding models and potentially amplify run dynamics. These trade-offs place clear limits on their role as value stores.

Stablecoins could, in principle, reduce certain types of payment fraud relative to card-based systems. Fraud on Australian-issued cards rose to $351 million in 2023 (up 12%), equivalent to 77.6 cents per $1,000 spent, with a substantial share occurring in card-not-present (CNP) transactions such as online, mobile, and in-app payments.[197] These fraud losses largely stem from the repeated exposure and storage of sensitive card credentials (particularly the Primary Account Number, PAN) across merchants, payment processors, and intermediaries. Once compromised, PANs can be reused across multiple transactions and platforms.

Tokenisation of card payments directly addresses this vulnerability by replacing the PAN with a unique, merchant- or device-specific token that is meaningless if intercepted.[198] Reflecting this, the RBA has issued explicit expectations encouraging card tokenisation to reduce systemic fraud risk.[199] Industry evidence

[193] Definition of HQLA is in Basel Committee December 15, 2019, "LCR Liquidity Coverage Ratio LCR30 High-quality liquid assets." HQLA must demonstrate liquidity, even under stressed market conditions.

[194] Estimates are from World Gold Council, August 16, 2024, “Why bitcoin isn’t the new gold” (volatility), State Street, July 24, 2024, “Bitcoin: The New Gold?” (liquidity), Morningstar Jul 23, 2025, “Digging for Gold With ETFs” (gold fees), and “Average transaction fee” from Token terminal (bitcoin fees).

[195] The size of the Australian bond market is in September 2023 Bulletin, “Measuring Government Bond Turnover in Australia Using Austraclear Data?” APRA defines HQLA as “cash, balances held with the Reserve Bank of Australia, and Australian Government and semi government securities.” in their July 14, 2016 media release, “APRA confirms its definition of high-quality liquid assets for the Liquidity Coverage Ratio requirement.”

[196] Direct retail ownership via the RBA’s retail facility ended in 2013, and since then, retail access is limited to indirect vehicles such as managed funds or Exchange-Traded AGS (eAGBs), of which only $200 million is currently on issue. This suggests small retail demand for direct AGS, possibly because of access to bank deposits and fixed income/cash ETFs. See e.g., January 2020 (Issue 3) Australian Office of Financial Management (AOFM) Investor Insights.

[197] See Australian payment fraud statistics (in November 19, 2024) Australian payments network “FY24 card fraud snapshot.”

[198] Note that tokenisation in card payments differs from how we define tokenisation in this report (creating a digital token on a distributed ledger to represent ownership). In card payments, tokenisation simply replaces the PAN with a unique 16-digit number that is meaningless if intercepted (see e.g., Visa March 1, 2023, page “What is Tokenisation?”).

[199] See e.g., “Expectations for Tokenisation of Payment Cards and Storage of PANs” page on the RBA’s website.

supports this mechanism: Visa reports that tokenised card payments reduce CNP fraud by up to 28%.[200] Applied mechanically to current Australian card fraud levels, this implies potential savings of around **$98 million per year** (28% × $351 million).

While stablecoins do not rely on tokenised PANs, they share a key fraud-mitigating property: payments can be executed without revealing reusable personal payment credentials to merchants. In this sense, stablecoin payments could plausibly achieve fraud reductions of a similar order of magnitude in CNP environments, particularly for online commerce.

However, stablecoins also introduce distinct and potentially significant fraud risks, primarily associated with private-key compromise. Unlike card fraud, where liability is often borne by issuers and losses can be reversed, stablecoin transactions are typically irreversible once authorised. Control of funds rests with the private key, which functions as a master credential granting unrestricted access to the wallet.

Evidence from crypto markets provides a useful benchmark for this risk.[201] Of the approximately USD 3.4 trillion global crypto market capitalisation, around 22% (USD 748 billion) is held in hot wallets – assets continuously connected to the internet and therefore exposed to hacking and phishing.[2025] In 2024, total crypto theft amounted to roughly USD 2.2 billion, with 43.8% attributable to private-key theft.[203] This implies an average monthly loss rate of approximately 0.011% of assets held in hot wallets.

If Australians were to hold stablecoins in hot wallets for everyday transactions, a comparable loss rate provides an illustrative benchmark for potential exposure. Total monthly household spending in Australia is approximately $74.8 billion, which serves as a reasonable proxy for the balances held in transaction accounts at any given time.[204] Applying the crypto-market loss rate of 0.011% to this balance implies potential losses of around $8.1 million per month, or $96 million per year.

Taken together, these estimates illustrate a central trade-off. Stablecoins could meaningfully reduce certain forms of payment fraud, particularly credential-based card fraud, by eliminating reusable payment information. At the same time, they introduce new vulnerabilities associated with private-key management that do not exist in conventional banking systems and for which consumer protections are weaker.

From an economic perspective, this suggests that fraud-related gains from stablecoins are ambiguous and highly design-dependent. Well-designed custody models, hardware wallets, social recovery mechanisms, and regulated intermediaries could substantially mitigate private-key risks. Absent such safeguards, fraud losses could offset or exceed the reductions achieved relative to card-based systems.

Summary: limited net gains from store-of-value innovation

Overall, Digital Finance delivers limited net economic gains in the store-of-value function relative to other parts of the financial system. Tokenisation improves convenience, access, and portability, but it does not materially reduce the fundamental economic costs or risks associated with storing value. In some cases, it introduces new operational vulnerabilities that offset potential benefits. For this reason, improvements to stores of value are not a primary contributor to the aggregate economic gains estimated in this report.

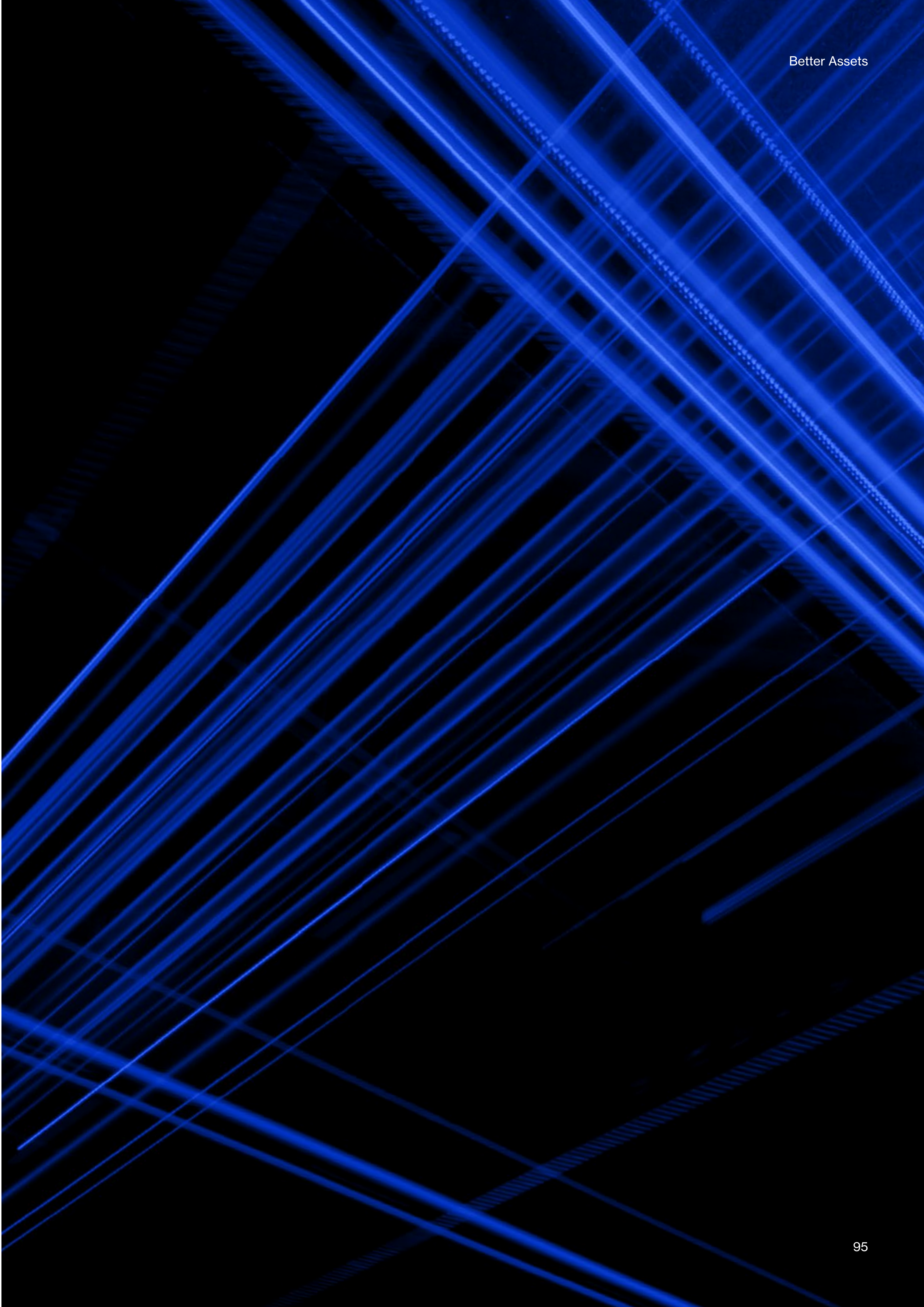
[200] Statistics on payments fraud is available in Australian Payments Network, November 19, 2024, "FY24 card fraud snapshot." Visa Acceptance Solutions provides statistics about their "Token Management Service" on their website.

[201] See e.g., Nguyen and Putnins (2023).

[202] CryptoSlate, December 27, 2022, article "450K BTC moved to cold storage in 2022" reports that 78% of the circulating BTC supply is held in cold storage.

[203] Chainalysis reports that $2.2 billion was stolen from crypto platforms in 2024 with almost half (or 43.8%) from "compromised private keys" in December 19 2024 article "$2.2 Billion Stolen from Crypto Platforms in 2024, but Hacked Volumes Stagnate Toward Year-End as DPRK Slows Activity Post-July." The total crypto market capitalization as of 2024 Q4 is in January 23, 2025 "2024 Annual Crypto Industry Report."f Statistics "Monthly Household Spending Indicator," reports that Australian household spending.

[204] Australian Bureau of Statistics "Monthly Household Spending Indicator," reports that Australian household spending.



Economic Gains at the 2030 Horizon

07

$E_i = M_i \times C_{\$i} \times C_{\Delta i}$
Estimation of the "speed" of tokenisation

Step 3

The potential economic gains from Digital Finance estimated in this report are forward-looking. They represent the value that could be created if assets, payments, and markets were transformed through tokenisation and related digital infrastructure. In practice, however, adoption will be gradual. Therefore, the economic gains that can be realised by 2030 depend critically on how quickly Digital Finance innovation is adopted in different parts of the financial system.

This section translates the long-run potential economic gains into realistic, near-term economic impacts by explicitly accounting for adoption dynamics. Rather than assuming full adoption, we project the fraction of assets, markets, and payment flows that are likely to be tokenised by 2030 and scale the estimated gains accordingly. This produces a more conservative and policy-relevant estimate of the economic benefits Australia could plausibly realise over the next five years.

To derive 2030 gains across conservative, base-case, and optimistic scenarios, we apply the following estimation strategy:

1. Measure the relative progress of tokenisation across different asset classes,
2. Adjust for the size of the Australian market,
3. Estimate global tokenisation rates by 2030 in conservative, base-case, and optimistic scenarios,
4. Project forward the tokenisation rates per asset class in Australia by 2030,
5. Scale economic gains by the estimated 2030 tokenisation rates.

Applying this approach implies estimated annual economic gains in Australia from Digital Finance innovation by 2030 are:

- **$0.4 billion** (conservative)
- **$1.1 billion** (base-case)
- **$1.8 billion** (optimistic).

The rest of this section provides the detail of each step, resulting in these estimates.

Step 1. Measure the relative progress of tokenisation across different asset classes

To inform projections of future tokenisation, we first assess current progress in tokenisation using two complementary measures:

1. **Platform-based adoption –** the share of active market platforms that currently support tokenisation for a given asset class.
2. **Market-value-based adoption –** the share of total market value that has already been tokenised or is being processed on tokenised infrastructure.[205]

Each measure captures a different dimension of progress. Platform counts reflect breadth of experimentation and ecosystem engagement, but treat all projects as equally important regardless of scale. Market-value measures capture where economically significant activity is occurring, but can overstate progress if adoption is concentrated in a small number of early or pilot initiatives.

To balance these biases, we take the average of the two measures as our baseline indicator of current adoption for each asset class.

For example, only around 7% of identified platforms currently support tokenised foreign exchange. However, those platforms account for more than 60% of tokenised market value. Relying on either metric alone would be misleading. Taking their average yields an estimated FX share of current global tokenisation activity of around 31%, which better reflects both experimentation and economic relevance.

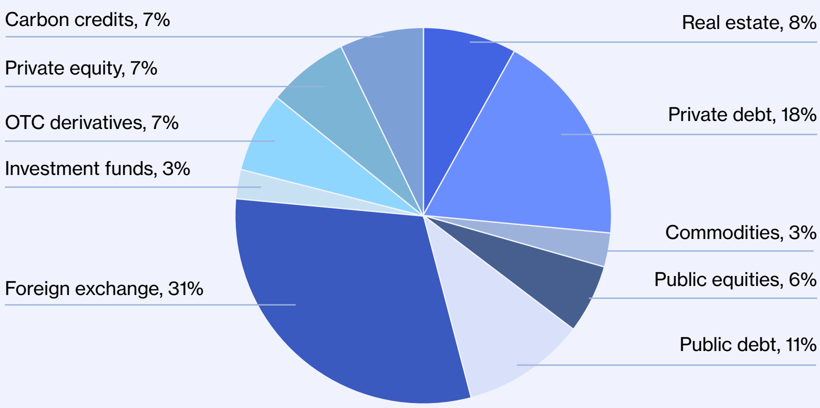
Figure 15 illustrates the relative distribution of current tokenisation activity across asset classes, based on the composite adoption indicator described above. Each slice represents an asset class's share of total observed tokenisation progress.

Step 2. Adjust for the size of the Australian market

While Figure 15 provides a useful snapshot of where tokenisation activity is currently concentrated, it does not account for differences in market size, which strongly influence both the pace of adoption and the economic significance of tokenisation.

Smaller asset classes can exhibit relatively high levels of tokenisation activity without contributing materially to aggregate economic impact. For example, carbon credits show a higher share of current tokenisation activity than equities or investment funds, but the underlying market is small and therefore unlikely to drive large economy-wide gains.

Figure 15: Distribution of current tokenisation activity by asset class



[205] The estimations follow the same approach as Baltais, Karlsen, Putnins, and Sondore (2024) using global data to estimate progress. For the "tokenized market value" we use the May 2025, "Total RWA value" available on rwa.xyz with a couple of exceptions–for foreign exchange we use the market value of USDC and for OTC we use the market value of the top 10 derivatives coins (available on CoinGecko). For the "Institutional Alternative Funds" category on rwa.xyz (around $517 million), we assume an equal split between private equity and investment funds. For tokenised carbon we use the Plume Network's partnership with Maseer to put $200 mn carbon on-chain.

To account for this, we construct a size-adjusted allocation measure for each asset class. Specifically, we multiply each asset class's share of current tokenisation activity by its market value. The resulting measure, denoted $C_{\Delta i}$ (unscaled), is an interim variable that captures relative tokenisation momentum adjusted for economic size. Its purpose is as a weight to distribute future aggregate tokenisation projections (in dollars) across asset classes in a way that reflects both observed early adoption patterns and asset class size.

Step 3. Estimate global tokenisation rates by 2030

Most experts expect tokenised assets to grow exponentially in the coming decade as the technology and market infrastructure mature. Panel A of Figure 16 illustrates how various analyses predict a sharp rise in the proportion and dollar value of assets tokenised by 2030.

Starting from the most conservative estimates, according to McKinsey (2024), the total tokenised market capitalisation is projected to reach around USD 2 trillion by 2030 (range between USD 1-4 trillion), excluding cryptocurrencies and stablecoins.[206]

Citi GPS (2023) forecasts that tokenisation of securities (i.e., tradable financial instruments) could reach between USD 4-5 trillion by 2030. The report also anticipates around USD 5 trillion in CBDCs.[207]

The BCG and Ripple (2025) report projects tokenised RWAs (including stablecoins) to grow from USD 0.6 trillion in 2025 to USD 18.9 trillion by 2033, a 53% CAGR, with a range of USD 12.5–23.4 trillion across conservative and optimistic scenarios.[208] By 2030, tokenised asset values are expected to exceed USD 9–10 trillion, driven by institutional adoption, regulatory clarity, and enterprise-grade infrastructure.

According to estimates from Roland Berger (2024),[209] tokenisation of RWAs is projected to reach approximately USD 10.9 trillion by 2030. HSBC and Northern Trust (2023)[210] anticipate that by 2030, approximately 5–10% of all global assets will exist in digitally tokenised form.

A report by BCG and ADDX (2022)[211] forecasts that tokenised assets could reach around USD 16 trillion by 2030 (roughly 10% of global GDP) implying a 50-fold increase from 2022 levels. This estimate is positioned as a "highly conservative forecast", with a best-case scenario of USD 68 trillion if regulatory maturity and market adoption accelerate. These estimates are broadly in line with DFCRC projections.

Others have issued even more optimistic projections. Standard Chartered Bank (2024)[212] predicts that the tokenisation market could grow to about USD 30 trillion in the early 2030s.

Panel B of Figure 16 makes these projections comparable by expressing the expected value of tokenised assets as a proportion of the relevant market segment assessed in each report. The resulting distribution of estimates informs the construction of our conservative, base-case, and optimistic tokenisation scenarios used in the 2030 forecasts.

Across industry and policy studies, the average projected global adoption rates split into three broad scenarios are as in Panel B of Figure 16:

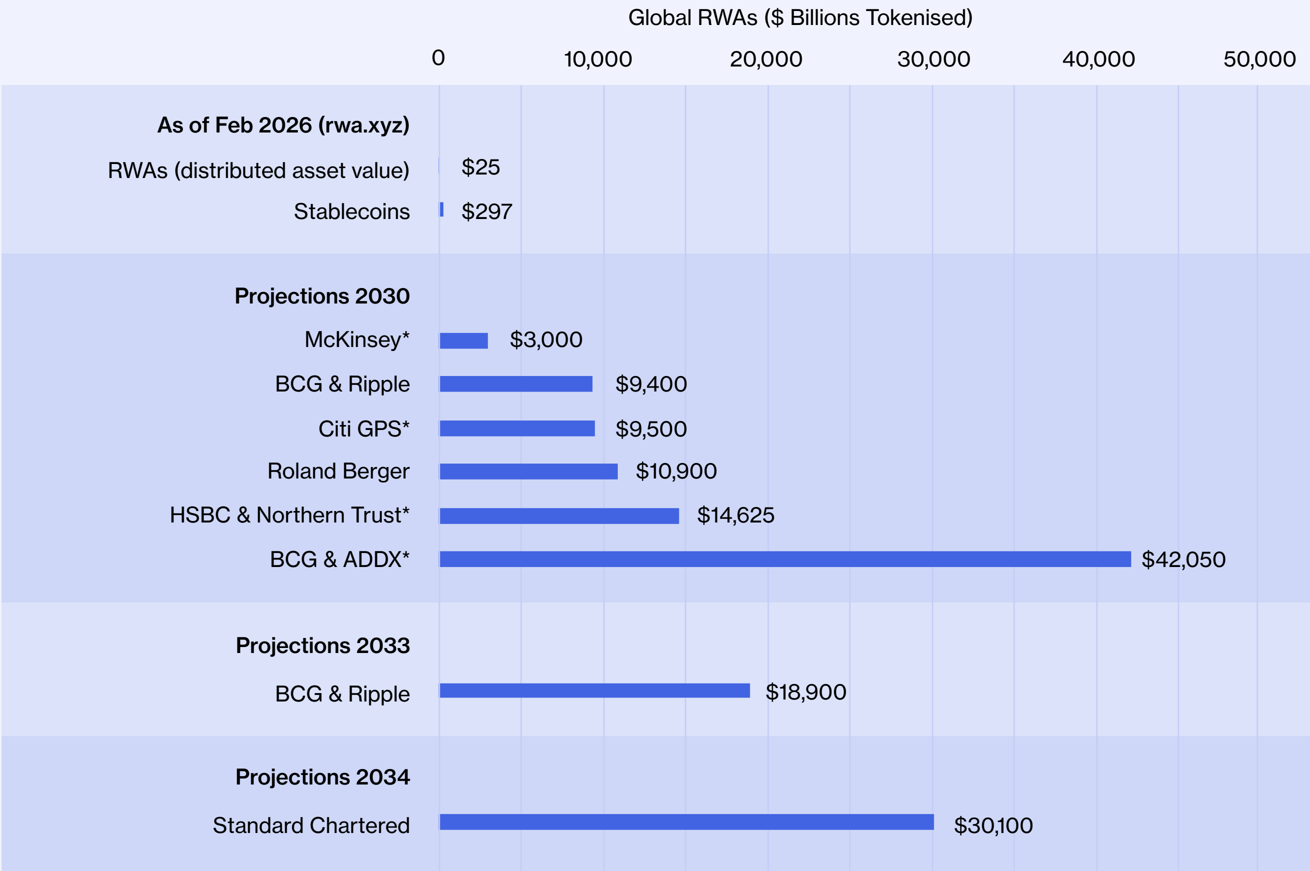
- **Conservative:** 1.54% of assets tokenised by 2030
- **Base case:** 4.04% of assets tokenised by 2030
- **Optimistic:** 6.55% of assets tokenised by 2030.

In sum, the projection is that tokenisation will grow from its current early stages to a foundational aspect of finance over the next 5-10 years. The exact trajectory is uncertain. Estimates range from a few trillion dollars to tens of trillions of tokenised asset value by 2030, but the projections across institutions are directionally consistent.

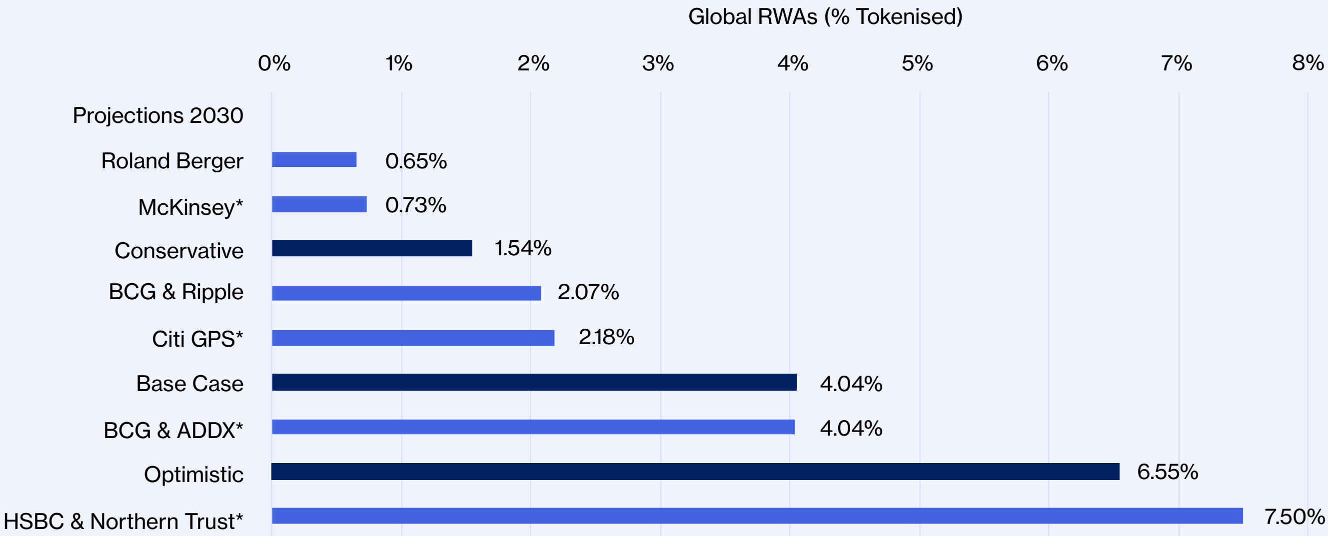
[206] See McKinsey, June 2024, "From Ripples to Waves: The Transformational Power of Tokenizing Assets."
[207] See Citigroup, March 2023, "Money, Tokens, and Games: Blockchain's Next Billion Users and Trillions in Value."
[208] See BCG and Ripple, April 2025, "Approaching the Tokenization Tipping Point."
[209] See Roland Berger May 2024. "Capturing the Multi-Trillion-Dollar Digital Asset Market: Strategies to Win the Race."
[210] See HSBC and Northern Trust January 2023. "Beyond Asset Tokenisation: The Evolving Role of Asset Servicing."
[211] See BCG and ADDX September 2022. "Relevance of On-Chain Asset Tokenization in 'Crypto Winter'."
[212] See Standard Chartered July 2024. "Tokenization: Reimagining the Future of Finance."

Figure 16: Estimates of the value of tokenised assets globally[216]

Panel A: Estimates in $



Panel B: Estimates in %



*mid-point if multiple scenarios are provided.

[216] The sources for the reports shown in this figure are each referenced in the preceding paragraphs.

Step 4. Project forward the tokenisation rates per asset class in Australia by 2030

Applying the global estimates of the tokenisation rates by 2030 to the Australian financial system implies total tokenised asset values by 2030 of approximately:

- **$0.6 trillion (conservative)**
- **$1.6 trillion (base case)**
- **$2.5 trillion (optimistic).**

To estimate the tokenisation rates per asset class in Australia by 2030 we scale each asset class's unscaled $C_{\Delta i}$ proportionally so that the total tokenised value across all asset classes matches these scenario totals. This ensures that projected adoption is internally consistent, grounded in observed patterns of early adoption, and constrained by plausible aggregate tokenisation adoption rates.

Table 9 reports the resulting projected tokenised values and proportions for each asset class in the three scenarios.

Table 9: Fraction of assets tokenised in Australia – scenario analysis

	Estimated tokenisation by 2030								
	Share of current tokenisation activity	Asset class market value	$C_{\Delta i}$ (Unscaled)	$C_{\Delta i}$ (Conservative)		$C_{\Delta i}$ (Base-case)		$C_{\Delta i}$ (Optimistic)	
	(%)	($bn)	($bn)	($bn)	(%)	($bn)	(%)	($bn)	(%)
Real estate	8.06	14,034	1,132	126	0.90	330	2.35	535	3.81
Private debt	18.41	943	174	19	2.05	51	5.37	82	8.70
Commodities	2.93	698	20	2	0.33	6	0.85	10	1.39
Public equities	5.92	3,007	178	20	0.66	52	1.73	84	2.80
Public debt	10.59	2,759	292	32	1.18	85	3.09	138	5.01
Foreign exchange	30.54	10,850	3,314	368	3.39	966	8.90	1,566	14.43
Investment funds	2.53	3,884	98	11	0.28	29	0.74	46	1.20
OTC derivatives	6.86	1,225	84	9	0.76	25	2.00	40	3.24
Private equity	6.98	1,579	110	12	0.78	32	2.03	52	3.30
Carbon credits	7.17	2	0	0	0.80	0	2.09	0	3.39
Total	**100.00**	**38,981**	**5,402**	**600**		**1,575**		**2,553**	

Step 5. Scale economic gains by the estimated 2030 tokenisation rates

The economic gains estimated earlier in the report correspond to full adoption of Digital Finance within each asset class. To derive realistic near-term impacts, we multiply those long-run gains by the projected tokenised fraction of each asset class under each scenario.

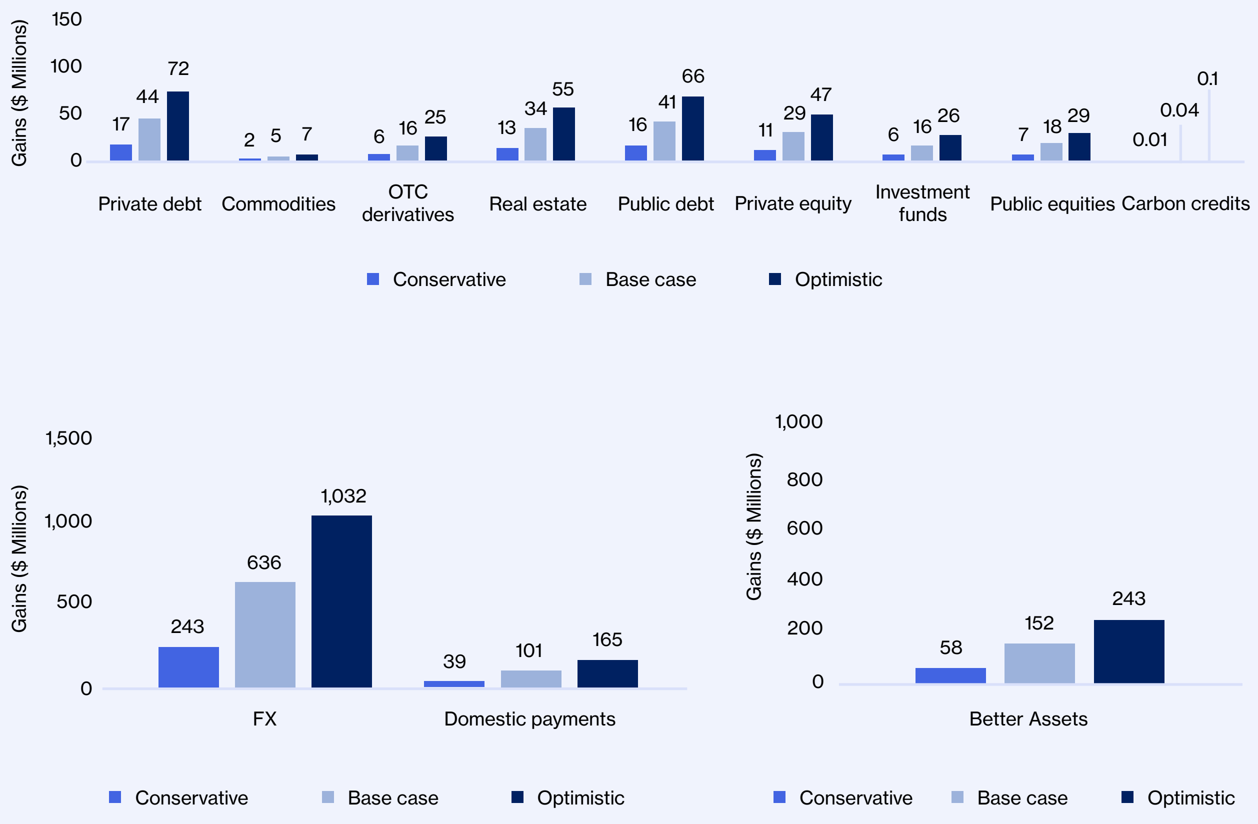
Figure 17 presents the resulting estimates under the conservative, base-case, and optimistic adoption paths. Aggregated across the three categories *(Better Markets, Better Payments, and Better Assets)*, these gains are approximately:

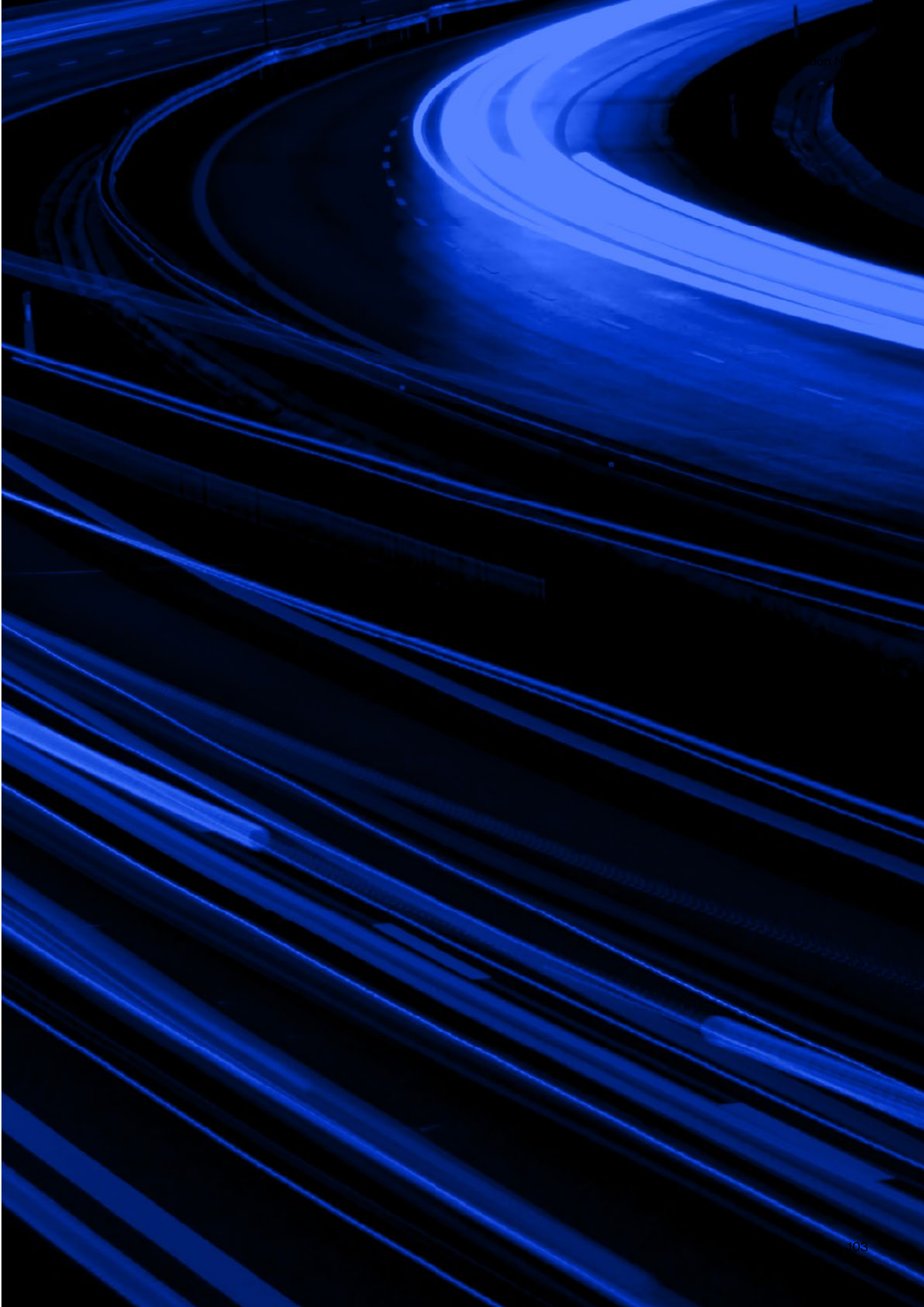
- **$0.4 billion** (conservative)
- **$1.1 billion** (base-case)
- **$1.8 billion** (optimistic).

Taken together, this approach ensures that the reported 2030 gains:

- Reflect partial, not full, adoption;
- Are grounded in observed tokenisation activity to date;
- Remain transparent about uncertainty; and
- Allow policymakers to see how adoption-accelerating policies could materially pull forward long-run economic benefits.

Figure 17: Gains by 2030 for Better Markets / Payments / Assets





Global Progress in Digital Finance

08

Notable Industry Use Cases

A growing number of production-level implementations across major financial jurisdictions demonstrate that Digital Finance is delivering measurable economic gains in real-world settings.

These systems are no longer confined to pilots; they are now supporting large transaction volumes and core market functions such as secured funding, asset issuance, collateral management, and securities settlement. The examples below illustrate how tokenisation and programmable settlement infrastructure are already improving capital efficiency, reducing operational costs, and enabling new forms of financial intermediation.

Tokenised intra-day repo

Repurchase agreements (repos) are a foundational component of modern financial systems, enabling secured short-term funding and liquidity management. Tokenisation has begun to materially improve the efficiency of these markets by enabling atomic settlement and real-time collateral mobility.

J.P. Morgan's Onyx Digital Assets platform provides a live distributed-ledger network for repo transactions, enabling simultaneous exchange of tokenised cash and tokenised collateral. By the end of 2022, the platform had processed over USD 500 billion in repo transactions, demonstrating institutional adoption of tokenised settlement infrastructure.

Similarly, Broadridge's Distributed Ledger Repo (DLR) platform now supports large-scale institutional repo activity and collateral substitution workflows. In January 2026 alone, the platform processed approximately USD 7.3 trillion in repo transactions, equivalent to over USD 350 billion in average daily volume.[217] This scale highlights that tokenised repo settlement is already operating at systemically meaningful levels.

The ability to settle repos intra-day rather than at T+1 or T+2 allows banks to recycle collateral multiple times within a single day, materially reducing the amount of high-quality collateral tied up in settlement cycles. Such platforms can operate 24/7, enabling after-hours liquidity management and more efficient deployment of idle assets.

Tokenised public debt

Tokenisation is increasingly being used for sovereign and supranational bond issuance, demonstrating its ability to support regulated, investment-grade securities markets. In 2021, the European Investment Bank issued a €100 million digital bond on the public Ethereum blockchain, one of the first large-scale tokenised issuances by a AAA-rated issuer. Since then, several sovereign and supranational issuers have followed.

For example, Hong Kong's government issued HK$800 million of tokenised green bonds in 2023 and has since continued issuing tokenised bonds as part of its digital bond programme. Reported benefits include faster settlement, lower issuance and servicing costs, improved transparency, and access to a broader investor base through digital distribution channels.

These issuances illustrate how tokenisation can streamline asset lifecycles while maintaining regulatory and credit standards. Additionally, the benefits of faster settlement, lower issuance and servicing costs, and broader distribution channels have been well documented.[218]

[217] See Broadridge, February 12, 2026 report "Broadridge's Distributed Ledger Repo Platform Achieves 508% Year Over Year Growth in January."

[218] See, e.g., Leung et al. (2023) and BIS working paper (no 1219), "Stablecoins, money market funds and monetary policy."

Tokenised money market funds

Tokenised money market funds (MMFs) have emerged as a commercially significant Digital Finance use case, combining the safety of traditional financial instruments with the programmability of digital infrastructure. BlackRock's tokenised MMF, BUIDL, reached approximately USD 1.8 billion in market capitalisation by early 2026, reflecting rapid institutional adoption.[219] Similar products from major asset managers enable investors to hold and transfer regulated MMF units on-chain while retaining exposure to high-quality, low-risk underlying assets.

These instruments function as yield-bearing, programmable settlement assets that can be used directly as collateral or margin in digital markets. By enabling real-time transfer, atomic settlement, and on-chain integration with trading and lending protocols, tokenised MMFs significantly reduce the need for cash conversion and collateral transformation, thereby addressing key inefficiencies in secured funding and margining processes.

Enhanced collateral mobility through tokenisation

Collateral fragmentation and settlement delays represent major inefficiencies in traditional financial systems. Tokenisation is enabling more efficient collateral management by providing real-time visibility and transferability of pledged assets.

For example, HQLAx's Digital Collateral Registry enables near-instant, on-chain transfers of securities ownership without moving the underlying assets. Built on R3's Corda platform, it allows Delivery-versus-Delivery (DvD) collateral swaps directly between participants, bypassing traditional custodial chains and multi-day settlement cycles.

By operating as a shared books-and-records layer rather than a central depository, the platform materially reduces intraday credit exposures, settlement fails, and liquidity buffers. Participants can mobilise collateral across custodians and jurisdictions in real time, lowering funding costs and improving balance-sheet efficiency. This directly addresses the fragmentation and immobilisation frictions highlighted in the collateral analysis earlier in this report.

DLT-based trading and settlement facilities

Tokenisation is also enabling fully integrated trading and settlement platforms that compress post-trade processes from days to seconds. The 21x platform is the first regulated trading venue that allows real-time trading and settlement of tokenised securities against digital cash under BaFin/ESMA oversight. By leveraging smart contracts for trade matching and instant settlement on-chain, 21X completes trades within two seconds. This compression of trading workflows is projected to cut participant transaction costs by over 50%.[220]

Emerging tokenised equity market infrastructure

Major exchange operators are actively preparing to support tokenised securities alongside existing market infrastructure. Nasdaq, the New York Stock Exchange, and other market operators have announced initiatives to enable tokenised issuance, trading, and settlement of equities.

The objective is not to replace existing equity markets wholesale, but to enable optionality: issuers and investors could choose between traditional and tokenised rails depending on the use case. Tokenised equities offer the potential for real-time settlement, automated corporate actions, and more efficient post-trade processing.

Implications

These use cases demonstrate that Digital Finance infrastructure is already delivering efficiency improvements across core financial system functions, including collateral management, secured funding, asset issuance, and market infrastructure. While adoption remains uneven across asset classes and jurisdictions, these examples validate the core economic mechanisms underlying the estimates in this report and underscore the importance of regulatory frameworks that allow such innovations to scale.

[219] The market capitalisation is available on CoinGecko's website under "BlackRock USD Institutional Digital Liquidity Fund."

[220] Se 21X September 8, 2025. "21X rings the bell as trading starts on the world's first blockchain-based exchange for tokenized securities and stablecoins."

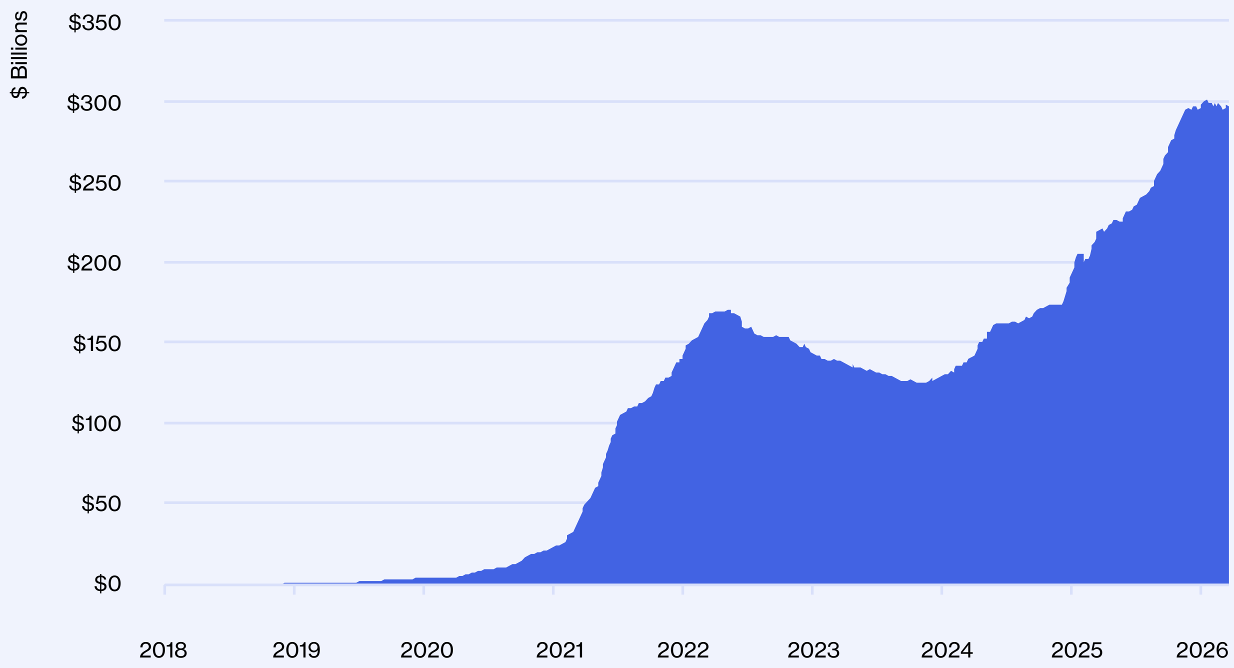
Tokenisation Rates by Asset Class

Tokenisation adoption has progressed unevenly across asset classes, reflecting differences in market structure, settlement frictions, regulatory constraints, and economic incentives. To date, tokenised forms of money, particularly stablecoins, represent by far the most advanced and widely adopted Digital Finance use case.

Stablecoins, which are digital tokens backed by fiat currency reserves or equivalent assets, have grown rapidly in both scale and usage. As of February 2026, global stablecoin market capitalisation exceeded USD 300 billion, with annual transaction volumes surpassing USD 33 trillion.[221] This level of activity, illustrated in Figure 18, is comparable to major global payment networks and reflects strong demand for programmable, real-time settlement assets.

Beyond stablecoins, tokenisation activity has concentrated in asset classes where settlement frictions are significant and where tokenisation delivers immediate operational or liquidity benefits. As illustrated in Figure 19, the largest tokenised RWA categories include short-term government securities (such as US Treasury instruments), private credit funds, and MMFs.[222]

Figure 18: Stablecoins – value tokenised[222]



[221] See CoinMarketCap's website ("Top Stablecoin Tokens by Market Capitalization" page) and Bloomberg, January 9, 2026 article, "Stablecoin Transactions Rose to Record $33 Trillion Led by USDC."

[222] The data is sourced from rwa.xyz.

Several structural characteristics explain why these asset classes have been early adopters of tokenisation.

First, these assets are already widely used as collateral or settlement instruments. Tokenisation enhances their utility by enabling real-time transfer, atomic settlement, and programmable collateral management.

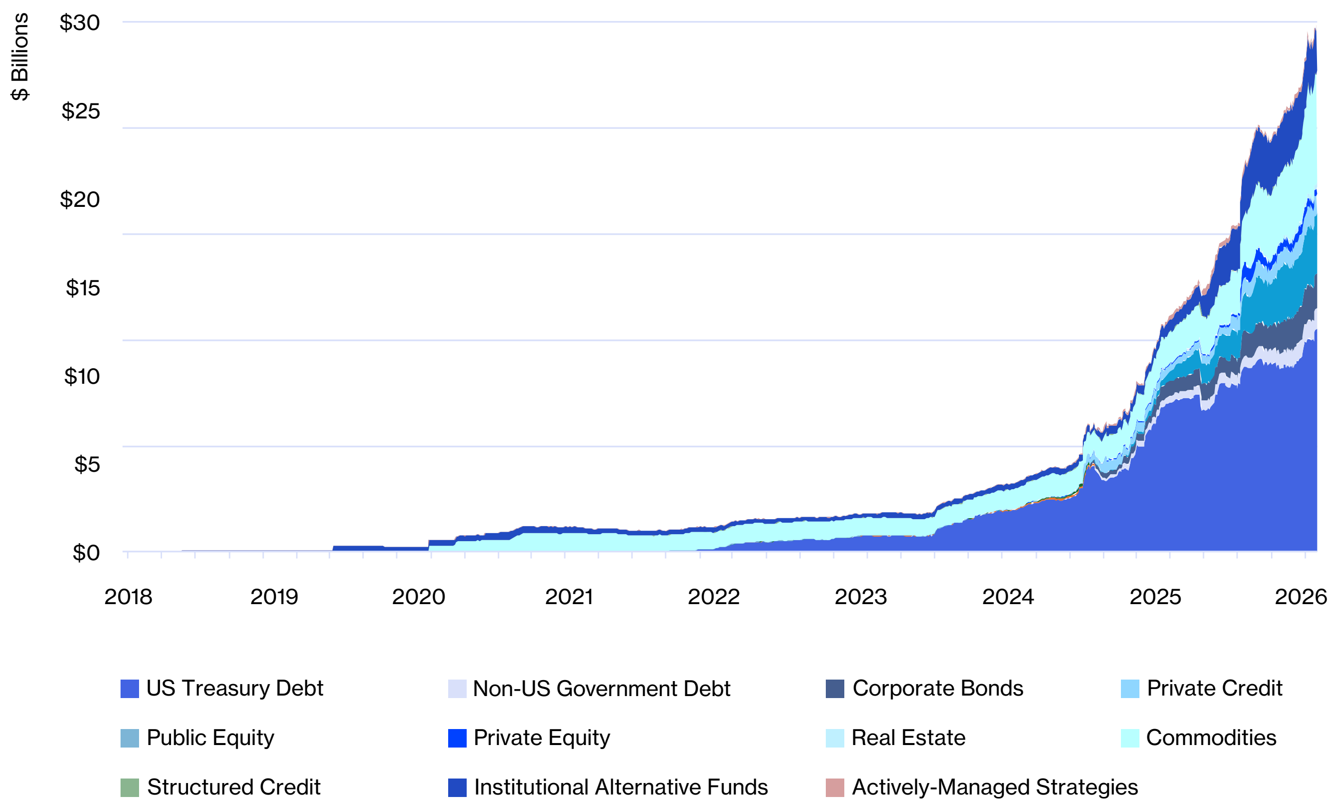
Second, these asset classes have relatively standardised legal and financial structures, which simplifies tokenisation. Standardisation reduces the legal and operational barriers associated with digitising ownership records and integrating tokenised assets into existing financial workflows.

Third, these markets often involve large institutional participants who have strong incentives to improve capital efficiency. Even small reductions in settlement delays or collateral requirements can generate substantial economic benefits when applied to large volumes of secured funding or margining activity.

Finally, these asset classes frequently operate with settlement cycles and operational processes that remain heavily dependent on intermediaries. Tokenisation enables more direct ownership transfer and automated lifecycle management, reducing reliance on manual processes and fragmented infrastructure.

As a result, tokenisation adoption has initially concentrated in markets where it delivers clear economic benefits by improving collateral mobility, reducing settlement risk, and lowering operational costs.

Figure 19: Tokenised real-world assets globally



The Critical Role of Tokenised Money and Settlement Assets

The availability of tokenised forms of money is a foundational enabler of Digital Finance. Many tokenisation use cases remain infeasible without tokenised central bank money because settlement still requires bridging back to traditional "off-chain" payment rails.

This is because, in major securities markets, the Principles for Financial Market Infrastructures (PFMI) require money settlements to be conducted in central bank money where practical and available to minimise and control credit and liquidity risks.

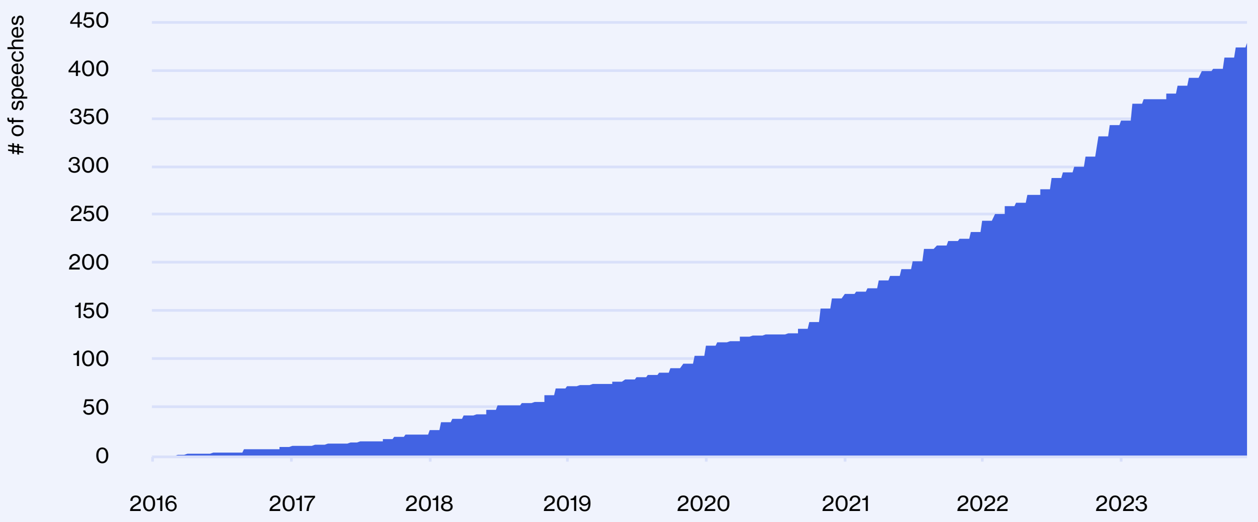
This issue has been noted, e.g., by BX Digital: "While this on- and off-chain hybrid model is unlikely to provide a permanent solution, it does enable banks to participate in tokenised asset markets immediately without reconfiguring their existing payments systems and processes."[225] Without a v readily available, widespread adoption is consequently slowed down. As such, innovations in this space are among the most closely watched by both policymakers and market participants.

For example, since 2018, references to CBDCs in speeches by central banks and regulatory authorities have risen substantially (see Figure 20). Over 130 countries (accounting for over 98% of global GDP) are now actively researching or testing CBDCs, and a few jurisdictions have rolled out production CBDCs. Other significant commitments have been made in Europe and the UK.

However, because CBDC deployment involves complex policy, legal, and financial stability considerations, in the interim, stablecoins have emerged as the primary tokenised settlement asset.

Many financial transactions today already settle using commercial bank money rather than central bank money. In these contexts, well-regulated stablecoins can provide a functional equivalent settlement asset, enabling tokenised markets to operate efficiently while CBDC frameworks continue to develop. Together, CBDCs and regulated stablecoins represent complementary pathways toward enabling fully integrated, programmable financial markets.

Figure 20: CBDC speeches[226]



[225] See BX Digital, February 2025, "Token markets need liquidity: Where will they get it from?"

[226] The data is sourced from Auer, Cornelli and Frost (2023).

Accelerating the Digital Finance Dividend: Where Policy Support can help Unlock Economic Value sooner

09

Key Insights based on Economic Impact Potential and Industry Survey Data

Regulatory barriers and uncertainty are the primary constraints identified.

Industry survey responses in Australia identify these as the primary constraints to tokenisation and Digital Finance innovation, consistent with findings from Australian policy forums. Barriers include unclear licensing requirements, ambiguity regarding the legal status of tokenised assets, and uncertainty about the applicability of the Australian Markets License (AML) and Clearing & Settlement Facility License (CSFL) frameworks, which limit product development, compliance, and operational planning. Additional constraints include co-ordination challenges.

Regulatory progress in licensing of tokenised financial markets and Digital Financial Market Infrastructures (DFMIs) remains the least developed of the four pillars of Australia's Digital Finance regulatory framework.

While Australia has made progress on the other three pillars (regulation/guidance for digital assets, digital money, and consumer protections) the financial markets and infrastructure pillar remains the least developed. The data shows progress in this pillar is essential because the most significant economic gains from tokenisation lie in Better Markets (developing tokenised financial markers) and Better Payments (particularly in foreign exchange markets).

Economic impact potential and industry survey data consistently highlight a set of policies expected to deliver the largest increase in Digital Finance adoption and economic gains.

Policies that shape the regulatory environment for the ongoing operation of tokenised markets and DFMIs are commonly identified as the main driver of potential economic gains in Australia. Secondary themes include the availability of trusted digital settlement assets and clear signalling from government. Finally, broader adoption will also depend on detailed regulatory guidance particularly for tokenised asset markets.

Key Policy Priorities Identified

Key policy priorities

The analysis identifies the following key policy priorities, based on Australian industry survey data and the most significant categories of economic gain:

Establish a dedicated Digital Financial Market Infrastructure (DFMI) sandbox to support transitions from pilot to production.

The sandbox could support the evolution of DFMI licensing, provide a stage-gated path to production for tokenised financial market use cases and build on Australia's strengths (including Project Acacia) and international best practice. It would formalise ongoing collaboration between regulators, industry participants in testing and scaling Digital Finance innovations.

Evolve the licensing framework for tokenised financial markets and DFMI.

This would complete the fourth pillar of a modern Digital Finance regulatory architecture. Australia has made important progress on regulation and guidance for digital assets, digital money (stablecoins), and consumer protections, but evolving the financial markets and DFMI licensing pillar remains an important enabling step.

Deploy foundational infrastructure, including tokenised Government bonds and wholesale Central Bank Digital Currency in the DFMI sandbox.

The data suggests these foundational components would enable the development of tokenised markets, collateralised lending, payments, and related services. They can help coordinate sequencing across industry participants, reducing fragmentation and accelerating the transition to a digital financial system.

Other policy priorities, including clear and consistent definitions of digital assets, regulatory guidance on FMI licensing, and the regulatory framework for stablecoins are also identified in this section of the report.

Framework for Policy Identification and Prioritisation

Our analysis identifies the significant economic impact potential of Digital Finance innovation in Australia. At the current trajectory of tokenisation, $1.1 billion in annual gains could be unlocked by 2030. While this is significant, it represents only a fraction of the full potential. With targeted policy interventions, Australia could accelerate adoption and move closer to the $24 billion annual gain achievable under full-scale implementation.

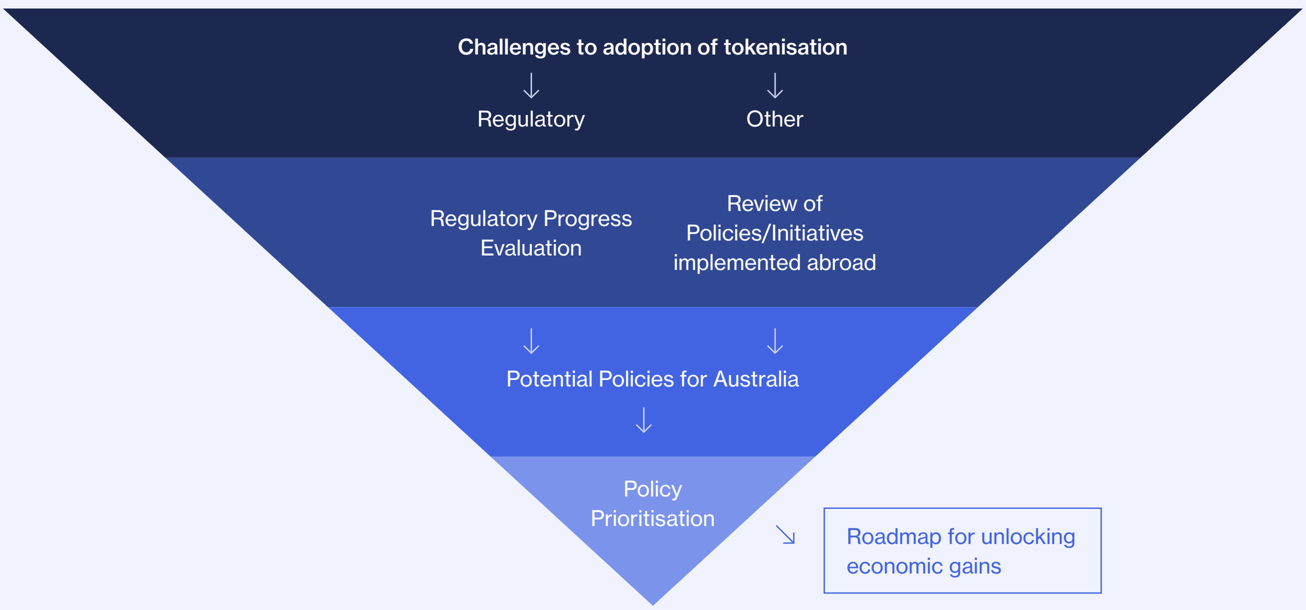
To identify the key policy priorities required to unlock the economic gains of tokenisation adoption in Australia, we apply a systematic framework of policy identification and evaluation. The framework is informed by the data on economic impact potential, which orients it towards unlocking the largest potential gains, and industry data derived from targeted surveys, to ensure it is grounded in the practical needs of innovators.

The framework:

- Starts by identifying and evaluating the impediments or challenges to adoption of tokenisation.
- Identifies a set of potential policies and reforms, based on a review of initiatives implemented abroad and those that have been suggested by various agencies and industry in Australia. Given that regulatory challenges are found to be substantial, this is one of the areas that has a more focused evaluation.
- Evaluates potential policies against the components of the economic gains that they could unlock, and their relative efficacy at doing so. This draws on data from industry. As a result, we obtain estimated dollar impact potential of each potential policy, which is used to prioritise the set of potential policies.
- Considers the interactions between the policies and their appropriate sequencing, should they be incorporated into a Digital Finance Policy Roadmap.

This sequence of steps is illustrated in Figure 21.

Figure 21: Framework for policy identification and prioritisation



Challenges to Adoption

To understand the barriers to adoption, we conducted a survey across key businesses in both traditional and digital finance, evaluated evidence from industry reports globally, policy forums in Australia, and Project Acacia (use case operators and Industry Advisory Group). Our survey asked a cross-section of industry participants to identify and rank the key challenges to tokenisation in Australia.[227]

The summary of findings regarding challenges to adoption is as follows.

#1 Regulatory barriers and uncertainty are the primary constraints in Australia and internationally

Panel A of Figure 22 shows that regulatory barriers are identified by industry as the most significant constraint, closely followed by regulatory uncertainty (particularly the lack of clear guidance on how existing regulations apply to tokenised markets).

This result aligns closely with global perspectives. For example, Panel B of Figure 22, based on the Global Financial Markets Association (GFMA) survey of tokenised securities markets, also ranks lack of regulatory clarity as the leading obstacle.[228] The consistency between the DFCRC/DECA and GFMA surveys underscores that the lack of regulatory certainty not just a local issue. It is a global obstacle for scaling tokenisation beyond pilots and into production-level markets.

Australian policy forums[229] consistently report that unclear licensing requirements, ambiguity over the legal status of tokenised assets, and uncertainty regarding the applicability of the Australian Markets License (AML) and Clearing & Settlement Facility License (CSFL) frameworks limit product development, compliance, and operational planning. Without clear guidance or reforms, adoption remains constrained, and broader deployment of tokenised markets is delayed

> "The challenges are a bit of a 'chicken and egg' situation. The TradFi investment and banking industry are reluctant to take on digital asset investment because of muddy regulator support/clarity. But the lack of mainstream interest makes regulators/government bodies think there's a lack of urgency!"
>
> *DFCRC/DECA survey participant*

Other notable barriers in Australia, according to survey participants, include network externalities and adaptation challenges of incumbent financial services providers in traditional finance, a lack of investor and industry understanding of digital assets, and a lack of supporting infrastructure (such as tokenised central bank money for settlement or tokenised government bonds). We discuss these topics in more detail in turn.

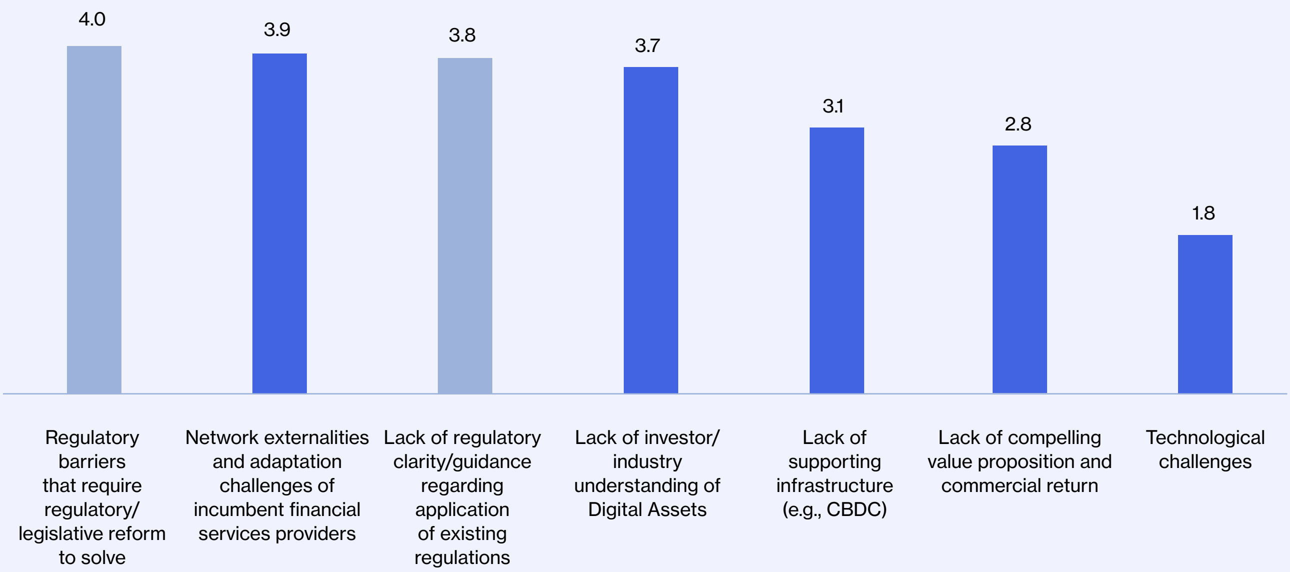
[227] Details of the survey methodology are in Appendix C.

[228] See Global Financial Markets Association (GFMA), and Boston Consulting Group (BCG) 2023 report, "Impact of Distributed Ledger Technology in Global Capital Markets."

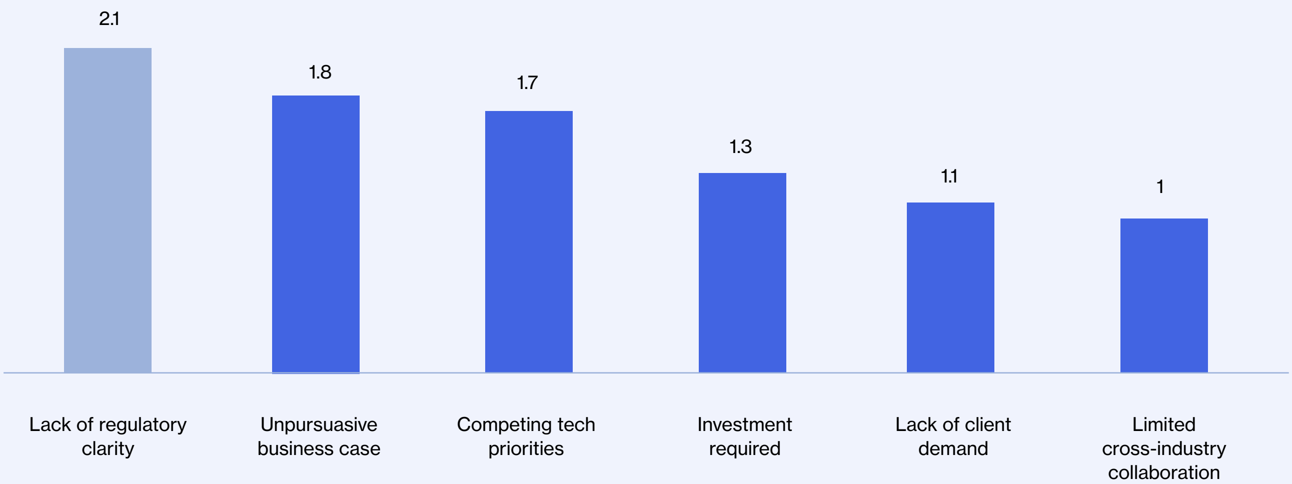
[229] See Section "Identifying Policies to Accelerate Tokenisation in Australia."

Figure 22: Challenges facing Digital Finance – Survey responses

Panel A: DFCRC Survey – Ranking on a scale from 1-5 (5 top-ranked)



Panel B: Global Financial Markets Association (GFMA) Survey – Ranking on a scale from 1-5 (5 top-ranked)



#2 Industry Coordination

A second group of constraints to Digital Finance innovation, and particularly asset tokenisation, is a range of organisational and market-level frictions. Survey respondents highlighted network externalities and adaptation challenges of incumbent financial services providers in traditional finance as a significant constraint, indicating that existing Australian financial legacy institutions often have competing priorities or insufficient incentives to engage with tokenisation initiatives. They noted that established financial services providers benefit from classic network externalities that can be very strong in financial system contexts, which makes it challenging for new entrants, often the ones driving Digital Finance innovation, to compete.

> "In general, technology is understood and purported benefits are acknowledged. However, incumbents are still required to demonstrate scope to deliver enterprise value. Investment to explore tokenisation is a resource allocation issue - that is, to what extent should a dollar be invested in tokenisation versus something else."
>
> *DFCRC/DECA survey participant*

A related and distinct issue identified by industry is a *coordination or collective-action problem* inherent in adopting new market infrastructure. Many of the largest economic gains from tokenisation only materialise when multiple parts of the financial value chain migrate concurrently. For example, issuers, investors, trading venues, custodians, payment providers, and settlement systems operating on compatible tokenised rails. If only a subset of participants adopts, most benefits (such as atomic settlement, straight-through processing, and collateral mobility) remain unrealised, while the costs of transition are still incurred. This weakens individual business cases even when the system-wide benefits are large. In economic terms, tokenised financial infrastructure exhibits strong network effects and complementarities across adoption decisions, meaning that decentralised, uncoordinated adoption is likely to be slower than is socially optimal.

Effective industry collaboration, shared standards, and knowledge transfer are therefore essential to overcome these structural barriers in Australia.

In contrast, GFMA participants ranked limited cross-industry collaboration as the lowest constraint, suggesting that Australia differs from other countries in this regard. We will discuss some of the initiatives promoting industry coordination globally in the subsequent sections.

> "The commercial realities of the Australian market, including scale limitations, high compliance costs, and incumbent revenue structures, mean that domestic tokenisation uptake will remain structurally constrained in the absence of a local on-chain demand anchor. These are not technological limitations, but market structure constraints that technology alone cannot resolve."
>
> *DFCRC/DECA survey participant*

#3 Infrastructure and Technology Readiness

The availability of supporting Digital Finance infrastructure is a further constraint on adoption in Australia. Survey respondents identified the absence of key infrastructure components (such as a wholesale CBDC or equivalent tokenised settlement asset) as a significant barrier, while technological challenges themselves were ranked lowest. This pattern suggests that technology maturity is not the main constraint; rather, it is the lack of production-grade foundational infrastructure on which tokenised markets can be built.

In the absence of wholesale tokenised settlement assets, tokenised markets must rely on hybrid settlement arrangements that interface with legacy payment and settlement systems. These hybrid structures reintroduce reconciliation complexity, settlement delays, and counterparty risk, undermining core benefits such as atomic settlement, straight-through processing, and efficient collateral mobility. As a result, a large share of the potential economic gains from tokenising assets is lost, weakening private-sector business cases and slowing adoption.

Beyond its functional role, public Digital Finance infrastructure also serves an important signalling function, according to industry responses. The issuance of a wholesale CBDC, tokenised government bonds, or other public-sector tokenised instruments signals credible, long-term commitment by the state to the emergence of tokenised financial markets. This signal shapes expectations about future market architecture and regulatory support, reducing uncertainty faced by private actors when deciding whether to invest in new systems, redesign processes, and migrate onto tokenised rails.

In economic terms, public-sector issuance can act as a coordination device: by anchoring activity on a common settlement asset and infrastructure layer, it increases confidence that other participants will also adopt, helping overcome first-mover disadvantage and network-adoption problems. In this way, public digital financial infrastructure not only enables tokenised markets technically, but also accelerates their formation by aligning private-sector expectations around a shared, credible pathway to scale.

#4 Commercial Considerations

Finally, the survey highlights that, for some participants, the commercial case for tokenisation is not yet sufficiently compelling, even though this factor ranks second lowest among the identified constraints. This suggests that, while tokenisation is generally perceived as valuable, the private, near-term return on investment is not always strong enough to trigger action.

GFMA participants ranked unpersuasive business cases as a more prominent constraint. At the same time, “lack of client demand” scores low in the GFMA survey, indicating that end-user appetite for tokenised products and services is relatively strong. Taken together, these findings point to a gap between strong underlying demand and weaker firm-level investment incentives.

We interpret this pattern as reflecting two reinforcing economic features of tokenisation.

- First, tokenised market infrastructure exhibits scale economies and network effects: many of the largest benefits, such as atomic settlement, straight-through processing, and collateral mobility, depend on widespread adoption across the value chain. Early adopters therefore capture only a fraction of the eventual system-wide benefits (counterintuitively, a "first mover disadvantage").

- Second, adoption involves non-trivial switching and integration costs, including system redevelopment, process redesign, staff retraining, and regulatory engagement. In the early stages of diffusion, these *switching costs* can outweigh the private benefits available to an individual firm, even when the long-run economic returns are large.

As a result, although tokenisation initiatives may generate substantial aggregate economic value, the private business case for any single organisation may appear marginal in isolation.

- This helps explain why client demand can be high while individual institutions remain hesitant to proceed.

- It also reinforces the role for coordination mechanisms and policy interventions that reduce fixed adoption costs, clarify regulatory treatment, and increase confidence that a critical mass of participants will migrate concurrently, thereby strengthening firm-level incentives and accelerating efficient adoption.

Regulatory Progress Evaluation

Having established regulatory barriers as a key constraint to Digital Finance innovation in Australia and internationally according to the data, this section provides a high-level assessment of regulatory progress across the four core pillars of a modern Digital Finance regulatory framework:

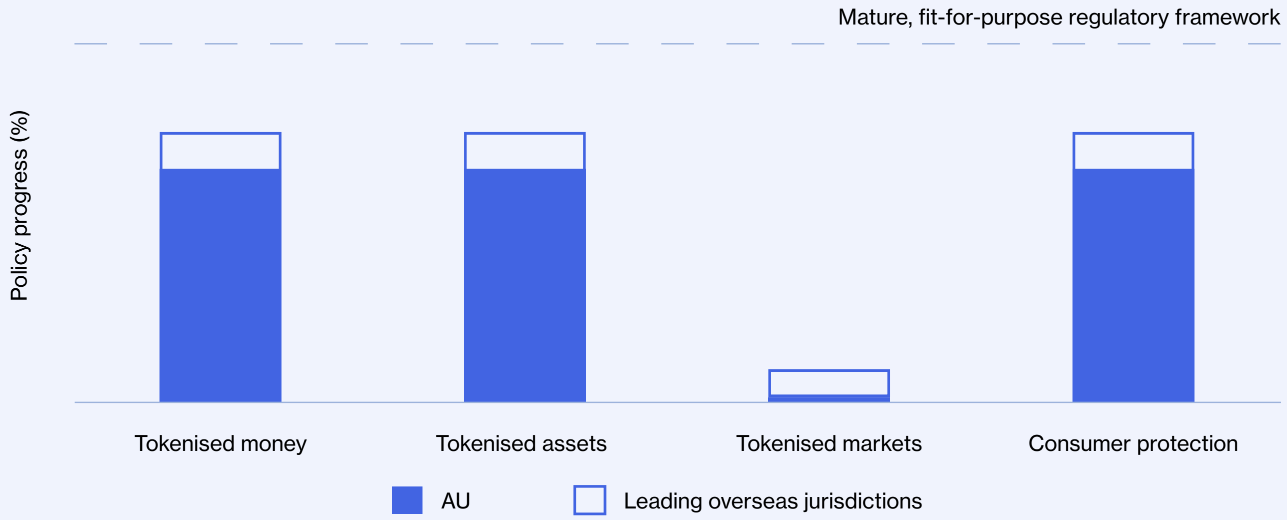
- **Tokenised money**
- **Tokenised assets**
- **Tokenised markets**
- **Consumer protection**

Figure 23 presents a qualitative summary of progress in Australia (blue) and selected leading jurisdictions (white) in implementing regulatory settings that support each pillar. The details of progress and what remains to be resolved are explained in subsections below. With the exception of tokenised markets, leading jurisdictions (including Switzerland, the United Kingdom, and the European Union) have made substantial progress, with Australia generally positioned as a close follower rather than a frontrunner.

For each pillar, we undertake a stocktake of relevant policies and regulatory initiatives implemented domestically and overseas. This stocktake is used to identify policy gaps and to distil a practical set of reforms that could strengthen Australia's regulatory architecture and accelerate adoption of Digital Finance innovations.

The Four Pillars of Digital Finance Regulation

Figure 23: Regulatory progress in Australia and overseas



Tokenised money

This pillar concerns regulation of digital representations of sovereign or commercial money that can be used for real-time, programmable, and atomic settlement.

This includes central bank digital currencies (CBDCs), regulated stablecoins, and tokenised bank deposits. Tokenised money is foundational to Digital Finance because a trusted, on-ledger form of cash is required to settle tokenised asset transactions without introducing new counterparty risk. In effect, tokenised money provides the "cash leg" for digital financial markets, enabling delivery-versus-payment on-chain and supporting smart-contract-based payments, automated margining, and programmable corporate actions.

Safe and well-regulated forms of tokenised money, including public and private, ensure that the credibility and trust associated with traditional money carry over into new market infrastructures. Without such instruments, tokenised markets must rely on hybrid settlement arrangements that weaken many of the economic gains from tokenisation.

Australia's progress

Australia has moved proactively in this area and is considered a close follower of global leaders. The RBA has piloted wholesale CBDC in Project Acacia. In several respects, the RBA's work in Acacia is considered world-leading, particularly in demonstrating how wholesale CBDC and tokenised assets can operate on shared infrastructure to enable real-time atomic settlement. On the stablecoin front, Treasury released draft legislation in 2025 to regulate stablecoins as part of a broader payments overhaul. Notably, the Australian Securities and Investments Commission has already granted financial services licences to three AUD-backed stablecoin issuers under existing law.

Current Australian stablecoin initiatives include:

- **Forte AUDF** – a regulated AUD-backed stablecoin designed for domestic and cross-border payments.
- **Macropod AUDM** – AUD-pegged stablecoin issued by Macropod (Catena Digital).
- **Other initiatives** include bank stablecoins (such as ANZ A$DC) or fintech stablecoins (such as AUDD).

These developments, combined with Australia's robust payments system oversight, put Australia in a strong position to deploy tokenised money. **Approximately three-quarters of the necessary regulatory framework is consequently in place or under active development.**

Approximately three-quarters of the necessary regulatory framework is consequently in place or under active development.

Remaining gaps

To reach a fully fit-for-purpose regime, the data shows that Australia needs to finalise and expand these frameworks.

- First, having the draft stablecoin legislation enacted and supported by detailed standards covering reserve quality, custody, redemption rights, governance, and risk management would move Australia from interim arrangements to a durable, purpose-built stablecoin regime.
- Second, regulatory treatment of deposit tokens (tokenised commercial bank deposits) remains unclear.[230] Deposit tokens are not yet explicitly recognised in Australian law or prudential standards, despite being explored in jurisdictions such as the UK and Singapore. Clarifying the legal and prudential treatment of deposit tokens would allow banks to issue tokenised deposit liabilities safely and support wholesale and institutional use cases.
- Third, Australia would benefit from developing a comprehensive taxonomy of tokenised money instruments, covering CBDCs, stablecoins, deposit tokens, tokenised deposits, and other forms of digital cash, so that each instrument falls into a clearly defined regulatory category. A coherent taxonomy reduces regulatory uncertainty, prevents gaps or overlaps, and provides confidence to market participants designing settlement architectures.

International context

Globally, regulators are refining regimes for tokenised money that Australia can draw on.

- Hong Kong has introduced a dedicated Stablecoins Ordinance effective August 2025. Observations from other jurisdictions also provide practical examples of how Australia may classify digital assets to allow e-money to function as a settlement asset in tokenised asset transfers.[231]
- In the United Kingdom, the Financial Services and Markets Act 2023 incorporated stablecoins as "digital settlement assets" to be brought within payments regulation, and the Bank of England is actively exploring a retail and wholesale CBDC ("digital pound").
- The European Union's Markets in Crypto-Assets (MiCA) regulation provides a rigorous framework for stablecoins (termed e-money tokens and asset-referenced tokens) by requiring issuers to obtain authorisation, maintain reserve backing, and provide investor safeguards.
- In the United States, the GENIUS Act of 2025 creates a framework for payment stablecoins. The Act restricts issuance to permitted bank and approved non-bank entities, requires 1:1 high-quality liquid asset backing, mandates redemption and disclosure standards, and places issuers under banking-style supervision. It also clarifies that compliant payment stablecoins are not treated as securities under federal law.
- Switzerland has leveraged its existing financial laws to accommodate tokenised money. For example, FINMA assesses stablecoins within the scope of securities or banking laws depending on their structure, and the Swiss National Bank has experimented with wholesale CBDC integration (Project Helvetia) to enable settlement on distributed ledgers.
- Some central banks have also provided a clear direction on tokenised central bank money. For example, the ECB has described its Pontes initiative as a short-term offering and a transitory step toward a longer-term DLT settlement framework, pending the eventual development of CBDC for wholesale use.[232] BIS projects, as well as the RBA's and DFCRC's project Acacia, demonstrate the benefits of having both assets on the same ledger in real-world settings to enable atomic settlement.

Implication

International experience underscores two consistent lessons: the importance of clear legal status for tokenised money, and the value of central banks engaging directly in digital currency experimentation to complement private stablecoin innovation. Australia is well positioned in this pillar, but completing the remaining elements, including stablecoin legislation, deposit-token treatment, and a unified taxonomy, would materially strengthen the foundations for tokenised markets.

[230] Deposit tokens have been a priority issue in Project Acacia, with the Deposit Token Working Group (DTWG) making substantial progress and expected to deliver specific recommendations.

[231] See Regulation (EU) 2022/858 of the European Parliament and of the Council.

[232] See ECB, June 2025, "Bridging innovation and stability: the Eurosystem's exploratory work on new technologies for wholesale central bank money settlement."

Tokenised assets

This pillar concerns regulatory clarity for digital tokens that represent rights or claims to real-world or financial assets.

It encompasses several interrelated questions, including:

- Whether, and in what circumstances, tokenisation affects the legal classification of an asset;
- How legal rights in an underlying asset are created, transferred, and enforced through possession or control of a digital token;
- What forms of tokenised assets are permitted (for example, restrictions on bearer-style instruments for regulated securities); and
- Which types of tokens constitute financial products or securities under existing law.

This pillar is central to transforming asset issuance and lifecycle processes and, in turn, to supplying assets for digital financial markets. **With appropriate regulatory clarity, tokenisation can streamline issuance, automate asset servicing through smart contracts (for example, interest payments and corporate actions), enable fractional ownership, and support continuous trading.** Absent such clarity, issuers face legal uncertainty that materially weakens the business case for tokenised issuance.

Australia's progress

Australia has made meaningful progress in clarifying how tokenised assets fit within existing legal frameworks. ASIC's Information Sheet 225 (INFO 225) provides the most substantive guidance on when digital assets are likely to be financial products under the *Corporations Act*, including examples of tokens that may constitute securities, derivatives, or interests in managed investment schemes. This guidance gives issuers and intermediaries an initial basis for structuring compliant tokenised products. [233]

In practice, most tokenised real-world asset projects in Australia have been designed to map onto traditional legal categories, and regulators have shown a willingness to grant targeted relief for pilot initiatives (including within Project Acacia). Ongoing engagement between industry and regulators, such as ASIC's consultation process associated with CP 381 and updates to INFO 225, has further refined interpretive guidance. Taken together, these developments justify an assessment of substantial, but incomplete, progress on this pillar (approximately 75%).

Remaining gaps

Despite this progress, important gaps remain before Australia has a fully fit-for-purpose regime for tokenised assets.

A key unresolved issue is the legal status of distributed ledger technology (DLT) registries. There is currently no explicit confirmation that a DLT-based registry can serve as an official register for securities or other registrable assets, and if so, under what conditions. Without this clarity, security tokens risk being treated as bearer instruments rather than as entries in a legally recognised register, complicating ownership, transfer, and enforcement.

[233] Although ASIC Info Guide 225 provides some examples and an assessment of whether certain digital assets are financial products or not, this still does not provide sufficient certainty for digital asset issuers that fall outside the scope of the examples. It also does not address the other regulatory questions concerning tokenisation of assets, particularly real-world assets.

A second unresolved area is the treatment of "digital twins" (tokenised representations of existing financial products). Uncertainty persists as to when such tokens constitute a separate financial product requiring their own disclosure, licensing, and prospectus, versus when they are merely a technical representation of an already regulated asset. Lack of clarity in this area creates the risk of duplicative regulation, inconsistent treatment across structures, or regulatory arbitrage.

To close the remaining gap, Australia could develop a systematic classification of digital assets that enables consistent regulatory treatment across government agencies. To appropriately apply existing laws, the categorisation could prioritise "substance over form", including how the token maintains its value and the legal nature of the underlying RWA. A comprehensive taxonomy that provides legal clarity over the full spectrum of digital assets would enable ex-ante compliance, reduce ambiguity, and accelerate institutional adoption.

International context

Several jurisdictions provide more explicit models for addressing these issues:

- Switzerland's DLT Act (2021) amended securities law to recognise distributed ledger-based securities, granting tokens legal status equivalent to traditional certificated or book-entry securities. This has enabled platforms such as SIX Digital Exchange to issue and settle tokenised bonds within a clear legal framework.
- The United States has developed taxonomies and classification approaches (including CFTC's Digital Assets Classification Approach and Taxonomy) to distinguish categories of digital assets and support coordinated regulatory treatment.
- The European Union's Markets in Crypto-Assets Regulation (MiCA) establishes clear categories for crypto-assets and stablecoins and complements existing securities law for security tokens, improving legal certainty for issuers.[234]
- The United Kingdom has authorised tokenised equity and bond issuances under existing law and engaged the Law Commission to examine how digital asset ownership fits within common law concepts of property. Notably, the UK's forthcoming regulatory framework for crypto-assets will encompass security tokens. The Digital Securities Sandbox (launched 2024) allows live testing of tokenised issuance and trading with modified legal requirements to inform permanent reforms.
- Hong Kong's Securities and Futures Commission has issued guidance confirming that tokenised securities can be offered by licensed entities (initially to professional investors) under existing securities laws.

Across these jurisdictions, common best practices include:

- explicit legal recognition of digital securities,
- classification based on economic substance, and
- the use of experimental regimes to adapt existing regulatory frameworks.

Implication

Australia's remaining task is not to reinvent securities regulation, but to modernise it so that legally recognised assets can exist natively on distributed ledgers. Doing so would materially strengthen the foundations for tokenised markets and support scaled issuance of RWAs in digital form.

[234] See Regulation (EU) 2023/1114 of the European Parliament and of the Council.

Tokenised markets

This pillar concerns the existence of a fit-for-purpose licensing and regulatory framework for digital asset markets (including markets for tokenised real-world assets) and Digital Financial Market Infrastructures (DFMIs), such as distributed ledgers or smart-contract systems performing functions traditionally associated with securities depositories, clearing, and settlement.

The central regulatory challenge, and the primary source of the large economic gains identified in this report, is that distributed ledger technology enables fundamentally different market architectures, characterised by:

- Fewer intermediaries;
- More direct peer-to-peer or protocol-mediated exchange of assets;
- Certain functions performed collectively by a network rather than by a single operator; and
- The technical integration of trading and settlement into a single, inseparable (atomic) process.

Unlike traditional markets that operate with separate entities and time-delayed settlement, tokenised markets eliminate the need for clearing and enable atomic settlement of trades. These structural differences sit uneasily within regulatory frameworks that are built around distinct institutional roles and sequential processing.

This pillar is therefore crucial because it unlocks the largest efficiency and risk-reduction benefits of tokenisation: real-time delivery-versus-payment reduces counterparty and credit risk; shared ledgers reduce reconciliation and operational complexity; and fewer intermediaries lower transaction costs and accelerate access to liquidity. Without regulatory settings that accommodate these new structures, many of these gains cannot be realised in production markets.

At the same time, tokenised markets challenge established regulatory concepts. For example, if matching and settlement occur automatically via smart contracts, there may be no central counterparty or settlement operator responsible for guaranteeing or reversing transactions. This raises important questions about accountability, operational resilience, governance, and supervisory oversight. Ensuring that regulation evolves to address these questions without forcing tokenised markets back into legacy structural moulds is essential for capturing the economic potential of Digital Finance.

Australia's progress

This is the pillar where the data shows Australia has the most remaining work to do, although the challenge is global. To date, Australia has taken only limited steps toward enabling tokenised market infrastructure.

The most notable example of this enabling is FCX, a platform for unlisted securities that obtained both an Australian Market Licence (AML) variation and a Clearing and Settlement Facility (CSF) licence to support near-instant, on-chain settlement within existing law. While this demonstrates regulatory flexibility, it also highlights the difficulty of fitting fundamentally new market structures into licensing categories designed for intermediated markets.

Beyond this case, Australian activity has largely been confined to small-scale pilots. Project Acacia enabled tokenised transactions within a sandbox environment, but these operated under temporary exemptions and did not create an enduring regulatory pathway. Australia currently has no dedicated framework for licensing DFMIs, and firms seeking to operate tokenised trading venues, integrated trading and settlement platforms, or launching decentralised exchanges face material uncertainty about who must be licensed, under what category, and with what obligations (e.g. it is unclear how to license a DeFi protocol or a smart contract performing settlement).

In summary, Australia's regulatory progress for tokenised markets is limited to preliminary experiments and one-off exemptions whereas other leading jurisdictions have begun more systemic reforms. This gap underscores why regulatory barriers are cited as the top constraint for tokenisation in Australia.

What is required?

Achieving an efficient, fit-for-purpose regulatory framework for tokenised markets will ultimately require significant structural reform. However, in the interim, two mechanisms can serve as practical bridges from today's licensing architecture to a future regime: (i) regulatory guidance clarifying the flexible use of existing licences (including special conditions and targeted exemptions), and (ii) a purpose-built DFMI or tokenised-market sandbox. Together, these tools can enable early production experimentation, generate regulatory learning, and reduce uncertainty for innovators while permanent reforms are developed.

First, in the near term, regulators could provide clearer guidance on how existing Australian Market Licence (AML) and Clearing and Settlement Facility (CSF) licences may be adapted for tokenised market structures through variations, special conditions, and exemptions. Similar to how ASIC's INFO 225 provides regulatory guidance for tokenised assets, formal guidance could be issued for tokenised markets and infrastructures, including when/how relief and special conditions can be used. Such guidance could improve transparency and consistency in regulatory decision-making and lower entry barriers for credible projects.

Second, Australia could benefit from establishing a dedicated tokenised-market or DFMI sandbox with a clearly articulated pathway to permanent authorisation. This sandbox could allow innovators to test and commercialise integrated trading, clearing, and settlement models under proportionate regulatory requirements, while collecting evidence on operational resilience, market integrity, and risk management. Importantly, sandbox participation could be coupled with defined graduation criteria so that successful pilots can transition into fully licensed production systems, rather than remaining confined to perpetual experimentation. Importantly, the sandbox could be used as a mechanism to achieve evidence-based regulatory reform. The observations from the tokenised markets operating in the sandbox can inform a future licensing regime for tokenised markets the digital FMIs. This future licensing regime could be one of the pathways for 'graduation' from the sandbox.

Third, over the medium term, Australia could evolve market licensing frameworks. The current AML and CSF regimes assume a separation between trading, clearing, settlement, and custody performed by identifiable intermediaries. Tokenised markets collapse these distinctions. Regulators could therefore introduce new licence categories for integrated market infrastructures or adapt existing licences to explicitly recognise entities (or systems) performing combined functions. In some cases, it may be appropriate to regulate the protocol or network itself, rather than only a traditional "operator". Future legislation or regulatory policy could formally recognise DFMIs as a distinct class of financial market infrastructure. This recognition could anchor requirements for operational resilience (e.g., smart-contract assurance, cybersecurity standards, governance arrangements), market integrity, and participant protections in tokenised markets.

Taken together, the near-term use of guidance, licence flexibility, and sandboxes could unlock early activity and learning, while longer-term structural reform delivers a durable regulatory architecture aligned with tokenised market design.

International context

While no jurisdiction has a fully mature framework for tokenised markets, Australia can learn from several progressive initiatives abroad.

- European Union: The DLT Pilot Regime establishes a temporary framework for DLT-based trading and settlement systems, recognising the inseparability of trading and settlement and permitting a single entity to operate both functions (DLT TSS).[235]
- Switzerland: Under the DLT Act, FINMA has authorised a DLT trading facility operated by BX Digital AG, permitting multilateral trading and settlement of securities on distributed ledgers, with integration into the Swiss Interbank Clearing payment system.[236]
- United Kingdom: The Bank of England and Financial Conduct Authority launched the Digital Securities Sandbox in September 2024, enabling live testing of DLT-based issuance, trading, and settlement of equities, bonds, money market instruments, fund units, and emission allowances with real users under modified regulatory settings.[237]
- Hong Kong: Authorities have advanced a coordinated roadmap for tokenised securities and virtual assets, including guidance on tokenised bond issuance, licensing of virtual asset trading platforms, a stablecoin issuer regime, and the LEAP framework to promote tokenisation of government and private-sector RWAs, use-case development, and industry–academic collaboration.[238,239]

Implication

International experience suggests a common toolkit:

- bespoke or adapted licensing categories,
- regulatory sandboxes with pathways to authorisation, and
- legislative recognition of DLT-based market infrastructures.

Adopting a similar approach could materially strengthen Australia's position in this pillar and unlock the largest share of the economic gains identified in this report.

[235] See 21X December 3, 2024 media post, "21X secures historic EU license to launch the first fully regulated blockchain-based trading venue."

[236] See March 18, 2025, "FINMA licenses first DLT trading facility" in the "News" tab on the FINMA website. The August 1, 2021 DLT Act creates a legal framework for the operation of DLT trading facilities and is an amendment to the FinMIA act (from June 19, 2015) which governs the organisation and operation of financial market infrastructures.

[237] The sandbox is with the intention of "strengthening the UK's leading position as a global and vibrant financial centre" and is "open to firms of all sizes and at all stages of development as long as they are legally established in the UK." See "Digital Securities Sandbox (DSS)" on the FCA's website (the "FCA Innovation Hub" tab).

[238] The regulatory roadmap is on the SFC's website under "A-S-P-I-Re" for a brighter future: SFC's regulatory roadmap for Hong Kong's virtual asset market."

[239] The August 1, 2025 "Stablecoin Ordinance" is on HKMA's website under "Regulatory Regime for Stablecoin Issuers." Guidance (or "circulars") on intermediary activities in virtual assets (e.g., cryptocurrencies, stablecoins, and NFTs) and tokenised securities (e.g., tokenised stocks and bonds) is on the SFC's website. See e.g., August 15, 2025, "Circular to licensed virtual asset trading platform operators on custody of virtual assets" and November 3, 2025, "Circular on expansion of products and services of virtual asset trading platforms."

Consumer protection

This pillar concerns the protection of retail users and investors as they engage with digital assets, tokenised products, and related platforms.

While Digital Finance can reduce several traditional financial risks (such as settlement risk and certain operational errors), it can also introduce new risk vectors that retail consumers do not face in the same way in conventional finance, most notably cybersecurity risks, private-key compromise, phishing and social-engineering attacks, and failures of digital custody arrangements.

Strong consumer protection is essential to prevent harm. It also sustains public confidence in tokenisation and digital financial services. At the same time, consumer protection frameworks must be proportionate and risk-sensitive. Tokenised versions of traditional financial instruments (such as government bonds or regulated funds) typically have risk profiles closer to their conventional counterparts, whereas unbacked or highly volatile crypto-assets pose fundamentally different risks. Regulatory approaches therefore need to distinguish between categories of digital assets and tailor protections accordingly, rather than applying a one-size-fits-all model.

Australia's progress

Australia has made notable progress in extending consumer protection frameworks to cover crypto-assets and related service providers. In 2025, the Government introduced the Corporations Amendment (Digital Assets Framework), which, once enacted, will require Digital Asset Platforms (DAPs), including exchanges and trading venues for crypto-assets, and Tokenised Custody Platforms to be licensed under the Australian Financial Services Licence (AFSL) regime and to comply with core financial services obligations.[240]

This framework, with appropriate proportionality and size-based exemptions for small or low-risk platforms, effectively brings major crypto exchanges and custodians within the regulated perimeter. Retail clients using these services should therefore receive protections broadly comparable to those using traditional broker-dealers or custodians.

A central policy objective of the DAP regime is to reduce losses suffered by Australians from crypto-related fraud, theft, and platform failures, highlighted by international cases such as FTX. Accordingly, the regime is primarily focused on situations where digital assets are held on behalf of consumers by intermediaries, and where failures of governance, custody, or operational controls can result in significant consumer harm.

Limits of this pillar for enabling tokenisation

While these reforms materially strengthen consumer protection, which is a positive step, they do not, by themselves, enable the tokenisation of real-world assets or address the core market-structure frictions identified elsewhere in this report. In particular, the DAP regime does not alter the licensing requirements for Australian Market Licence (AML) holders or Clearing and Settlement Facilities (CSFs), nor does it create a framework for digital Financial Market Infrastructures or tokenised trading–settlement systems.

[240] The Australian Parliament House website show the current progress of the bill (e.g., bill 2025 was introduced into parliament on November 26, 2025) which ensures that platforms are subject to obligations including operating fairly and transparently, providing clear customer information, maintaining robust governance and risk controls, and offering accessible dispute resolution.

In this sense, consumer protection reforms are largely orthogonal to the key innovation-enablement challenges in tokenised markets. They improve safety at the edges of the digital asset ecosystem but do not unlock new market architectures.

Wholesale versus retail context

Many of the largest economic gains from Digital Finance, such as reductions in settlement risk, collateral efficiency, and post-trade costs, are concentrated in wholesale and institutional markets. In these contexts, participants are sophisticated, and the binding constraints are primarily legal, regulatory, and structural (as discussed in the Tokenised Assets and Tokenised Markets pillars), rather than due to deficiencies in retail consumer protection.

Implication

Australia is progressing well in terms of consumer protection for digital assets. However, further tightening of this pillar, while important, will not materially increase Australia's ability to capture the economic gains from tokenisation. Those gains depend far more on completing the tokenised asset and tokenised market pillars. Consumer protection should therefore be viewed as a necessary foundation for safe participation, but not as a substitute for structural reform of market infrastructure.

Identifying Potential Policies to Accelerate Tokenisation in Australia

Having outlined the key adoption challenges and completed a regulatory stocktake, this section identifies policies that can most effectively accelerate tokenisation in Australia.

Subsequent sections evaluate and rank the list of potential policy priorities.

Candidate policies are drawn from three sources:

- Findings from the regulatory stocktake in the previous section;
- International best practices and policy approaches overseas; and
- Policy proposals from industry consultation in Australia and policy forums convened by DECA and DFCRC.

Across these sources, a set of recurring themes and policy priorities emerges.

Theme 1: Regulatory clarity and consistency

Regulatory uncertainty remains a core barrier to the development of digital asset markets in Australia. Part of this uncertainty pertains to fragmented and inconsistent definitions across agencies, ambiguous legal treatment of tokenised assets, and unclear application of existing licenses, which collectively have created a compliance burden for industry and impeded innovation. This theme addresses the need to establish a coherent regulatory framework by harmonising digital asset definitions across government bodies and issuing interpretive guidance on how existing markets and clearing and settlement facility license obligations apply to tokenised markets.

Potential Policy 1: Clear and consistent definitions

Create clear, consistent definitions of digital assets across government agencies to ensure alignment in categorisation across institutions and improve compliance with regulatory requirements. DECA notes that the inconsistent use of terms such as “digital assets” and “crypto assets” by ASIC, the ATO, and others creates confusion and hampers constructive industry engagement.[241]

This policy includes creating a comprehensive taxonomy of digital assets (asset nature and token structure) with legislative mapping to remove legal uncertainty associated with how tokenised assets are treated.[242] A report from DFCRC, DECA, and Ripple argues that developing a taxonomy will help map new token types to existing laws, thereby exposing regulatory gaps and preventing assets from being shoehorned into inappropriate categories. This mapping exercise could ensure tokenised real-world assets are properly classified rather than treated the same as crypto-native tokens, which have “novel properties” and often do not fit neatly into existing legal buckets.[242] DECA concludes that establishing a unified taxonomy is an “essential, foundational step” for effective policymaking. Internationally, regulators have reached similar conclusions: for instance, the US CFTC’s Digital Asset taxonomy initiative aims to harmonise how agencies classify a wide range of digital assets, and the European Union’s MiCA regulation clearly categorises crypto-assets (distinguishing “e-money tokens” and other asset-referenced tokens) with consistent licensing and oversight obligations for issuers.

[241] See the outcome paper of the 2025 Proactive Policy Forum from DECA, July 2025, “2025 Policy Paper.”

[242] See DFCRC, DECA, and Ripple, October 2024, “Key Policy Reforms to Support Tokenisation of Real World Assets in Australia.”

Potential Policy 2: Regulatory guidance on FMI licensing

Issue regulatory guidance clarifying how the Australian Market Licence (AML) and Clearing and Settlement Facility Licence (CSFL) frameworks apply to digital asset markets and tokenised settlement mechanisms.

Analogous to ASIC's INFO 225 for digital assets, such guidance could clarify how existing market and post-trade obligations apply to tokenised markets, integrated trading–settlement models, and decentralised architectures. DFCRC's submission on INFO 225 highlights the positive role of interpretive guidance in reducing uncertainty and calls for a similar approach for markets and clearing and settlement licensing.[244]

Guidance should be developed through industry consultation and explicitly address decentralised and protocol-based models.[245] While not a substitute for longer-term licensing reform, this guidance could provide near-term clarity on the scope for innovation within existing frameworks.

Theme 2: Enable tokenised markets and DFMIs

The regulatory stocktake shows that progress is weakest in tokenised markets and DFMIs (see Figure 23). Yet this pillar is critical: most of the economic gains from tokenisation depend on new market infrastructures that enable real-time atomic settlement and integrated trading–settlement architectures.

Traditional FMIs rely on identifiable entities to perform discrete functions, including trading, clearing, and settlement. These entities inherently create risks by performing these functions (e.g., credit, liquidity, operational risks), which are mitigated through controls enforced by licenses. In contrast, DFMIs reorganise these functions and introduce structural changes that challenge existing regulatory assumptions:

- Reorganisation of functions: Change in risk profile (e.g., integrating trade and settlement into a single process).
- Functions performed collectively: Absence of a single responsible entity, making accountability and oversight more complex.
- Vertical integration of functions, reducing intermediaries but concentrating operational responsibilities in new ways.
- Substantially different trading models (e.g., automated market makers), which alter risks associated with trading and settlement.

Addressing these structural differences and regulatory barriers requires targeted interventions that enable enduring experimentation (Policy 3) to ultimately reform the existing licensing framework (Policy 4).

[244] See DFCRC, 28 February 2025, "DFCRC Response to ASIC Consultation Paper 381 – Updates to INFO 225: Digital assets: Financial products and services."

[245] See DFCRC, December 1, 2023, "DFCRC Response to "Regulating Digital Asset Platforms" Proposal Paper."

Potential Policy 3: Sandbox with pathway to production

Establish a dedicated DFMI / tokenised-market sandbox with a clearly defined pathway to production. This sandbox would operate as a bridge between today's licensing architecture and a future fit-for-purpose regime. It would allow firms to test and scale tokenised market models under conditional relief, while regulators observe risks and gather evidence to inform permanent licensing reform.

Project Acacia demonstrated the value of regulatory relief for experimentation, but lacked a pathway to production and is insufficient in duration and scope to resolve structural licensing issues.

Regulators could specify stage-gated progression: testing → limited licence → full licence, conditional on meeting defined safeguards. This graduated approach could prevent innovators from becoming trapped in perpetual pilots and allows regulators to incrementally approve new models. It could also facilitate collaboration between innovators and regulators during the trial phase, smoothing the transition to a fit-for-purpose licensing regime.

International experience supports this model, including the EU DLT Pilot Regime and the UK Digital Securities Sandbox.

In Australia, a DFMI sandbox concept has already been developed through cross-jurisdictional analysis of overseas sandbox and pilot regimes and adapted to Australian institutional and legal settings.[246] The proposal sets out a stage-gated "production sandbox" that enables real-money, like the issuance of wholesale CBDC, on-market operation, combined with safeguards, and a clear graduation pathway to existing or new licences. Leveraging this existing design work could materially accelerate implementation and reduce policy development risk.

Potential Policy 4: Markets and FMI licensing reform

Reform AML and CSFL to reflect the structural differences of tokenised markets and settlement mechanisms.[247]

This reform would naturally follow from the learnings in the DFMI sandbox environment and remove outdated requirements that are not fit-for-purpose for real-time atomic settlement models due to the substantially different risk structure.

For example, the DFCRC's Economic Reform Submission proposes updates to licensing frameworks and the *Corporations Act*, emphasising that the existing licensing regime fails to accommodate real-time, riskless settlement, thus impeding new market formation.[248] Similarly, DFCRC, DECA, and Ripple highlighted specific constraints in the CSFL regime (e.g., duplicative or irrelevant obligations) that hinder the development of real-time settlement mechanisms.[249]

International regulatory reforms echo these points. In Switzerland, the 2021 DLT Act created a new category of DLT trading facility license, allowing integrated trading, settlement and custody of tokenised securities under a single regulatory umbrella. In the EU, the DLT Pilot Regime enables regulators to waive certain traditional infrastructure requirements (for example, the rule that any security traded on a venue must be settled through a central securities depository) for approved DLT market operators. These changes acknowledge that distributed ledgers can perform functions of traditional intermediaries within the technology itself. Australia should similarly introduce new categories or adapt existing ones to support lawful operation of tokenised markets.

[246] See Discussion Paper "Digital Financial Markets and Infrastructures Regulatory Sandbox in Australia", Anton Didenko (DFCRC/UNSW), Ross Buckley (DFCRC/UNSW), Franziska Gmeiner (DFCRC/UTS), Talis J. Putnins (DFCRC/UTS), Tony Richards (DFCRC).

[247] Gmeiner, Putnins and Weiss (2026) outline several DFMI trading and settlement models and highlight the mismatch between new financial market infrastructures and the existing FMI licensing frameworks.

[248] See DFCRC, July 25, 2025, "DFCRC Submission to Australian Government Economic Reform Roundtable."

[249] See DFCRC, December 1, 2023, "DFCRC Response to "Regulating Digital Asset Platforms" Proposal Paper."

Theme 3: Enable digital forms of money

Tokenised financial markets require robust digital settlement assets that match the programmability of tokenised RWAs. As traditional payment infrastructures are ill-suited to support atomic settlement and 24/7 market operations, the introduction of regulated digital forms of money (specifically AUD-denominated stablecoins, deposit tokens, and a wholesale central bank digital currency) is essential. The policies in this theme address the role of these instruments in enabling real-time atomic settlement.

Potential Policy 5: Regulatory framework for stablecoins

Implement a regulatory framework for stablecoins that ensures stability and confidence in AUD stablecoins, which can be used to settle tokenised assets and resolves regulatory uncertainty in the issuance and use of stablecoins. As noted in the regulatory stocktake above, progress toward a framework has been made, but some steps still remain.

DECA's 2025 Policy Paper urges the government to "legislate for stablecoins as a priority step in the digital asset framework" in order to provide secure, programmable, AUD-denominated settlement infrastructure for the digital economy.[250] DECA's roundtable participants stressed that "nothing works without stablecoins" since almost all tokenised asset transactions require a stable digital form of money. The paper notes that while USD-pegged stablecoins have exploded to over US$200 billion issued globally, Australia's domestic AUD stablecoin growth has "stalled due to regulatory barriers." This gap in payment infrastructure undermines the broader tokenisation market. The policy paper argues that without clear standards ensuring the integrity and security of stablecoins, "the broader tokenised financial market cannot operate efficiently." It calls the stablecoin framework the "cornerstone" for digital asset markets, laying the necessary groundwork for innovation.

Major banks also have a critical role to play in establishing confidence in AUD-denominated digital money. Their issuance of deposit tokens would provide a strong market signal, anchoring trust in tokenised markets. To enable this, regulators could offer clearer guidance that existing prudential and payments frameworks do not preclude controlled experimentation, and expand support for supervised pilots that allow banks to test tokenised liabilities safely.

Potential Policy 6: Australian wholesale CBDC

Issue an Australian wholesale CBDC.

A wholesale CBDC could enable riskless settlement in central bank money, support atomic delivery-versus-payment, and provide a neutral settlement asset for tokenised markets. It could also serve as a coordination anchor, signalling commitment to tokenised market infrastructure and accelerating institutional adoption.

As outlined in the "Global Progress in Digital Finance" section of this report, the absence of a readily available CBDC significantly slows industry-wide adoption of tokenised markets and programmable settlement.

The rationale behind this policy is similar to the requirements for stablecoins, with a specific focus on wholesale transactions that require settlement in central bank money. Moreover, central bank money is a potential interchange asset for stablecoins on different ledgers, or for cases where issuers do not want exposure to other stablecoin issuers.

A prudent step ahead of issuing wholesale CBDC is the testing in a long-term regulatory environment, such as a sandbox. This would enable controlled evaluation of wholesale CBDC use in new market architectures. Subject to successful and sufficiently robust testing outcomes, regulatory alignment and deployment can then proceed for widespread adoption.

[250] See the outcome paper of the 2025 Proactive Policy Forum from DECA, July 2025, "2025 Policy Paper."

Theme 4: Government support

Tokenisation adoption exhibits strong coordination dynamics. Firms' incentives to invest depend on expectations about future infrastructure and regulatory certainty. Government action can shift expectations and reduce coordination failure. Without these signals, firms hesitate to commit resources.

Consequently, government support accelerates adoption in two ways:

- Signalling readiness and legitimacy. Issuing tokenised sovereign instruments validates the technology and reassures the industry that tokenisation is a strategic priority.
- Anchoring trust and coordination. Public-sector involvement creates on-chain high-quality liquid assets (HQLA) as collateral, enabling private-sector innovation to scale.

Potential Policy 7: Tokenised government bonds

Issue tokenised government bonds.

Tokenised government bonds provide sovereign-grade high-quality liquid assets (HQLA) usable as collateral, stablecoin backing, repo instruments, and investment assets on digital rails. This anchors private-sector innovation around trusted public instruments and materially strengthens the business case for tokenised markets, reducing reliance on synthetic substitutes of government bonds.[251]

> "Tokenised government bonds can create a domestic demand nucleus around which sustainable on-chain capital markets can form."
>
> *DFCRC/DECA survey participant*

The DFMI sandbox (Policy 3) could also be utilised to issue Australian tokenised government bonds, providing a controlled environment to test on-chain issuance, settlement, and interoperability with tokenised money. This approach is consistent with international practice. The UK Treasury, for example, has appointed HSBC to lead the issuance of its first digitally native government bond ("digital gilt") within the UK's Digital Securities Sandbox.[252]

[251] See DFCRC, July 25, 2025, "DFCRC Submission to Australian Government Economic Reform Roundtable."

[252] See HM Treasury, February 12, 2026. "Update on the procurement for Digital Gilt Instrument (DIGIT) Pilot."

Evaluating and Prioritising Potential Policies to Unlock Economic Gains

While Australia has made progress across tokenised money, assets, and consumer protection, the previous sections highlight that the most significant gaps remain in tokenised markets, where regulatory misalignment, unclear licensing pathways, and the absence of safe settlement assets (CBDC, stablecoins, or deposit tokens) constrain the development of high-turnover tokenised markets.

To prioritise policies that are most likely to unlock the economic gains from Digital Finance, we apply two complementary lenses:

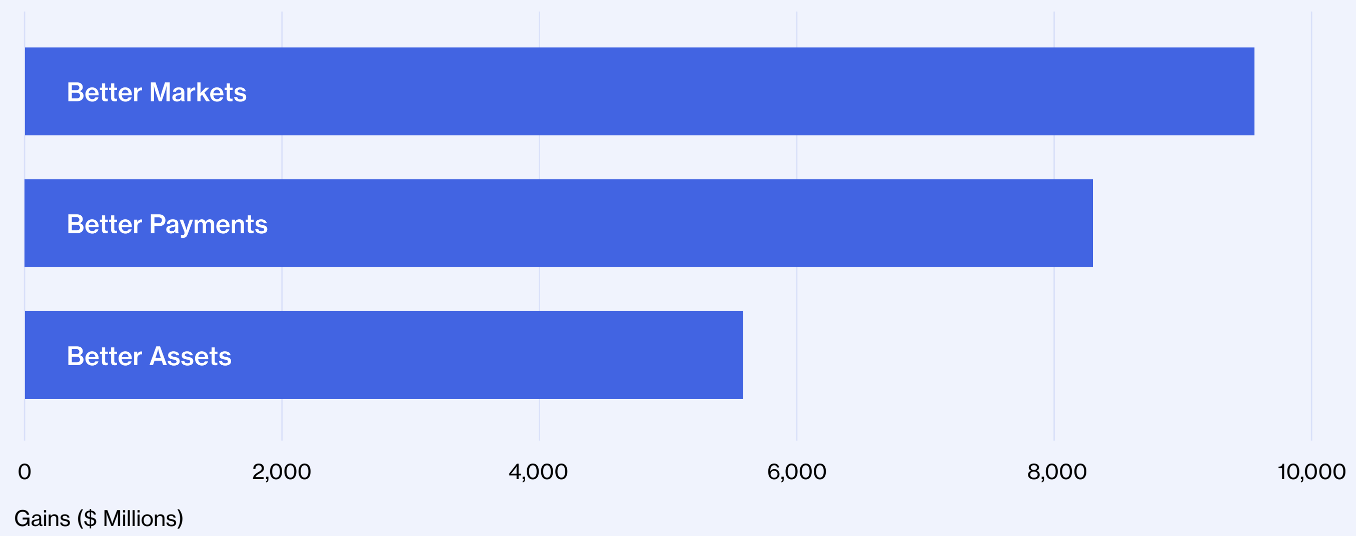
1. **Data-driven prioritisation,** based on the economic impact assessment in this report, which identifies where the largest potential gains arise; and
2. **Industry assessment of policy impact,** based on survey evidence capturing expert views on which policies would have the greatest practical effect.

We prioritise policies that perform strongly on both dimensions: (i) large potential economic impact, and (ii) strong industry support.

Policies prioritised by economic impact data

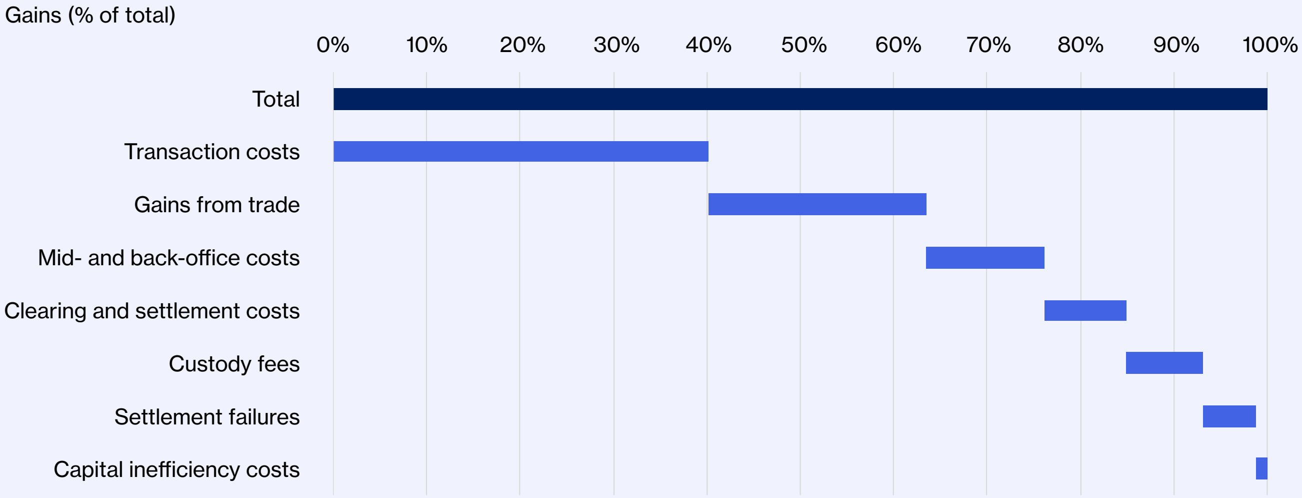
At a high level, as depicted in Figure 24, our analysis indicates that the most significant economic gains from tokenisation lie in Better Markets and Better Payments (particularly in foreign exchange markets). This finding underscores the importance of **Policy Theme 2 – Enabling Tokenised Markets** as the most critical lever for unlocking value, including **Potential Policy 3 (Sandbox with pathway to production)** and **Potential Policy 4 (Markets/FMI licensing reform)**. It also supports the policies associated with enabling tokenised money (e.g., **Potential Policy 5: Regulatory framework for stablecoins**, and **Potential Policy 6: Australian wholesale CBDC**).

Figure 24: The potential economic gain of tokenisation in Australia



Better Markets

Figure 25: Sources of economic impact potential in markets



Within the category *Better Markets*, two mechanisms drive the bulk of gains:

- Direct exchange of assets, such as via automated market makers (AMMs); and
- Redesign of financial market infrastructure, where atomic settlement reduces execution and settlement costs and risks.

Figure 25 shows that approximately 40% of market-level gains arise from transaction cost reductions, including narrower bid–ask spreads and lower intermediary fees enabled by direct asset exchange and atomic settlement. Unlocking these gains requires:

- **Potential Policy 3 (Sandbox with pathway to production)** and
- **Potential Policy 4 (Markets/FMI Licensing reform)** to enable tokenised market infrastructures; and
- A programmable settlement asset embedded directly in smart contracts, which is provided by either **Potential Policy 6 (Wholesale CBDC)** where settlement in central bank money is required, or **Potential Policy 5 (Stablecoin framework).**

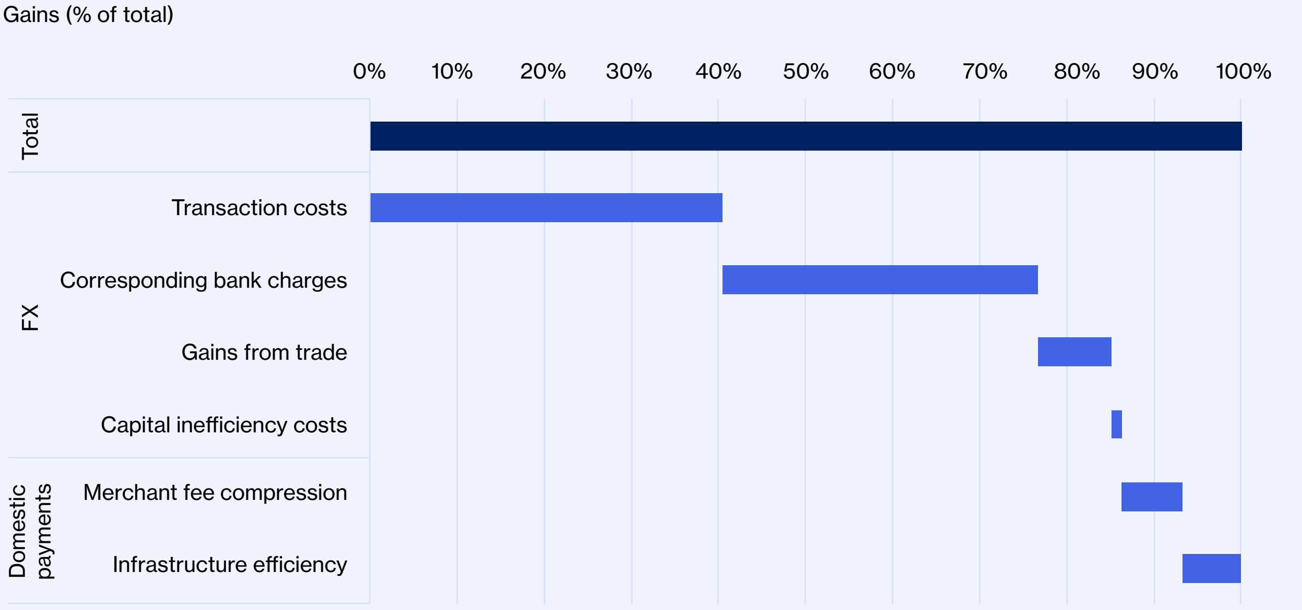
In the interim, developing tokenised markets in Australia could benefit from **Potential Policy 2 (Regulatory guidance on FMI licensing).**

The next major source of gains is 'gains from trade', reflecting increased participation once frictions fall. Middle- and back-office automation is a key channel, as tokenisation enables automated reconciliation, reporting, and settlement. Again, these gains depend fundamentally on Potential Policies 3 and 4. Clearing and settlement costs and settlement failures follow, both of which are substantially reduced or eliminated under real-time atomic settlement, reinforcing the centrality of tokenised market enablement.

Conclusion: The largest economic gain potential (Better Markets) suggests strongly prioritising Potential Policies 3 and 4, supported by Policies 5 and 6.

Better Payments

Figure 26: Sources of economic impact potential in payments



Turning to *Better Payments*, Figure 26 shows that the largest share of payment-system gains comes from FX transaction costs, accounting for more than 40% of total payment gains. These arise from tighter spreads and lower intermediary fees through more direct trade and settlement of FX.

Unlocking these gains requires:

- **Potential Policy 6 (Wholesale CBDC)** to enable riskless settlement in central bank money; and
- **Potential Policy 5 (Stablecoin framework)** to provide trusted programmable settlement assets.

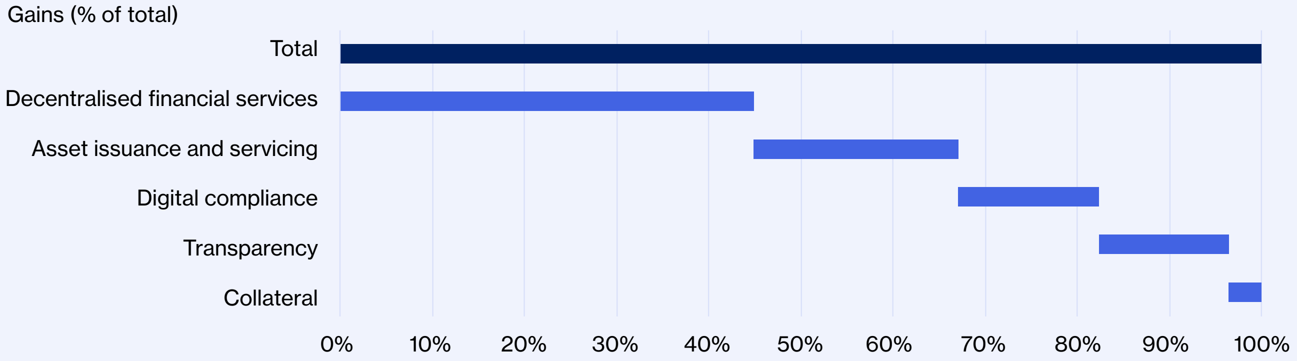
Correspondent banking charges are the next major source of inefficiency. Tokenisation can replace multi-intermediary correspondent chains with direct atomic settlement, again relying on Policies 5 and 6. 'Gains from trade' follow, reflecting increased cross-border activity once costs fall, and depend on the same foundational policies. Capital inefficiency costs from liquidity trapped in nostro accounts are smaller but material and likewise depend on Policies 5 and 6.

Finally, in domestic payments, gains primarily arise from lower merchant and transaction fees, which depend on scalable, low-cost programmable settlement assets enabled by Policy 5.

Conclusion: Payment-system results suggest prioritising Potential Policies 5 and 6, complemented by Potential Policies 3 and 4 to enable FX and AMM market experimentation.

Better Assets

Figure 27: Sources of economic impact potential in assets



Finally, turning to *Better Assets*, Figure 27 shows that the largest share of asset-level gains arises from decentralised financial services, including collateralised lending, repo, and invoice financing.

Unlocking these gains requires:

- **Potential Policy 1 (Unified digital asset taxonomy)**
  to provide legal clarity for tokenised RWAs; and
- **Potential Policy 7 (Tokenised government bonds)**
  to supply on-chain sovereign collateral, including a trusted form of digital money for settlement.

The next major source is asset issuance and servicing, which includes efficiencies from automating bond issuance, coupon payments, and lifecycle management.

These gains depend on:

- **Potential Policy 3 (Sandbox)** and **Policy 4 (Markets/FMI licensing reform)** to enable integrated issuance and atomic settlement models; and
- **Potential Policy 1 (Taxonomy)** to support native tokenised issuance.

Digital compliance follows, reflecting cost reductions from embedding KYC, AML, and reporting requirements into smart contracts. Unlocking these gains requires **Potential Policy 1 (Taxonomy)** for consistent regulatory treatment.

> "A tokenisation-first competitive dynamic only becomes economically rational once sovereign settlement and collateral are natively available on-chain."
>
> *DFCRC/DECA survey participant*

Transparency gains stem from improved price discovery and reporting in opaque markets such as private equity and corporate bonds. These benefits primarily rely on **Potential Policy 3 (Sandbox)** to pilot new, more transparent infrastructure and assess its institutional adoption.

Finally, tokenisation improves collateral mobility and eligibility, reducing funding costs and freeing liquidity. These gains require **Potential Policy 1 (Taxonomy)** to provide legal clarity on tokenised collateral, and **Potential Policies 6 (Wholesale CBDC)** and **7 (Tokenised Government Bonds)** to provide high-quality settlement assets[253]
and enable real-time collateral reuse.

Conclusion: Gains associated with Better Assets prioritise Policy 1 and Policy 7, supported by Policies 3, 4, and 6.

[253] An alternative trusted settlement asset could be the interbank interchange of tokenised deposits, with final settlement effected in Exchange Settlement Account (ESA) balances.

Overall prioritisation from economic data

Across markets, payments, and assets, the economic impact assessment consistently prioritises:

Tier 1:

- Policy 3 – Sandbox with pathway to production
- Policy 4 – Markets/FMI licensing reform
- Policy 5 – Stablecoin framework
- Policy 6 – Wholesale CBDC

Tier 2:

- Policy 1 – Unified digital asset taxonomy
- Policy 7 – Tokenised government bonds
- Policy 2 – Regulatory guidance on FMI licensing.

These results strongly reinforce the conclusion that the largest gains from Digital Finance will not be realised through incremental consumer protection reform alone, but through policies that enable tokenised market infrastructure and real-time atomic settlement.

Potential policies prioritised by industry survey data

While all seven potential policies identified above are expected to support tokenisation in Australia, we further assess their relative importance using a targeted expert survey of participants from both traditional finance (TradFi) and decentralised finance (DeFi). The objective is to validate the policy directions suggested by the economic modelling and to obtain indicative estimates of the relative magnitude of each policy's impact.

The survey asked respondents to provide two estimates for each major market segment:

1. The expected tokenisation rate by 2030 under a baseline scenario with no additional policy changes; and
2. The expected tokenisation rate by 2030 if each policy were implemented today.

The responses indicate low adoption of Digital Finance, measured by the proportion of asset value tokenised, under current policy settings. For example, respondents estimate an average tokenisation rate of approximately 2% in public markets (equities and bonds) by 2030, broadly consistent with the global adoption ranges discussed in Section "Economic gains at the 2023 horizon."

To translate survey responses into economic impacts, we compute, for each policy, the difference between the projected tokenisation rate under the baseline scenario and the rate projected if the policy were implemented. This difference represents the incremental adoption attributable to that policy. We then map incremental adoption to the estimated total economic gains from tokenisation (Section "Economic gains at the 2023 horizon") to obtain an indicative dollar value for each policy's contribution.

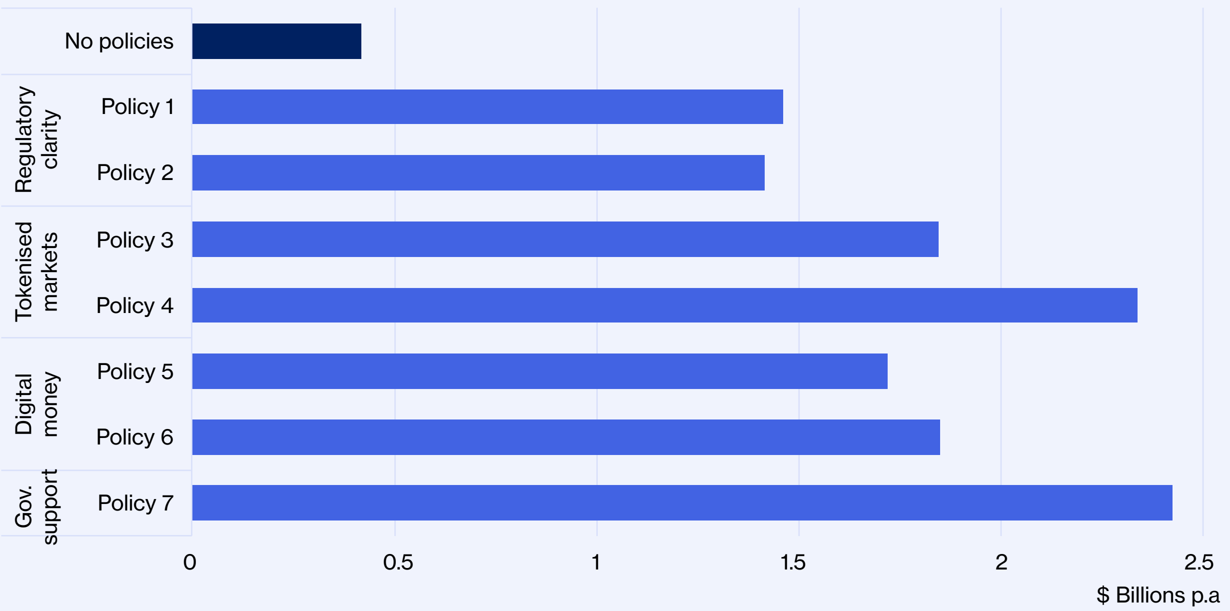
For illustration, if baseline adoption is 2% and Policy 4 (FMI licensing reform) raises expected adoption to 14%, the additional 12 percentage points are attributed to Policy 4 and applied proportionally to the total estimated economic gains to derive the dollar value associated with the policy intervention.

Figure 28 summarises the resulting estimates, showing each policy's incremental effect on adoption and the corresponding annual economic value. The results indicate that:

- Policies directly enabling tokenised markets, particularly **Policy 4 (Markets/FMI licensing reform)**, and strong government signalling through **Policy 7 (Tokenised government bonds)** deliver the largest incremental gains.
- These are followed by **Policy 6 (Wholesale CBDC)**.
- Policies aimed at regulatory clarity, **Policy 1 (Unified taxonomy)** and **Policy 2 (Regulatory guidance)**, are also estimated to generate meaningful benefits, primarily by lowering compliance friction and reducing uncertainty, although their effects are more indirect.

The results of this analysis are illustrated in Figure 28, which depicts policies and their estimated impact on adoption and corresponding economic value.

Figure 28: Estimated 2030 economic impact if policies are implemented today



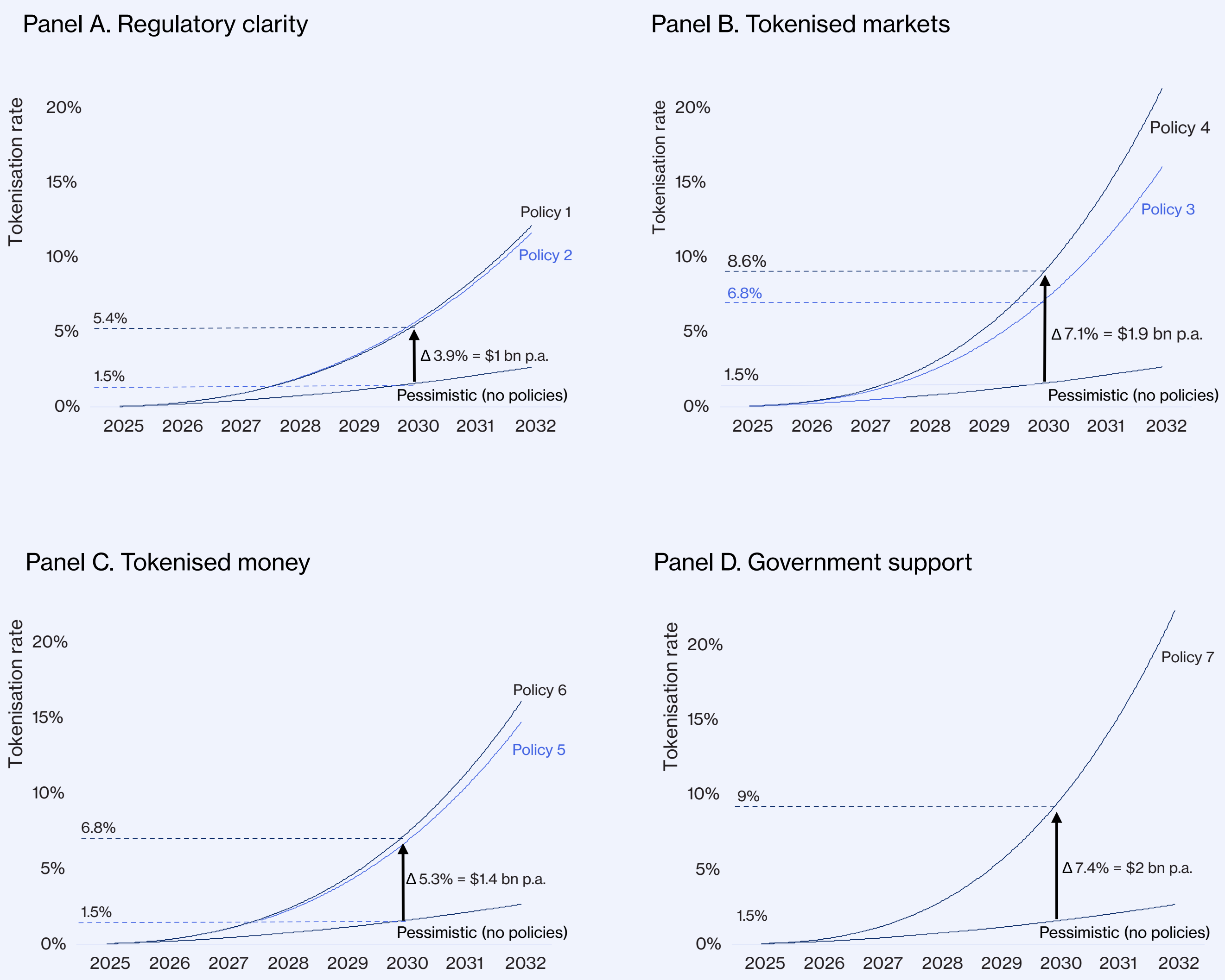
Notes: Policy 1: Unified digital asset taxonomy; Policy 2: Regulatory guidance on FMI licensing; Policy 3: Sandbox with pathway to production; Policy 4: Markets/FMI licensing reform; Policy 5: Stablecoin framework; Policy 6: Wholesale CBDC; Policy 7: Tokenised government bonds.

Next, Figure 29 illustrates how implementation of the seven policies is expected to affect both the fraction of assets tokenised by 2030 and the associated economic gains. Consistent with the adoption scenarios in Section "Economic gains at the 2023 horizon," we use the pessimistic scenario (1.54% tokenisation rate) as the reference point for estimating incremental impacts.

The figure shows, by policy theme, the change in tokenisation rate and the corresponding increase in estimated annual economic gains relative to this baseline. Policy 7 (Tokenised government bonds) and Policy 4 (Markets/FMI licensing reform) again emerge as the most impactful, each expected to increase adoption by more than seven percentage points and adding approximately A$2 billion per year in economic value by 2030.

Taken together, the industry survey results reinforce the economic data-driven prioritisation: policies that directly enable tokenised market infrastructure and provide trusted on-chain settlement and collateral assets dominate in terms of expected impact.

Figure 29: Estimated economic impact of policies by 2030



Integrated Potential Policy Prioritisation: A Synthesised View of Industry and Global Perspectives

We combine the economic impact assessment and the industry survey evidence to form an integrated prioritisation of policy interventions. The economic modelling identifies where the largest potential gains from tokenisation arise, while the survey evidence indicates which policies practitioners believe would most effectively unlock adoption in practice. Policies that score highly on both dimensions are treated as highest priority.

Table 10 summarises the combined assessment.

Table 10: Combined prioritisation of potential policies (economic impact × industry support)

Rank	Policy	Economic impact potential	Industry support	Primary channel	Rationale
1	Policy 3 – Digital FMI Sandbox with pathway to production	Very high	Very high	Markets, experimentation	Enables real-world testing and learning; bridge to licensing reform; stage-gated pathway to production and scaling; builds on current momentum
2	Policy 4 – Licensing reform for tokenised markets	Very high	Very high	Markets, payments (FX)	Removes binding constraint preventing integrated trading / settlement infrastructures and distributed FMI; enables atomic settlement and high-turnover tokenised financial markets
3	Policy 5 – Stablecoin regulatory framework	High	High	Payments, markets, assets	Provides programmable settlement asset; essential for AMMs, FX, and DeFi services
4	Policy 6 – Wholesale CBDC	High	High	Payments, markets	Enables riskless atomic settlement in central bank money; anchors institutional adoption
5	Policy 7 – Tokenised government bonds	Medium–high	High	Assets, collateral, signalling	Provides on-chain HQLA; anchors collateral and repo markets; strong coordination signal
6	Policy 1 – Unified digital asset taxonomy	Medium	Medium–high	Assets, compliance	Reduces legal uncertainty; enables native issuance
7	Policy 2 – Regulatory guidance on AML/CSFL	Medium	Medium	Markets	Improves near-term clarity within existing frameworks

Tier 1: Market-enabling infrastructure policies

- Policy 4 (Markets/FMI licensing reform) and Policy 3 (Sandbox with pathway to production) form the core of the reform agenda. Economic modelling shows that most gains arise in markets and payments, and both require tokenised trading–settlement infrastructures that cannot operate at scale under current licensing regimes. Industry respondents consistently identify licensing uncertainty as the most binding constraint. Together, these policies could unlock atomic settlement, integrated market design, and high-turnover activity.
- Policy 6 (Wholesale CBDC) and Policy 5 (Stablecoin framework) are closely complementary. Settlement assets are necessary inputs into tokenised markets, AMMs, and efficient cross-border payments. Without programmable digital money, licensing reform alone cannot deliver the full gains.

Tier 2: Adoption accelerators and anchors

- Policy 7 (Tokenised government bonds) ranks highly in industry surveys due to its strong signalling and coordination effects and its role in providing on-chain sovereign collateral. While its direct economic contribution is smaller than licensing reform, it materially accelerates ecosystem formation.

> "System-level interventions such as an Australian wholesale CBDC and the issuance of tokenised government bonds are not merely enabling reforms, they are catalytic. These instruments would establish on-chain sovereign settlement and on-chain high-quality collateral, creating a domestic demand nucleus around which sustainable tokenised capital markets can form."
>
> *DFCRC/DECA survey participant*

Tier 3: Foundational clarity measures

- Policy 1 (Unified taxonomy) and Policy 2 (Regulatory guidance) primarily reduce legal and compliance friction. Their effects are enabling rather than transformative, but they materially improve the effectiveness of higher-tier policies.

Overview of Top Policy Catalysts to Unlock Australia's $24b Economic Dividend

The analysis identifies the following key policy priorities, based on Australian industry survey data and the most significant categories of economic gain:

- **Establish a dedicated Digital Financial Market Infrastructure (DFMI) sandbox to support transitions from pilot to production.** The sandbox could support the evolution of DFMI licensing, provide a stage-gated path to production for tokenised financial market use cases and build on Australia's strengths (including Project Acacia) and international best practice. It would formalise ongoing collaboration between regulators, industry participants in testing and scaling Digital Finance innovations.
- **Evolve the licensing framework for tokenised financial markets and DFMI.** This would complete the fourth pillar of a modern Digital Finance regulatory architecture. Australia has made important progress on regulation and guidance for digital assets, digital money (stablecoins), and consumer protections, but evolving the financial markets and DFMI licensing pillar remains an important enabling step.
- **Deploy foundational infrastructure, including tokenised Government bonds and wholesale Central Bank Digital Currency in the DFMI sandbox.** The data suggests these foundational components would enable the development of tokenised markets, collateralised lending, payments, and related services. They can help coordinate sequencing across industry participants, reducing fragmentation and accelerating the transition to a digital financial system.

Other policy priorities, including clear and consistent definitions of digital assets, regulatory guidance on FMI licensing, and the regulatory framework for stablecoins are also identified in this section of the report.

Sequencing of policy priorities

Based on the data, a practical suggested sequencing could be as follows.

This sequencing enables building on current momentum while laying foundations for durable, high-impact reform.

1 Phase 1 (Immediate): Create the bridge and build on current momentum

Goal: enable safe real-world testing and unlock early adoption incentives.

1A Establish sandbox with pathway to production (Policy 3)

Stand up a dedicated DFMI/tokenised markets sandbox with:

- entry criteria (fit-and-proper, risk controls, transparency)
- tiered permissions (test > restricted live > → broader live)
- explicit graduation pathway into licensing reform outcomes
- pilot wholesale CBDC to enable settlement

Use the sandbox as the primary evidence engine for what does/doesn't work.

1B Concurrently finalise stablecoin framework (Policy 5)

Finalise and implement stablecoin rules covering:

- reserve quality/custody
- redemption rights and disclosures
- governance and risk management
- operational resilience expectations.

Outputs by end of Phase 1

Sandbox operating with first cohorts running end-to-end (issuance > trading > settlement) under controlled conditions.

Stablecoin regime enacted/operational (or at least materially de-risked with clear path to enactment).

2 Phase 2 (Near-term): Convert sandbox learning into licensing reform & guidance

Goal: establish a permanent fit-for-purpose licensing regime to move activity from sandbox exemptions to permanent licences.

2A Markets and DFMI licensing reform informed by sandbox learnings (Policy 4)

2B Develop guidance on the application of existing licences to digital finance markets (Policy 2)

Use sandbox outcomes to identify:

- which AML/CSFL obligations are duplicative/irrelevant under atomic settlement
- where new obligations are needed (e.g., smart contract assurance, protocol governance, cyber)
- how to allocate accountability when functions are integrated or collectively performed.

Outputs by end of Phase 2

Regulatory guidance issued including how flexibility in current regime can best be applied and a regulatory "operating model" for supervising DFMIs.

Draft legislative/regulatory reforms creating licence category or amended categories for integrated tokenised markets/DFMIs.

A transition plan for sandbox graduates into the reformed framework (to 2A or 2B).

3 Phase 3 (Mid-term): Scale settlement and collateral rails through the sandbox

Goal: introduce the anchor instruments that enable institutional-scale markets.

3A Introduce tokenised government bonds (Policy 7) via the sandbox

3B Advance wholesale CBDC (Policy 6)

Use sandbox to:

- Test native issuance of tokenised government bonds and repo/collateral workflows using on-chain HQLA
- Evaluate broadening issuance of tokenised government bonds to outside of the sandbox
- Evaluate use of the pilot CBDC in the sandbox to decide on ongoing wholesale CBDC facility beyond the DFMI sandbox or standing settlement access for licensed DFMIs.

Outputs by end of Phase 3

Regular or repeatable tokenised government bond issuance cadence (even if limited initially).

Demonstrated repo/collateral and settlement workflows that support broader institutional adoption.

Ongoing wholesale CBDC facility beyond the DFMI sandbox or alternate standing settlement access for licensed DFMIs.

4 Phase 4 (Ongoing): Complete definitional clarity and interpretive guidance

Goal: harden the legal perimeter and reduce compliance friction as adoption broadens.

4A Complete digital asset taxonomy (Policy 1) and address legal/regulatory constraints concerning issuance of tokenised securities

- Finalise a unified digital asset taxonomy aligned across agencies, grounded in “substance over form” and observed implementation patterns from sandbox participants.
- Address identified legal/regulatory constraints concerning issuance of tokenised securities, such as restrictions on bearer securities and tokenisation arrangements that cause unwarranted regulatory reclassification.

Outputs by end of Phase 4

Cross-agency digital asset taxonomy embedded in practice (and ideally legislation where needed).

Reduced need for bespoke exemptions.

Potential updates of the *Corporations Act* to remove constraints in issuance of tokenised securities.

Main Conclusions

10

The economic opportunity is large and transformative, and we need to act now to capture the benefits

Key Takeaway 1

Digital Finance has moved beyond experimentation and is entering large-scale, real-world adoption globally, driven by major policy reforms and institutional deployments. The technologies at the centre of this shift - tokenisation, distributed ledgers, programmable money, and real-time atomic settlement - are proving their value in live implementations across markets, payments, assets, and collateral systems.

Full-scale Digital Finance adoption could deliver approximately $24 billion in annual economic gains for Australia, equivalent to roughly 1% of GDP, through more efficient markets, payments, and asset functionalities. These gains come from reduced transaction and settlement costs, improved capital and collateral efficiency, reduced operational and compliance costs, and new marketplaces that unlock previously unrealised gains from trade.

These benefits reflect improvements in the fundamental efficiency of the financial system. Even modest reductions in frictions can produce large economic gains when applied across markets that intermediate tens of trillions of dollars annually.

This opportunity is not abstract: global uptake in tokenised bonds, tokenised funds, intraday repo, and stablecoins demonstrates that meaningful efficiency gains are already being achieved in production environments.

Australia stands at a pivotal moment: the foundations are in place, but the global environment is moving ahead quickly. Hesitating now risks Australia falling behind jurisdictions that are already modernising market infrastructure and scaling tokenised asset markets. The question is no longer whether Digital Finance will reshape global markets, but how quickly Australia will adapt and whether it captures the economic benefits or becomes a consumer of infrastructure developed elsewhere.

The largest gains are from improving the performance of high-turnover asset classes

Key Takeaway 2

The largest economic gains from tokenisation arise from enhancing the performance of high-turnover asset classes, where even small reductions in frictions compound across enormous transaction volumes.

Foreign exchange, for example, contributes an estimated $7.2 billion per year in potential gains, reflecting its enormous trading volume and reliance on intermediated settlement. Other large and heavily intermediated markets such as investment funds ($2.5 billion p.a.), public and private debt ($1.9 billion p.a.), and private equities ($1.6 billion p.a.) generate similarly outsized benefits. Their scale means that marginal improvements in spreads, settlement processes, and liquidity costs translate into substantial system-wide economic value.

By contrast, in markets such as real estate, where transaction costs are high, but trades occur infrequently, tokenisation would produce relatively modest aggregate economic gains, notwithstanding the large size of the underlying asset class.

Therefore, prioritising large but heavily intermediated and structurally inefficient markets, where incremental improvements deliver outsized economic impact, accelerates realisation of national productivity gains.

The primary economic gains come from more direct exchange of value that tokenisation enables

Key Takeaway 3

While tokenisation is a necessary technological foundation of Digital Finance, this report finds that the primary economic gains arise from the market and settlement architectures it enables rather than from tokenisation alone. Tokenisation enables a fundamentally different market structure in which trading, settlement, custody, and compliance are integrated within a unified, programmable infrastructure. This changes how value moves through the financial system by enabling more direct exchange between transacting parties, reducing reliance on intermediaries. It also reduces reliance on sequential processing across multiple intermediaries and systems, thereby lowering coordination costs, operational complexity, and reconciliation requirements that are intrinsic to today's financial infrastructure.

The report finds significant gains in better settlement processes, across many asset classes and payments. A central mechanism driving these gains is the ability to support atomic, real-time settlement, where assets and payments are exchanged simultaneously. This materially reduces counterparty exposure and the associated need for collateral buffers and ongoing risk management processes designed to mitigate settlement risk. These frictions exist because today's financial system separates trading from settlement, often across multiple intermediaries and systems.

This more direct and efficient market infrastructure also expands market access and enables entirely new markets to emerge. By reducing issuance, trading, and servicing costs, tokenisation lowers the minimum efficient scale required for assets to be economically tradable. Assets that were historically too illiquid or too costly to intermediate, such as private credit, infrastructure projects, trade finance receivables, or fractional interests in real assets, can become widely tradable. Increased accessibility and liquidity can reduce the cost of capital for issuers, generating broader economic benefits.

Australia is on track to capture only a fraction of the potential economic gains

Key Takeaway 4

The analysis shows that while full-scale tokenisation could unlock around $24 billion per year, Australia is not currently positioned to realise even half of this value by 2030. On the current trajectory, only about $1.1 billion per annum in gains is expected to be realised by 2030, representing less than 5% of the estimated full potential.

This gap reflects the reality that Digital Finance adoption requires coordinated, system-wide change, and such transitions typically unfold slowly without deliberate policy and industry action.

The economic implications of delayed adoption are compounded by the time value of money. Because financial infrastructure investments have persistent effects, delays reduce the cumulative and present value of economic benefits. Each year of delayed adoption represents lost productivity improvements, higher operating costs, and reduced international competitiveness. This finding highlights that Digital Finance is a time-dependent economic opportunity.

Strong opportunity to accelerate adoption and enhance 2030 gains via innovative policy reforms and coordination

Key Takeaway 5

The report also shows a strong opportunity for Australia to bring forward a much larger share of the economic gains through targeted, innovation-enabling policy and regulatory reforms, combined with stronger collaboration across industry, regulators, and government. The recommended path focuses on addressing the most material constraints to adoption and creating the enabling conditions for tokenised markets, payments, and assets to scale safely.

The report finds that regulatory barriers and uncertainty are the primary constraints identified by the data. Industry survey responses in Australia identify these as the primary constraints to tokenisation adoption, consistent with findings from Australian policy forums and international evidence. Key barriers cited include unclear licensing requirements, ambiguity regarding the legal status of tokenised assets, and uncertainty about the applicability of the Australian Markets License (AML) and Clearing & Settlement Facility License (CSFL) frameworks, which limit product development, compliance, and operational planning.

Key policy priority areas identified by the analysis, which is based on Australian industry survey data and the most significant categories of economic gain:

- **Establish a dedicated Digital Financial Market Infrastructure (DFMI) sandbox to support transitions from pilot to production.** The sandbox could support the evolution of DFMI licensing, provide a stage-gated path to production for tokenised financial market use cases and build on Australia's strengths (including Project Acacia) and international best practice. It would formalise ongoing collaboration between regulators, industry participants in testing and scaling Digital Finance innovations.
- **Evolve the licensing framework for tokenised financial markets and DFMI.** This would complete the fourth pillar of a modern Digital Finance regulatory architecture. Australia has made important progress on regulation and guidance for digital assets, digital money (stablecoins), and consumer protections, but evolving the financial markets and DFMI licensing pillar remains an important enabling step.
- **Deploy foundational infrastructure, including tokenised Government bonds and wholesale Central Bank Digital Currency in the DFMI sandbox.** The data suggests these foundational components would enable the development of tokenised markets, collateralised lending, payments, and related services. They can help coordinate sequencing across industry participants, reducing fragmentation and accelerating the transition to a digital financial system.

Together, these steps create a clear and actionable opportunity to accelerate tokenisation, unlock earlier and larger economic gains, strengthen the resilience of Australia's financial system and ensure the country secures a competitive position in the rapidly evolving global digital finance landscape.

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Appendix A: Estimation of Market Value per Asset Class

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Table A1

Asset Class	Market Size ($bn)	Source
Real estate	14,034.00	Statista “Commercial Real Estate - Australia” (USD 1.71 tn) Australian Bureau of Statistics “Total Value of Dwellings” ($11,366.4 bn)
Foreign exchange	10,850.36	CEIC “Australia Money Supply M2” ($ 3,050.36 bn) Reserve Bank of Australia “Developments in Foreign Exchange and Over-the-counter Derivatives Markets” (USD 5 tn notional outstanding FX contracts in Australia).
Investment funds	3,883.67	*Australia managed fund value:* Australia Bureau of Statistics “Managed Funds, Australia” – Dec 2023 ($4,751.5 bn) Consolidated assets total managed funds institutions ($3,883.67 bn)
Public equities	3,007.00	ASX “Historical market statistics - End-of-month values and the number of listed companies and securities on ASX”
Public debt	2,759.00	ASIC “Australia’s evolving capital markets: A discussion paper on the dynamics between public and private markets” (Government bonds $1.499 tn; Corporate bonds $760 bn) Imperium “Imperium Markets Wants to Settle Money Market Transactions Instantly” (The “market for wholesale term deposits and certificates of deposit [is] estimated to be worth about $500 billion.”)
Private equity	1,579.00	*Private capital:* ASIC February 2025, (REP 807) “Evaluating the state of the Australian public equity market: Evidence from data and academic literature” ($139 bn private capital funds) *Revenue top 500:* IBISWorld “Australia’s Top 500 Private Companies of 2024” ($360 bn) *Value / Revenue:* Aspira “Small Business Valuations in Australia: Key Methods, Industry Multiples, and Rules of Thumb” (average of “1-3”) *Value / Revenue top 500:* Grant Thronton “The overlooked opportunity in Australia’s mid-sized businesses” (49%) $\mathit{Private\ capital} + \left(\mathit{Revenue\ top\ 500} \times \frac{\mathit{Total\ revenue}}{\mathit{Revenue\ top\ 500}}\right) \times \frac{\mathit{Value}}{\mathit{Revenue}}$ $\$139\text{bn} + \left(\$360\text{bn} \times \frac{100\%}{49\%}\right) \times 2 = \$1.58\text{tn}$
OTC derivatives	1,224.60	Reserve Bank of Australia, 2022 “Developments in Foreign Exchange and Over-the-counter Derivatives Markets” – “Australian share reached 5 per cent of global derivatives’ gross market values” Excluding the gross market value of FX OTC derivatives (around USD 250 bn) BIS “OTC derivatives statistics at end-December 2022” – “The gross market value of OTC derivatives, summing contracts with positive and negative values, grew by 13% in the second half of 2022 to reach $20.7 trillion at year-end.” (USD 20.7 tn×5% - USD 250 bn)×1.56 AUD/USD =$1.22 tn

Private debt	943.20	Reserve Bank of Australia "Growth in Global Private Credit" ABS "Australian National Accounts: Finance and Wealth." – Household balance sheet data. APRA "APRA releases quarterly authorised deposit-taking institution statistics for June 2025." Residential mortgage lending – total credit outstanding ($2,391.8 bn) $3,335 bn-$2,391.8 bn=$943.2 bn
Commodities	698.40	ABARES "Agricultural Commodities Report December 2024" (Agricultural production $88.4 bn.) Australian Government, Office of the Chief Economist. "Resources and Energy Quarterly March 2025" (Resources and Energy exports $415 bn.) Reserve Bank of Australia, 2019. "Developments in Foreign Exchange and Over-the-counter Derivatives Markets" (Notional outstanding in commodity derivatives around USD 125 bn.)
Carbon credits	1.83	Clean Energy Regulator "Quarterly Carbon Market Report June Quarter 2025"

Appendix B: Gains from Increased Trade Calculations

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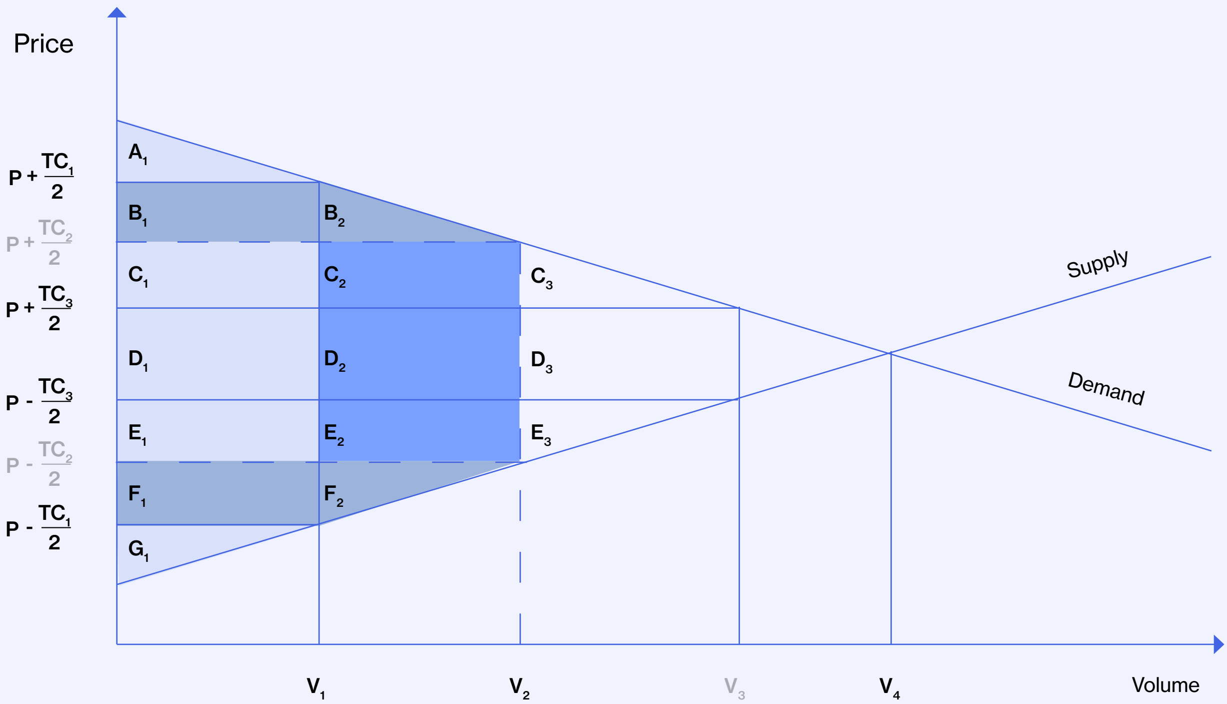
Figure B1 illustrates the framework as a market of buyers (the demand curve), sellers (the supply curve), and round-trip trading costs (TC), which include the full range of costs associated with participating in transactions in the market (market access costs, clearing/settlement costs, on-market liquidity costs, market and broker fees, trade reconciliation, and back office costs).

A hypothetical, perfectly efficient, frictionless market facilitates trade volume V_4 at price P. However, in real markets, trading costs drive a gap between prices paid by buyers $(P + \frac{TC_1}{2})$ and prices received by sellers $(F + \frac{TC_2}{2})$, causing a reduction in volume (to V_1) and lower total realised gain from trade.[254] In the extreme, trading costs completely erode economic gains to market participants and collapse the market (V=0).

Conversely, improvements to market efficiency can be modelled as a reduction in trading costs (e.g., from TC_1 to TC_2 or TC_3), unlocking gains to buyers and sellers. Cheaper trade also incentivises increased market participation and volume (from V_1 to V_2 or V_3) which unlocks increased gains from trade to buyers, sellers, and potentially also intermediaries.

There can also be redistributions of gains between traders and intermediaries that are not necessarily net economic gains. Whether a decrease in trading costs as a result of a change in market structure results in real gains, and how gains are distributed among participants, depends on the nature of the transaction cost savings. If the transaction cost reduction primarily reflects a decrease in resource use (e.g., technology cost), it creates real economic gain.[255] If the transaction cost reduction reduces intermediaries' economic rents, the effect is largely a transfer (redistributive gains) from intermediaries to buyers and sellers.

Figure B1: Economic framework



[254] These costs of trading are analogous to a "tax" in Boulding (1945) imposed on buyers and sellers. The total tax revenue is less than the "loss" to the market participants – if the tax was returned to the participants, they would still be worse off than if the tax had not been imposed in the first place. For example, a transaction cost (or "tax" in Boulding, 1945) of TC_3 would subtract D_1, D_2, and D_3 from gains to buyers and sellers. Returning these proceeds as lump sum would not compensate buyers and sellers from lost gains from trade, the deadweight loss equal to triangle V_3 to V_4.

[255] In this report, we focus on market changes in which intermediaries do not lose. For example, a market operator or clearinghouse might eliminate cost $A from the use of technology, passing on the cost savings to market participants. Or market participants might save $B in costs on market access or trade reconciliation, without displacing an intermediary. Or an intermediary might become redundant but can reallocate its resources at zero cost – the intermediary's excess profit is a redistribution and thus not in this category, but the resources/costs of the intermediary that are removed are a net saving.

Formally, these two scenarios can be separated as follows:

1. Market efficiency gain (TC_1 to TC_2)

First, consider Digital Finance innovations that reduce the costs of trading from TC_1 to TC_2 driven by resource savings, i.e., an increase in total factor productivity. These cost reductions for buyers, sellers, and intermediaries give rise to pareto gains that are net economic gains. Additionally, there is a net gain from the corresponding increase in volume to V_2:

Gains to existing buyers/sellers (at no cost to other participants)	$B_1 + F_1 = (TC_1 - TC_2) \times V_1$
Gains to new market participants or increased buyer/seller activity	$B_2 + F_2 = \frac{B_1 + F_1}{2} \times \frac{V_2 - V_1}{V_1}$
Potential gains from trade to intermediaries from increased volume[256]	$C_2 + D_2 + E_2 = (TC_1 \times V_1 - B_1 - F_1) \times \frac{V_2 - V_1}{V_1}$
Total net economic gains	$B_1 + F_1 + B_2 + C_2 + D_2 + E_2 + F_2$

2. Change to intermediary structure (TC_2 to TC_3)

Second, consider changes in the market structure that reduce the costs of trading from TC2 to TC3, but cut into intermediary profits, for example, disintermediation in transaction processes or increased competition. These cost reductions for traders give rise to redistributive gains (from intermediaries to traders) that are not net economic gains, but also net gains from the corresponding increase in volume to V_3:

Redistributive gains (from intermediaries to traders	$C_1 + C_2 + E_1 + E_2 = (TC_2 - TC_3) \times V_2$
Increased gains from trade to buyers and sellers	$C_3 + E_3 = \frac{TC_2 - TC_3}{2} \times (V_3 - V_2)$
Potential increased gains from trade to intermediaries [257]	$D_3 = (V_3 - V_2) \times TC_3$
Total net economic gains	$C_3 + D_3 + E_3$

The "Better Markets" section calculates gains in four different markets that vary in the way they facilitate trade and the sensitivity of market participation to efficiency improvements. Quantifying the increased gains from increased trade therefore requires estimates on how much more market participants in each market trade from an efficiency improvement. This appendix relies on natural experiments to calculate sensitivities (elasticity estimates).

[256] The exact gain depends on the marginal cost of the transactional infrastructure and to intermediaries.

[257] Again, the exact gain depends on the marginal cost of the transactional infrastructure and to intermediaries.

Public debt

To quantify the gains from increased trade in public debt markets, we refer to a previous analysis of the DFCRC, the Australian CBDC Economic Impact Assessment Report from 2023.[258] While an accurate estimation of gains from additional trade would ideally require a natural experiment, the referenced analysis examines changes in the market following the launch of the first UBS digital bond. Launched in 2022 on the SIX Swiss Exchange (SIX), this bond settles using the SIX Digital Exchange Distributed Ledger. This allows us to analyse the market effects of the transition to atomic settlement. Comparing the market data of this digital bond with a similar traditional bond, the DFCRC reports a 39% lower bid-ask spread for the digital bond (very close to our 36.1-38.1% estimate) than the traditional bond and a 49% higher volume. The values allow us to compute the ARC elasticity in the public debt market (Panel A of Table B1).

ARC elasticity estimation

First, we extract the bid-ask quotes for the 48 most liquid US Treasury bonds from Refinitiv Eikon Datastream, alongside the US sovereign bond market's average daily volume (ADV) of $630.9 billion.[259]

For the calculation of gains from increased trade, we require the average daily volume (in number of contracts) estimated as the daily dollar volume divided by the average midquote of the 48 bonds ($95.4) and results in 6.6 billion daily contracts. Then we calculate the average bid-ask spread of the 48 bonds, equal to $0.358 ($TC_1$). Based on a 39% reduction in the bid-ask spread of digital bonds, we calculate the adjusted average spread to $0.218 ($TC_2$). The four values allow us to estimate an ARC elasticity for public debt of 0.81 (see Panel in Table B1)

Gains from trade estimation

We use the ARC elasticity to estimate the gains from increased trade in the Australian public debt market. First, multiply the ARC with the relative cost reduction from tokenising debt (annual savings of $435 million) equal to a 39% (0.81 × 0.48) increase in transaction volume. Using the equations from earlier in the appendix we estimate $353 million in annual gains from increased trade.

Table B1: Gains calculation – public debt

Asset Class	Public debt (SIX)
Panel A: ARC elasticity estimation	
Relative volume change, $\frac{\Delta V}{\bar{V}}$	0.39
Volume before	6.61
Volume after	9.85
Volume change, ΔV	3.24
Volume average, $\bar{V}$ →	8.23
Relative cost change, $\frac{\Delta TC}{(\overline{TC})}$	0.48
Cost before	0.36
Costs after	0.22
Cost change, ΔTC	0.14
Cost average, $(\overline{TC})$ →	0.29
ARC elasticity, $\frac{\frac{\Delta V}{\bar{V}}}{\frac{\Delta TC}{\overline{TC}}}$	0.81
Panel B: Gains from increased trade estimation	
Savings, B_1+F_1	0.44
Relative cost change, $\frac{\Delta TC}{\overline{TC}}$	0.48
Costs before	1.13
Costs after	0.70
Cost change, ΔTC	0.44
Cost average, $(\overline{TC})$ →	0.92
Relative volume change, $\frac{\Delta V}{\bar{V}}$ →	0.39
Gains to buyers and sellers, B_2+F_2	0.08
Gains to intermediaries, $C_2+D_2+E_2$	0.27
Total gains, $B_2+F_2+C_2+D_2+E_2$	0.35

[258] The DFCRC prepared the September 2023 report from a pilot project with the Reserve Bank of Australia (the RBA) focused on identifying use cases for CBDC in collaboration with industry.

[259] US sovereign bond average daily volume (ADV) data is from the Securities Industry and Financial Markets Authority, July 2023, "2023 Capital Markets Fact Book."

Public equities

The economic benefits of increased trading volume from atomic settlement could be best observed by a natural experiment; however, due to the absence of pilot projects, we turn to a comparable event–the implementation of the NYSE Autoquote system in 2003. Before Autoquote, trading required significant manual labour as specialists were needed to match orders and update quotes. The innovation automated the dissemination of quotes after changes to the limit order book, heavily reducing reliance on costly specialists (Hendershott, Jones, and Menkveld, 2011). The initial automation of quotes drastically changed the capacity of trading and brought major efficiency gains, reflected in reduced bid-ask spreads and increased trading volume. The average bid-ask spread decreased by around 50%, whilst the average daily trading volume grew by 5%.[260]

ARC elasticity estimation

We calculate the potential gains from trade and extract year-to-date bid-ask quotes for the 1,000 largest stocks by trade volume in the US from Refinitiv Eikon Datastream. We then calculate the average bid-ask spread for these stocks, amounting to 2.1 cents. The average daily volume of US equities equals around 6.2 billion contracts.[261] Assuming similar gains from atomic settlement as Autoquote, the initial spread (TC_1) would reduce to 1.05 cents (2.1 cents × 50%), and the average daily volume would increase to 6.5 billion (6.2 billion × 1.05), an increase of 0.3 billion from the current value. The cost reduction (from 2.1 to 1.05) and resulting increase in trading activity (from 6.2 to 6.5) produce an ARC elasticity of 0.07 for equities.

Gains from trade estimation

We use the ARC elasticity to estimate the increased gains from trade from tokenising public equities. First, we multiply the elasticity by the cost reduction from tokenising equities, from $1.72 to $0.77 billion ($\Delta TC/\overline{TC}$ = 76.5%), to get a 5.6% relative increase in daily turnover. The increased trading activity benefits buyers and sellers beyond areas B_1 and F_1 (the $0.95 billion), totalling $26.7 million. Intermediaries, who now facilitate more trade, gain $43 million. In total, the increased gains from trade from tokenising public equities equals **$69.8 million annually.**

Table B2: Gains calculation – public equities

Asset Class	Public debt (SIX)
Panel A: ARC elasticity estimation	
Relative volume change, $\frac{\Delta V}{\overline{V}}$	0.39
Volume before	6.61
Volume after	9.85
Volume change, ΔV	3.24
Volume average, $\overline{V}$ →	8.23
Relative cost change, $\frac{\Delta TC}{\overline{(TC)}}$	0.48
Cost before	0.36
Costs after	0.22
Cost change, ΔTC	0.14
Cost average, $\overline{(TC)}$ →	0.29
ARC elasticity, $\frac{\frac{\Delta V}{\overline{V}}}{\frac{\Delta TC}{\overline{TC}}}$	0.81
Panel B: Gains from increased trade estimation	
Savings, B_1+F_1	0.44
Relative cost change, $\frac{\Delta TC}{\overline{TC}}$	0.48
Costs before	1.13
Costs after	0.70
Cost change, ΔTC	0.44
Cost average, $\overline{(TC)}$ →	0.92
Relative volume change, $\frac{\Delta V}{\overline{V}}$ →	0.39
Gains to buyers and sellers, B_2+F_2	0.08
Gains to intermediaries, C_2+D_2+E_2	0.27
Total gains, B_2+F_2+C_2+D_2+E_2	0.35

[260] Values from DFCRC September 2023, "Australian CBDC economic impact assessment" report.Book."

[261] December 2023 average daily volume in the US equity market is from the Cboe "Data & Access" page "U.S. Equities Market Volume Summary."

Real estate

To quantify the potential increase in real estate turnover resulting from reduced transaction costs, we compare the direct real estate market to Real Estate Investment Trusts (REITs), which faces significantly lower transaction costs and faster turnover. Publicly traded REITs in the US have a market capitalisation of $1.5 trillion and an average daily trading volume of around $8.4 billion, equal to an annual turnover of 142% (over 252 trading days).[262]

ARC elasticity estimation

REITs are also much less expensive to trade–using the 30-day bid-ask spread of iShares Global REIT ETF (REIT) as a proxy, the transaction costs equal around 0.04%.[263] In stark contrast, direct real estate investments trade infrequently (average turnover is 4.00%) at substantial cost (average transaction costs equal 1.80%).[264] We assume that the primary cause of infrequent trade in direct real estate (compared to REITs) is due to large transaction costs and estimate the ARC elasticity between the two asset classes where ΔV is the difference in volume between REITs and the direct real estate market (138%), $\overline{V}$ is the volume average (73%), ΔTC is the difference in transaction costs (1.76%), and $\overline{TC}$ is the transaction cost average (0.92%). Using equation 3, $\Delta V/\overline{V}$ is 1.89, $\Delta TC/\overline{TC}$ is 1.91, and the ARC is 0.99.

Gains from trade estimation

Our lower-bound estimate of a fully tokenised real estate market suggests a relative cost reduction of 38.77% (using ΔTC of $0.73 and $\overline{TC}$ of $1.81) and a relative volume increase equal to 0.40. Using equations from earlier in the appendix, the savings generate gains from trade to buyers and sellers equal to $145.5 million and intermediary gains equal to $576.1 million. The total increased gains from trade to buyers, sellers, and intermediaries equals **$721.6 million.**

Table B3: Gains calculation – real estate

Asset Class	Public debt (SIX)
Panel A: ARC elasticity estimation	
Relative volume change, $\frac{\Delta V}{\overline{V}}$	0.05
Volume before	6.20
Volume after	6.51
Volume change, ΔV	0.31
Volume average, $\overline{V}$ →	6.36
Relative cost change, $\frac{\Delta TC}{\overline{(TC)}}$	0.67
Cost before	2.10
Costs after	1.05
Cost change, ΔTC	1.05
Cost average, $\overline{(TC)}$ →	1.58
ARC elasticity, $\frac{\Delta V/\overline{V}}{\Delta TC/\overline{TC}}$	0.07
Panel B: Gains from increased trade estimation	
Savings, B_1+F_1	0.95
Relative cost change, $\frac{\Delta TC}{\overline{TC}}$	0.76
Costs before	1.72
Costs after	0.77
Cost change, ΔTC	0.95
Cost average, $\overline{(TC)}$ →	1.25
Relative volume change, $\frac{\Delta V}{\overline{V}}$ →	0.06
Gains to buyers and sellers, B_2+F_2	0.03
Gains to intermediaries, $C_2+D_2+E_2$	0.04
Total gains, $B_2+F_2+C_2+D_2+E_2$	0.07

[262] Data on the market capitalization and average daily trading volume of US REITs obtained from the National Association of Real Estate Investment Trust (Nareit) website page "REIT Industry Financial Snapshot" as of October 2024.

[263] 30-day median bid-ask spread of the iShares Global REIT ETF is from the iShares Global REIT ETF page under "Key Facts" section (collected for November 2024).

[264] Based on Redfin Corporation report, the real estate turnover over the first 8 months of 2024 was 2.5%, a record low number. We estimate that an average house exchanges hands every 25 years, corresponding to a 4% turnover

Appendix C: Survey Methodology

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Survey objective and collection

The survey is designed to gain the best possible estimates from a representative sample of industry experts within traditional finance (TradFi) and decentralised finance (DeFi) on two core themes:

(i) the expected economic and operational gains from tokenisation, and

(ii) the extent to which policy change may accelerate adoption.

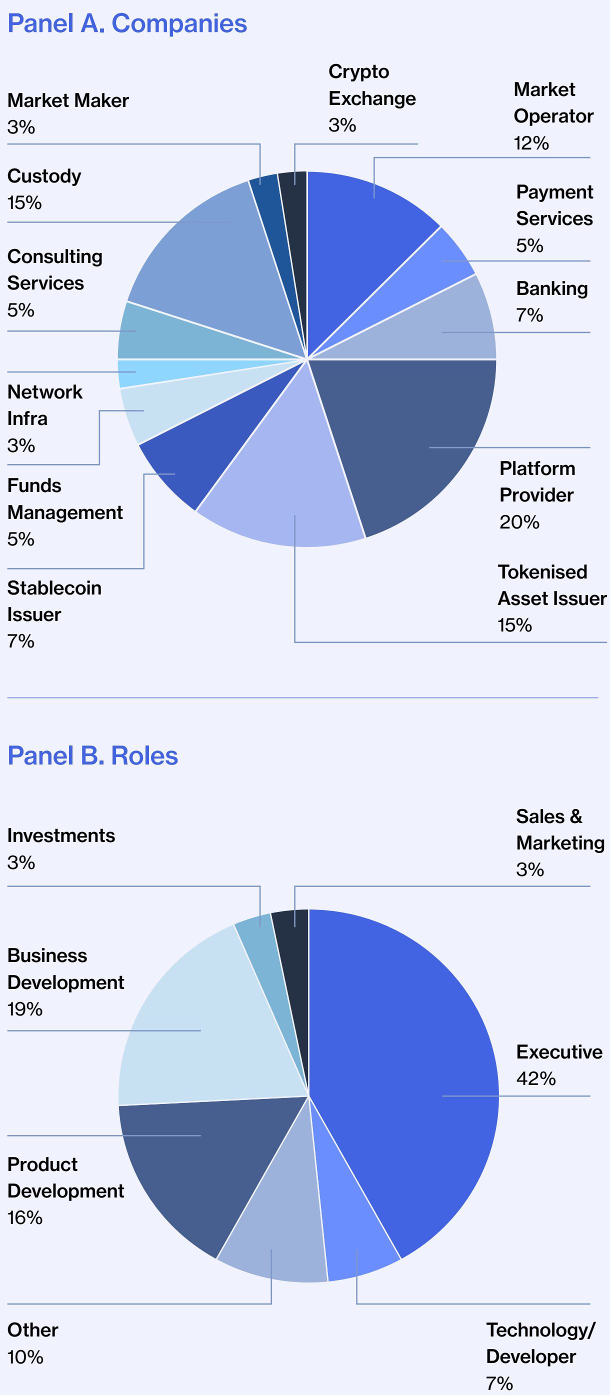
Given the technical nature of the topic (e.g., RWA tokenisation, the survey uses in-person meetings, video calls, and phone interviews whenever possible to collect responses. By allowing respondents to seek clarification, the survey reduces the likelihood of misunderstandings. Participants can also complete the survey online when phone, video, and in-person interviews are not possible.

Survey participants

The sample is purposefully drawn from Project Acacia participants (Industry Advisory Group and use case operators), as well as individuals within DECA's network and the DFCRC's network with relevant knowledge to provide meaningful answers and ensure the highest possible level of accuracy. Around 50 individuals were selected to participate in the survey. Survey demographics are depicted in Figure C1. These individuals include:

- **TradFi professionals**, employed across sectors such as banking, funds management, payment services, market operations, legal services, consulting, platform provision, custody, and regulation.
- **DeFi professionals**, employed in areas such as stablecoin issuance, tokenised asset issuance, and other roles across blockchain projects, digital asset service providers, and decentralised protocol development.

Figure C1. Survey Demographic



Survey data calibration

A potential source of bias comes from the survey participants, e.g., through miscalibration, where participants exhibit excessive confidence in the accuracy of their knowledge (in our setting, the potential impact of policies and the gains from tokenisation). Ben-David, Graham, and Harvey (2013) show a positive correlation between miscalibration and optimism, suggesting that miscalibrated respondents could systematically overestimate the effects of policies and gains from tokenisation.

The literature commonly uses confidence bounds to estimate miscalibration, with narrower bounds indicating higher overconfidence. In our estimation, we also aim to capture overconfidence to improve the accuracy of our results.[265] However, simply categorising individuals with narrow confidence intervals as miscalibrated would discount those whose narrow intervals reflect that they are well-informed (not miscalibrated). We therefore design our debiasing question to specify the individuals that both 1) provide narrow confidence intervals and 2) inaccurate estimates. From their responses we estimate the following calibration measure.

$$Calibration = \frac{CI\ width}{Inaccuracy} = \frac{Upper - Lower}{|Estimate - Actual|}$$

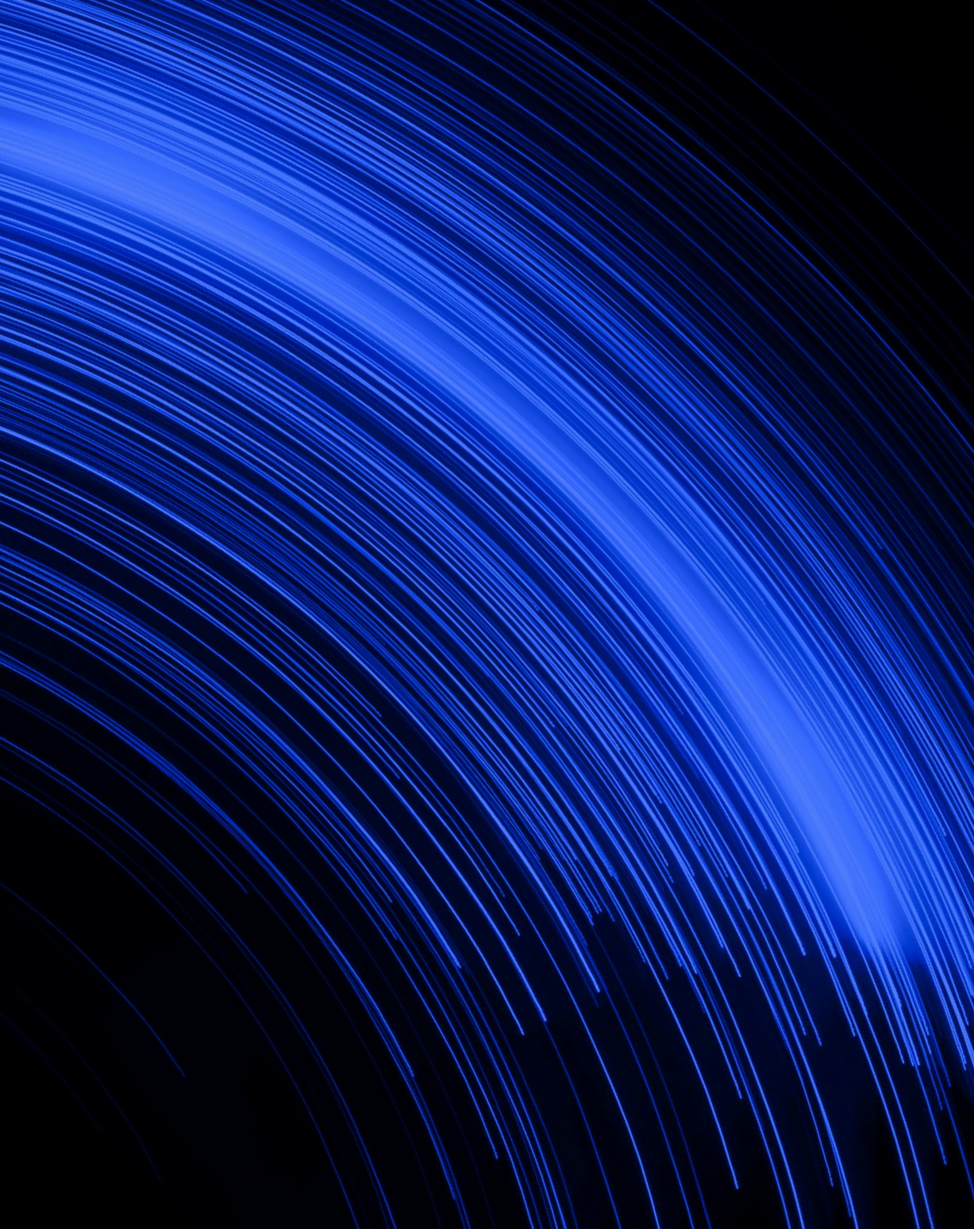
The intuition is simple: participants with wide confidence intervals and low inaccuracy are more likely to be well-calibrated (not miscalibrated).[266]

We base our calibration proxy on the following survey question:

> *Please provide your estimate (without looking it up) of the dollar value of tokenised RWA currently on public blockchains globally, excluding stablecoins. Provide your best guess (point estimate) and a 90% confidence interval (a range within which you are 90% confident the true value is within).*

[265] For example, on the future returns of the S&P500 market index (see e.g., Ben-David, Graham and Harvey, 2013) and the DAX market index (Merkle and Schreiber, 2025).

[266] Our measure is in the same spirit as Borchardt, Lovallo, Samuelsson, and da Silva 2026) who estimate both the width of the confidence interval and whether it contains the true value. Similar to Ben-David, Graham and Harvey (2013), we use "miscalibration" and "overprecision" interchangeably.



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